ECG

energy consulting group

Envestra Limited

Capital and Operating Expenditure Review

For

Essential Services Commission of South Australia

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TABLE of CONTENTS

LIST of TABLES

1. EXECUTIVE SUMMARY

Background

As part of the South Australian Access Arrangement review on Envestra gas network, the Essential Services Commission of SA (Commission) has appointed ECG to advise on whether the capital and non capital cost is in accordance with the Gas Code.

This consultancy project has been divided into two stages. In Stage One, ECG reviewed the information in the Access Arrangement Information and the additional data provided by Envestra in October in support of its submission. ECG made recommendations on the capital and non capital expenditure on a number of items. For the outstanding items, ECG outlined the requirements for additional information to assist it in finalising its recommendations.

In Stage Two, following the Commission's review of ECG's Stage One report, a list of questions was provided to Envestra. Envestra provided responses to the questions which form the basis for the Stage Two review. The analysis and conclusions for Stage Two are detailed in the relevant subsections of the report.

In the Executive Summary, ECG has summarised the conclusions reached in Stage One followed by a separate section on the conclusions for Stage Two. This method of reporting provides clear transparency and logic on the process for this review. Details of the review are provided below:

Capital Expenditure 2001/02 to 2005/06

In the 2005, Envestra submitted its capital expenditure for the current period as shown in Table 1-1.

Table 1-1: Details of New Facilities Capital Expenditure 2001/02 to 2005/06 (Nominal $ million)

New Facilities Investment (excluding FRC)	2001/02	2002/03	2003/04	2004/05	2005/06f
Mains	7.9	5.5	6.3	8.1	12.4
Inlets	4.7	5.8	6.0	6.8	7.0
Meters	3.8	3.8	4.4	4.0	7.5
SCADA	0.2	0.0	0.0	0.2	0.0
IT Systems	0.6	0.5	0.1	0.7	0.0
Other Distribution System Equipment	0.1	0.2	0.1	0.1	0.0
Other	2.5	4.4	3.6	0.7	0.3
New Facilities Investment	**19.7**	**20.4**	**20.4**	**20.6**	**27.1**

In support of its capital expenditure, Envestra submitted a number of consultants' reports including WorleyParsons, IBM and CRA. WorleyParsons reviewed Envestra capital and non capital costs except for IT. However, it had presented its assessment in different categories from that shown in Table 1-1.

ECG sought information from Envestra regarding the above costs in the same categories as the WorleyParsons' report. The same categories were also used for the forecast period.

Envestra provided a table mapping the above cost to the WorleyParsons' report. As such, ECG has carried out its review using the revised categories. It is worth noting that all the consultants' reports address the forecast expenditure and there is limited information on the current period.

The expenditure categories are shown in Table 1-2.

Table 1-2: New Facilities Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Stay In Business						
Telemetry	0.23	0.05	0.00	0.20	0.00	0.49
Regulators	0.00	0.00	0.00	0.15	0.00	0.15
PMC - Domestic	1.05	1.19	1.39	1.04	3.20	7.87
PMC - I&C	0.26	0.31	0.43	0.36	1.29	2.65
Odorising	0.00	0.05	0.00	0.02	0.00	0.07
Corrosion Protection	0.00	0.00	0.00	0.16	0.00	0.16
Mains Renewal	4.58	4.10	4.25	4.17	7.37	24.47
Non-FRC IT Systems	0.61	0.54	0.13	0.73	0.00	2.02
FRC IT Systems	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.34	0.00	0.50	0.15	0.99
Total Stay-in-Business	**6.74**	**6.58**	**6.20**	**7.34**	**12.01**	**38.86**
Growth						
Large Consumers	1.52	1.68	0.99	0.96	0.13	5.29
Improve Supply	0.15	0.10	0.86	0.58	0.60	2.29
General Mains	3.96	3.85	3.73	2.74	4.25	18.54
Regulators	0.12	0.25	0.07	0.00	0.00	0.44
Meters	2.61	2.73	2.90	2.55	3.02	13.80
Services	6.67	6.59	6.64	6.93	6.95	33.78
Other	0.00	0.00	0.00	0.00	0.14	0.14
Total Growth	**15.04**	**15.20**	**15.19**	**13.76**	**15.10**	**74.29**
TOTAL NEW FACILITIES INVESTMENT	**21.77**	**21.79**	**21.39**	**21.10**	**27.11**	**113.15**

Stage One

Following the Stage One review, ECG's findings for the current period are listed below.

The areas in which ECG is unable to assess whether the expenditure is prudent and efficient and requires additional information are:

- Large consumers – the supply is only to a small number of large customers. The cost is highly variable due to gas demand and the geographical location of the site.
- Volume Customer

  - Meters - the cost of supply and installation of meters is higher than other jurisdictions due to the unique circumstances in South Australia.
  - Services – these are pipes that run from the street to the customer's premises.

- Regulators – these projects are related to the supply and installation of regulating stations.

- Other – the cost is related to sub meter removal and provision of higher capacity meters for hot water.

- Periodic Meter Changes – this cost is related replacement of meters in the field after they have reached their approved life in the field.

- SCADA – the cost is related to installing remote devices in the field for monitoring and controlling system pressures.

- Regulators – the projects are related to ongoing replacement and improvement of regulator stations and valve pits.

- IT Projects – no information has been detailed regarding this expenditure.

- Miscellaneous – the cost are related to small projects for odorising, corrosion protection and other.

The areas in which ECG considers the expenditure is prudent and efficient are:

- Improve Supply – the related projects are for augmentation and security of supply.

- Volume customers
  - General Mains – the related projects are for the main supply mains and reticulation mains for new customers.

- Mains Replacement – this cost is related to replacing old cast iron and unprotected steel mains to reduce UAFG and leak repairs. Except for the cost in 2005/06, ECG considers this cost to prudent and efficient.

- Periodic Meter Changes – this cost is related replacement of meters in the field after they have exceeded their approved life in the field. ECG considers this cost to be prudent and efficient except for 2005/06.

Stage Two

The additional information received from Envestra has enabled ECG to complete its analysis on the prudence and efficiency of the expenditure in accordance with the Code.

The information provided has enabled ECG to make recommendations on the prudence and efficiency of expenditure in the current period. ECG considers the actual and forecast expenditure proposed by Envestra to be prudent and efficient except for the following items:

- Volume customers – The industrial and commercial services cost is considered high for the current period.

- Forecast Other (Growth) expenditure in 2005/06 relating to the removal of sub meters and the provision of high capacity meters was considered high. Envestra does not propose to remove sub meters in 2005/06.

- Forecast Mains Replacement Expenditure in 2005/06 – is considered high for the 75kms block renewal.

Details of the recommended expenditure are shown in Table 1-3:

Table 1-3: Recommended New Facilities Actual Capital Expenditure, 2001/02 to 2005/06 (Nominal $ million)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Stay In Business						
Telemetry (SCADA)	0.21	0.05	0.00	0.20	0.00	0.45
Regulators (SIB)	0.00	0.00	0.00	0.15	0.00	0.15
PMC - Domestic	0.95	1.11	1.32	1.01	3.20	7.60
PMC - I&C	0.23	0.29	0.41	0.35	1.29	2.58
Odorising	0.00	0.05	0.00	0.02	0.00	0.07
Corrosion Protection	0.00	0.00	0.00	0.16	0.00	0.16
Mains Renewal	4.14	3.83	4.05	4.07	5.95	22.04
Non-FRC IT Systems	0.55	0.50	0.12	0.71	0.00	1.89
FRC IT Systems	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.32	0.00	0.49	0.15	0.96
Total Stay-in-Business	**6.08**	**6.15**	**5.91**	**7.15**	**10.59**	**35.88**
Growth						
Large Consumers	1.37	1.57	0.94	0.94	0.13	4.95
Improve Supply	0.14	0.09	0.82	0.57	0.60	2.21
General Mains	3.58	3.60	3.56	2.67	4.25	17.65
Regulators (Growth)	0.11	0.23	0.07	0.00	0.00	0.41
Meters	2.36	2.55	2.76	2.49	3.02	13.18
Services	5.97	5.70	5.87	6.86	6.71	31.11
Other	0.00	0.00	0.00	0.00	0.08	0.08
Total Growth	**13.53**	**13.75**	**14.02**	**13.52**	**14.79**	**69.61**
TOTAL NEW FACILITIES INVESTMENT	**19.61**	**19.90**	**19.93**	**20.67**	**25.38**	**105.49**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

ECG advises this recommendation reduces the Capital expenditure allowance requested by Envestra by $2.62million, from $108.11million to $105.49million (nominal).

ECG has not presented its summary in the same tabular form as provided by Envestra in Table 8 of its AAI due to the difficulty in reconciling the item by item categories of information provided in Envestra's AAI with the categories shown above.

Capital Expenditure Forecast 2006/07 to 2010/11

The capital expenditure in the 2005 AAI for the forecast period is shown in Table 1-4.

Table 1-4: Forecast New Facilities Capital Expenditure (AAI), 2006/07 to 2010/11 (Nominal $ million)

	2006/07	2007/08	2008/09	2009/10	2010/11
Stay in Business					
Mains replacement	9.2	9.2	8.8	9.3	10.5
Periodic meter changes	4.7	4.7	5.1	5.1	4.5
Security of Supply	4.0	8.0	6.5	13.9	15.1
SCADA	1.3	1.3	0.7	1.2	0.8
Regulators	1.5	1.5	0.9	0.9	0.9
IT Projects	4.6	5.6	7.6	0.3	3.9
Other	0.6	1.0	0.6	0.6	0.6
Total replacement	**26.0**	**31.3**	**30.3**	**31.3**	**36.4**
Growth					
Mains/inlets/meters	19.7	19.9	18.5	20.0	22.6
Extensions to Towns	1.9	4.3	1.5	1.4	0.4
Other	0.1	0.1	0.2	0.2	0.2
Total Growth	**21.7**	**24.3**	**20.1**	**21.5**	**23.2**
Total New Facilities	**47.6**	**55.6**	**50.4**	**52.8**	**59.6**

Following a request from ECG, Envestra provided a breakdown of the forecast expenditure in the 2005 AAI. The expenditure details are shown in Table 1-5.

ECG has carried out its analysis using Table 1-5.

Table 1-5: Forecast New Facilities Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Stay In Business						
Telemetry	1.25	1.26	0.64	1.11	0.71	4.97
Regulators	1.44	1.46	0.83	0.83	0.83	5.40
PMC - Domestic	3.50	3.62	3.48	3.33	2.83	16.76
PMC - I&C	1.08	0.83	1.26	1.28	1.19	5.64
Odorising	0.06	0.41	0.06	0.06	0.06	0.64
Corrosion Protection	0.05	0.02	0.05	0.02	0.05	0.19
Mains Renewal	9.00	8.79	8.15	8.42	9.30	43.66
Non-FRC IT Systems	0.26	0.57	4.52	0.26	0.27	5.88
FRC IT Systems	0.05	0.08	0.15	0.00	3.19	3.47
Other	0.49	0.48	0.46	0.45	0.44	2.32
Total Stay-in-Business	**17.18**	**17.51**	**19.61**	**15.78**	**18.86**	**88.93**

Growth						
Large Consumers	0.67	0.82	0.59	0.60	0.60	3.28
Improve Supply	1.21	1.03	0.48	0.48	0.99	4.20
General Mains	5.82	5.62	5.28	5.55	6.09	28.36
Regulators	0.00	0.00	0.00	0.00	0.00	0.00
Meters	3.63	3.50	3.28	3.44	3.79	17.63
Services	7.85	7.94	7.51	8.03	8.53	39.87
Other	0.14	0.14	0.14	0.14	0.14	0.70
Total Growth	**19.32**	**19.04**	**17.29**	**18.24**	**20.14**	**94.04**
Material Changes						
Increased Network Utilisation	-	-	-	-	-	-
IT	4.20	4.71	2.43	0.00	0.00	11.34
New Townships	1.82	4.13	1.40	1.25	0.33	8.94
Security of Supply	3.95	7.58	6.07	12.59	13.34	43.54
Total Scope Changes	**9.96**	**16.42**	**9.91**	**13.85**	**13.67**	**63.81**
TOTAL NEW FACILITIES INVESTMENT	**46.46**	**52.97**	**46.80**	**47.87**	**52.68**	**246.78**

Stage One

The areas in which ECG requires additional information are:

- Large Consumers – the supply is only to a small number of large customers. The cost is highly variable due to gas demand and the geographical location of the site.
- Improve Supply – the related projects are for augmentation and security of supply.
- Extension to Towns – this expenditure is related to supplying a number of towns including McLaren Vale, Tanunda and the Monarto Industrial Estate.
- Other – the cost is related to sub meter removal and provision of higher capacity meters for hot water.
- Periodic Meter Changes – this cost is related to replacement of meters after they have reached their approved life in the field.
- Security of Supply – the category relates to major projects required to reduce the possibility of gas outage through third party damage or capacity constraints. The total expenditure for the forecast period is $44 million.
- SCADA – the cost is related to installing remote devices in the field for monitoring and controlling system pressures.
- Regulators – the projects are related to ongoing replacement and improvement of regulator stations and valve pits.
- IT Projects – IT projects have been divided into non FRC, FRC and a number of projects that are considered as material change projects.

- Miscellaneous – the costs are related to small projects for odorising, corrosion protection and other.

The area in which ECG considers the expenditure is prudent and efficient is:

- Mains Replacement – this cost is related to replacing old cast iron and unprotected steel mains to reduce UAFG and leak repairs.

The area in which ECG considers expenditure is not prudent and efficient is:

- Volume customers
  - General Mains – the related projects are for the main supply mains and reticulation mains for new customers.
  - Meters- the cost of supply and installation of meters.
  - Services - these are pipes that run from the street to the customer's premises.

Stage Two

The information provided has enabled ECG to make recommendations on the prudence and efficiency of expenditure in the forecast period. ECG considers the forecast expenditure proposed by Envestra to be prudent and efficient except for the following items:

- Improve Supply – details of expenditure provided shows that the total project cost is less than what is included in the Access Arrangement Information.

- Volume Customers: – the unit cost for domestic meters and for industrial and commercial services is considered high.

- Mains Replacement – the unit cost for mains renewal is considered to be high.

- Security of Supply – part of the Gawler Transmission System Augmentation Project should be deferred to the Access Arrangement period commencing 2012.

- Regulators (SIB) – information provided shows that the regulator replacement program is less than in the Access Arrangement Information.

- Miscellaneous: Other – is a provision for the purchase of small gas specific equipment. The expenditure is twice that of the current period without any justification.

ECG's recommended expenditure that is considered prudent and efficient is shown in Table 1-6.

Table 1-6: Recommended New Facilities Capital Expenditure, 2006/07 to 2010/11 (Nominal $ million)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Stay In Business						
Telemetry (SCADA)	1.28	1.32	0.69	1.23	0.80	5.32
Regulators (SIB)	1.37	1.42	0.76	0.78	0.80	5.14
PMC - Domestic	3.59	3.80	3.75	3.68	3.20	18.02
PMC - I&C	1.11	0.87	1.36	1.41	1.35	6.10
Odorising	0.06	0.43	0.06	0.07	0.07	0.69
Corrosion Protection	0.05	0.02	0.05	0.02	0.06	0.20
Mains Renewal	6.96	6.88	6.47	6.78	7.58	34.67
Non-FRC IT Systems	0.00	0.32	4.47	0.00	0.00	4.78
FRC IT Systems	0.05	0.08	0.15	0.00	3.48	3.77
Other	0.29	0.29	0.30	0.31	0.32	1.51
Total Stay-in-Business	14.76	15.44	18.07	14.27	17.66	80.21
Growth						
Large Consumers	0.69	0.86	0.64	0.66	0.68	3.52
Improve Supply	0.71	0.65	0.12	0.12	0.12	1.72
General Mains	5.51	5.52	5.30	5.73	6.36	28.42
Regulators (Growth)	0.00	0.00	0.00	0.00	0.00	0.00
Meters	3.54	3.46	3.30	3.51	3.94	17.74
Services	7.59	7.95	7.72	8.49	9.15	40.90
Other	0.14	0.15	0.15	0.15	0.16	0.75
Total Growth	**18.17**	**18.59**	**17.22**	**18.66**	**20.41**	**93.05**
Material Changes						
Increased Network Utilisation	0.00	0.00	0.00	0.00	0.00	0.00
IT	3.63	3.99	2.55	0.00	0.00	10.17
New Townships	1.87	4.02	1.50	1.36	0.36	9.11
Security of Supply	4.05	7.36	4.54	12.73	10.22	38.90
Total Material Changes	**9.54**	**15.38**	**8.59**	**14.08**	**10.58**	**58.18**
TOTAL NEW FACILITIES INVESTMENT	42.48	49.41	43.88	47.02	48.65	231.44

ECG has mapped the expenditure to the categories in the AAI as shown in Table 1-7.

Table 1-7: Recommended New Facilities Capital Expenditure, 2006/07 to 2010/11 (Nominal $ million)

	2006/07	2007/08	2008/09	2009/10	2010/11
Stay in Business					
Mains replacement	6.96	6.88	6.47	6.78	7.58
Periodic meter changes	4.69	4.68	5.10	5.09	4.55
Security of Supply	4.05	7.36	4.54	12.73	10.22
SCADA	1.28	1.32	0.69	1.23	0.80
Regulators	1.37	1.42	0.76	0.78	0.80
IT Projects	3.68	4.39	7.17	0.00	3.48
Other	0.40	0.75	0.42	0.40	0.44
Total replacement	**22.44**	**26.80**	**25.17**	**27.00**	**27.88**
Growth					
Mains/inlets/meters	18.03	18.44	17.07	18.51	20.25
Extensions to Towns	1.87	4.02	1.50	1.36	0.36
Other	0.14	0.15	0.15	0.15	0.16
Total Growth	**20.04**	**22.61**	**18.72**	**20.02**	**20.77**
Total New Facilities	**42.48**	**49.41**	**43.88**	**47.02**	**48.65**

ECG advises this recommendation reduces the Capital expenditure allowance requested by Envestra by $34.67million, from $266.11million to $231.44million (nominal).

Non Capital Costs 2006/07 to 2010/11

Envestra Non Capital Costs as presented in its 2005 AAI are as per Table 1-8:

Table 1-8: Non Capital Costs 2006/07 to 2010/11 (Nominal $m)

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
Operating and Maintenance	30.3	35.7	30.3	30.7	31.3	158.3
Administration and General	7.5	7.5	8.3	8.4	8.7	40.4
FRC	6.4	6.9	7	7.5	7.6	35.4
Network Development	6.6	6.8	7	7.3	7.5	35.2
IT projects	0.7	1.3	1.8	1.8	1.9	7.5
Total	**51.5**	**58.2**	**54.4**	**55.7**	**57**	**276.8**

In the 2005 AAI, Envestra has listed a number of material changes in its forecast expenditure from its current expenditure. To assess the non capital expenditure in the categories listed in the 2005 AAI including the material changes, ECG has used the information in the WorleyParsons' report as shown in Table 1-9.

Table 1-9: Envestra's Non Capital Expenditure 2003/04 to 2010/11[1]
(Real $thousand 2004/05)

	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	TOTAL 06/07-10/11
Operating & Maintenance	25,143	24,437	23,948	24,940	24,954	24,767	25,079	25,169	124,910
Administration & General	5,572	6,225	6,837	7,160	6,971	7,527	7,417	7,510	36,585
Network Development	6,771	6,524	6,266	6,275	6,328	6,372	6,436	6,492	31,903
FRC	229	6,191	6,269	6,133	6,425	6,372	6,633	6,598	32,160
Material Changes				4,608	9,404	4,335	3,707	3,490	25,544
Total	**37,716**	**43,377**	**43,320**	**49,116**	**54,082**	**49,373**	**49,272**	**49,260**	**251,102**

Stage One

A summary of ECG's key findings are:

Operations and Maintenance expenditure for the forecast period includes a number of activities such as network management, network maintenance, meter reading and billing, leak repairs, self insurance etc. ECG findings are listed below.

- Network Management – this expenditure is related to the One Call Centre and other administration function. ECG considers this cost to be prudent and efficient
- Network Maintenance – this expenditure is related to routine maintenance of the network. ECG considers that the expenditure is not prudent and efficient. However, ECG sought additional information on the SCADA operating and maintenance expenditure.
- Network Reading and Billing – this expenditure includes the reading and billing function and the disconnection/reconnection function. ECG considers the cost to be prudent and efficient.
- Leak Repairs – this expenditure is related to the repair of leaking gas mains. ECG considers the expenditure is not prudent and efficient.
- Self Insurance - this expenditure is a new expenditure not included in the regulatory business previously. ECG sought additional information where the cost would have been accounted for previously.
- Gas Network Planning – this expenditure is related the engineering and network planning functions. At this stage ECG considers this expenditure not prudent and efficient and sought additional information.
- Facilities Management – this expenditure is associated with environmental management of contaminated sites, property rates etc. ECG considers this expenditure is prudent and efficient.

[1] WorleyParsons' Report September 2005 Table 1-4

- Government Charges – this expenditure is related to licence fees and charges. ECG considers this expenditure is prudent and efficient.

Administration and General expenditure includes the costs for IT, Human Resources, Accounting and Finance and Network Services. At this stage ECG considers this expenditure is not prudent and efficient and has sought additional information in relation to Accounting and Finance costs.

Network Development includes operations support and market development activities. ECG is unable to conclude on whether the network marketing cost is prudent and efficient.

FRC cost is shown as over $6million per annum from 2004/05 onwards. ECG sought additional information on why there is a difference between the Commission's approved FRC expenditure and Envestra's expenditure.

Material Changes includes a number items such as IT projects, ageing workforce, regulatory governance, risk management etc.

- IT project costs are linked to the new initiative proposed by Envestra. ECG is sought clarification of the operating expenditure before it can conclude that the cost is prudent and efficient.

- Aging Workforce includes the costs of recruiting a number of staff as a result of an aging workforce. ECG sought information on the options considered before it can conclude that the cost is prudent and efficient.

- Regulatory Governance and Service Requirements relates to a number of activities such as compliance costs, review and auditing, etc. ECG is unable to conclude that the expenditure is prudent and efficient except for the cost related to Corporate Governance.

- Risk Management includes a number of activities such as promotion of "Dial before You Dig", terrorist risk management and mapping of I&C services.

    - Except for the terrorist risk management category, due to the lack of supporting information, ECG is unable to conclude that the costs are prudent and efficient.

- Environmental Management covers such activities as management of contaminated sites and land remediation. ECG considers this expenditure to be prudent and efficient.

- Miscellaneous Cost covers activities which include increases in contractors' costs, material costs, OEAM depot relocation.

    - ECG has concluded that the price increases for contractors and materials are prudent and efficient.

    - However, in the case of the relocation costs, superannuation guarantee and Smallworld licence fees, ECG is unable to conclude that the expenditure is prudent and efficient.

- Office and Equipment costs are not associated with the increase in the workforce. As ECG has not concluded that the costs for addressing the ageing workforce are prudent and efficient, it therefore is unable to recommend that the cost for the additional office and equipment is prudent and efficient.

Stage Two

In the areas where ECG sought additional information, Envestra has provided clarification on the various activities. ECG has incorporated the additional information into its analysis. A summary of the key findings in the outstanding areas not assessed as prudent and efficient in Stage One are set out below.

Operations and Maintenance

- Network Maintenance expenditure has increased due to higher labour costs resulting from wage increases which ECG considers to be reasonable.

- Leak Repairs expenditure has been adjusted consistent with the increased mains renewal program. The recommended expenditure also reflects a reduction in piece meal renewal costs.

- Self Insurance cost is a notional amount. ECG considers this expenditure to be prudent and efficient but the Commission may wish to consider how it treats a notational cost in a regulated environment.

Administration and General

- The outstanding issue relating to Administration and General expenditure is related to IT costs. ECG considers the cost to be prudent and efficient except for the additional expenditure following the upgrade of the software, Maximo. ECG considers this cost is already part of the ongoing IT operations expenditure. Accounting and Finance expenditure has been adjusted to reflect ECG's findings and recommendations in Section 8.3.3.

FRC Operating Cost

- The difference in the Commission's approved FRC expenditure and the forecast expenditure is due to the additional maintenance cost for the HP servers and also the ongoing version upgrades of the software. ECG considers these costs to be prudent and efficient.

Network Development

- Envestra has divided the network development into operational support and network marketing. The operational support staff carries out activities performed by network operational staff in other distribution networks. ECG only recommends acceptance of labour costs due to wage increases as prudent and efficient.

- Due to the nature of the SA market, ECG is recommending acceptance of the Network Marketing expenditure as being prudent and efficient.

Material Changes

- IT Projects operating expenditure is for new IT projects. ECG has in principle concluded that the expenditure is prudent. However, ECG considers the expenditure is not efficient as operating expenditure and capital expenditure have been forecast to occur in the same year.

- Aging Workforce expenditure is not considered to be prudent and efficient (except for additional graduate engineers) as no other option has been considered. ECG believes that whilst this is an issue, other considerations such as outsourcing should be reviewed before the expenditure can be considered as being prudent and efficient.

- Regulatory Governance and Services Requirements expenditure is only partially considered to be prudent and efficient. There is insufficient justification for increased cost in a number of areas such as changes to Australian Standards and responding to service enquiries. Other areas such as Corporate Governance and notification of programmed meter changes (partially) are considered to be prudent and efficient.

- Risk Management costs that are considered prudent and efficient include Terrorist Risk Management.costs. SCADA maintenance and mapping of I&C services are considered to be partially prudent and efficient.

- Miscellaneous costs cover a range of activities. ECG considers the costs to be prudent and efficient except for cost related to superannuation guarantee.

- Office and Equipment is related to the additional staff proposed by Envestra. ECG is only recommending a partial amount which is related solely to the additional graduate engineers.

Details of ECG's recommended expenditure are shown in Table 1-10.

Table 1-10: Recommended Non Capital Expenditure 2006/07 to 2010/11. (Nominal $million)

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
Operating & Maintenance	26.82	27.31	27.59	28.43	29.07	139.22
Administration & General	7.48	7.47	7.98	8.05	8.36	39.35
Network Development	6.75	6.98	7.20	7.45	7.71	36.08
FRC	6.59	7.08	7.20	7.68	7.83	36.39
Material Changes						
IT Projects	0.00	0.51	0.88	1.36	1.39	4.15
Ageing Workforce	0.21	0.25	0.26	0.25	0.22	1.20
New Regulatory, Governance and Service Requirements	0.18	0.11	0.10	0.11	0.11	0.61
Risk Management	0.59	0.57	0.66	0.24	0.28	2.34
Miscellaneous Costs	0.66	0.39	0.32	0.33	0.34	2.03
Environmental Management	0.35	5.69	-0.20	-0.20	-0.21	5.43
Office and Equipment Costs	0.10	0.06	0.08	0.12	0.14	0.50
Sub Total	2.09	7.58	2.11	2.21	2.28	16.27
TOTAL	**49.73**	**56.42**	**52.09**	**53.83**	**55.24**	**267.30**

Note: Environmental management cost for 2008/09 onwards is shown as negative as Envestra is spending less than the baseline amount included in the operating and maintenance expenditure.

ECG advises this recommendation reduces the Non Capital expenditure by $9.5million, from $276.8million to $267.3million (nominal).

2. INTRODUCTION

2.1 BACKGROUND

In 2001, the South Australian Independent Pricing and Access Regulator (SAIPAR) approved Envestra's current Access Arrangement for the period 1 July 2001 to 30 June 2006. In 1 July 2003, the Essential Services Commission of South Australia (Commission) succeeded SAIPAR as the South Australian regulator. The Commission as such, is responsible for administering the Access Arrangement regime in accordance with the National Gas Code (Code).

As the regulatory period is coming to its end, Envestra has submitted its revised Access Arrangement to the Commission. The revised Access Arrangement is to apply in the next regulatory period from 1 July 2006 to 30 June 2011.

The Commission is therefore carrying out a review of Envestra's proposed Access Arrangement submission. The review is being carried out under the Code. As such, the Commission has engaged ECG to assess the prudence and efficiency of Envestra's revised capital and non capital expenditure in accordance with the Code.

2.2 OBJECTIVES OF CONSULTANCY

The consultancy has been divided into two stages:

Stage One

The primary objective of Stage One is to undertake an expert assessment in a manner consistent with the relevant views expressed by the Commission in its Guidance Paper to the extent to which:

- The operating and capital forecast for the second Access Arrangement period included in Envestra's proposed Access Arrangement revisions comply with the requirements of the Code in particular in Section 8.2 (e) and Section 8.20 (for capital expenditure) and Section 8.37 (for non capital expenditure); and

- The capital base amounts at the commencement of the second Access Arrangement period, based upon a roll forward of the initial capital base over the first period included in Envestra's proposed Access Arrangement revisions, comply with the requirement of the Code under Section 8.9.

Stage Two

Where the Commission decides that Envestra's forecasts and/or amounts do not comply with the requirements of Section 8.2(e) and Section 8.20 (for capital forecasts), Section 8.37 (for non capital expenditure) and Section 8.9 (for the rolled-forward capital base amount), ECG is to recommend alternative forecasts and/or amounts which are compliant with these requirements.

The scope of ECG's review covered in this report includes work undertaken for both Stages One and Two.

2.3 STRUCTURE OF THE REPORT

This report covers the processes and conclusions for both the Stage One and Stage Two studies. As such, a number of sections in the report are divided into Stage One and Stage Two. The Stage One sub section describes ECG's review of Envestra's Capital and Non Capital Expenditure and the conclusions drawn at that time. The Stage Two sub section which follows the Stage One review, describes the further analysis carried out after receipt of additional information from Envestra and the conclusions drawn from the information. In every case, ECG has either recommended that the expenditure is in accordance with the Code or has provided its estimate of the expenditure that complies with the Code.

This method of reporting provides the transparency and logic of the work carried out in the Stage One and Stage Two processes. ECG believes that the benefit of reporting in such a manner outweighs the slightly awkward style of reporting.

The report as such, has been divided into the following main sections:

- Approach adopted by ECG
- Description of Envestra Network
- Envestra Asset Management Process
- Capital Expenditure Analysis
- Non Capital Expenditure Analysis

3. REVIEW PROCESS

3.1 INTERPRETATION OF THE CODE

In undertaking this study, ECG has taken into consideration the requirements of the Code. In particular:

- Section 8.2(e) which states that any forecast required in setting the Reference Tariff represents the best estimates which have been arrived at on a reasonable basis.
- Sections 8.16 to 8.19 of the Code which set out how the capital base of a pipeline can be increased by actual capital expenditure and Sections 8.20 to 8.22 which deal with forecast capital expenditure.
- Sections 8.36 and 8.37 which define non capital costs and outline the criteria for acceptance.

ECG has defined Section 8.2(e) of the Code to mean that in preparing the best estimates which have arrived at on a reasonable basis, the service provider should be able to demonstrate how it has arrived at the best estimates. This includes:

- Projects are selected after all feasible options are considered.
- Forecast cost has taken into account efficient industry trends and not just a continuation of historical work practices.
- Estimates are prepared using rates that are market tested.
- Projects should be based on specific business needs and quantifiable benefits.

Both Sections 8.16(a) and 8.37 of the Code require that costs must not exceed the amount that would be invested by a prudent Service Provider acting efficiently, in accordance with accepted good industry practice and to achieve the lowest sustainable cost of delivering Services and Reference Services.

ECG has defined “prudent” and “efficient” as follows:

- ‘Prudent’ to mean exercising good judgement in deciding whether to proceed with one’s projects or activities.
- ‘Efficient’ to mean projects or activities should be carried out at the most cost effective option.

ECG has interpreted the definition of ‘efficient’ as also meaning that capital and non capital expenditure should reflect competitive market rates and has applied this interpretation in conducting its assessment.

“Good industry practice” is considered to mean the practice that a prudent operator would adopt in similar Australian conditions. Lowest sustainable cost’ as meaning an optimum balance of capital and non capital expenditure that maintains the safety and integrity of the assets throughout their economic lives. In Envestra’s case, the majority of its network assets are long-life – up to 80 years.

ECG has endeavoured, as far as practicable, to take the life-cycle requirements of each asset category into account. Specific details of how ECG has applied the above principles to its assessment of capital and non capital expenditure are outlined in the relevant sections.

By applying the above principles and meanings of prudent and efficient, ECG has either recommended acceptance of Envestra's historical and forecast expenditure or recommended alternative expenditure amounts.

3.2 GUIDANCE PAPER

Prior to Envestra submitting its proposed Access Arrangement revisions, the Commission published an Issues Paper in November 2004 and carried out an extensive public consultation process. In May 2005, as part of the process, the Commission published a Discussion Paper which developed its preliminary views on certain matters based on its analysis of the requirements of the Code. The Commission analysed further submissions and has subsequently published its Guidance Paper outlining its current position.

New Facilities Investment for the Second Period

In relation to the forecast capital expenditure, the Commission proposes to adopt an approach which invites Envestra to include with its forecasts of new facilities investment, supporting information of the relevant factors of any year-to-year variations in each of the major capital expenditure components.

The Commission will then assess Envestra's forecasts of the new facilities investment with the assistance of expert consultants using an approach which considers the recent and forecast trends in Envestra's new facilities investments.

Any information provided by Envestra should support its arguments that any forecast new facilities investment to be provided by Origin Energy Asset Management (OEAM) meets the Code requirements.

Capital Base at the Start of the Second Period

The Commission advises that under the Code, the initial Capital Base as determined by SAIPAR at the commencement of the first Access Arrangement period is binding. Section 8.16 (a) of the Code provides that the capital base at the start of the second period may be increased in the preceding Access Arrangement period by the amount of the (actual or forecast) New Facilities Investment only if that amount meets the requirements of the Code.

As such, similar to the approach adopted in assessing the forecast capital expenditure, the Commission is proposing to invite Envestra to submit supporting information explaining the differences between the actual new facilities investment in each of the major capital expenditure components from that approved by SAIPAR.

The Commission will seek expert assistance in assessing the implications of any departures observed between Envestra's actual new facilities investment and the forecast levels approved by SAIPAR during the first period.

Non Capital Costs for the Second Period

To determine the efficient non capital costs for the second period, the Commission proposes to adopt a variance-against-trend approach. Before this approach is adopted for the second period, it is necessary to determine the cost trend for the first period. The Commission has also indicated that in looking at the cost trend in the first period, it will take into account any incentives by Envestra to bring forward or defer expenditure on a year by year basis. This means that any analysis of the cost trend should give regard to the incentive to move away from the cost path determined by SAIPAR for the current Access Arrangement period.

In view of the above, Envestra will be invited to submit information supporting the differences between the forecast and actual non-capital costs in each of the major categories.

However the Commission proposes to adopt a zero based costing methodology for the marketing expenditure and the "outsourced" asset management costs.

3.3 APPROACH

In carrying out this review, ECG has relied on its wide experience in both the gas industry and Access Arrangement reviews. ECG has conducted the total cost study in ACT and NSW and staff of ECG has also been involved with the Victorian Access Arrangement review. In addition, ECG is also currently involved with similar work in Queensland.

3.3.1 General

In order to meet the Commission's objectives, ECG carried out its review in two stages as follows:

Stage One

- Reviewed Envestra's proposed Access Arrangement (AA) and the Access Arrangement Information (AAI) submitted to the Commission in September 2005.
- Reviewed Envestra asset management plans underpinning its capital and operating expenditure.
- Incorporated current demand and forecast demand as proposed by Envestra
- Analysed the prudence and efficiency of the capital and operating expenditure consistent with the approach in the Commission's Guidance Paper. This analysis took into account additional information provided by Envestra at ECG's request.
- To the extent possible based on the information provided, ECG has adopted a 'zero-based costing' methodology in reviewing material changes in forecast non-capital costs as compared to the current period.
- Prepared its Stage One report based on the above. ECG either made recommendations on Envestra's expenditure or outlined the requirements for additional information required to enable ECG to make recommendations on the outstanding items.

Stage Two:

- Following the Commission's review of ECG's Stage One report, ECG reviewed further information provided by Envestra at ECG's request.
- Analysed the prudence and efficiency of the capital and operating expenditure taking into account the further information provided by Envestra.
- Prepared its Stage Two report based on the above. ECG either recommended acceptance of Envestra's expenditure or recommended alternative expenditure amounts.

3.3.2 Benchmarking

Envestra engaged WorleyParsons to conduct a benchmarking study examining the performance of the business relative to other Australian natural gas distribution businesses. The 2005 AAI indicates WorleyParsons' results concluded that Envestra's current non-capital costs are within a reasonable range, while new facilities investment is currently below a reasonable range, with a degree of catch-up required in this area. Overall, WorleyParsons concludes that Envestra's costs are reasonable and that Envestra is an efficient distributor[2].

The benchmarking study was carried out at two levels:

- High level key performance indicators (KPIs)
- Low level inputs (Capex):

and recognises that no two distributors are the same, eg. there are differences in network size, physical operating environments, climate, customer density, percentage of old cast iron mains. Furthermore, the study recognises that timing issues may affect data comparisons. The study indicates that Envestra is operating within expected KPI ranges.

In principle, ECG has no reason to disagree with WorleyParsons' report that on a high level Envestra's operating environment is different from other network service providers. However, ECG is required to review the capital and non capital costs in accordance with the specific requirements of the Code. ECG believes that high level benchmarks alone are not always sufficient to determine whether the costs are prudent and efficient. In some cases, a high level benchmark may show that the cost is efficient but using a building block approach to the cost may show that some components of the cost may be inefficient.

ECG preferred approach is to review the costs at a sufficient detailed level to be able to ensure that the costs are prudent and efficient in accordance with the Code. At this detailed level, ECG has either benchmarked the cost with other service providers or has used its industry experience to assess whether the costs are prudent and efficient. In some cases, especially when the costs are not of a material amount, ECG has still used the same approach but considered the costs at an aggregate level. In other situations, particularly in the non capital expenditure areas, ECG has adopted a cost variance versus trend approach. In using the cost variance versus trend approach, ECG is cognisant of the requirements of the Guidance Paper in respect to how the cost variance approach should be applied.

[2] WorleyParsons report Sept 2005

Where ECG has used benchmarking information, it has attempted to use the latest publicly available data. As such, ECG has referred to the Access Arrangement in NSW and ACT as the two most current reviews that have been completed. Where relevant, ECG has also used the Victorian Access Arrangement review to provide a wider range of data.

3.4 ACCESS TO INFORMATION

During the Stage One review process, ECG, through the Commission, sought clarification from Envestra on a number of matters. Envestra provided responses to all of the questions raised and has offered to meet to clarify some of the issues in particular in the area of IT. In other areas, such as the Gas Measurement Plan, Safety Reliability, Maintenance and Technical Plan, Leakage Management Plan and Cathodic Protection Plan, Envestra advises[3] that due to the intellectual property value associated with these plans, it is unable to provide copies of these plans but have them available for viewing on site in Adelaide.

Due to the tight timeframe for the Stage One review, ECG is unable to visit Envestra's offices to review these documents. As such, this has limited ECG's ability to comment on the prudence of some of the asset management processes adopted by OEAM on behalf of Envestra.

ECG recognises that Envestra has been reasonably open in providing responses to the questions asked. Some of the information provided may be insufficient for ECG to be able to draw a conclusion and this is reflected in the specific sections of the report. Given the tight timeframe for Stage One, ECG has not been able to seek additional information before it has had to prepare the report. Nevertheless, the Commission, ECG and Envestra did meet in Envestra offices on 21 November 2005. Envestra had a number of subject matter experts present on a range of topics including network augmentation, network development, IT and land remediation. ECG has revised its report to incorporate the additional information presented at that meeting.

Following ECG's report in Stage One, the Commission and ECG developed a further request for information for Envestra at the commencement of Stage Two. The list acknowledges that Envestra has already provided information on a considerable number of items. The additional information requested was to enable ECG to finalise its conclusions on the outstanding expenditure items.

Over the period December 2005 and January 2006, Envestra provided the responses to the list of questions. In addition, ECG met with Envestra on 19 December 2005 and 5 January 2006 to discuss a number of items including the major reinforcement projects and IT projects.

In February 2006, Envestra provided a response to ECG's draft report. ECG has considered the comments provided by Envestra and has amended its report in the appropriate sections where ECG has revised its conclusions as a result of the additional information.

[3] ECG Reply to SA Questions 231005

3.5 USE OF INFLATION FACTORS

For comparison purposes, ECG has carried out its review in real 2005/06 dollars unless otherwise stated in the report. As such, ECG has converted the tables in the 2001 and 2005 AAI to real 2005/06 dollars.

The historical inflation factors used by ECG have been provided by the Commission and the values for years 2001/02 to 2005/06 are shown in Table 3-1.

Inflation factors calculated from Envestra's forecast[4] of a 2.5% CPI have been used to convert nominal $ for each year from 2006/07 to 2010/11 to real $ 2005/06.

Table 3-1: Asset Inflation Rates

	2001/02	2002/03	2003/04	2004/05	2005/06
Actual CPI (%)	2.94%	3.44%	1.98%	2.36%	2.5%

[4] ESCOSA Email, 6 October 2005

4. DESCRIPTION OF ENVESTRA GAS NETWORK

The Envestra gas network that is covered under the revised Gas Access Arrangement is comprised of six natural gas operating regions. These are in Adelaide, the South East, Whyalla, Port Pirie, the Riverland and Peterborough.

Natural gas is supplied from three sources:

- Moomba via the Hastings Fund Management (HFM) Moomba to Adelaide pipeline
- Port Campbell via the SEAGAS pipeline to Adelaide
- Katnook via the HFM pipelines to Mt. Gambier

The gas is supplied into the Envestra networks, including the lateral pipeline to the Riverland from the Moomba to Adelaide pipeline, at a number of custody gate stations.

The Adelaide region has four gate stations, Berri in the Riverland has two, and the thirteen other locations have one. Natural Gas pipeline lengths are as summarised in Table 4-1 and types are as summarised in Table 4-2[5] [6]. It should be noted that there are two types of transmission pipelines; Trans-Inter between regions, currently operating up to 5,000kPa and Trans-Intra within distribution networks, currently operating up to 1,750kPa.

Table 4-1: Natural Gas Pipelines as at 30th 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**

Table 4-2: Natural Gas Pipelines as at 30th June 2005

Pipeline Pressure Tier	Kilometres	MAOP (kPa)
Transmission	201	1,050 – 10,000
High	2,665	250 – 1,050
Medium	2,003	7 - 250
Low	2,334	0 - 7
Total	**7,203**	**-**

[5] Envestra, Access Arrangement Information, Section 16, September 2005
[6] Envestra, Asset Management Plan, Section 1.4, 19 September 2005,

5. ASSET MANAGEMENT

Network assets generally have long economic lives and consist of gas mains, services[7], regulators and meters. Envestra is the owner of the gas network assets and these assets are managed on behalf of Envestra by Origin Energy Asset Management (OEAM). The manner in which Envestra manages its asset is described in its Asset Management Plan[8].

5.1 ASSET MANAGEMENT PLAN

Envestra advises in its Asset Management Plan (AMP) that the document is a high level plan on how OEAM manages Envestra's assets. The AMP details the existing network assets and how they are operated and maintained. The AMP also describes the activities related to the replacement and expansion of the network assets.

Underpinning the AMP are a number of sub plans which are listed below:

- Business Risk Management Plans – Plans designed to implement HSE Management System into the various sites and activities.
- Health Safety and Environment (HSE) Management System – Process used to define employees' roles and responsibilities related to the health, safety and the environment.
- Safety, Reliability, Maintenance and Technical Management Plan – Plan that describes how OEAM designs, constructs and maintains the networks.
- Gas Measurement Management Plan – Plan that describes OEAM's metering practices to ensure that is in compliance with the appropriate Act and Regulations.
- Augmentation Plan – Plan that describes how decisions are made on the expansion, reinforcement and renewal of the networks.
- Mains Replacement Plan – Plan that describes the strategy adopted for the replacement of the networks.
- Leakage Management Plan – Plan that describes the practices adopted to manage gas leaks in the networks.
- SA Cathodic Protection Management Plan – Plan that describes the system used to protect steel mains in the networks from corroding.
- Emergency Response Plans – Process for managing gas emergencies in the networks including organisational escalation.
- Configuration Management Manual – Process used to manage large or non standard projects including defining employees' responsibilities.
- Project Risk Management Manual – Process used to identify and assess the risk of large and non standard projects.
- Project Management Manual – Process used to define the various roles for managing large and non standard projects.

[7] Services are also called inlets which convey gas from the mains to the customer meter/regulator.
[8] AAI SA Att 1 AMP

- Documentation Project Plan – Plan that describes how technical documentation should be prepared.

- ISO 9000/2000 Quality Systems – Quality management system that supports OEAM HSE Management System

ECG has separately reviewed the Augmentation Plan and the Expenditure Planning process, which are critical to the review of Envestra's capital expenditure in its revised Access Arrangement. Details of these reviews are provided in Sections 5.2 and 5.3.

ECG considers that the Asset Management Plan has taken a life cycle approach to Envestra's asset. It has also tried to link key performance indicators to asset creation. However, ECG is of the view that whilst the Asset Management Plan is shown as an Envestra document, the main focus of the document is around OEAM with Envestra as a stakeholder[9]. Nevertheless, ECG believes that the Asset Management Plan is a good basis for Envestra to manage its assets.

5.2 AUGMENT ATION PLAN

Envestra's Augmentation Plan is described in Section 5.2 of the Asset Management Plan. In addition, at the meeting on 21 November 2005, between the Commission, Envestra and ECG, Envestra presented the basis for its augmentation program. Envestra has divided its augmentation projects into three categories:

- Network reinforcement – projects for increasing the capacity of the network in specific areas due to additional demands

- Security of supply – projects for mitigating the risk of supply as a result of damage to critical gas mains in the system

- Strategic replacement – projects for the replacing the main gas supply to various area to enable the mains renewal program to be carried out

Underpinning the network augmentation process is the network planning process. The network planing process is described in Section 2.2 of Envestra's Asset Management Plan but was also presented at the meeting on the 22 November 2005.

ECG recognises that the network planning process is a key function that underpins any augmentation program. It is fundamental to assessing the capability of the gas networks to deliver gas loads to all customers prudently and efficiently, as required under Section 8.16 of the National Third Party Access Code.

The four principal activities in the planning process include:

- Network performance monitoring

- Network Modelling

- Demand forecasting

- Project planning

[9] Envestra Asset Management Plan page 12

Envestra performs these activities by completing the ten stage process outlined in its asset management plan. ECG has reviewed these steps and considers the process to be reasonable.

As such, ECG considers the Envestra processes for determining augmentation projects to be consistent with that which would be expected of a prudent network operator in accordance with the requirements of the Code.

5.3 EXPENDITURE APPROVAL PROCESS

Envestra advises [10] that its expenditure approval process is as described in the WorleyParsons' report, Section 5.4.2. Essentially, the expenditure approval process permits the General Manager, OEAM to authorise any projects less than the $0.5million as long as the project has been included in the annual approved budget and satisfies the required rate of return. Any projects in excess of $0.5million but less than $1.0million is approved by Envestra management. Projects in excess of $1.0million are approved by the Envestra Board.

WorleyParsons in its report indicates that projects that are in excess of $0.1million are managed in accordance with the project management manual which requires allocation of responsibility, project management plan and a post audit review.

ECG has no reason to doubt that the expenditure approval process is as outlined in the WorleyParsons' report. As such, ECG considers that expenditure approval process is what would be expected from a prudent operator acting in accordance with the Code.

[10] Envestra Document, ECG Reply SA Questions, 23 October 2005

6. CAPITAL EXPENDITURE REVIEW 2001/02 TO 2005/06

6.1 OPENING CAPITAL BASE

Section 8.9 of the Code provides for the regulatory capital base to reflect the initial capital base at the start of the Access Arrangement period, adjusted for capital expenditure (which passes the test in Section 8.16 of the Code), depreciation, redundant capital, asset disposals, capital contributions and inflation of the asset base.

Section 8.16 of the Code enables capital expenditure in the Access Arrangement period to enter the regulatory capital base provided that:

- The amount does not exceed the amount that would be invested by a prudent service provider acting efficiently, in accordance with accepted good industry practice and to achieve the lowest sustainable cost of delivering services.
- One of the following conditions is satisfied:
    - The anticipated incremental revenue generated exceeds the cost
    - The regulator is satisfied that the capital expenditure has system-wide benefits that justify the approval of a higher reference tariff for all users
    - The capital expenditure is necessary to maintain the safety, integrity or contracted capacity of services.

The Commission therefore requires that ECG carries out its assessment and considers if the capital expenditure meets the requirements of the Code as stated above. In carrying out the review, ECG has taken into consideration the Commission's Guidance Paper.

The Commission in its Guidance Paper says: *"in submitting its estimates of the roll-forward of the capital base during the first period, Envestra should include in its supporting information an analysis of the difference between actual new facilities investment in each of the major capital expenditure components during that period and the forecast approved by SAIPAR and the factors that it considers to have been most significant in explaining and justifying the differences."*

ECG has therefore assessed the capital costs in the following manner:

- Reviewing the capital expenditure in the Access Arrangement Information to ensure that it meets the requirements of the Commission in its Guidance Paper.
- Reviewing actual costs to assess trends, anomalies, differences in the various input categories.
- Analysing the input categories to determine the reasonableness of the costs for the service provided.
- Where possible, comparing overall costs in particular categories (e.g. growth related costs) with those of other companies.
- Draw conclusions on whether the costs are prudent and efficient in accordance with the meanings of these terms outlined in Section 3.1.

In the 2005 AAI Table 6, Envestra has provided its opening asset base. ECG has reproduced the information in the table below.

Table 6-1: Envestra Opening Asset Base (Nominal $ million)

	1998/99	1999/00	2000/01
Opening Asset Value	617.0	634.4	663.0
+ Inflation of opening asset base	7.7	17.7	39.7
+ Capital Expenditure	22.1	23.9	21.6
- Customer Contributions	(0.6)	(0.4)	(0.3)
- Regulatory Depreciation	(11.8)	(12.5)	(13.2)
= Closing Asset Value	634.4	663.0	710.9
Average Asset Value ($m nominal)	625.7	648.7	686.9
Average Asset Value ($m 31 Dec 2004)	749.5	767.5	790.6

For the purpose of this review, ECG has assumed that the opening asset value to be correct.

However, for the commencement of the second Access Arrangement, ECG has reviewed the capital expenditure incurred by Envestra for the current period and has commented on the customer contributions. ECG believes that other components that contribute to the opening of the capital base for the second period is outside the scope of the project.

Details of the assessment are provided in the following sections of this review.

6.2 ACTUAL CAPITAL EXPENDITURE: 2001/02 TO 2005/06

In the 2005 AAI, Envestra has provided a table[11] comparing its actual capital expenditure for 2001/02 to 2004/05 and its forecast expenditure for 2005/06. In the same table, Envestra has shown SAIPAR approved expenditure for the same period. ECG has reproduced the table as shown below.

Table 6-2: New Facilities Capital Expenditure (AAI), 2001/02 to 2005/06 (Nominal $million)

	2001/02	2002/03	2003/04	2004/05	2005/06 f	TOTAL
SAIPAR Forecast	26.7	20.2	17.9	16.8	16.8	98.5
Actual	19.7	20.4	20.4	20.6	27.1	108.1
Variance from forecast	**(7.0)**	**0.1**	**2.5**	**3.8**	**10.3**	**9.6**

As shown in the above table, the New Facilities Investment over the period is expected to exceed the SAIPAR approved forecast capital expenditure by $9.6m. Envestra indicates that the main factor contributing to the higher expenditure was additional capital required

[11] Envestra, AAI Section 5.2 Table 4, 30 September 2005

to meet expenditure associated with the higher than forecast gross customer connections. Envestra says:

"SAIPAR's 2001 Final Decision failed to take into account disconnections in estimating New Facilities Investment, instead focussing only on net connections. Envestra forecasts that the number of disconnections over the period will be approximately 4,500."

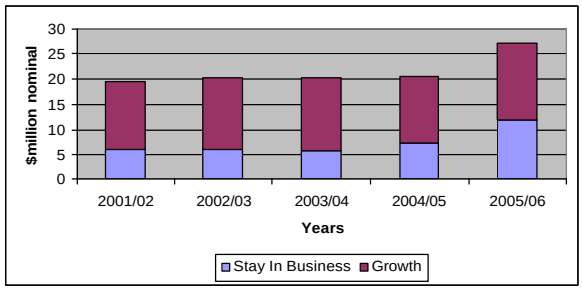
Envestra data summarised in Table 6-2 shows the variance from SAIPAR's forecast expenditure occurs principally in 2005/06 when the difference between Envestra's forecast expenditure ($27.1million, nominal) and SAIPAR's forecast expenditure ($16.8million, nominal) is $10.3million or 61% of SAIPAR's forecast.

There is no significant difference between Envestra's actual expenditure ($81.0million, nominal) and SAIPAR's forecast expenditure ($81.7million, nominal) from years 2001/02 to 2004/05. Therefore any over expenditure on customer connections in these years has been offset by under expenditure in other categories. As ECG has no detailed breakdown of the SAIPAR forecast, it is not able to further comment on any differences between the SAIPAR forecast expenditure and the actual expenditure between 2001/02 and 2004/05.

Disconnections over the five year period, as shown in Table 6-8, are fairly constant from year to year. Therefore ECG is of the view that if the major contributor to the cost difference between Envestra and SAIPAR is the fact that SAIPAR has not taken into account disconnections, the capital expenditure profile as shown in Graph 6-1 (refer Table 6-3 for details) will also be fairly constant over the five year period.

However, the capital expenditure profile shows a significant cost increase in 2005/06. ECG considers this is mainly due to the forecast Stay in Business expenditure for mains renewals and periodic meter changes increasing significantly.

Therefore ECG believes that whilst SAIPAR not taking into account the disconnections may have contributed to the higher than forecast expenditure another factor that would have contributed to this is the forecast step increase in the Stay in Business expenditure for 2005/06.



Graph 6-1 Capital Expenditure 2001/02 to 2005/06

In its 2005 AAI Table 8, Envestra provides a breakdown of the New Facilities Investment for this current Access Arrangement period as shown in Table 6-3.

Table 6-3: Details of New Facilities Capital Expenditure 2001/02 to 2005/06 (Nominal $ million)

New Facilities Investment (excluding FRC)	2001/02	2002/03	2003/04	2004/05	2005/06f
Mains	7.9	5.5	6.3	8.1	12.4
Inlets	4.7	5.8	6.0	6.8	7.0
Meters	3.8	3.8	4.4	4.0	7.5
SCADA	0.2	0.0	0.0	0.2	0.0
IT Systems	0.6	0.5	0.1	0.7	0.0
Other Distribution System Equipment	0.1	0.2	0.1	0.1	0.0
Other	2.5	4.4	3.6	0.7	0.3
New Facilities Investment $m (nominal)	**19.7**	**20.4**	**20.4**	**20.6**	**27.1**
New Facilities Investment $m (31 Dec 2004)	**21.4**	**21.5**	**20.8**	**20.6**	**26.5**

In support of its expenditure, Envestra has also provided a report from WorleyParsons endorsing that Envestra's expenditure is in accordance with the Code.

The Guidance Paper has invited Envestra to provide the supporting information explaining the differences between the actual new facilities investment in each of the major capital expenditure components from that approved by SAIPAR. However, Envestra's 2005 AAI submission has not detailed the difference between the actual/forecast costs in the major cost components with that approved by SAIPAR.

The WorleyParsons' report has also not provided any explanation of the differences between the actual capital expenditure components and SAIPAR's forecast. WorleyParsons has reviewed the capital expenditure for both period and has not drawn the distinction between the current period and the forecast period. Where WorleyParsons has carried out its analysis at the unit cost level, it is not apparent whether the unit cost refers to the current or forecast period. In addition, WorleyParsons has carried out its review using different categories to that shown in Table 6-3.

As a result, ECG, to assist its analysis, sought additional information from Envestra on the cost for the current period reported in the same categories as the WorleyParsons' report[12]. These categories are also consistent with the forecast New Facilities Investment for the second Access Arrangement period in the 2005 AAI.

Envestra[13] as such, has provided a separate breakdown into categories which can more readily be analysed and are consistent across both periods. This breakdown is provided in Table 6-4.

[12] As the WorleyParsons' report does not detail how it has derived the unit costs from the actual expenditure, ECG is unable to ensure that the unit costs sums up to the actual expenditure in the 2005 AAI.
[13] Envestra, Excel Spreadsheet, SA Capex, 24 October 2005

Table 6-4: Actual New Facilities Capital Expenditure, 2001/02 to 2005/06 (Nominal $ million)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Stay In Business						
Telemetry	0.21	0.05	0.00	0.20	0.00	0.46
Regulators	0.00	0.00	0.00	0.15	0.00	0.15
PMC - Domestic	0.95	1.11	1.32	1.02	3.20	7.60
PMC - I&C	0.23	0.29	0.41	0.36	1.29	2.57
Odorising	0.00	0.05	0.00	0.02	0.00	0.07
Corrosion Protection	0.00	0.00	0.00	0.15	0.00	0.15
Mains Renewal	4.14	3.83	4.05	4.07	7.37	23.46
Non-FRC IT Systems	0.55	0.51	0.12	0.72	0.00	1.90
FRC IT Systems	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.32	0.00	0.48	0.15	0.95
Total Stay-in-Business	**6.09**	**6.15**	**5.91**	**7.16**	**12.01**	**37.31**
Growth						
Large Consumers	1.38	1.57	0.95	0.94	0.13	4.96
Improve Supply	0.14	0.09	0.82	0.57	0.60	2.22
General Mains	3.58	3.60	3.55	2.67	4.25	17.66
Regulators	0.11	0.23	0.07	0.00	0.00	0.41
Meters	2.35	2.55	2.76	2.48	3.02	13.17
Services	6.03	6.16	6.33	6.76	6.95	32.23
Other	0.00	0.00	0.00	0.00	0.14	0.14
Total Growth	**13.59**	**14.21**	**14.48**	**13.43**	**15.10**	**70.80**
TOTAL NEW FACILITIES INVESTMENT	**19.67**	**20.36**	**20.39**	**20.58**	**27.11**	**108.11**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

To ensure that Envestra's revised information shown in Table 6-4 is consistent with the current period expenditure shown in Table 6-3, ECG attempted to map the two sets of data. It is not apparent how the categories in Table 6-3 can be disaggregated to the categories in Table 6-4. As such, ECG is unable to map the cost between the two tables. However, as the totals for the two tables are the same, ECG believes that it is reasonable to assume that the costs in Table 6-3 do map across to Table 6-4. As such, ECG has used the categories from Table 6-4 for its analysis.

For analytical purposes, ECG has determined the actual expenditure in real $ 2005/06 as summarised in Table 6-5.

This conversion has been performed so that proper comparisons can be made between historical expenditures in the current period and predicted expenditures for the forecast period (2006/07 to 2010/11) which are expressed in real $ 2005/06.

Table 6-5: Actual New Facilities Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Stay In Business						
Telemetry	0.23	0.05	0.00	0.20	0.00	0.49
Regulators	0.00	0.00	0.00	0.15	0.00	0.15
PMC - Domestic	1.05	1.19	1.39	1.04	3.20	7.87
PMC - I&C	0.26	0.31	0.43	0.36	1.29	2.65
Odorising	0.00	0.05	0.00	0.02	0.00	0.07
Corrosion Protection	0.00	0.00	0.00	0.16	0.00	0.16
Mains Renewal	4.58	4.10	4.25	4.17	7.37	24.47
Non-FRC IT Systems	0.61	0.54	0.13	0.73	0.00	2.02
FRC IT Systems	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.34	0.00	0.50	0.15	0.99
Total Stay-in-Business	**6.74**	**6.58**	**6.20**	**7.34**	**12.01**	**38.86**
Growth						
Large Consumers	1.52	1.68	0.99	0.96	0.13	5.29
Improve Supply	0.15	0.10	0.86	0.58	0.60	2.29
General Mains	3.96	3.85	3.73	2.74	4.25	18.54
Regulators	0.12	0.25	0.07	0.00	0.00	0.44
Meters	2.61	2.73	2.90	2.55	3.02	13.80
Services	6.67	6.59	6.64	6.93	6.95	33.78
Other	0.00	0.00	0.00	0.00	0.14	0.14
Total Growth	**15.04**	**15.20**	**15.19**	**13.76**	**15.10**	**74.29**
TOTAL NEW FACILITIES INVESTMENT	**21.77**	**21.79**	**21.39**	**21.10**	**27.11**	**113.15**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

ECG advises that its subsequent review and analysis is conducted in real $ 2005/06 unless otherwise stated.

ECG's analyses of the costs provided in Table 6-5 are detailed below.

6.3 GROWTH

ECG has reviewed the Growth expenditure in the various categories as shown in Table 6-5. In Section 6.3.4, ECG has reported on the three categories, General Mains, Meters and Services in their sub sections.

ECG's review in Section 6.3.4 is based on the unit cost per volume customer. To enable this unit cost analysis, ECG has derived the gross number of customers from the information provided by Envestra.

6.3.1 Volume Customer Numbers

Stage One

In the 2005 AAI, table 3, Envestra has provided a table comparing the SAIPAR forecast volume customer numbers and Envestra actual/forecast volume customer numbers for the current period as shown in the table below.

Table 6-6: Volume Customer Numbers (Thousand)

< 10 TJ/a Customer Numbers	2001/02	2002/03	2003/04	2004/05	2005/06f
SAIPAR's Forecast	342.8	348.1	353.4	358.8	364.1
Actual	339.3	345.6	351.4	357.4	363.6
Variance from forecast	**(3.5)**	**(2.5)**	**(2.0)**	**(1.4)**	**(0.5)**

From the table above, the difference between SAIPAR's forecast and Envestra's actual/forecast customer number for the current period is the total of the variances, i.e. 9,900 customers.

Envestra has also provided[14] details of its actual customer numbers for domestic, commercial and small industrial customers for the period 2000/01 to 2004/05 as shown in Table 6-7.

Table 6-7: Customer Number Details

Financial year ending June 30 Actual	2000/01	2001/02	2002/03	2003/04	2004/05
Domestic					
Adelaide	312,205	317,969	323,964	329,560	334,840
Peterborough	33	35	35	35	33
Port Pirie	4,599	4,620	4,627	4,623	4,656
Riverland	43	44	51	55	62
South East	5,499	5,611	5,784	6,015	6,245
Whyalla	2,968	2,981	2,990	2,995	3,008
Total Domestic	**325,347**	**331,260**	**337,451**	**343,283**	**348,843**
Commercial & Industrial (C&I)					
Commercial	7,104	7,182	7,210	7,233	7,565
Small Industrial	861	880	899	901	944
Total C&I customers	**7,965**	**8,062**	**8,109**	**8,134**	**8,509**
Total Volume Customers	**333,312**	**339,322**	**345,560**	**351,417**	**357,352**
Volume Customer Growth[15]	na	6,010	6,238	5,857	5,935
Gross Volume customers	na	6,910	7,138	6,757	6,835

[14] Envestra, Excel Spreadsheet, SA Demand Information, 12 October 2005

[15] Volume customer growth is the difference between the customer numbers for that year with the customer numbers for the preceding year.

The gross numbers includes 900pa disconnections each year, based on the Envestra estimate of 4,500 disconnections over the current period.

Without detailed data for 2005/06, ECG has derived the customer number from the information in Table 6-6. The forecast number of new volume customers in year 2005/06 is 6,200[16] and the forecast gross number is 7,100 which include 900 disconnections pa.

Stage Two

At the commencement of the Stage Two process, Envestra advises[17] that the estimate of 4,500 disconnections for this period as provided in Section 2.2 of its AAI is incorrect. Envestra has provided the correct customer connection and disconnection details[18]. From the revised customer numbers, ECG has derived the number of volume customers pa as shown in Table 6-8.

Table 6-8: Corrected Volume Customer Numbers

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Domestic Net Connections	5,913	6,191	5,832	5,560	6,162	29,658
Domestic Disconnections	2,461	1,222	984	1,579	1,650	7,896
Domestic Gross Connections	8,374	7,413	6,816	7,139	7,812	37,554
C&I Net Connections	97	47	25	375	81	625
C&I Disconnections	267	162	206	156	238	1,029
C&I Gross Connections	364	209	231	531	319	1,654
Volume Net Connections	6,010	6,238	5,857	5,935	6,244	30,284
Volume Disconnections	2,728	1,384	1,190	1,735	1,888	8,925
Volume Gross Connections	8,738	7,622	7,047	7,670	8,132	39,209

This data is used for deriving facility unit costs, used for the analysis of expenditure on mains, services and meters in the current period as presented in Section 6.3.4.

6.3.2 Large Consumers

Stage One

Large consumers are customers with gas consumptions greater than 10TJ pa. The capital expenditure for the facilities required to supply large customers are shown in Table 6-5 are summarised in Table 6-9.

[16] Table 3-1 2005/06 Actual Customer No 363,600 – 2004/05 Actual Customer No 357,400
[17] Commission's Email, 28 November 2005
[18] Spreadsheet SA Disconnections, 31 October 2005

Table 6-9: Large Consumer (Growth) Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06 f	TOTAL
Large Consumers (Growth)	1.52	1.68	0.99	0.96	0.13	5.29

As can be seen from Table 6-9, the expenditure ranges from $0.1million to $1.7million. In its response to ECG's question, Envestra has provided a spreadsheet AAI ECG – SA Capex 241005. The spreadsheet however did not provide any details on the customers but Envestra offered to meet to discuss the details with ECG. In the absence of this information, ECG has referred to the WorleyParsons' report for further details.

Section 9.3.2.1 of the WorleyParsons' report only offers comments on forecast expenditure and not actual expenditure. WorleyParsons indicates in its report on unit cost to Section 9.3.1.4, which is on Programmed Meter Change – Industrial and Commercial. ECG can only assume that the reference is incorrect but is unable to locate the unit cost analysis.

ECG recognises the variability of the cost is typical for this class of customer as there are normally only a very small number of new customers each year and the facilities required to provide supply are highly variable dependent upon the load and location of the customer.

However, in view of the lack of information, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought additional information from Envestra on the list of large customers connected to the network and the scope of works for each of these customers.

Stage Two

Envestra advises[19] there have been at least 12 demand customers connected in the current period, with expenditure varying between $50,000 and $1.5million per connection. It has also provided scope of works, peak load estimates and actual costs for three large customers connected during the current period.

ECG calculates the average connection cost to have been about $430,000 per site. ECG recognises that the total expenditure is dependent on the gas demand and location of the customer. As such, the cost could significantly vary from customer to customer. ECG has observed the same variation in other jurisdictions. For example expenditure by Allgas in Queensland averaged $280,000 per site[20] during the current period.

From the information provided for the three large customers, ECG has derived from Envestra's advised costs that the unit costs for 150mm steel main extensions to supply two customers are less than $324 per metre. This compares favourably with estimated costs for 150mm steel mains between $250 per metre and $640 per metre in areas in NSW (AGLGN), ACT (ActewAGL)and Queensland (Allgas), derived from data in ECG's reviews of the Access Arrangements for these jurisdictions. For a third customer the derived unit cost for the 160mm PE supply main in a rural location is $46 per metre which ECG considers to be low.

[19] Envestra Document, Reply to ECG Q round 2, Question 2.11, 20 December 2005
[20] ECG Capital and Operating Expenditure review for Allgas, 4 December 2005

ECG therefore considers the costs for these Envestra projects to be efficient. Based on this sample of data it also considers the costs for other Envestra projects to supply large customers to be efficient.

Therefore ECG considers that the actual expenditure in this category from 2001-02 to 2004-05 and the forecast expenditure in 2005-06, summarised in Table 6-10 is prudent and efficient.

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-10: Recommended Large Consumer (Growth) Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Large Consumers (Growth)	1.52	1.68	0.99	0.96	0.13	5.29

6.3.3 Improve Supply

Stage One

The expenditure for this category is for principal supply mains to provide additional capacity in the network. The projects are generally related to load growth reinforcement, strategic replacement and security of supply mains required in projects determined under the Envestra risk assessment process. WorleyParsons indicates[21] that the projects allocated to this section cost less than $0.5million each. The capital expenditure for this category from Table 6-5 is summarised in Table 6-11.

Table 6-11: Improve Supply (Growth) Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Improve Supply (Growth)	0.15	0.10	0.86	0.58	0.60	2.29

As can be seen from Table 6-11, the expenditure ranges from $0.10million to $0.86million.

ECG believes that principal supply mains projects to provide additional capacity and increase security of supply are typical projects that are carried out by a service provider in the course of a five year period. The variability in the cost depends on the scope of the project. It is therefore difficult to determine the efficiency of the cost without specific details of the projects.

In WorleyParsons' report, Section 9.2.1, it advises that network modelling is used to test options to determine the most cost effective long term project. ECG has reviewed Envestra's Network Planning process (Section 5.2) used for determining the most suitable projects to improve supply and considers that the process to be reasonable.

[21] WorleyParsons' Report Section 9.3.2.2

The WorleyParsons' report also indicates that the Office of the Technical Regulator (OTR) carried out an audit on the process in place to determine the projects needed for load growth and supply security in June 2005. The OTR did not express any concern on the process used or the outcomes.

The total expenditure on these projects ($2.29million) is 3.5% of expenditure on facilities to supply new volume customers ($66.12million - refer Table 6-13). ECG has not reviewed the scope and justification for the individual projects. Whilst ECG acknowledges that only a limited comparison can be carried out by using data from other jurisdictions, it is worth noting that from ECG's Access Arrangement reviews in NSW and the ACT, the expenditure ratio for these types of projects is typically in the order of 6%.

ECG believes that most of this type of work is most likely to be carried out by contractors. In addition, there is nothing that has come to ECG's attention to indicate that the costs are not prudent and efficient. ECG considers that the projects are prudent and efficient. The key reasons for this conclusion are:

- Expenditure amounts in each year are typical for this type of work
- Total expenditure is relatively low in comparison with other jurisdictions.
- The network and project planning processes used to determine the scope of the projects are reasonable.

Stage Two

In Stage One, ECG has recommended that the expenditure from 2001/02 to 2004/05 and the forecast expenditure in 2005/06, as advised by Envestra and summarised in Table 6-11, to be prudent and efficient.

ECG therefore recommends the inclusion of the expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-12: Recommended Improve Supply (Growth) Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Improve Supply (Growth)	0.15	0.10	0.86	0.58	0.60	2.29

6.3.4 Volume Customers

Introduction

Stage One

Volume consumers are those with gas consumptions less than 10TJ pa and the facilities used to supply them consist of general mains, meters and services. The expenditure in each of these categories and the estimated gross number of new customers are summarised in Table 6-13, along with the unit cost per volume customer for each facility type.

Table 6-13: Volume Customer Cost Details[22]
(Real $ 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Number of New Volume customers including 900pa disconnections	6,910	7,138	6,757	6,835	7,100	34,740
Growth ($ million)						
General Mains	3.96	3.85	3.73	2.74	4.25	18.54
Meters	2.61	2.73	2.90	2.55	3.02	13.80
Services	6.67	6.59	6.64	6.93	6.95	33.78
Volume Customers Capex	**13.24**	**13.17**	**13.26**	**12.22**	**14.23**	**66.13**
Unit Cost ($ per customer)						Average Cost
General Mains	574	540	552	401	599	534
Meters	377	383	429	373	425	397
Services	966	923	982	1014	979	972
Total Unit Cost	**1,916**	**1,846**	**1,963**	**1,788**	**2,004**	**1,903**

WorleyParsons' analysis of the Growth Capital is detailed in Section 8.5.3 of its report. It said that it is unable to determine the efficient cost for each category of unit cost (general mains, meters and services) mainly due to the variability of publicly available information.

However, WorleyParsons concluded that in comparison to other utilities at the total cost level, Envestra's unit cost is efficient[23].

As shown in Table 6-13, the volume customer connection cost derived from Envestra data averages $1,903 per connection. ECG advises that key factors affecting the average volume customer connection cost are:

- The average cost per customer is significantly affected by the customer mix, especially by the ratio of industrial & commercial to domestic customers and by the ratio of domestic customers in new areas to domestic customers in existing areas.
- The unit cost for connecting residential customers in existing inner city areas is likely to be higher than this unit cost in other existing areas, due to higher costs associated with work activities including traffic management, reinstatement and night work.

The customer categories for the forecast period are listed below:

- New homes (domestic)
- Multi – User (domestic)
- Existing homes (domestic)
- Commercial and Small Industrial (I&C)

[22] Customer Cost and Numbers have been extracted from Table 6-5 and Table 6-7
[23] WorleyParsons' report section 8.5.3.4

These customer categories are similar to those used by other network service providers. As such, ECG considers that it is reasonable to expect that the customer categories provided by Envestra for the forecast period will also apply to the current period.

ECG has analysed actual volume customer expenditure in the following categories of General Mains, Meters and Services.

Stage Two

As discussed in Section 6.3.1, the number of gross volume customers' connections has to be adjusted due to the change in the number of disconnections. Also Envestra has provided an allocation of volume customer meters and services expenditure between domestic and I&C customers. As such, the unit costs in Table 6-13 have been recalculated to reflect the revised customer numbers and this expenditure allocation. These revisions are shown in the table below.

Table 6-14: Revised Volume Customer Unit Cost Details (Real $ 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Volume Customer Gross Connections: Numbers in Year	8,738	7,622	7,047	7,670	8,132	39,209
Domestic	8,374	7,413	6,816	7,139	7,812	37,554
I&C	364	209	231	531	319	1,654
Growth Expenditure ($, million)						
General Mains (Total Domestic and I&C)	3.96	3.85	3.73	2.74	4.25	18.54
Meters - Domestic	1.60	1.96	2.22	1.92	2.32	10.02
Meters - I&C	1.00	0.77	0.68	0.63	0.70	3.78
Meters	2.61	2.73	2.90	2.55	3.02	13.80
Services - Domestic	6.13	5.83	5.86	6.34	6.29	30.45
Services - I&C	0.54	0.76	0.77	0.59	0.66	3.33
Services	6.67	6.59	6.64	6.93	6.95	33.78
Unit Cost ($ per customer)						Average Cost
General Mains	454	505	529	357	523	473
Meters - Domestic	191	265	326	269	297	267
Meters - I&C	2,755	3,681	2,939	1,181	2,185	2,282
Services - Domestic	732	786	860	888	805	811
Services - I&C	1,484	3,650	3,352	1,116	2,078	2,015

General Mains

Stage One

ECG understands that general mains are supply and reticulation mains that deliver natural gas to both domestic and small industrial and commercial customers. As shown in Table 6-13, the average general mains unit cost is $534 per customer. However, Envestra has

not provided details related to the numbers and length of mains for each category of customers and the unit costs associated with these categories.

In the absence of specific data related to general mains, ECG has based its analysis on work it has carried out in other jurisdictions. ECG believes that the cost of the general mains could vary from $264[24] to $1,200[25] per customer. The efficient unit price depends on a number of issues including housing density, geographic constraints affecting the metres of main per customer, constraints on construction activities including reinstatement and ground conditions and on the growth in existing areas relative to new subdivision areas.

Envestra's general mains unit cost of approximately $534 per customer within the range stated above and is consistent with the cost expected where most new customers are located in new subdivisions. Data provided by Envestra[26] shows that about 80% of domestic customers in the forecast period are expected to be in new areas. ECG considers that it is reasonable to expect that most of the new customers in the current period will also be in the new estates.

Based on the above, ECG considers that the current period expenditure on general mains is prudent and efficient because it considers the unit cost of $534 per customer is consistent with that expected for areas where most new domestic customers are in new subdivisions.

Stage Two

As discussed in Section 6.3.1, the number of gross volume customers' connections has to be adjusted due to the change in the number of disconnections. As such, the General Mains unit cost previously calculated to be $534 per customer has been recalculated to be $473 per customer (refer Table 6-15).

In Stage One of the Report, ECG has recommended a unit cost of $534 as the efficient expenditure. The revised expenditure of $473 is lower than $534.

ECG therefore considers that the actual expenditure in this category from 2001/02 to 2004/05 and the forecast expenditure in 2005/06, as advised by Envestra and presented in Section 6.3.4 summary, to be prudent and efficient.

Meters

Stage One

This category "Meters" is related to the supply and installation of meter and regulator units for both domestic and small commercial and industrial customers. WorleyParsons advises[27] that the unit cost includes the supply of meter boxes and lighting and checking the safety aspects of the appliances and fitting lines. As shown in Table 6-13, the average unit cost for meters is $397. This unit cost is a weighted average cost is dependent on relative number of meters for domestic and small commercial and industrial customers.

Envestra has been unable to provide the unit cost for domestic meter or the small industrial and commercial meters. Envestra has also not been able to provide the

[24] ECG review of AGLGN AAI, Section 7.4.1, August 2004
[25] ECG review of CEG AAI, Section 6.4.2.1, June 2005
[26] Att 1 ECG – SA Capex 241005
[27] WorleyParsons' Report Section 9.3.2.4

customer mix (e.g. new estate, line of main customer etc) for the domestic category nor is it able to provide the mix between domestic and industrial and commercial customers.

To carry out the review, ECG has referred to derived unit costs in other jurisdictions as shown in Table 6-15.

Table 6-15: Derived Unit Meter Costs ($/meter)

	Domestic	I & C
Victoria	180	6,000
NSW (AGLGN)	180	2,829
ACT (ActewAGL)	140	2,420
Envestra Queensland	180	2,104

Note: The cost for Victoria is taken from the 2002 Final Access Arrangement Decision. The costs of the other states are from ECG's reviews of the Access Arrangements.

As discussed above, ECG notes WorleyParsons' comment in its report Section 9.2.3.4, that South Australian practice is different as it includes installing a meter box and checking safety aspects of appliances and fitting lines in addition to installing a meter and regulator unit. Therefore it can be expected that the unit meter costs in South Australia are higher than the unit costs in other jurisdictions.

As shown in Table 6-15, the unit cost for domestic meter is fairly consistent in the different states but the industrial and commercial meters could vary significantly. The weighted average unit cost for volume customers covering both domestic and industrial and commercial will depend on the relative number of customers in each category.

In view of the lack of information, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought information on the meter components and their unit costs for both domestic and small commercial and industrial customers. ECG also sought additional information on the customer numbers in each class of new customers for both domestic and commercial and industrial.

Stage Two

Envestra provided additional information on the unit costs of the various categories of meters and the customer numbers in each class. The efficiency of the cost is reviewed in Section 7.3.3 of this report. ECG estimated that the efficient unit cost for the forecast period to be $280 per domestic meter and $2,473 per I&C meter. ECG believes that it is reasonable to expect that the efficient unit cost for the forecast period should also apply for the current period.

In Table 6-14, ECG has calculated that the average unit cost for domestic meters to be $267 and for I&C meters to be $2,282. Based on the above comment on unit costs in the forecast period, ECG concludes that the unit costs for the current period to be efficient.

ECG therefore considers that the actual expenditure in this category from 2001/02 to 2004/05 and the forecast expenditure in 2005/06, as advised by Envestra and presented in the summary for this Section 6.3.4, to be prudent and efficient.

Services

Stage One

The category "Services" refers to the pipe that runs from the gas mains to the customer's meter. As shown in Table 6-13, the average cost per service is $972. This cost is dependent on the length of service, the location and the gas demand for commercial or industrial customers.

Envestra has been unable to provide the unit cost of services for domestic customers or the cost of services for the small industrial and commercial meters. As discussed in the above section on Meters, Envestra has also not been able to provide the customer mix (e.g. new estate, line of main customer etc) for the domestic category nor is it able to provide the mix between domestic and industrial and commercial customers.

As such to carry out the analysis, ECG has referred to derived unit costs available from other jurisdictions. The information from Victoria is not disaggregated between meter and services. ECG does not have the information regarding the customer mix in Victoria and as such is unable to calculate the service costs.

Table 6-16: Derived Service Unit Cost ($/service)

	Domestic	I & C
Victoria	na	na
NSW (AGLGN)	731 (new area) 1,305 (existing area)	1,305
ACT (ActewAGL)	750	1,123
Envestra Queensland	750 (new area) 1,300 (existing area)	1,300

Note: The costs of the other states are from ECG's reviews of the Access Arrangements.

As mentioned above, the unit cost per service is $972 which is dependent on a number of variables as discussed at the start of the section. On face value, the unit cost appears high and ECG would need additional information to be able to draw a conclusion.

In view of the lack of information, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient in accordance with the Code.

ECG sought information on the unit cost of service for both domestic (new and existing areas) and small commercial and industrial customers. ECG also sought additional information on the customer numbers in each class of new customers for both domestic (new and existing areas) and commercial and industrial.

Stage Two

Envestra provided additional information on the unit costs of the various categories of services and the customer numbers in each class. The efficiency of the cost is reviewed in Section 7.3.3 of this report. ECG has recommended unit costs of $733 per domestic service in new areas, $1,132 per domestic service in existing areas and $1,305 per I&C service as efficient. ECG believes that it is reasonable to expect that the efficient unit cost for the forecast period should also apply for the current period.

In Table 6-14, ECG has calculated the average unit cost for a domestic service to be $811 and for an I&C service to be $2,015.

As the calculated average domestic service cost of $811per customer for the period 2001/02 to 2005/06 is between $733 and $1,132, ECG considers this average domestic service unit cost to be efficient. However ECG considers the average service unit cost of $2015 for I&C customers to be high, and considers that a service unit cost of $1,305 per I&C customer, as proposed for the period 2006/07 to 2010/11, is appropriate.

ECG advises that the application of this average unit cost of $1,305 per I&C customer increases the expenditure advised by Envestra in year 2004/05 by about $100,000. This is due to the unit cost derived from Envestra data of $1,192 per service in 2004/05, as advised in Table 6-14, being less than the average unit cost of $1,305 recommended by ECG. However this apparent anomaly is offset by the reduction in Envestra's recommended expenditure by over $1million in the other years between 2001/02 and 2005/06. This is due to the unit cost derived from Envestra's data being between $3,650 and $1,484 per I&C service in these years which is higher than the average unit cost of $1,305 recommended by ECG. Therefore ECG considers it is reasonable to apply the average unit cost throughout the period 2001/02 to 2005/06.

In its response to ECG's draft report, Envestra commented that there is a wide variation in the type of work for I&C customers and as such, the unit cost should be higher than ECG's estimate. As no specific information has been provided supporting Envestra's position, ECG considers that its conclusion above is still appropriate.

ECG considers that its estimated actual expenditure in this category from 2001/02 to 2004/05 and the forecast expenditure in 2005/06, as presented in the summary for this Section 6.3.4, are prudent and efficient.

Summary

Stage One

The facilities needed to supply volume customers, which include domestic and industrial & commercial customers, are General Mains, Meters and Services.

ECG considers that Envestra's capital expenditure for General Mains in the current period is prudent and efficient. However, for Meters and Services, ECG sought additional information before it can conclude on whether the expenditure is prudent and efficient.

Stage Two

ECG has reviewed in the separate subsections for General Mains, Meters and Services the additional information provided by Envestra. For reasons outlined in those subsections, ECG considers that, except for the service unit cost for I&C customers, the other unit costs for general mains, services and meters to be prudent and efficient.

ECG therefore recommends the inclusion of the expenditure, as summarised in Table 6-17, in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11. This would reduce the expenditure allowance requested by Envestra for these projects by $1.18million, from $66.13million to $64.95million.

Table 6-17: Recommended Volume Customer Expenditure
(Real $ million 2005/06)

Expenditure Category	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
General Mains (Total Domestic and I&C)	**3.96**	**3.85**	**3.73**	**2.74**	**4.25**	**18.54**
Meters - Domestic	*1.60*	*1.96*	*2.22*	*1.92*	*2.32*	*10.02*
Meters - I&C	*1.00*	*0.77*	*0.68*	*0.63*	*0.70*	*3.78*
Meters	**2.61**	**2.73**	**2.90**	**2.55**	**3.02**	**13.80**

Services - Domestic	*6.13*	*5.83*	*5.86*	*6.34*	*6.29*	*30.45*
Services - I&C	*0.48*	*0.27*	*0.30*	*0.69*	*0.42*	*2.16*
Services	**6.61**	**6.10**	**6.16**	**7.03**	**6.71**	**32.61**
TOTAL	**13.17**	**12.68**	**12.79**	**12.32**	**13.98**	**64.95**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

6.3.5 Regulators (Growth)

Stage One

ECG advises that no information has been provided on the purpose of this expenditure, which is as summarised in Table 6-18. It also noted that no expenditure has been forecast in this category for years 2006/07 to 2010/11.

Table 6-18: Regulators (Growth) Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Regulators (Growth)	0.12	0.25	0.07	0.00	0.00	0.44

ECG believes that this category "Regulators" is generally related to the supply of installation of regulating stations to supply a new area or to augment the supply to an existing area.

In view of the lack of information, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought information on the scope, cost and justification for the projects related to Regulators.

Stage Two

Envestra has advised[28] that full details are not readily available on this work which was conducted several years ago but the expenditure included upgrading three regulator stations to increase their capacity. Envestra subsequently advised[29] that the expenditure also included one new regulating station at a cost of $262,000. The justification for this new regulator was also provided.

ECG calculates the actual expenditure averaged about $110,000 per regulator for the four identified new or upgraded regulator stations. ECG believes that typical regulator projects could cost between $20,000 for a minor upgrade and $200,000 for a major new station. Therefore ECG considers this average expenditure to be feasible for new regulator stations or for stations requiring substantial upgrading. Therefore ECG considers the cost of these regulator works to be efficient.

ECG has reviewed the capital expenditure proposal provided for the project and considers the project to be justified as it provides back up supply to an area with in excess of 5000

[28] Envestra Document, Reply to ECG Q round , Question 2.14, 21 December 2005
[29] Envestra Email, ECG Qn 2.14, 10 January 2006

new customers and meets Envestra's rate of return criteria. Therefore ECG considers this project to be prudent. ECG believes that the other projects would have gone through similar justification and as such, ECG also considers the other projects to be prudent.

ECG therefore considers the actual expenditure in this category from 2001/02 to 2004/05 and the forecast expenditure in 2005/06, summarised in Table 6-19, is prudent and efficient.

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-19: Recommended Regulators (Growth) Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Regulators (Growth)	0.12	0.25	0.07	0.00	0.00	0.44

6.3.6 Other

Stage One

ECG understands from the WorleyParsons' report, Section 9.3.2.6, that the purposes of this expenditure are:

- to remove sub-meters from properties post FRC
- to provide higher capacity meters needed for high flow hot water heaters

The expenditure is summarised in Table 6-20.

Table 6-20: Other Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Other	0.00	0.00	0.00	0.00	0.14	0.14

ECG recognises that this expenditure is forecast expenditure i.e. in 2005/06. Whilst ECG understands that sub-meters are used in shopping centres and apartment blocks to allocate the gas consumed for the shopping centre or apartment block to individual shops or apartments. ECG is unaware why Envestra is considering removing sub-meters in 2005/06 when FRC was introduced at the start of 2004/05.

In the case of providing higher capacity meter for high flow hot water meters, ECG understands that the introduction of continuous hot water units into the gas market has resulted in the installation of larger meters in domestic households. This usually happens in houses with central heating units that have decided to install the new hot water units. In these cases, the normal domestic meter is not insufficient to supply the instantaneous gas load when both the hot water unit and central heating unit are turned on at the same time. These houses have to be upgraded to a larger gas meter.

However, in view of the lack of details regarding the above activities, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient in accordance with the Code.

As such, ECG sought information on the number of meters to be removed and the number of high capacity meter installed and the scope of works and costs for any other types of expenditure included in this category.

Stage Two

Envestra advises[30] that it has allowed about $80,000 in year 2005/06 for provision of 60 high capacity meters per month to provide for increasing demand for temperature controlled hot water systems.

Envestra in the same response has indicated that it does not intend to remove sub-meters in 2005/06.

ECG considers provision of high capacity meters to be essential and the expenditure estimate to be efficient. As no other items requiring "Other" expenditure have been identified, ECG considers the forecast expenditure in 2005-06 should be $80,000, not $140,000 as advised by Envestra and summarised in Table 6-21. ECG considers the forecast expenditure of $80,000 in year 2005/06 to be prudent and efficient. ECG notes there was no expenditure in this category from 2001/02 to 2004/05.

ECG therefore recommends the inclusion of $80,000 expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11. This would reduce the expenditure allowance requested by Envestra for this work by $60,000, from $140,000 to $80,000.

Table 6-21: Recommended Other Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Other	0.00	0.00	0.00	0.00	0.08	0.08

6.4 STAY IN BUSINESS

Stay in Business expenditure is related to activities to maintain the ongoing operation of the networks such mains replacement and periodic meter changes. Expenditure in real $ 2005/06 in each of the categories for Stay in Business projects is summarised in Table 6-5 and provides the basis for the reviews presented in the following Subsections 6.4.1 to 6.4.6.

[30] Envestra Document, Reply to ECG Q round , Questions 1.17 & 2.17, 20 & 21 December 2005

6.4.1 Mains Replacement

Stage One

Mains replacement is carried out to replace primarily cast iron and unprotected steel mains. These are old gas mains that have deteriorated over time and have to be replaced for both safety and reliability issues. The operating and maintenance costs for these mains are also high in comparison to the protected steel mains or the polyethylene mains used currently for gas reticulation. These old mains contribute to "Unaccounted for Gas" (UAFG) due to gas leaks from the joints in the gas pipes and also from pin hole leaks in the pipes. Old cast iron mains only operate in low pressures and in some areas may be subject to water ingress into the pipes causing the pipes to fill up with water and as such stopping the supply of gas.

The capital expenditure for the mains replacement program is Table 6-5 and is summarised in Table 6-22.

Table 6-22: Mains Renewal Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Mains Renewal	4.58	4.10	4.25	4.17	7.37	24.47

In Section 7.2 of Envestra's 2005 AAI, Envestra advises that it was previously replacing over 200kms per annum under its accelerated replacement program. Following a reduction in UAFG, it then reduced the mains renewal to 50kms per year in 2002/03. Envestra increased its mains renewal in 2004/05 to 60kms per year after it has observed that the UAFG has increased. ECG concurs with this approach to reduce the UAFG by increasing the mains renewal program.

In its report, Section 9.3.1.7, WorleyParsons advises that the recent mains renewal rate had been approximately 50km pa and will be increased to the 100kms per year consistent with the asset management plan. WorleyParsons has not commented on whether the expenditure for the current period meets the Code. Section 8.5.2.3 of the WorleyParsons' report discusses the unit cost for mains renewal and concludes that the unit cost is prudent without mentioning which period the cost refers to.

Envestra's asset management plan discusses the proposal[31] to carry out a planned mains replacement program in the forecast period of about 100kms per annum. There are no details of the current period or what is proposed for 2005/06.

Nevertheless, ECG believes that there is sufficient information to be able to draw some conclusions on the actual expenditure for the period, 2001/02 to 2004/05. As shown in Table 6-22, the expenditure profile for the period 2001/02 to 2004/05 varies from $4.10million to $4.58million. In 2002/03, the total length of planned mains renewals, with a total expenditure of $4.10million, is 50kms at a renewals unit cost[32] of $82 per metre. In 2004/05, the total length of planned mains renewals, with a total expenditure of $4.17million, is 60kms at a renewals unit cost of $70 per metre. This variation in renewals unit cost could be due to the different ground conditions in the areas renewed.

[31] Envestra Asset Management Plan page 50

[32] Renewals unit cost is the total expenditure on renewals, divided by the length of main replaced by planned renewals.

Recognising the fact that the ground conditions could cause a variation in unit cost and the fact that the expenditure for the four years, 2001/02 to 2004/05 is fairly similar, ECG believes that it is reasonable to conclude that the total length of mains renewed for the four years is approximately 200kms or 50kms pa.

Using the total mains renewed for the period 2001/02 to 2004/05 for 200kms and the total expenditure[33] for the same period as $17.1million, ECG has calculated the renewal unit cost is $86[34] per metre. In NSW, the comparable renewal unit cost is in the range of $79 to $96[35] per metre (Real 2005/06) and in Victoria, the comparable renewal unit cost is in the range of $96 to $129 per metre (Real 2005/06)[36]. ECG therefore considers Envestra's renewal unit cost of $86 per metre for the period 2001/02 to 2004/05 to be efficient.

At this stage, Envestra has not provided information regarding the forecast expenditure for 2005/06

In relation to the prudence of the expenditure, ECG has reviewed in Section 7.4.1 the financial model used to justify projects in the forecast period 2006/07 to 2010/11 and considers this model to be prudent. ECG has not reviewed sample projects for the current period to verify justification. However, ECG believes that it is reasonable to expect that the same financial model has been used to justify projects for the current period. Therefore ECG considers that the financial model used to justify specific project expenditure for 2001/02 to 2004/05 is reasonable.

As advised in Section 7.4.1, ECG considers that the estimated operating cost savings used in the financial models are efficient. However at this stage it has insufficient information to conclude that the estimated UAFG savings also used in the financial models are efficient.

Therefore ECG considers that that the expenditure for years 2001/02 to 2004/05 is prudent and efficient for the following reasons:

- The average renewals unit cost is efficient in comparison with other jurisdictions.
- The extent of program to prevent any increase in UAFG is prudent.
- The financial processes used to justify projects likely is prudent,
- Estimated operating savings due to renewal works are efficient.

However, for the renewals cost in the current period from 2001/02 to 2005/06, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

ECG sought information on the scope of the mains renewal program in 2005/06 including the length of mains to be replaced. ECG also sought additional information on how the leakage rate has been derived and how the UAFG for the residual networks which have not been replaced has been determined.

[33] Total expenditure is sum of the annual expenditure for 2001/02 to 2004/05 shown in Table 6-22
[34] $17.1million divided by 200kms
[35] ECG Reviews of AGLGN and CEG Gas Access Arrangement For IPART
[36] Essential Services Commission's (ESC's) 2002 Final Determination in Victoria

Stage Two

Envestra has provided further clarification and additional information[37] [38] on the expenditure for Mains Replacement works. It confirmed that:

- The length of mains planned to be renewed in 2005/06 is 75km.
- An average leakage rate per km of mains replaced is appropriate for evaluating the economics of replacing mains in various suburbs, due to the high incidence of small leaks from most joints in the cast iron network.
- Renewals capital expenditure from 2001/02 to 2005/06 includes short length renewals as well as planned renewals.

ECG advises it has estimated from Envestra's data the short length renewals expenditure in the period 2001/02 to 2005/06 to average $1.07million pa (refer Section 7.4.1, Stage Two). Therefore the actual mains renewal expenditure from 2001/02 to 2004/05 of $17.10million (calculated from data in Table 6-22), is estimated to include $4.28million for short length renewals and $12.92million for block renewals.

For 200km of block renewals in this 4 year period, ECG has calculated the average rate for block renewals to be $65 per metre.

As such, ECG estimates the expenditure for 75km of block renewals in 2005/06 to be $4.88million[39]. Allowing a further $1.07million for short length renewals, ECG calculates the forecast expenditure in 2005/06 to be $5.95million. ECG therefore considers the forecast renewals expenditure for 2005/06 based on 75km of planned renewals should be its estimate of $5.95million.

ECG considers the 75km of mains renewal planned for 2005/06 is prudent and is part of the program to increase the renewal to 100km pa proposed by Envestra for years 2006/07 to 2010/11 (refer to Section 7.4.1 for review of this forecast period proposal).

Therefore ECG considers that the estimated expenditure in this category from 2001/02 to 2004/05 and the forecast expenditure in 2005/06, as summarised in Table 6-23, to be prudent and efficient.

Table 6-23: Recommended Mains Renewal Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Mains Renewal	4.58	4.10	4.25	4.17	5.95	23.05

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11. This would reduce the expenditure allowance requested by Envestra for these projects by $1.42million, from $24.47million to $23.05million.

[37] Envestra Document, Reply to ECG Q round 2, Questions 2.7&3.4, 20 December 2005
[38] Email, 23 December 2005
[39] 75,000metres multiplied by $65/metre

6.4.2 Periodic Meter Changes

Stage One

Meters installed in customer premises have to be changed periodically. The Office of the Technical Regulator (OTR) has the responsibility of determining the appropriate length of time gas meters can be remain in the field before they have to replace. This expenditure for "Periodic Meter Changes" is related to the replacement of meters in the field after they have exceeded their approved period for which they can remain the field. Envestra expenditure for periodic meter change (PMC) shown in Table 6-5 is summarised in Table 6-24.

Table 6-24: PMC Capital Expenditure, 2001/02 to 2005/06
(Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
PMC - Domestic	1.05	1.19	1.39	1.04	3.20	7.87
PMC - I&C	0.26	0.31	0.43	0.36	1.29	2.65
Total	**1.31**	**1.50**	**1.82**	**1.40**	**3.49**	**10.52**

Envestra's Asset Management Plan Section 5.4.2 outlines the requirements of the PMC. Essentially the Gas Act requires that meters be changed periodically based on the approved intervals that meters can remain in the field. The OTR has determined that most of the meters have a field life span of 10 years except for the two families of meters that are approved to remain in the field for 15 years.

WorleyParsons advises[40] that the management of the plan is detailed in the Gas Measurement Management Plan[41] which has been prepared in accordance with the Gas Metering Code.

In response to ECG's request for information, ECG provided a spreadsheet titled "Att 1 ECG – SA Capex 241005"which contains details of the forecast number of meters to be removed and the unit cost associated for both domestic and industrial meters. The unit cost is shown in Table 6-25. ECG has derived the $2005/06 unit cost by applying a CPI of 2.5% (refer Section 3.5).

Table 6-25: Unit Cost of Periodic Meter Change[42]
($/meter)

	2006/07	2005/06
Domestic PMC	102	100
Industrial & Commercial PMC	1,354	1,321

WorleyParsons advises[43] that the capital expenditure for the forecast period has been derived using the historical costs for each meter type and also taking into consideration the meters used are either new, fully refurbished or partially refurbished.

[40] WorleyParsons' Report September 2005 Page 63
[41] Envestra has only made the Gas Measurement Management Plan available at its premises in Adelaide. Due to the time table for Stage One, ECG has not reviewed the plan.
[42] Att 1 ECG – SA Capex 241005
[43] WorleyParsons' Report September 2005 Page 92

ECG believes that it is reasonable to expect that Envestra would have adopted a similar practice in the current period. On that basis, the unit cost for the current period must be comparable with the unit cost for the forecast period. Therefore using the above unit costs and the capital expenditure in Table 6-24, ECG has derived the number of meters that are removed in the current period as shown in Table 6-26. The number of meters to be removed in the forecast period[44] is also shown for comparison purposes.

Table 6-26: PMC Meter Numbers, 2001/02 to 2010/11

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
PMC - Domestic	10,500	11,900	13,900	10,400	32,000	78,700
PMC - I&C	197	234	325	273	976	2,005
	2006/07	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**TOTAL**
PMC - Domestic	35,192	35,951	34,168	32,398	27,157	164,866
PMC - I&C	816	621	935	936	858	4,166

Assuming that the product mix and unit cost for the domestic PMC's is similar for both the current and forecast periods, ECG believes that the 2005/06 unit costs of $100 per domestic meter change is within the range of the unit costs in other jurisdictions i.e. in Victoria[45] the range is between $98 and $102 ($ 2002) and in NSW[46] the unit cost is $137 ($ 2004). However in Section 7.2 of its AAI Envestra advises that about 24,000 domestic meters were replaced in year 2004/05, which is not consistent with ECG's calculation of 10,400 meters. This anomaly needs to be resolved before ECG can assess the efficiency of Envestra's unit cost for periodic meter changes. ECG sought additional information from Envestra clarify this apparent anomaly.

ECG has compared Envestra's unit cost of $1,321 for replacing industrial and commercial for the period 2001/02 to 2005/06 with other jurisdictions[47] and has concluded that this unit cost is efficient. Therefore ECG considers Envestra's expenditure on I&C PMC's in the period from 2001/02 to2005/06 to be prudent and efficient.

No information has been provided at this stage as to why the number of PMC domestic and industrial and commercial meters should significantly increase in 2005/06 and continue at that level through the next period. In addition, the OTR[48] approved the extension of the field life of a type of meter, E602 from 1990/91 by an additional year. This deferral means that meters that are to be removed in 2005/06 can remain in the field for an additional year. In addition, ECG understands that the sampling plan allows for further extension of the E602 meter based on the performance of the E602 meter in the field. At this stage, ECG is unable to conclude that forecast expenditure for year 2005/06 is prudent.

In view of these factors, ECG sought more information from Envestra about how the meter volumes were derived for 2005/06 and for the forecast period. Information was also sought about unit costs applicable to both domestic and commercial and industrial meters.

[44] Envestra spreadsheet, SA Capex, 24 October 2005
[45] ESCV Final Decision 2002
[46] ECG Report on Review of AGLGN Access Arrangement
[47] Victoria $600 to $1431(2002$) and NSW $1742(2004$)
[48] OTR letter to the Manager Metering, SCADA and Telemetry, dated 26 August 2005

Stage Two

Envestra has advised[49] that "*replacements rise significantly over 04/05 figures due to the age profile of domestic meters, which has a step change post 2004/05, and an increasing adding population over the next five years. The replacement numbers are estimated based on the age profile of meters and how this compares with the standard statutory life of the specific meters, taking into account those meters that have already been repaired once.*"

Envestra also advised[50] that the number of domestic periodic meter changes in year 2004/05 was 23,839. At that time the majority of meters were able to be repaired/refurbished, which resulted in an unusually lower average replacement cost (approx. $43). Envestra advises the product mix of repaired and new meters for the replacement program is more likely to be 50/50 in the forecast period (which ECG takes to include forecast year 2005/06) because the aging population of domestic meters will include a higher proportion of non-repairable meters.

Based on its knowledge of repaired meter costs, ECG considers the unit price of $43 per meter in year 2004/05 when using predominantly repaired meters is prudent and efficient.

Some variation in expenditure would normally be expected from year to year due to the age profile of meters in each year. However as the expenditure shown in Table 6-24 for years 2001/02 to 2003/04 is similar to that for year 2004/05, ECG assumes comparable annual replacement programs occurred throughout this period and on this basis considers the domestic PMC expenditure for years 2001/02 to 2003/04 to be prudent and efficient.

ECG considers the unit cost of $100 per meter shown in Table 6-25 for domestic periodic meter changes in 2005/06 is consistent with the unit cost of $43 per domestic PMC meter in 2004/05, based on the different product mixes of repaired and new meters. $100 per meter unit cost is also consistent with the prudent and efficient unit cost in other jurisdictions, as advised in Stage One of this review. ECG therefore considers this unit cost and the domestic PMC expenditure in 2005/06 to be prudent and efficient.

In its Stage One review ECG advised that it considered the I&C PMC expenditure from 2001/02 to 2005/06 to be prudent and efficient.

ECG's total recommended actual and forecast PMC expenditure from years 2001/02 to 2005/06 is summarised in Table 6-27.

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-27: Recommended Periodic Meter Change Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Domestic PMC	1.05	1.19	1.39	1.04	3.20	7.87
I&C PMC	0.26	0.31	0.43	0.36	1.29	2.65
Total PMC	**1.31**	**1.50**	**1.82**	**1.40**	**3.49**	**10.52**

[49] Envestra Email, SA AA CAPEX - Meters- Serv-PMC, 11 January 2006
[50] Envestra Email, Reply to ECG Questions, 8 Feb 2006

6.4.3 SCADA (Telemetry)

Stage One

ECG believes that SCADA projects are generally related to installing remote devices in the field for monitoring and/or controlling system pressures. These projects are required to improved network performance data gathering, routine operation and emergency management.

The expenditure for SCADA from Table 6-5 is summarised in Table 6-28.

Table 6-28: SCADA Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
SCADA	0.23	0.05	0.00	0.20	0.00	0.49

At this stage, Envestra has not provided details on the expenditure for SCADA in the current period. Envestra has provided a SCADA strategy document titled "SA Networks – Pressure Surveillance & Control"[51] which outlines the strategy to be implemented in the forecast period with no details on the current period. In addition, the WorleyParsons' report makes no mention of SCADA project in the current period.

In view of the lack of details regarding the above activities, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought additional information on scope, cost and justification for the SCADA projects for the current period.

Stage Two

Envestra advises[52] that the expenditure for the current period is related to approximately $50,000 for spare parts and $50,000 for a series of modules for quick replacement. There was also an additional expenditure of $90,000 for the purchase of Mercury pressure monitors. In addition, Envestra also upgraded the telemetry of the odorant sites, regional sites and other modules.

ECG recognises that telemetry equipment and pressure monitors have to be maintained and parts replaced periodically. It is therefore reasonable for Envestra to procure spares and also additional Mercury pressure monitors. In addition, ECG also believes that it is reasonable to develop quick replacement modules to reduce the downtime of any faulty telemetry equipment in the field. Similarly, ECG is also aware that the gas distributors also occasionally upgrade various telemetry sites. As such, the upgrade of telemetry sites is an activity expected of a prudent service provider.

The cost of telemetry equipment could vary from $1,000 to $20,000 depending on the complexity of the equipment. ECG therefore believes that it is reasonable to have incurred a cost of $50,000 for spares and $50,000 for the development of the modules in the current period.

[51] Envestra File SA SCADA Improvement project 202005
[52] Envestra Document, Reply to ECG Q round 2, Questions 2.1,24 December 2005

ECG is of the view that the Mercury pressure monitors are special purpose equipment and are only available from its supplier. As such, the cost incurred by Envestra is limited by Envestra's ability to negotiate a better price. ECG therefore considers the cost to be efficient.

As shown in Table 6-28, the total expenditure for the current period is $490,000. Envestra has only quantified a total cost of $190,000. This means that the cost of the upgrading of the various telemetry sites is approximately $300,000. As the cost of telemetry could vary from $1,000 to $20,000, ECG believes that it is reasonable to assume the average cost of a site upgrade is in the order of $15,000 (given the complexity of an odorant site and other remote telemetry sites). This means that Envestra would have to upgrade 15 telemetry sites in the current period. Given the size of Envestra's network, ECG believes that it is conceivable that these upgrades would have taken place.

ECG therefore considers that the actual expenditure in this category from 2001/02 to 2004/05 and the forecast expenditure in 2005/06, in Table 6-29, are prudent and efficient.

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-29: Recommended SCADA Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
SCADA	0.23	0.05	0.00	0.20	0.00	0.49

6.4.4 Regulators (Stay in Business)

Stage One

This work provides for on going replacement and improvement of regulator stations and valve pits. Expenditure on this work is summarised in Table 6-30.

Table 6-30: Regulators Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Regulators	0.00	0.00	0.00	0.15	0.00	0.15

ECG has not been provided with any data on the project scope related to the expenditure of $0.15million in 2004/05. However Envestra has provided a document[53] on the scope of works, justification and forecast expenditure in this category in the period 2006/07 to 2010/11.

Envestra advises that expenditure in the forecast period is for generic regulator upgrades as well as other activities (refer Section 7.4.5 for a full review). It also advises the unit costs for specific activities range from $15,000 to provide ball valves capable of remote control to $100,000 to provide a twin stream concrete vault district regulator.

[53] Envestra document, ECG reply SA questions, 24 October 2005

However, in view of the lack of details regarding the above expenditure, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought information on the scope, cost of individual projects and justification on the projects.

Stage Two

Envestra advises[54] that this expenditure was for minor works such as replacement of actuators, gauges and fittings at 8 regulator sites, with expenditure up to $40,000 per site. ECG is of the view that such works are typical of a distributor's activities in the course of operating and maintaining its distributing system. ECG therefore considers these activities to be prudent.

Based on a total expenditure of $150,000, ECG calculates the average expenditure is approximately $20,000 per site. Whilst specific details of each site has not bee provided, ECG understands that the cost of actuators could be over $5,000 depending on the size and complexity. As such, given that the average cost per site is $20,000, ECG believes the expenditure for the minor works to be efficient.

ECG considers that the actual expenditure in this category from 2001/02 to 2004/05 and the forecast expenditure in 2005/06, as advised by Envestra and summarised in Table 6-31, is prudent and efficient.

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-31: Recommended Regulators (SIB) Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Regulators	0.00	0.00	0.00	0.15	0.00	0.15

6.4.5 IT Projects

Stage One

There is no information provided on the expenditure related to the IT expenditure for the current period. The expenditure from Table 6-5 is summarised in Table 6-32. Envestra's IT strategy document prepared by IBM Consulting Services only deals with the forecast period.

Table 6-32: IT (Non FRC) Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Non-FRC IT Systems	0.61	0.54	0.13	0.73	0.00	2.02

[54] Envestra Document, Reply to ECG Q round , Questions 2.2, 21 December 2005

In addition, WorleyParsons' has indicated that it has not reviewed any IT expenditure[55].

In view of the lack of details regarding the above activities, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient in accordance with the Code.

As such, ECG sought additional information on the project scope, cost and justification for the above expenditure.

Stage Two

Envestra advises[56] that the expenditure for the Non FRC IT is essentially for three key projects:

- Installation of telemetry for large customers as required by Envestra's obligations under the Access Arrangement. The work includes the upgrade of repeater stations, master telemetry units, ongoing maintenance of Phoenix (telemetry data collection and reporting solution) etc.
- Implementation of Envestra's Asset Management System (AMS) and included the implementation of Maximo and GIS SmallWorld systems.
- Finance system upgrade was implemented to reduce reliance on MS Excel and Access in the production of monthly reports.

Whilst no information has been provided regarding how the above projects line up with the costs as shown in Table 6-32, ECG is aware that SAIPAR in its 2001 Final Decision approved an expenditure of $684,000 (Nominal) for telemetry. It is therefore reasonable to believe that the total expenditure of $2.02million will have included the telemetry for these large customers.

Section 7.4.6.1 of the report shows that the upgrade for Maximo is approximately $4million. The total cost for the implementation of Envestra's Asset Management System including Maximo and the upgrade of the financial system is approximately $1.3million ($2.02million - $0.69million).

As such, ECG considers that the expenditure in this category from 2001/02 to 2004/05 is prudent and efficient. ECG has summarised the recommended expenditure in Table 6-33,

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-33: Recommended IT (Non FRC) Projects Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Non-FRC IT Systems	0.61	0.54	0.13	0.73	0.00	2.02

[55] WorleyParsons' Report page 69
[56] Envestra's email, Reply to ECG Q round , Questions 2.8, 12 January 2006

6.4.6 Miscellaneous

Stage One

ECG has grouped a number of subcategories into "Miscellaneous". As shown in Table 6-34, the subcategories include Odorising, Corrosion Protection and Other. Expenditure for this category is summarised in Table 6-34.

Table 6-34: Miscellaneous Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Odorising	0.00	0.05	0.00	0.02	0.00	0.07
Corrosion Protection	0.00	0.00	0.00	0.16	0.00	0.16
Other	0.00	0.34	0.00	0.50	0.15	0.99
Miscellaneous	**0.00**	**0.39**	**0.00**	**0.68**	**0.15**	**1.22**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

At this stage, ECG has not been provided with any data on the scope or justification of the projects constituting this program. The WorleyParsons' report has not indicated what the expenditure for the current period for odorising and corrosion protection is for. However WorleyParsons advises that the category "Others" is related to mains stopple equipment, earth boring equipment and gas detectors.

However, in view of the lack of details regarding the above expenditure, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient in accordance with the Code.

As such, ECG sought additional information on the scope, costs and justification for the above expenditure in all the different subcategories.

Stage Two

Envestra advises[57] the expenditure on Miscellaneous works includes the following items:

- Odorising includes minor expenditure on earthing works at various sites and a new meter at one site.
- Corrosion Protection includes replacement of two transformer rectifiers and ground bed systems and protection of buried valves.
- Other expenditure includes a list of over 60 items[58] provided to ECG in addition to the equipment identified during Stage One of this work.

While individual item costs have not been provided, ECG considers that the list of equipment provided is typical of the equipment, a distribution service provider would procure over a five year period. This includes the odorising, corrosion protection equipment and other items.

Envestra has provided some costs related to borers ($45,000), metric jigs ($70,000), breathing apparatus ($30,000) and welders ($25,000). ECG believes these expenditures

[57] Envestra Document, Reply to ECG Q round , Questions 2.5, 2.6 & 2.10, 21 December 2005
[58] Examples of the items are: power analyser, gas detectors, arc welder and pressure testers.

are typical of the type of equipment purchased. ECG therefore considers the Odorising expenditure of $70,000, the Corrosion Protection expenditure of $160,000 and Other expenditure of $990,000 at an average close to $200,000pa to be efficient for the capital items identified.

ECG considers that the actual expenditure in this category from 2001/02 to 2004/05 and the forecast expenditure in 2005/06 summarised in Table 6-35, to be prudent and efficient.

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-35: Recommended Miscellaneous Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Odorising	0.00	0.05	0.00	0.02	0.00	0.07
Corrosion Protection	0.00	0.00	0.00	0.16	0.00	0.16
Other	0.00	0.34	0.00	0.50	0.15	0.99
Miscellaneous	**0.00**	**0.39**	**0.00**	**0.68**	**0.15**	**1.22**

6.5 REDUNDANT CAPITAL & ASSET DISPOSALS

In its 2005 AAI, Envestra advises that it does not have any redundant assets for the current and forecast period. Envestra put forward the position that in 2002, the Essential Services Commission in Victoria decided not to identify or remove assets.

Section 8.27 of the Code distinguishes between two types of capital redundancy (or partial redundancy), namely assets that "cease to contribute to service delivery" and those that have experienced "a decline in the volume of sales".

ECG believes that assets that do not contribute to service delivery are generally mains, services and meters that are no longer required due to vacant premises. Meters are also no longer required when they are replaced at customer premises due to meter change programs. Those meters that are not repaired for reuse are disposed of and as such should not be included in the asset base.

As no information has provided regarding either categories, ECG is unable to discuss the matter further.

6.6 CAPITAL CONTRIBUTION

In its 2005 AAI, Envestra advises that its capital contribution is as shown in Table 6-36. Envestra also advises that its 2005/06 forecast is based on its latest information.

Table 6-36: Capital Contribution 2001/02 to 2005/06 (Nominal $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06f	TOTAL
Capital Contribution	0.2	0.5	0.5	0.3	0.4	1.9

In the absence of any other information, ECG is unable to comment further on the capital contribution.

In the 2005 AAI, Envestra advises[59] that the $0.4million estimate for 2005/06 is based on latest information that it has available. Envestra has not offered any other details at this stage.

Envestra has used the same estimate of $0.4million[60] for its forecast expenditure capital contribution.

In the absence of any other information, ECG notes the forecast capital contribution is consistent with the average actual contribution and has accepted it on the basis.

6.7 SUMMARY: 2001/02 TO 2005/06

Stage One

In support of its 2005 AAI, Envestra has provided a number of consultants' reports. In addition, Envestra has also provided additional information in response to questions from ECG. The consultants' reports generally only address the forecast expenditure and not the current expenditure. As such, the level of information provided and the justification from the consultants' report is insufficient for ECG to draw a conclusion on the prudence and efficiency of the expenditure in a number of areas. ECG has detailed the extra information that is required for ECG to make a conclusion on the expenditure in reference to the Code.

The areas in which ECG required additional information are:

- Large consumers – the supply is only to a small number of large customers. The cost is highly variable due to gas demand and the geographical location of the site. The list of customers has not been provided in this case.
- Volume Customer
  - Meters- the cost of supply and installation of meters is higher than other jurisdictions due to the unique circumstances in South Australia. ECG sought additional information on the unit cost and customer numbers related to these costs.
  - Services –these are pipes that run from the street to the customer's premises. The cost is higher than in other jurisdictions and ECG sought clarification of the unit costs.
- Regulators – these projects are related to the supply and installation of regulating stations. ECG sought additional information on the scope and cost of the projects.
- Other – the cost is related to sub meter removal and provision of higher capacity meters for hot water. ECG sought additional information on the number of meters to be removed and the number of higher capacity meters installed.
- Mains Replacement – this cost is related to replacing old cast iron and unprotected steel mains to reduce UAFG and leak repairs. ECG sought

[59] 2005 AAI page 19
[60] 2005 AAI Table 17 page 45

additional information on the basis for determining UAFG savings and on the scope of works and cost for 2005/06.

- SCADA – the cost is related to installing remote devices in the field for monitoring and controlling system pressures. ECG sought additional information to justify this expenditure.

- Regulators – the projects are related to ongoing replacement and improvement of regulator stations and valve pits. There is only one cost for 2004/05. ECG sought additional information on this cost.

- IT Projects – no information has been detailed regarding this expenditure. ECG sought additional information on the IT projects.

- Miscellaneous – the costs are related to small projects for odorising, corrosion protection and other. ECG sought additional information on scope, cost and justification.

The areas in which ECG considers the expenditure is prudent and efficient are:

- Improve Supply – the related projects are for augmentation and security of supply. ECG considers the process used for determining the scope of works is prudent and as such the projects are prudent. In addition the cost is within the expenditure level of other jurisdictions.

- Volume customers
    - General Mains – the related projects are for the main supply mains and reticulation mains for new customers. Envestra's cost is comparable with the costs in other jurisdictions.

- Periodic Meter Changes – this cost is related replacement of meters in the field after they have exceeded their approved life in the field. ECG considers this cost is efficient except for 2005/06 where ECG sought additional information.

Stage Two

Envestra has provided further clarification and additional information on the expenditure for Current Period works, as summarised in sections 6.3 and 6.4 and their associated subsections. For reasons outlined in Section 6.2, ECG has determined the recommended expenditure in different categories to those used by Envestra in its Access Arrangement Information.

The information provided has enabled ECG to make recommendations on the prudence and efficiency of expenditure in the current period. ECG considers the actual and forecast expenditure proposed by Envestra to be prudent and efficient except for the following items:

- Actual and Forecast Services expenditure from 2001/02 to 2005/06

- Forecast Other (Growth) expenditure in 2005/06

- Forecast Mains Replacement Expenditure in 2005/06

Based on this ECG considers that its recommended New Facilities actual expenditure from 2001/02 to 2004/05 and forecast expenditure in 2005/06, as summarised in Table 6-37, to be prudent and efficient.

ECG therefore recommends the inclusion of this expenditure in the Opening Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 6-37: Recommended New Facilities Capital Expenditure, 2001/02 to 2005/06 (Real $ million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Stay In Business						
Telemetry (SCADA)	0.23	0.05	0.00	0.20	0.00	0.49
Regulators (SIB)	0.00	0.00	0.00	0.15	0.00	0.15
PMC - Domestic	1.05	1.19	1.39	1.04	3.20	7.87
PMC - I&C	0.26	0.31	0.43	0.36	1.29	2.65
Odorising	0.00	0.05	0.00	0.02	0.00	0.07
Corrosion Protection	0.00	0.00	0.00	0.16	0.00	0.16
Mains Renewal	4.58	4.10	4.25	4.17	5.95	23.05
Non-FRC IT Systems	0.61	0.54	0.13	0.73	0.00	2.02
FRC IT Systems	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.34	0.00	0.50	0.15	0.99
Total Stay-in-Business	**6.73**	**6.58**	**6.2**	**7.33**	**10.59**	**37.45**
Growth						
Large Consumers	1.52	1.68	0.99	0.96	0.13	5.29
Improve Supply	0.15	0.10	0.86	0.58	0.60	2.29
General Mains	3.96	3.85	3.73	2.74	4.25	18.54
Regulators (Growth)	0.12	0.25	0.07	0.00	0.00	0.44
Meters	2.61	2.73	2.90	2.55	3.02	13.80
Services	6.61	6.10	6.16	7.03	6.71	32.61
Other	0.00	0.00	0.00	0.00	0.08	0.08
Total Growth	**14.97**	**14.71**	**14.71**	**13.86**	**14.79**	**73.05**
TOTAL NEW FACILITIES INVESTMENT	**21.7**	**21.29**	**20.91**	**21.19**	**25.38**	**110.5**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

The above recommended expenditure has been converted to nominal $ for inclusion into the capital base as shown in Table 6-38.

Table 6-38: Recommended New Facilities Actual Capital Expenditure, 2001/02 to 2005/06 (Nominal $ million)

	2001/02	2002/03	2003/04	2004/05	2005/06	TOTAL
Stay In Business						
Telemetry (SCADA)	0.21	0.05	0.00	0.20	0.00	0.45
Regulators (SIB)	0.00	0.00	0.00	0.15	0.00	0.15
PMC - Domestic	0.95	1.11	1.32	1.01	3.20	7.60
PMC - I&C	0.23	0.29	0.41	0.35	1.29	2.58
Odorising	0.00	0.05	0.00	0.02	0.00	0.07
Corrosion Protection	0.00	0.00	0.00	0.16	0.00	0.16
Mains Renewal	4.14	3.83	4.05	4.07	5.95	22.04
Non-FRC IT Systems	0.55	0.50	0.12	0.71	0.00	1.89
FRC IT Systems	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.32	0.00	0.49	0.15	0.96
Total Stay-in-Business	**6.08**	**6.15**	**5.91**	**7.15**	**10.59**	**35.88**
Growth						
Large Consumers	1.37	1.57	0.94	0.94	0.13	4.95
Improve Supply	0.14	0.09	0.82	0.57	0.60	2.21
General Mains	3.58	3.60	3.56	2.67	4.25	17.65
Regulators (Growth)	0.11	0.23	0.07	0.00	0.00	0.41
Meters	2.36	2.55	2.76	2.49	3.02	13.18
Services	5.97	5.70	5.87	6.86	6.71	31.11
Other	0.00	0.00	0.00	0.00	0.08	0.08
Total Growth	**13.53**	**13.75**	**14.02**	**13.52**	**14.79**	**69.61**
TOTAL NEW FACILITIES INVESTMENT	**19.61**	**19.90**	**19.93**	**20.67**	**25.38**	**105.49**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

ECG advises this recommendation reduces the Capital expenditure allowance requested by Envestra by $2.62million, from $108.11million to $105.49million (nominal).

ECG also advises that it has not presented its summary in the same tabular form as provided by Envestra in Table 8 of its AAI (refer Table 6-3). This is due to difficulty in reconciling the item by item categories of information provided in Envestra's AAI with the categories in its detailed additional information response to ECG (refer Table 6-4).

7. CAPITAL EXPENDITURE FORECAST 2006/07 TO 2010/11

7.1 BACKGROUND

Section 8.20 of the Code enables reference tariffs to be determined on the basis of forecast capital expenditure, provided that the capital expenditure is reasonably expected to pass the requirements of Section 8.16 of the Code.

The Code does not specifically outline the approach that has to be adopted to determine the efficient cost for a level of service. As such, ECG proposes to assess the capital costs as outlined in Section 6.

7.2 FORECAST CAPITAL EXPENDITURE: 2006/07 TO 2010/11

Envestra advises[61] that its forecast expenditure for the period 2006/07 to 2010/11 is as summarised in Table 7-1.

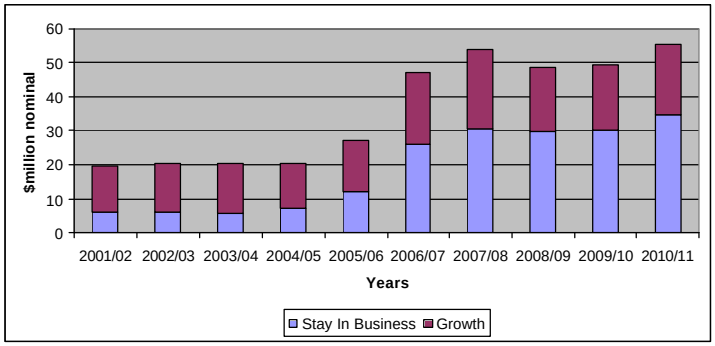
Table 7-1: Forecast New Facilities Capital Expenditure (AAI), 2006/07 to 2010/11 (Nominal $ million)

Expenditure Category	2006/07	2007/08	2008/09	2009/10	2010/11
Stay in Business					
Mains replacement	9.2	9.2	8.8	9.3	10.5
Periodic meter changes	4.7	4.7	5.1	5.1	4.5
Security of Supply	4.0	8.0	6.5	13.9	15.1
SCADA	1.3	1.3	0.7	1.2	0.8
Regulators	1.5	1.5	0.9	0.9	0.9
IT Projects	4.6	5.6	7.6	0.3	3.9
Other	0.6	1.0	0.6	0.6	0.6
Total replacement	**26.0**	**31.3**	**30.3**	**31.3**	**36.4**
Growth					
Mains/inlets/meters	19.7	19.9	18.5	20.0	22.6
Extensions to Towns	1.9	4.3	1.5	1.4	0.4
Other	0.1	0.1	0.2	0.2	0.2
Total Growth	**21.7**	**24.3**	**20.1**	**21.5**	**23.2**
Total New Facilities	**47.6**	**55.6**	**50.4**	**52.8**	**59.6**

Whilst analysis of each category of the expenditure is detailed in the sections below, it is worth noting the significant increase in expenditure from the current period. For

[61] Envestra, AAI, Table 13, 30 September 2005

comparison purposes, ECG has presented the expenditure for the current period and the forecast period in the Graph 7-1.



Graph 7-1 Capital Expenditure 2001/02 to 2010/11

Envestra[62] has also provided a detailed breakdown of the above expenditure into categories which are consistent across both periods, so that an effective comparison of first period actual expenditure and second period forecast expenditure can be made. This breakdown is provided in Table 7-2.

Table 7-2: Forecast New Facilities Capital Expenditure, 2006/07 to 2010/11 (Nominal $ million)

Expenditure Category	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Stay In Business						
Telemetry	1.28	1.32	0.69	1.23	0.80	5.33
Regulators	1.48	1.53	0.89	0.92	0.94	5.77
PMC - Domestic	3.59	3.80	3.74	3.68	3.20	18.01
PMC - I&C	1.10	0.87	1.36	1.41	1.34	6.09
Odorising	0.06	0.43	0.06	0.07	0.07	0.68
Corrosion Protection	0.05	0.02	0.05	0.03	0.05	0.20
Mains Renewal	9.23	9.23	8.78	9.30	10.52	47.06
Non-FRC IT Systems	0.27	0.59	4.87	0.29	0.30	6.32
FRC IT Systems	0.05	0.08	0.16	0.00	3.61	3.90
Other	0.50	0.50	0.50	0.50	0.50	2.50
Total Stay-in-Business	**17.61**	**18.39**	**21.11**	**17.42**	**21.34**	**95.87**
Growth						
Large Consumers	0.69	0.86	0.64	0.66	0.68	3.53
Improve Supply	1.24	1.09	0.52	0.53	1.12	4.50
General Mains	5.97	5.90	5.69	6.12	6.89	30.57
Regulators	0.00	0.00	0.00	0.00	0.00	0.00
Meters	3.72	3.67	3.53	3.80	4.28	19.01
Services	8.05	8.34	8.09	8.86	9.65	43.00
Other	0.14	0.15	0.15	0.15	0.16	0.75
Total Growth	**19.80**	**20.00**	**18.62**	**20.14**	**22.79**	**101.35**

[62] Envestra, Excel Spreadsheet, SA Capex, 24 October 2005

Material Changes						
Increased Network Utilisation	-	-	-	-	-	
IT	4.30	4.94	2.62	0.00	0.00	11.87
New Townships	1.86	4.34	1.51	1.38	0.38	9.48
Security of Supply	4.05	7.97	6.54	13.90	15.09	47.55
Total Material Changes	**10.21**	**17.25**	**10.67**	**15.28**	**15.47**	**68.89**
TOTAL NEW FACILITIES INVESTMENT	**47.62**	**55.65**	**50.40**	**52.84**	**59.60**	**266.11**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

For analytical purposes ECG has determined the actual expenditure in real $ 2005/06, as summarised in Table 7-3, which is based on the inflation factor of 2.5%pa advised by the Commission[63].

Table 7-3: Forecast New Facilities Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

Expenditure Category	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Stay In Business						
Telemetry	1.25	1.26	0.64	1.11	0.71	4.97
Regulators	1.44	1.46	0.83	0.83	0.83	5.40
PMC - Domestic	3.50	3.62	3.48	3.33	2.83	16.76
PMC - I&C	1.08	0.83	1.26	1.28	1.19	5.64
Odorising	0.06	0.41	0.06	0.06	0.06	0.64
Corrosion Protection	0.05	0.02	0.05	0.02	0.05	0.19
Mains Renewal	9.00	8.79	8.15	8.42	9.30	43.66
Non-FRC IT Systems	0.26	0.57	4.52	0.26	0.27	5.88
FRC IT Systems	0.05	0.08	0.15	0.00	3.19	3.47
Other	0.49	0.48	0.46	0.45	0.44	2.32
Total Stay-in-Business	**17.18**	**17.51**	**19.61**	**15.78**	**18.86**	**88.93**
Growth						
Large Consumers	0.67	0.82	0.59	0.60	0.60	3.28
Improve Supply	1.21	1.03	0.48	0.48	0.99	4.20
General Mains	5.82	5.62	5.28	5.55	6.09	28.36
Regulators	0.00	0.00	0.00	0.00	0.00	0.00
Meters	3.63	3.50	3.28	3.44	3.79	17.63
Services	7.85	7.94	7.51	8.03	8.53	39.87
Other	0.14	0.14	0.14	0.14	0.14	0.70
Total Growth	**19.32**	**19.04**	**17.29**	**18.24**	**20.14**	**94.04**
Material Changes						
Increased Network Utilization	-	-	-	-	-	-
IT	4.20	4.71	2.43	0.00	0.00	11.34
New Townships	1.82	4.13	1.40	1.25	0.33	8.94
Security of Supply	3.95	7.58	6.07	12.59	13.34	43.54
Total Material Changes	**9.96**	**16.42**	**9.91**	**13.85**	**13.67**	**63.81**
TOTAL NEW FACILITIES INVESTMENT	**46.46**	**52.97**	**46.80**	**47.87**	**52.68**	**246.78**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

[63] ESCOSA Email, 6 October 2005

7.3 GROWTH

ECG has calculated from Envestra data[64] on the forecast numbers of each type of volume customer for each year of the next period that the gross number of new customers to be supplied is as given in Table 7-4.

Table 7-4: Forecast New Volume Customer Numbers (Gross) 2006/07 to 2010/11

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
New Homes	6,704	6,854	6,374	6,802	6,964	33,699
Multi User	18	24	35	35	35	147
Existing Homes	1,682	1,732	1,572	1,715	1,769	8,470
Domestic	**8,405**	**8,611**	**7,981**	**8,551**	**8,768**	**42,316**
Industrial & Commercial	455	357	333	313	406	1,864
Total	**8,860**	**8,968**	**8,314**	**8,864**	**9,174**	**44,180**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

7.3.1 Large Consumers

Stage One

Large consumers are customers with gas consumptions greater than 10TJ pa. The expenditure for supplying these large customers are generally for facilities consisting of long mains extension, gas services, gas meter assembly and telemetry equipment. Forecast expenditure to provide supply to these customers is summarised in Table 7-5

Table 7-5: Large Consumer (Growth) Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Large Consumers (Growth)	0.67	0.82	0.59	0.60	0.60	3.28

Note: In all tables there may be small arithmetic anomalies due to rounding errors

At this stage, Envestra has not provided details regarding this expenditure.

The cost of supplying these large customers is very much dependent on the gas demand, pressure required and the geographical location of these customers. The requirements of the customers are translated to length of mains required, the size and length of the gas connection or service and the size of the meter regulator assembly. The varying facilities required for each customer translates to costs specific to each customer. These costs could vary significantly.

Table 7-5 shows varying expenditure on an annual basis which seems to indicate that Envestra has provision for at least one large customer connecting every year.

[64] Envestra, Excel Spreadsheet, SA Capex, 24 October 2005

WorleyParsons has indicated[65] that the cost has been derived from Envestra's market intelligence and also historical information. ECG sees no reason for disagreeing with WorleyParsons as the varying expenditure does indicate that Envestra is targeting specific customers.

However, in view of the lack of details regarding the above expenditure, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought additional information on the scope of works, cost and justification for each individual potential customer.

Stage Two

Envestra advises[66] its estimated expenditure is based on two new demand customers each year except for 2007/08 when three customers are forecast. It considers this reasonable as in the past up to five demand customers have connected in a year. It has estimated that the connection cost will be approximately $300,000 per customer for all customers except for the third customer in 2007/08 which is estimated at $200,000. It also advises that it is not possible to exactly predict details of customers likely to connect in a 5 year period.

It is worth noting that Envestra has not forecast[67] any increase in its demand forecast or customer numbers for the forecast period. However, ECG acknowledges that within the five year period, the number of new customers and the number of disconnections could effectively cancel each other.

ECG notes that the connection cost per site is less than that accepted as efficient for the current period and the number of forecast customers of 11 is less than the 12 connected in the current period. ECG concurs that details of forecast customers are difficult to predict and that an average unit cost per connection is a valid basis for forecasting expenditure in this category.

Therefore ECG considers that the forecast expenditure in this category from 2006-07 to 2010-11, as summarised in Table 7-6, to be prudent and efficient.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-6: Recommended Large Consumer (Growth) Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Large Consumers (Growth)	0.67	0.82	0.59	0.60	0.60	3.28

[65] WorleyParsons' Report page 71
[66] Envestra Document, Reply to ECG Q round , Questions 1.11, 20 December 2005
[67] AAI SA AA8 Demand Forecast and MMA Report 14 November 2005

7.3.2 Improve Supply

Stage One

The expenditure for this category is for principal supply mains to provide additional capacity to supply peak hour loads, and for security of supply mains required in projects determined under the Envestra risk assessment process. Forecast expenditure to improve supply to customers is summarised in Table 7-7.

Table 7-7: Improve Supply (Growth) Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Improve Supply (Growth)	1.21	1.03	0.48	0.48	0.99	4.20

Note: In all tables there may be small arithmetic anomalies due to rounding errors

ECG has not been provided with any data on the scope, estimated cost and justification of the projects constituting the proposed program.

ECG notes that in its report, Section 9.3.2.2, WorleyParsons advises this expenditure is for Security of Supply projects estimated to cost less than $0.5million each. The scope of these works is similar to those described in Section 7.4.3. At the meeting with Envestra on 21 November 2005, Envestra confirmed that these projects that cost less than $0.5million are required to improve supply to the system based on the organic growth to the demand of the network and also to resolve security of supply issues in local areas.

To decide on which projects are required for the forecast period, ECG understands that Envestra has used its network planning process. ECG has reviewed Envestra's Network Planning process (Section 5.2) and considers that the process, which is used to determine the most suitable project to improve supply, is what would be expected of a prudent service provider acting in accordance with the Code. Whilst ECG has not reviewed any individual projects, there is nothing to suggest that has not used the network planning process to select the most prudent project. On that basis, ECG is recommending that the projects under this category be considered prudent.

In relation to the expenditure level, ECG recognises that the project costs are highly variable as they are specific to individual project scope and location. In the absence of any other information, ECG is unable to comment on the efficiency of the projects.

As such, ECG sought additional information on the scope of works for each year, the project costs and justifications.

Stage Two

Envestra has provided further clarification and additional information about expenditure for Improve Supply projects. It advises these Improve Supply projects are Network Augmentation projects estimated to cost less than $0.5million each. They are otherwise similar to the Security of Supply projects reviewed in Section 7.4.3, which are Network Augmentation projects estimated to cost more than $0.5million each.

As explained in Section 7.4.3, Envestra has provided a detailed list of Network Augmentation projects covering all Improve Supply and Security of Supply projects. ECG has allocated these into their categories based on the $0.5million threshold and

determined that the estimated expenditure on Improve Supply projects is as given in Table 7-30 and summarised below in Table 7-8.

Table 7-8: Network Augmentation Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Improve Supply	0.69	0.62	0.11	0.11	0.11	1.64
Security of Supply – Material Changes	3.95	7.01	5.39	12.59	13.79	42.73
Total	**4.64**	**7.63**	**5.50**	**12.71**	**13.90**	**44.37**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

There are substantial differences between the Improve Supply cost (real $2005/06) data in Table 7-8 (total $1.64million) and that presented in Table 7-7 (total $4.20million). ECG considers the data in Table 7-8 to be correct as it is based on a list of specifically identified projects. Also ECG has no other evidence to support the level of expenditure proposed by Envestra and shown in Table 7-7.

Envestra's list shows there are eight Improve Supply projects estimated to cost between $100,000 and $300,000 each. These consist of priority 1 and 3 projects spread over the five years of the forecast period and have been identified by Envestra as Piecemeal Reinforcements, Seaford, Burton, Port Pirie, Prospect, Para Hills, Marleston and Mawson Lakes.

The proposed scope, benefits and costs for each have been outlined by Envestra. They are consistent with their Asset Management Plan strategy with priority 1 projects principally to maintain adequate capacity for network growth and priority 3 projects principally to reduce the risk of disruption to supply.

ECG has reviewed the Network Augmentation Capex proposal for Marleston. This project is primarily to provide security of supply to an estimated 10,000 customers currently supplied from a medium pressure network in the central south suburbs, by providing a district regulator in Marleston at an estimated cost calculated by ECG from Envestra data to be $210,000 (real $ 2005/06).

Additional benefits for the proposed project are:

- Additional capacity to supply continuing load growth in the area.
- A high pressure gas supply which will facilitate the replacement of the cast iron mains in the area using pipe insertion techniques.
- Scope for lower operating pressures reducing the level of UAFG.

Envestra advises that a risk assessment has been conducted on the existing system where the two prime risks are tripping of either of the primary supply regulators or failure of the 500mm cast iron trunk supply main. In the worst case scenario, 5,000 customers would lose supply for 5 to 10 days. This project has a risk rating of 18 which makes it Envestra's third highest priority Security of Supply project.[68]

Envestra also advises there are no obvious alternatives to the proposed scheme.

[68] Envestra, Asset Management Plan Appendix 7, 19 September 2005.

ECG considers the risk assessment to be appropriate and the estimated regulator cost to be efficient. It therefore considers this project to be prudent and efficient.

Based on the project scope, cost and benefits provided by Envestra, ECG considers the other seven projects to be reasonable and their costs efficient.

ECG therefore considers that the forecast expenditure in this category from 2006/07 to 2010/11, as summarised in Table 7-9 is prudent and efficient. This would reduce the expenditure allowance requested by Envestra for these projects by $2.56million, from $4.20million to $1.64million.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-9: Recommended Improve Supply Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Improve Supply	0.69	0.62	0.11	0.11	0.11	1.64

7.3.3 Volume Customers

Stage One

Envestra has provided data[69] on the unit cost in nominal $ of mains ($/metre), meters and services used to supply each category of volume customer for each year of the forecast period. Envestra has also provided data on the unit length of mains for each category of volume customer, from which ECG has derived the unit cost per customer of mains extensions to these customers.

For analytical purposes ECG has determined these unit costs in real $ 2005/06 and these are summarised in Table 7-10 based on the inflation factor of 2.5%pa advised by the Commission[70].

Table 7-10: Volume Customers Facility Unit Costs, 2006/07 to 2010/11 (Real $ 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11
Domestic New Homes					
General Mains($/metre)	39.82	40.31	40.73	41.18	41.67
General Mains (metre/cust.)	12.00	12.00	12.00	12.00	12.00
General Mains ($/cust.)	478	484	489	494	500
Meters ($/cust.)	301	304	308	311	315
Services ($/cust.)	717	726	733	742	750

[69] Envestra, Excel Spreadsheet, SA Capex, 24 October 2005
[70] ESCOSA Email, 6 October 2005

Domestic Multi User					
General Mains($/metre)	144.88	146.67	148.21	149.84	151.62
General Mains (metre/cust.)	10.05	10.05	10.05	10.05	10.05
General Mains ($/cust.)	1456	1474	1489	1506	1523
Meters ($/cust.)	301	304	308	311	315
Services ($/cust.)	7,751	7,847	7,930	8,017	8,112
Domestic Existing Homes					
General Mains($/metre)	78.36	79.33	80.16	81.04	82.00
General Mains (metre/cust.)	6.38	6.38	6.38	6.38	6.38
General Mains ($/cust.)	500	506	511	517	523
Meters ($/cust.)	301	304	308	311	315
Services ($/cust.)	1,106	1,120	1,132	1,144	1,158
Industrial & Commercial					
General Mains($/metre)	144.88	146.67	148.21	149.84	151.62
General Mains (metre/cust.)	26.52	26.52	26.52	26.52	26.52
General Mains ($/cust.)	3843	3890	3931	3975	4022
Meters ($/cust.)	2,418	2,447	2,473	2,500	2,530
Services ($/cust.)	2,298	2,327	2,351	2,377	2,405

Note: In all tables there may be small arithmetic anomalies due to rounding errors

The capital expenditure on these items as presented in Table 7-3 was determined based on these unit costs, and is restated in Table 7-11.

Table 7-11: Volume Customers Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Growth						
General Mains	5.82	5.62	5.28	5.55	6.09	28.36
Meters	3.63	3.50	3.28	3.44	3.79	17.63
Services	7.85	7.94	7.51	8.03	8.53	39.87
Total	**17.30**	**17.06**	**16.07**	**17.02**	**18.41**	**85.86**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

New customers can be categorised into the following:

- Domestic customers
    - New Homes
    - Existing Homes
    - Multi User
- Industrial and Commercial (I&C)

The capital costs required to supply these new customers include costs for mains, meters and services facilities. Each facility cost is calculated from the unit cost and the average number of units.

ECG has assessed each of these items for each facility, from the data in Table 7-10, based on the work it has carried out in other jurisdictions [71] [72] [73].

[71] ECG, Review of AGLGN Access Arrangement for IPART, August 2004
[72] ECG, Review of CEG Access Arrangement for IPART, June 2005

General Mains

Stage One

To assess whether the General Mains cost is in accordance with the Code, ECG has calculated the length of mains needed to supply each category of customers and the unit cost to supply these customers. This information is summarised in the table below:

Table 7-12: General Mains Unit Length and Cost (Real $ 2005/06)

Customer Category	Unit Length[74] (m)	Unit Cost[75] ($/m)
Domestic		
- New Homes	12.0	41
- Existing Homes	6.4	80
- Multi User	10.1	148
I&C	26.5	148

The length of mains to supply a new home is generally longer than for an existing home as new homes are in new developments or new areas which are further away from the existing gas distribution networks. Similarly, a multi user development is generally a high rise development usually closer to the distribution network than the new homes development. The length of mains to supply I&C customers can be varied as it depends essentially on the location of the customer. However, ECG believes that the assumption used by Envestra is based on historical data. Therefore, based on its industry experience, ECG considers that the unit length of mains used by Envestra to calculate the cost of supply to customers is reasonable.

ECG is aware that the cost of laying gas pipes in new areas is significantly less than the cost in existing areas. In new areas, gas pipes are usually laid together with other utilities' assets and as such the cost of the trench is shared between the utilities. However, in the case of established areas, laying gas pipes have a different set of problems. The problems encountered in established areas including traffic management, reinstatement, other utilities assets and other public safety requirements.

As shown in Table 7-12, the unit cost for supplying new homes is $41/m. Based on its experience, ECG considers that the unit cost for new areas to be efficient.

Table 7-12 also shows that the cost of supplying established customers is $80/m. This cost is approximately twice the cost of supplying new homes. ECG believes that general industry trend has shown that it is reasonable to expect that the cost for established homes can be twice that for new homes. As such, ECG also considers that the unit cost of supplying established homes is also efficient.

However, ECG considers that the unit cost of $148/metre for supplying multi-user customers and I&C customers to be high. This is further supported by the cost from other jurisdictions as shown in the table below.

[73] MMA, Review of Expenditure, Demand Forecasts and Cost Attribution for ActewAGL for ICRC, June 2004
[74] Derived from Att1 – ECG – SA Capex 24102005
[75] Sourced from Table 7-10

Table 7-13: Unit Costs for Multi User and I&C Customers
(Real $ 2005/06 per meter)

	Multi User	I&C
NSW (AGLGN)[76]	77	102
ACT (ActewAGL)[77]	-	64*
Envestra Queensland[78]	-	109

*Note ActewAGL's cost excludes overheads

From the information provided, it is not apparent why the cost should be more than in Queensland, which supplies a smaller market than South Australia and is likely to have lower scale efficiencies than in South Australia.

As such, ECG concludes the following:

- Unit costs for General Mains for new customers and established customers are prudent and efficient. This means that the capital expenditure for these two categories of customers is prudent and efficient.

- Unit costs for multi users and I&C customers are not in accordance with the Code and as such the capital expenditure for these two categories of customers is not prudent and efficient.

Stage Two

As discussed in Stage One, ECG believes that there are no unique circumstances in South Australia that would result in the unit cost for I&C customers being higher than in other jurisdictions. As such, based on the unit cost for I&C mains in other jurisdictions (Table 7-13), ECG considers the efficient unit cost for I&C mains in South Australia should be no more than the $109 per metre as compared to the unit cost of $148 per metre derived from Envestra's data. ECG therefore recommends this unit cost of $109 per metre for I&C customers and for multi-user domestic customers in South Australia.

In its response to ECG's draft report, Envestra commented that the unit cost range for I&C mains should be wider considering the variation in the type of works. As discussed above, ECG believes that its recommended unit cost is appropriate as it is based on the average unit costs experienced in other jurisdictions. These averages are based on the wide variations in customer types in those jurisdictions.

As advised in Stage One, ECG considers the unit costs for Domestic customers in new and existing areas to be efficient. In addition, the unit lengths of main for all domestic and I&C customers are considered reasonable.

The General Mains cost per customer is calculated by multiplying the estimated unit lengths and efficient unit costs. This cost is summarised in Table 7-16. The forecast expenditure pa is then calculated by multiplying the General Mains cost per customer by the number of customers (Table 7-17).

ECG therefore considers that the forecast expenditure in this category from 2006/07 to 2010/11, as presented in Table 7-17, to be prudent and efficient.

[76] ECG report " Review of AGLGN Access Arrangement"
[77] Calculated from Section 11.4.2 of the MMA Review of Expenditure, Demand Forecasts and Cost Attribution for ActewAGL for ICRC, June 2004
[78] ECG's Report on the Envestra Capital and Operating Costs 5 December 2005

Meters

Stage One

ECG has derived from Envestra data (refer Table 7-10) the unit costs[79] of approximately $308 per meter for domestic customers and approximately $2,473 per meter for industrial & commercial customers. As discussed in Section 6.3.4, ECG has obtained the cost of meters from other jurisdictions from its work in NSW, ACT and from the Access Arrangement Review in Victoria. The derived unit meter costs from other jurisdictions are shown in Table 7-14

Table 7-14: Derived Unit Meter Costs ($/meter)

	Domestic	I & C
Victoria	180	6,000
NSW (AGLGN)	180	2,829
ACT (ActewAGL)	140	2,420
Envestra Queensland	180	2,104

Note: The cost for Victoria is taken from the 2002 Draft Access Arrangement. The costs of the other states are from ECG's reviews of the Access Arrangement

ECG notes that Envestra's domestic meter unit cost is higher than in other jurisdictions. WorleyParsons has indicated in its report that Envestra in South Australia is different to other states because it installs the gas meter and regulator in a meter box. In addition, Envestra is also required to carry out a safety check on the fitting line and appliances when it installs the gas meter. ECG has no reason to disagree with WorleyParsons regarding the difference in South Australia compared to other States. However, ECG believes that in spite of the differences, it is unlikely that the cost difference is as large as indicated above.

Based on the above information, ECG concludes that the cost for domestic meters is not efficient.

ECG has carried out a similar review on the unit cost of industrial and commercial meters. From the table above, Envestra's unit cost for industrial and commercial meters is within the range of the other jurisdictions. As such ECG considers the unit cost for industrial and commercial meters is efficient.

Stage Two

Envestra has confirmed[80] that its domestic meter installations include a meter box at a unit cost of [*confidential information removed*] per customer and a fitting line check at a unit cost of [*confidential information removed*] per customer. ECG understands that the installation of a meter box has been an industry practice in South Australia. There is no technical or regulatory requirement for the meter box. However, there is an expectation by the customer that the meter will be installed in a meter box. In relation to the fitting line check, ECG understands that this work has been done at the request of the Office of Technical Regulations (OTR). As such, these practices are unique to the South Australian market.

[79] Derived from Att1 – ECG – SA Capex 24102005
[80] Meeting, Envestra Adelaide offices, 21 November 2005

Based on its gas industry experience, ECG considers the unit prices for the fitting line safety check and the meter box to be efficient.

ECG acknowledges these additional requirements will result in the domestic meter installation cost being higher in South Australia than in other jurisdictions. However as shown in Table 7-14, the unit cost of a meter installation is within the range of $140 to $180. Adding the cost of meter box and a fitting line check will only increase the cost to $240 to $280. This is still lower than Envestra's cost of $308. ECG therefore believes that the efficient cost for a domestic meter should be within the range of the other jurisdictions.

As the cost in Victoria and NSW are similar, ECG has used the cost of a meter installation from these jurisdictions as the base cost and has added the cost of a meter box and a fitting line check to determine the unit cost for South Australia. As such, ECG estimates the efficient cost of a domestic meter connection in South Australia to be $280 per meter, as compared to Envestra's $308.

In its response to ECG's draft report, Envestra comments that ECG has not taken inflation factors into account in determining its benchmark cost. ECG confirms that its efficient estimate has been adjusted for inflation and as such considers that its benchmark cost is comparable.

As advised in Stage One, ECG considers the unit costs for I&C customers to be efficient. ECG has summarised the unit cost per customer for in Table 7-16. The forecast expenditure is then calculated by multiplying the unit cost per customer with the total number of customers as shown in Table 7-17.

ECG considers that the forecast expenditure in this category from 2006/07 to 2010/11, as presented in Table 7-17, to be prudent and efficient.

Services

Stage One

ECG has derived from Envestra data (refer Table 7-10) unit costs[81] of about $733 for domestic customers in new areas and about $1,132 for domestic customers in existing areas. The derived unit cost of services from other jurisdictions is shown in Table 7-15.

Table 7-15: Derived Service Unit Cost ($/service)

	Domestic	I & C
Victoria	na	na
NSW (AGLGN)	731 (new area) 1,305 (existing area)	1,305
ACT (ActewAGL)	750	1,123
Envestra Queensland	750 (new area) 1,300 (existing area)	1,300

Note: The costs of the other states are from ECG's reviews of the Access Arrangement.

As shown in the table above, Envestra's domestic service cost in new and existing areas is comparable to the service costs from other jurisdictions. ECG therefore considers that the domestic service in new and existing areas cost is efficient.

Unlike the domestic services, Envestra has advised a unit cost of about $2,351 for industrial & commercial customers. As can be seen from the table above, the cost is

[81] Derived from Att1 – ECG – SA Capex 24102005

significantly higher than in NSW and ACT. ECG is unable to see why this service cost should vary significantly from other jurisdictions.

ECG concludes that the cost is not efficient.

Envestra advises that the unit cost for multi-user domestic customer is approximately $7,930. Envestra has indicated that there are 147 customers in the forecast period. The total cost for this period is $1.2million. ECG is unable to conclude on the efficient cost at this stage without further information from Envestra on this category of customer.

As such, ECG sought additional information on the number of customer numbers per multi-user service.

Stage Two

Envestra has confirmed [82] that each multi-user service supplies an average of 35 customers. Therefore the unit cost of about $7,930 per multi-user service is equivalent to about $227 per customer. ECG considers this unit cost to be efficient.

Based on the unit cost for I&C services in other jurisdictions shown in Table 7-15, ECG considers the efficient unit cost for I&C services in South Australia should be no more than $1,305 per service, less than the $2,351 derived from Envestra data. It recommends this unit cost of $1,305 per service for I&C customers in South Australia.

As advised in Stage One, ECG considers the unit costs for Domestic customers in new and existing areas to be efficient. Therefore ECG recommends that the expenditure on Services be calculated from its estimated efficient unit costs of service summarised in Table 7-16.

ECG considers that the forecast expenditure in this category from 2006/07 to 2010/11, as presented in Table 7-17, to be prudent and efficient.

Summary

Stage One

Based on the above analysis, ECG considers that Envestra's forecast growth capital for volume customers is not prudent and efficient on the basis that some of the unit costs are higher than in other jurisdictions.

As such, it sought further information from Envestra on the components and unit costs of meters and services.

Stage Two

From the above analysis, ECG has estimated the efficient unit costs for mains, services and meters. Its recommended unit costs for the forecast period are summarised in Table 7-16.

[82] Envestra Document, Reply to ECG Q round , Questions 1.16, 21 December 2005

Table 7-16: Recommended Unit Cost Details

VOLUME CUSTOMERS FACILITY UNIT COSTS	2006/07	2007/08	2008/09	2009/10	2010/11
Domestic New Homes					
General Mains($/metre)	39.82	40.31	40.73	41.18	41.67
General Mains (metre/cust.)	12.00	12.00	12.00	12.00	12.00
General Mains ($/cust.)	478	484	489	494	500
Meters ($/cust.)	280	280	280	280	280
Services ($/cust.)	717	726	733	742	750
Domestic Multi User					
General Mains($/metre)	109	109	109	109	109
General Mains (metre/cust.)	10.05	10.05	10.05	10.05	10.05
General Mains ($/cust.)	1,095	1,095	1,095	1,095	1,095
Meters ($/cust.)	280	280	280	280	280
Services ($/cust.)	7,751	7,847	7,930	8,017	8,112
Domestic Existing Homes					
General Mains($/metre)	78.36	79.33	80.16	81.04	82.00
General Mains (metre/cust.)	6.38	6.38	6.38	6.38	6.38
General Mains ($/cust.)	500	506	511	517	523
Meters ($/cust.)	280	280	280	280	280
Services ($/cust.)	1,106	1,120	1,132	1,144	1,158
Industrial & Commercial					
General Mains($/metre)	109	109	109	109	109
General Mains (metre/cust.)	26.52	26.52	26.52	26.52	26.52
General Mains ($/cust.)	2,891	2,891	2,891	2,891	2,891
Meters ($/cust.)	2,418	2,447	2,473	2,500	2,530
Services ($/cust.)	1,305	1,305	1,305	1,305	1,305

Note: In all tables there may be small arithmetic anomalies due to rounding errors

ECG has used these unit costs to calculate its recommended expenditure on Volume Customer connections for this period, as summarised in Table 7-17. It considers its forecast expenditure for Volume customers from 2006-07 to 2010-11, including General Mains, Meters and Services, to be prudent and efficient. This would reduce the expenditure allowance requested by Envestra for these projects by $5.12million, from $85.86million to $80.74million.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-17: Recommended Volume Customer Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
General Mains	5.38	5.25	4.92	5.19	5.62	26.36
Meters	3.45	3.29	3.06	3.18	3.48	16.46
Services	7.40	7.57	7.17	7.69	8.09	37.92
Total	**16.24**	**16.11**	**15.14**	**16.06**	**17.19**	**80.74**

7.3.4 Extensions to Towns

Stage One

Envestra advises[83] that expenditure in this category is to extend supply to McLaren Vale, Tanunda and the Monarto Industrial Estate and the proposed expenditure is shown in Table 7-18. As no such extensions were undertaken during the first Access Arrangement Period, the proposed expenditure represents a material change to the previous expenditure.

Table 7-18: Extensions to Towns Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
New Townships – Material Changes	1.82	4.13	1.40	1.25	0.33	8.94

ECG has been provided[84] with the economic assessment of the three separate proposals for supply to these towns. These show that in each case Envestra calculates the projects Internal rate of return after 20 years exceeds the 7.3% hurdle rate needed to satisfy the Economic Feasibility test required under Section 8.16 of the Code. In its report, Section 9.3.3.2, WorleyParsons advised this assessment had been based on reasonable assumptions.

The business case presented shows that the revenue exceeds the rate of return expected and as such infers that it is economically viable to extend the gas supply to these towns. However, the business case is only reasonable if the key inputs for the model are considered reasonable. The key inputs to the business case include the revenue, forecast customer number and the costs of the new facilities. ECG considered it is outside the scope of this project to review the assumptions on the revenue stream or the forecast customer numbers. ECG has only reviewed the cost of supply to the new towns.

Envestra has not provided the scope of works for the mains to these new towns and the extent of coverage over a twenty year period. ECG is therefore unable to comment further on the cost of constructing gas mains to these new customers and whether the costs are efficient.

Envestra has estimated that the cost of laying a service pipe to a new domestic customer is $1,131 which is the same as what Envestra has assumed for a domestic customer in an existing area. ECG believes that the new towns project may have other considerations such as availability of resources to do the work and the fact that in new towns services are installed in conjunction with the mains being laid. Both of these factors could influence the costs. Given this situation, ECG is unable to comment on the cost of services without additional information. Similarly ECG believes that additional information regarding I&C customers is required before it can be more definitive on the efficiency of the cost of laying services to the industrial and commercial sector.

In Section 7.3.3, ECG has expressed concern on the cost of the domestic meter unit of $308. Envestra has used the same assumptions for estimating the cost of meter units for these new towns. Unless there are other circumstances not advised currently, ECG can only reaffirm its previous conclusion that it considers this cost to not be efficient.

[83] AAI, Section 7.3, Extensions to Towns, 30 September 2005
[84] Envestra, Excel Spreadsheet, SA Major towns assessment, 3 November 2005

Unlike the domestic meter, ECG concurs with the unit cost of $2,472 for industrial and commercial customers as being efficient.

Based on the above analysis, ECG is unable to conclude that the cost of Extensions to Towns is prudent and efficient.

As such, ECG sought additional information on the scope of works for supply and reticulation mains in each new town. In addition, ECG also sought information on the estimated split between customers in new estates versus in established areas and on the unit costs for services. Where there is likelihood of demand customers, ECG sought information regarding the scope of works to supply these customers.

Stage Two

Envestra has provided additional information[85] [86] about expenditure for Extensions to Towns works. A summary of this follows:

- Scope of works for each of the three areas, Tanunda, Monarto and McLaren Vale, including lengths of supply and reticulation mains are given.
- Expenditure estimates for each type of new facility including supply mains, reticulation mains, city gates, regulators have been provided.
- Unit costs for meters, mains and services for domestic and I&C customers have been confirmed.
- Information on potential demand customers and their loads has been given.
- No customer contributions have been assumed, as Envestra's analysis shows the projects are economic in the absence of such contributions.
- The forecast for new domestic customers includes only existing houses in the proposed areas and does not include growth from new housing.
- It is expected that 95% of existing homes in the proposed areas would be passed by the new gas infrastructure.

ECG has assessed this additional information and advises that the unit costs used by Envestra to estimate its expenditure on these projects are similar to the unit costs Envestra proposes for supply to new Volume Customers. These unit costs were reviewed in Section 7.3.3 on new Volume Customers. Therefore ECG's conclusions on the efficiency of these costs are similar to its conclusions for new Volume Customers. The proposed unit costs and ECG's recommended efficient unit costs are summarised in Table 7-19.

[85] Envestra Email, Final Townships Response, 12 January 2006
[86] Envestra Email, New Towns Assessment Spreadsheet, 13 January 2006

Table 7-19: New Towns Unit Costs

Facility	Envestra (Real $2004/05)	ECG (Real $2005/06)
General Main	$142 to $146 per metre	$109 to $146 per metre
Reticulation Main	$77 to $79 per metre	$77 to $79 per metre
Domestic Meter	$297 to $307 per meter	$280 per meter
I&C Meter	$2,391 to $2,472 per meter	$2,391 to $2,472 per meter
Domestic Service (existing area)	$1,094 to $1,131 per service	$1,094 to $1,131 per service
I&C Service	$2,273 to $2,350 per service	$1,305 per service

Each of the three areas requires new supply and reticulation mains. The lengths of these are specified for Tanunda and McLaren Vale, but no reticulation mains are specified for Monarto. For the purpose of this report, ECG has assumed that 50% of the Monarto general main should be considered to be reticulation main for I&C customers.

ECG has reviewed the general mains costs for all three towns and considers that the cost to be efficient in accordance with the Code (refer Section 7.3.3 for analysis of unit cost)

In addition, ECG's review in Section 7.3.3 considers $77 to $79 per metre to be an efficient cost for domestic reticulation mains. The costs for Tanunda and McLaren Vale are based on similar unit cost. As such, ECG considers the domestic reticulation costs for Tanunda and McLaren Vale to be efficient in accordance with the Code.

The reticulation system for Monarto is essentially for I&C customers only. As such, ECG considers the efficient cost for I&C reticulation mains in Monarto should be $109 per metre, the same as ECG's recommended unit cost for I&C mains for Volume Customers (refer7.3.3).

Envestra indicates that 18,750 metres of supply main are required at Monarto at a unit cost of $143 per metre. ECG considers that 50% of this is I&C reticulation main with an efficient unit cost it estimates at $109 per metre. Based on this ECG considers the proposed expenditure on supply mains to Monarto should be reduced by $34 per metre for 8,375 metres of main, reducing required expenditure by an estimated $285,000.

ECG considers Envestra's unit cost for Domestic Services in existing areas and I&C meters to be efficient. However it considers the unit cost for Domestic Meters and I&C services to be high. Based on Envestra's forecast of 694 domestic and 51 I&C customers connected by 2010/11 and on its estimated efficient unit costs, ECG calculates a small reduction in expenditure of $65,000 for these items.

ECG therefore considers that its forecast expenditure in this category from 2006/07 to 2010/11, as summarised in Table 7-20, to be prudent and efficient. This would reduce the expenditure allowance requested by Envestra for these projects by $0.35million, from $8.94million to $8.59million.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-20: Recommended Extensions to Towns Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
New Townships	1.82	3.83	1.39	1.23	0.32	8.59

7.3.5 Other

Stage One

ECG understands from the Envestra AAI, Section 7.3 that the purposes of this expenditure are:

- to remove sub meters from properties
- to provide higher capacity meters needed for high flow hot water heaters

The expenditure is summarised in Table 7-21.

Table 7-21: Other Capital Expenditure, 2006/07 to 2010/11
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Other	0.14	0.14	0.14	0.14	0.14	0.70

Note: In all tables there may be small arithmetic anomalies due to rounding errors

As explained in Section 6.3.6, this cost is partially related to the growing demand for continuous hot water units. ECG is not aware of the circumstances for provisioning to continuously remove sub meters.

In view of the lack of details regarding the above activities, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought additional information on the number of meters to be removed or upgraded and the scope of works and costs for any other types of expenditure included in this category.

Stage Two

Envestra has provided further clarification and additional information about expenditure for Other works. It advises[87] that:

- It has allowed approximately $50,000pa to remove or upgrade sub-meters allowing about $2,000 per site. This work involves alterations to the service pipes, conversion of the check meter to a standard meter and usually requires connection to properties some distance from the supply main. About 250 properties require this work to be done.
- It has allowed approximately $80,000pa to provide about 60 high capacity meters per month for instantaneous hot water systems.
- It has not advised any other expenditure for Other works

ECG advises that due to the need to provide a significant length of service to those sites currently supplied from a sub-meter installation, it considers the unit cost for sub-meter removal is efficient. It also concurs with the plan to upgrade those sites at a rate of about 25pa as proposed by Envestra.

[87] Envestra Document, Reply to ECG Q round , Questions 1.17, 20 December 2005

As advised in Section 6.3.6, it considers the forecast expenditure of $80,000pa on high capacity meters to be prudent and efficient.

Therefore ECG considers that the forecast expenditure in this category from 2006/07 to 2010/11, as summarised in Table 7-22, to be prudent and efficient.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-22: Recommended Other Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Other	0.14	0.14	0.14	0.14	0.14	0.70

7.4 STAY IN BUSINESS

As discussed in Section 6.4, Stay in Business expenditure is related to activities to maintain the ongoing operation of the networks such mains replacement and periodic meter changes. Expenditure in real $ 2005/06 in each of the categories for Stay in Business projects is summarised in Table 7-3 and provides the basis for the reviews presented in the following Subsections 7.4.1 to 7.4.6.4.

7.4.1 Mains Replacement

Stage One

Envestra has provided data[88] on the unit cost in nominal $ for replacing mains ($/metre) and on the length of mains proposed for replacement in each year of the forecast period. For analytical purposes ECG has calculated the renewals unit costs in real $ 2005/06 and these are as summarised in Table 7-23, based on the inflation factor of 2.5%pa advised by the Commission[89].

The capital expenditure for mains renewal as shown in Table 7-3 has been calculated using the unit cost and lengths in Table 7-23.

Table 7-23: Mains Renewal Capital Expenditure Details, 2006/07 to 2010/11

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Length to be replaced (metres)	104,498	100,734	92,507	94,500	103,080	495,318
Renewals Unit Cost ($ per metre)	86	87	88	89	90	-
Mains Renewal Expenditure ($ mill. 2005/06)	**9.00**	**8.79**	**8.15**	**8.42**	**9.30**	**43.66**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

[88] Envestra, Excel Spreadsheet, SA Capex, 24 October 2005
[89] ESCOSA Email, 6 October 2005

In Section 7.2 of Envestra 2005 AAI, Envestra advises that it was previously replacing up to 200kms per annum under its accelerated replacement program. Following a reduction in UAFG, it then reduced the mains renewal to 50kms per year in 2002/03. Envestra now considers that a mains renewal rate of 75km pa is necessary to maintain existing UAFG volumes but a mains renewal rate of approximately 100km pa as proposed in its asset management plan[90] would be prudent to reduce UAFG volumes.

In its Asset Management Plan, Section 5.2.11 Envestra advises that the program that makes up approximately 745km of mains could be economically replaced in the forecast period, as the program achieves the required rate of return. However it advises this high volume of work is not optimal for labour resourcing and therefore Envestra proposes to reduce its program to replace about 500km in five years.

With a 100km pa planned renewal rate Envestra forecasts UAFG volumes to decline to the levels shown in Section 9.6 of its AAI and shown in Table 7-24. If this planned renewal rate is maintained Envestra advises that all cast iron pipes in the network would be eliminated by the year 2023, in about 18 years.

Table 7-24: Forecast UAFG Volumes, 2006/07 to 2010/11

	2006/07	2007/08	2008/09	2009/10	2010/11
UAFG Volume (TJ)	1,606	1,591	1,575	1,560	1,547

ECG is aware that the general industry trend is to replace cast iron mains and unprotected steel mains over a 20 to 40 years timeframe. Mains that are in the worst conditions are given the highest priority. Envestra's program of 100kms pa means that the replacement of the cast iron and unprotected steel mains will be completed in 18 years. As Envestra has already been replacing these mains for a number of years, Envestra's timeframe to totally remove all of these mains is within the industry range.

In addition, ECG is concerned whether there are sufficient resources to renew at 100kms per year (or 500kms over 5 years) as Envestra is currently only renewing at approximately 50kms per year. At the meeting on 21 November, Envestra indicated that it has previously renewed at 200kms pa and as such the planned renewal rate of 100kms pa is achievable.

To determine the reasonableness of the financial model used to justify the mains renewal projects, ECG has reviewed a sample of five projects[91]. The projects chosen are in excess of $0.5million and due for completion in the forecast period 2006/07 to 2010/11. ECG concluded that based on the savings in operating costs and the reduction in UAFG, each project exceeds the required hurdle rate of return (regulatory WACC). Therefore ECG considers the financial justification model to be reasonable.

The WorleyParsons' report indicates that the current data on the operating costs associated with leak repairs in each renewal area is used to establish the operating cost savings for each renewal project. ECG accepts what WorleyParsons has said and on that basis, accepts that the estimated operating costs savings used in the financial models are reasonable.

One of key inputs into the financial model is the leakage reduction rate per km of mains renewed. In Envestra's report, titled "SA UAFG Volume Forecast 23 November 2006", it advises that the average leakage rate for cast iron and unprotected steel has been determined. However, there is no other comment on how this leakage rate has been derived. ECG believes that this information is necessary to understand the basis for the estimates of UAFG reduction used in the financial model.

[90] Envestra Asset Management Plan page 50
[91] Envestra spreadsheet, SA Mains Replacement Summaries II

As such to assist ECG to finalise its conclusion on the prudence of the mains renewal project,, ECG sought additional information (Section 6.4.1) to understand how the leakage rate reduction per km of mains renewed has been determined for projects.

In addition, Worley Parsons has advised[92].that there has been a change in policy by Envestra, to expense short length repairs from 2006/07 instead of the previous policy to capitalise these. This has the potential to affect the efficient amount of capital expenditure for mains renewals in the forecast period. ECG therefore sought clarification of the application of this new policy to assist it in determining the prudence and efficiency of the mains renewal expenditure.

In summary, ECG considers:

- The extent of program to prevent any increase in UAFG to be reasonable.
- The financial processes used to justify projects to be reasonable,
- Estimated maintenance savings due to renewal works to be reasonable.

In regard to the UAFG process, ECG sought information on how the leakage rate has been derived and a clarification on the policy of expensing short length mains renewals in the forecast period.

Stage Two

Envestra has provided further clarification and additional information about expenditure for Mains Replacement works.

It advises[93] [94] that:

- The forecast expenditure on mains replacement for the period 2006/07 to 2010/11 is for planned replacement only and excludes short length replacements. This represents a change in approach to that used in the current period 2001/02 to 2005/06 where the total mains replacement expenditure includes short length replacements.
- It is planning to expense short length renewals from 2006/07.
- An average leakage rate per km of main replaced is appropriate for evaluating the economics of replacing mains in various suburbs; due to the high incidence of small leaks from most joints in the cast iron network (A more detailed explanation of this has been provided).
- Its estimated expenditure on short length renewals averages $1.14million pa (nominal $) for the period 2006/07 to 2010/11, based on historical costs and accounting for forecast increases in replacement costs such as traffic management costs.

In its detailed explanation as to why an average leakage rate per km of main replaced has been used to estimate UAFG savings due to the planned renewals program, Envestra advises that from its experience, leakage is fairly uniform across the cast iron and unprotected steel sections of its networks. Most leaks are small and undetected by the public, occurring typically at thousands of cast iron joints.

[92] WorleyParsons Report, Section 10.1.2.4, September 2005
[93] Document, Reply to ECG Q round 2, Questions 2.7&3.4, 20 December 2005
[94] Email, Responses to ECG Questions, 23 December 2005

ECG acknowledges that given the lack of detailed information, it is reasonable to use an average leakage rate to justify the mains renewal projects. However, it is worth noting that in areas of high leakage rates the UAFG savings could be understated which would affect the overall savings in UAFG.

The renewals program proposed for years 2006/07 to 2010/11 is approximately 500km. As ECG concurs with the model used to determine the projects, ECG considers the mains renewal projects planned for 2006/07 to 2010/11 are prudent.

ECG has determined from Envestra data that the forecast expenditure on short length renewals in the forecast period 2006/07 to 2010/11averages about $1.07million pa (real $ 2005/06). Envestra advises that the short length renewals expenditure is based on historical costs. Therefore ECG considers it is reasonable to expect that the short length renewals expenditure in the current period 2001/02 to 2005/06 is also about $1.07million pa (this is used to review the expenditure for the current period, 2001/02 to 2005/06, in Section 6.4.1).

As the short length renewals expenditure is to be expensed, ECG considers the forecast capital for mains replacement expenditure should be for planned renewals only. This should be calculated based on the efficient unit cost for mains renewals. ECG calculated this to be $65 per metre for the current period (refer Section 6.4.1) and considers this unit cost should apply for the forecast period.

In its response to ECG's draft report, Envestra commented that its expenditure is based on a unit cost of $85. Envestra further advises this rate is based on the proposed renewal program including the Adelaide CBD which is relatively more costly to renew. Excluding the CBD, Envestra's unit rate is consistent with ECG's estimate.

In Envestra's Asset Management Plan, the Adelaide CBD is ranked 42nd in order of priority. The Plan includes some proportion of the CBD to be renewed in the forecast period. However, given the low priority for the Adelaide CBD renewal, ECG considers that the CBD renewal will form only a small proportion of the total renewal program. As such, ECG considers that its recommended unit cost to be appropriate.

ECG therefore estimates the total renewals expenditure in the forecast period should be as given in Table 7-23, calculated from the lengths of main planned for renewal each year.

ECG considers that its forecast expenditure for planned mains renewals from 2006/07 to 2010-11, as summarised in Table 7-25, to be prudent and efficient. This would reduce the expenditure allowance requested by Envestra for these projects by $11.57million, from $43.66million to $32.19million.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-25: Recommended Planned Mains Renewal Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Planned Mains Renewal	6.79	6.55	6.01	6.14	6.70	32.19

7.4.2 Periodic Meter Changes

Stage One

Envestra has provided data[95] on the unit cost in nominal $ for replacing domestic and Industrial & Commercial meters under its periodic meter change program (PMC) and on the numbers of meters proposed for replacement in each year of the forecast period. For analytical purposes ECG has determined the unit costs in real $ 2005/06 and these are as summarised in Table 7-26 based on the inflation factor of 2.5%pa advised by the Commission.

The capital expenditure on these items as presented in Table 7-3 was determined based on these numbers and unit costs and is restated in Table 7-26.

Table 7-26: Periodic Meter Changes Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Domestic						
Meter Numbers	35,192	35,951	34,168	32,398	27,157	164,866
Unit Cost ($ per meter)	99	101	102	103	104	-
I&C						
Meter Numbers	816	621	935	936	858	4,166
Unit Cost ($ per meter)	1321	1337	1351	1366	1382	-
PMC Expenditure ($ mill. 2005/06)						
PMC - Domestic	3.50	3.62	3.48	3.33	2.83	16.76
PMC - I&C	1.08	0.83	1.26	1.28	1.19	5.64
Total	**4.58**	**4.45**	**4.74**	**4.61**	**4.02**	**22.40**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

As discussed in Section 6.4.2, ECG considers both the domestic meter unit cost and the industrial and commercial unit cost to be efficient.

Also discussed in Section 6.4.2, no information has been provided why the number of PMC domestic and industrial and commercial meters should significantly increase in 2005/06 and continue on that level through the next period. In addition, ECG is unaware how Envestra has factored in the possibility of the meter field life extension program.

In view of this, ECG is unaware of how Envestra has derived its meter volumes for the forecast period.

Due to the lack of details regarding the above meter volumes, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient in accordance with the Code.

As such, ECG sought additional information on how Envestra has derived the PMC meter replacement volume for domestic and I&C customers.

[95] Envestra, Excel Spreadsheet, SA Capex, 24 October 2005

Stage Two

Envestra has advised[96] that "*replacements rise significantly over 04/05 figures due to the age profile of domestic meters, which has a step change post 2004/05, and an increasing ageing population over the next five years. The replacement numbers are estimated based on the age profile of meters and how this compares with the standard statutory life of the specific meters, taking into account those meters that have already been repaired once.*"

Replacement of meters is a compliance issue. As such, ECG accepts Envestra's estimates of the number of meters as valid. ECG therefore considers that the forecast expenditure in this category from 2006/07 to 2010/11, as summarised in Table 7-27, to be prudent and efficient.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-27: Recommended Periodic Meter Change Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
PMC - Domestic	3.50	3.62	3.48	3.33	2.83	16.76
PMC - I&C	1.08	0.83	1.26	1.28	1.19	5.64
Total	**4.58**	**4.45**	**4.74**	**4.61**	**4.02**	**22.40**

7.4.3 Security of Supply

Stage One

Envestra advises[97] that expenditure in this category is to "*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*". The proposed expenditure for these projects is summarised in Table 7-28. The key security of supply projects are the Eastern Ring Main, reinforcement of supply to Northern Gawler and completion of the Southern Loop.

Envestra also advises that it has undertaken relatively little expenditure on such projects in recent years, therefore these projects represent a material variation in expenditure. In the meeting on 21 November 2005, Envestra discussed the details of the key projects and in particular the Eastern Ring Main.

Table 7-28: Security of Supply Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Security of Supply – Material Changes	3.95	7.58	6.07	12.59	13.34	43.54

[96] Envestra Email, SA AA CAPEX - Meters- Serv-PMC, 11 January 2006
[97] AAI, Section 7.2, Security of Supply, 30 September 2005

ECG acknowledges that WorleyParsons indicates[98] in its report that it has identified 16 load growth reinforcement projects, 4 strategic replacement projects and 10 security of supply projects in this expenditure category. It advises that Envestra has determined the need for these projects through its Network Planning and Risk Management processes.

WorleyParsons advises it has reviewed eight network capital expenditure proposals and considered the proposals are based on an adequate level of investigation of alternatives, have soundly based cost estimates, and will significantly improve the security of supply in Adelaide which is currently relatively low in comparison with that in other locations.

Given the total expenditure for the projects makes up approximately 18% of the expenditure for the forecast period, ECG considers that it is appropriate to review detailed information on at least the top five projects before it is can recommend that the expenditure is prudent and efficient. It should be noted that Envestra has offered to provide information on these projects at the meeting on 21 November 2005.

As such, ECG sought additional information scope of works, costs and justifications for five projects including Eastern Ring Main, Northern Gawler and Southern Loop. In particular, ECG sought information on alternatives considered for the above projects and the risk assessment carried out to justify these projects.

Stage Two

Envestra met with ECG on 19 December 2005 to discuss the major projects. At the meeting, Envestra clarified the requirements of the projects and provided additional information in support of these projects. The documents provided include a summary of the Security of Supply Risk Assessment process[99], a network augmentation projects summary[100] detailing the scope, benefits and costs of all Network Augmentation projects for the period 2006/07 to 2010/11 and Network Capital Expenditure Proposal documentation for several projects[101].

Envestra has also advised [102]that its list of Network Augmentation projects includes both Security of Supply projects (forecast to cost more than $500,000 each, and reviewed in this Section 7.4.3) and Improve Supply projects (forecast to cost less than $500,000 each and reviewed in Section7.3.2).

ECG has analysed the list of projects and allocated them to the Security of Supply and Improve Supply categories based on the $500,000 threshold advised by Envestra. It has derived the expenditures in each category to be as summarised in Table 7-29. Details of five major and the combined other seven security of supply projects are also provided. For analytical purposes ECG has converted the nominal $ to real $ 2005/06 as summarised in Table 7-30

[98] WorleyParsons' Report Section 9.2.1
[99] Origin Energy Security of Supply Risk Assessment Process Presentation, 21 December 2005
[100] Envestra's email, Actions from 19/12 Network Augmentation Meeting, 10 January 2006
[101] Envestra Network Capex Proposal Documents, Projects 34,36,37,42,46,47,53&54, December 2005
[102] Envestra email, ECG Question 1.12, 12 January 2006

Table 7-29: Network Augmentation Capital Expenditure, 2006/07 to 2010/11 (Nominal $ million)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Improve Supply	**0.70**	**0.65**	**0.12**	**0.12**	**0.13**	**1.72**
North Central Suburbs	0.00	1.14	1.15	1.18	0.90	4.36
Outer Harbour	0.49	0.51	0.52	0.54	0.55	2.61
Eastern Ring Main	0.00	0.00	0.00	8.29	8.54	16.83
Southern Loop	0.00	4.02	4.14	0.00	0.00	8.16
Gawler	2.14	0.00	0.00	3.15	3.25	8.54
Other	1.42	1.70	0.00	0.75	2.36	6.23
Total Security of Supply – Material Changes	**4.05**	**7.37**	**5.80**	**13.90**	**15.60**	**46.72**
Total Network Augmentation	**4.75**	**8.01**	**5.92**	**14.02**	**15.73**	**48.44**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

For the purpose of the analysis, ECG has converted the table to real $ 2005/06.

Table 7-30: Network Augmentation Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Improve Supply	**0.69**	**0.62**	**0.11**	**0.11**	**0.11**	**1.64**
North Central Suburbs	0.00	1.09	1.06	1.07	0.79	4.01
Outer Harbour	0.48	0.48	0.48	0.49	0.49	2.42
Eastern Ring Main	0.00	0.00	0.00	7.51	7.55	15.06
Southern Loop	0.00	3.83	3.84	0.00	0.00	7.67
Gawler	2.08	0.00	0.00	2.85	2.87	7.81
Other	1.39	1.62	0.00	0.68	2.09	5.77
Security of Supply – Material Changes	**3.95**	**7.01**	**5.39**	**12.59**	**13.79**	**42.73**
Total	**4.64**	**7.63**	**5.50**	**12.71**	**13.90**	**44.37**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

There are anomalies between the Security of Supply cost (real $2005/06) data in Table 7-30 (total $42.73million) and that presented in Table 7-28 (total $43.54million). ECG considers the data in Table 7-30 to be correct as it is based on a list of specifically identified projects and includes a reduction of $737,000 (nominal) in the forecast expenditure for 2008/09 as advised by Envestra[103].

As discussed in Stage One before ECG concludes on the prudence and efficiency of the Network Augmentation (Security of Supply) projects, ECG has reviewed the five most material projects. All costs given in this review are in real $ 2005/06.

[103] Envestra email, Actions from 19/12 Network Augmentation Meeting, 10 January 2006

Eastern Ring Main and Southern Loop Projects

Whilst the Eastern Ring Main and the Southern Loop projects are discrete projects, they are required primarily to increase capacity to supply areas of southern Adelaide which are predicted to have insufficient capacity to supply forecast loads by winter 2008[104]. ECG has calculated from Envestra data the estimated expenditures for these projects to be $15.1million for the Eastern Ring Main (ERM) and $7.7million for the Southern Loop Project (SLP).

Based on the forecast load growth in southern Adelaide, Envestra estimates that there will be capacity issues in 2008. Envestra indicates that the ERM project alone will provide sufficient extra capacity to supply about 4 years load growth. This means that if the ERM is completed by winter 2008, it would be sufficient to meet the increased demand for the winter periods 2008 to 2011 However, the ERM could take as long as 4 years due to the protracted planning and community consultation processes needed to obtain an appropriate pipeline licence and other essential permits to construct a transmission pipeline through the affected suburban areas. As Envestra proposes to commence the project in 2006 the ERM may not be completed until 2010. This means that the ERM project will not be able to augment the gas demand for 2008.

To meet the capacity requirements in 2008, Envestra proposes first to complete the SLP. Envestra indicates that the SLP project alone will provide sufficient extra capacity to supply about 2 years load growth. The SLP will commence at the same time as the ERM and will be completed before winter 2008, providing sufficient capacity for winter 2009 but not for winter 2010. The ERM will be completed by winter 2010. Envestra advises that the combined capacity of the SLP and the ERM is sufficient to meet the gas demand until about year 2020 based on current growth projections.

Envestra advises these are the most viable options available to maintain adequate capacity in the system. It has rejected an option to provide a new supply from the SEAGAS pipeline east of Adelaide as too expensive. In addition an option to stage the ERM by initially constructing about half of it and connecting this via a 150mm branch to the refinery main has been assessed. This has been rejected as even in combination with the SLP it does not provide sufficient capacity to supply forecast loads in winter 2011[105].

Envestra has also indicated that additional benefits for its proposed projects are:

- The ERM provides security of supply to over 100,000 customers.
- The SLP provides security of supply to over 5,000 customers.
- The projects provide an alternative supply main to the present Refinery Main (RM) facilitating maintenance, repairs or alterations to this key transmission pipeline. These are considered likely to be needed, as other transmission pipelines that were built to a similar past standard to that of the RM and carried gas of similar past quality are known to be in poor condition and are planned to be downgraded.

ECG has reviewed the proposals and considers that:

- Due to the gas demand in 2008, there is a need to provide additional supply to south Adelaide.
- Given the complexity of such transmission projects through suburban areas, Envestra's construction time table for the ERM and the SLP is reasonable.

[104] Origin Energy Email, Southern Loop Timing, 22 December 2005
[105] Envestra email, Actions from 19 December Augmentation Meeting, 21 December 2005

- Options to defer augmentation as long as possible have been implemented over a period of years, and there are no realistic further low cost options available. As the sources of gas are all north of Adelaide, major projects and expenditure are required to increase the capacity of the existing transmission system to supply the new customers south of Adelaide.

- The increase in capacity provided by the combined proposed schemes is adequate to supply forecast load growth until about year 2020.

The ERM consists of 16kms of 300mm transmission pipeline at a total cost of $15.1million. This translates to a unit cost of $943 per metre. In addition, the SLP consists of 10kms of 300mm transmission pipeline at a total cost of $7.7million. This translates to a unit cost of $770 per metre. Envestra advises that the cost estimates have been prepared following consultation with experienced contractors.

ECG acknowledges that the construction of transmission pipeline through suburban areas is very complex and the cost of construction can only be accurately estimated following a detailed investigation of the pipeline route. However, ECG is aware of two projects in NSW and Queensland that also involve transmission pipelines through suburban areas. The AGL's Primary Loop Project is a 500mm pipeline that duplicates a section of the main supply to Sydney. The unit cost of the transmission pipeline is $1,700 per metre[106]. The Allgas South Coast Project is a 200mm pipeline supplying part of the Gold Coast. The unit cost of the transmission pipeline is $570 per metre[107] in highly built up areas.

As Envestra's cost is within the range of both AGL's and Allgas' unit costs, ECG considers the unit cost for constructing the pipeline to be efficient.

In relation to the proposal to construct the ERM and SLP, ECG considers that given the forecast gas demand, it is reasonable to construct the SLP by winter 2008 and the ERM by winter 2010.

ECG therefore considers that the expenditure of $22.8million, consisting of $7.7million for the Southern Loop project and $15.1million for the Eastern Ring Main Project to be prudent and efficient.

Gawler Transmission System Augmentation Project

This project is primarily to increase capacity to supply areas around Gawler which are predicted to have insufficient capacity to supply forecast loads in winter 2010. ECG has calculated from Envestra data the expenditure for this project to be $7.8million, including $1.8million for a new City Gate Station and $6.0million for 11.5km of 150mm steel transmission pipeline from Kudla to Willaston, at a unit cost of $522 per metre.

Envestra advises that the additional benefits for this project are:

- The City Gate Station provides security of supply to over 50,000 customers.

- The pipeline provides security of supply to over 5,000 customers.

- The City Gate Station provides a supply point for gas from the SEAGAS pipeline to directly supply the industries in northern Adelaide.

- The pipeline provides capacity to supply a new 5,000 site domestic allotment north east of Gawler but not likely to be developed until beyond the next five year time

[106] ECG' Report on AGLGN Total Cost 04 August 2004
[107] ECG's Report on the Allgas Capital and Operating Costs 4 December 2005

frame. It also provides capacity to supply adjacent industrial customers which have had their recent connection requests rejected due to lack of capacity.

- [*confidential information removed*]. This would also improve security of supply to the Riverland pipeline.

Envestra considers this project as the best option because:

- The alternative location for a new City Gate station at Angle Vale would also require 6.5km of 150mm steel main at an estimated cost of $5million in comparison with the $1.8million for the proposed City Gate.

- The alternative supply from a new city gate station off the AMCOR lateral and a high pressure trunk main would cost an estimated $3.5million. However it is unlikely there is sufficient available capacity in the AMCOR lateral to supply the forecast load, and this scheme does not have the same security of supply benefits to the Gawler area and potential benefits to the Riverland pipeline [*confidential information removed*] as the proposed pipeline.

ECG has reviewed the proposal and considers that:

- The project should be completed in time to overcome capacity limitations expected in winter 2010.

- The City Gate Station and transmission pipeline extension proposed by Envestra are suitable projects for overcoming the expected capacity limitations in Gawler.

- Envestra's alternatives to the proposed scheme are less suitable than the recommended scheme.

- The estimated unit cost of $522 per metre for the proposed 150mm transmission pipeline is in the range that would be considered efficient for the developing area in which the main is to be laid.

However, ECG considers there is an option for staging the proposed transmission pipeline extension and deferring part of the proposed capital expenditure. This option has not been assessed by Envestra. This would require constructing about half of the proposed 11.5km of 150mm pipeline from Kudla to Willaston, and providing a connection to an existing branch of the Gawler high pressure network. ECG estimates from Envestra cost data that this work plus the City Gate station could be completed for about $5million.

If implemented ECG considers this would defer the remaining expenditure (approximately $2.4million) until the next Access Arrangement period commencing in July 2011. It is consistent with providing supply to the proposed 5,000 site domestic development expected to be needed in the Access Arrangement period commencing in July 2011, while not providing capacity earlier than necessary. It would provide the other benefits advised by Envestra, with the possible exception of access to the expanded gas supply for some potential industrial customers.

The deferred portion of the project would then be implemented at a time to be determined in a few years, after a review of the forecast growth rate and the performance of the system at that time.

In its response to ECG's draft report, Envestra indicated that it considers that there is insufficient capacity for the forecast load in the next (post 2010/11) Access Arrangement period. ECG considers that due to normal forecasting uncertainties associated with predicting loads so far ahead there is no compelling reason why the work should be carried out in the Access Arrangement period. ECG believes that the work can be

deferred until the next Access Arrangement period when there is a greater degree of certainty related to forecasting information.

ECG recommends that the expenditure that is prudent and efficient for this project be ECG's estimate of $5.0million, consisting of $1.8million for the City Gate Station and $3.2million for part of the transmission pipeline. This would reduce the expenditure allowance requested by Envestra for this project by $2.8million, from $7.8million to $5.0million.

Outer Harbour – Transmission Trunk Main

This project is primarily to provide capacity to supply areas between Osborne and Outer Harbour where significant industrial, commercial and residential load growth is forecast to occur over the next five years, particularly industrial load associated with the Australian Submarine Corporation's Navy destroyer contract. ECG has calculated from Envestra data the estimated expenditure for the proposed 5km of 150mm steel transmission pipeline to be $2.4million, at a unit cost of $480 per metre.

Envestra advises that the main additional benefit for this project is that it will improve the security of supply to 2,000 existing customers in the surrounding areas.

Envestra has considered an alternative proposal to extend the network with a high pressure PE main, with a potential reduction in costs of approximately $1million. However it advises that the transmission pipeline option would be more appropriate for new loads in excess of 2,000m3/hr.

[*confidential information removed*]

Envestra has considered a longer pipeline to provide capacity into more distant locations at Outer Harbour but considers the justification for this to be insufficient. Other projects providing minor local capacity increases are also possible but are inadequate to supply the potential load.

ECG has reviewed the proposal and considers that due to the high development potential in the area and the high profile of the development activities, the transmission pipeline option proposed by Envestra is the most appropriate option for this project with its high potential loads.

ECG has reviewed the detailed cost estimates provided by Envestra. Based on its experience, ECG considers the estimated unit cost of $484 per metre for the proposed 150mm transmission pipeline to be efficient for the suburban / industrial development areas in which the main is to be laid.

ECG therefore considers that the expenditure of $2.42million for this project is prudent and efficient.

North Central Suburbs - Grand Junction Rd Stages 1 to 3

This project is primarily to provide security of supply to an estimated 20,000 customers currently supplied from transmission, high and medium pressure networks in the north east suburbs. It provides 3.5km of 200mm steel main, 1.8km of 150mm steel main and 8 district regulators at an estimated cost calculated by ECG from Envestra data to be $4.0million. It is planned for completion in 3 stages. Stage 1 is estimated at $1.1million, Stage 2 at $2.15million and Stage 3 at $0.75million.

Envestra advises that additional benefits for the proposed project are:

- The total project provides scope for possible future downgrading of the Yatala Vale Rd transmission pipeline. This may become necessary if the current history of repairs and corrosion faults continues.
- Stage 1 provides security of supply to a hospital and major retail shopping complex.
- Stage 2 provides strategic replacement of a medium pressure cast iron main expected to require replacement within 10 years.
- Stage 3 provides strategic replacement of a medium pressure cast iron main expected to require replacement within 5 to 10 years.
- Each stage provides capacity augmentation expected to be required after year 2011.
- Each stage will reduce the operating pressure in medium pressure cast iron mains, reducing environmental gas emissions.
- Each stage will reduce the consequences of possible third party damage to pipelines, which are considered to be at increased risk due to new estates being located in close proximity to the primary transmission supply pipeline.

Envestra has considered alternatives but advises that the network configuration does not allow for the installation of additional regulators to reinforce or improve the security of supply. It also advises that other short term options for local security enhancements are not suitable as they do not lead to the strategic goal of improving security of supply to the 20,000 customers supplied from the existing transmission pipeline.

ECG has reviewed the proposals and supports and considers that the scope of works for the three stages will achieve the benefits advised by Envestra. ECG calculates from Envestra's detailed cost estimates that the unit cost for the 150mm and 200mm steel mains are $627 and $735 per metre. It considers these unit costs are efficient for the suburban areas through which the mains are to be laid.

However ECG considers there is insufficient justification to complete the three stages of work in the forecast Access Arrangement period from 2006/07 to 2010/11 because:

- Capacity augmentation is not required until after year 2011.
- Cast Iron mains proposed for replacement in stages 2 and 3 are not expected to need replacing for 5 to 10 years.

ECG recommends that stage 1 of the proposed works be completed in the period from 2006/07 to 2010/11, but that stages 2 and 3 are deferred until the following Access Arrangement period.

In its response to ECG's draft report, Envestra advises that a section of the cast iron main in question experienced brittle fracture and the exclusion of stage 2 from the forecast period would increase risks to an unacceptable level. In the absence of a formal risk assessment and evidence that the condition of the remaining Stage 2 cast iron mains has deteriorated and warrants replacement within five years, ECG considers that its recommendation is appropriate.

ECG therefore recommends that the expenditure that is prudent and efficient for this project be its estimate of $1.1million for stage 1. This would reduce the expenditure

allowance requested by Envestra for these projects by $2.9million, from $4.0million to $1.1million.

Other Augmentation Projects

These consist of 7 priority 1, 2 and 3 projects spread over the 5 years of the forecast period. These have been identified by Envestra as Virginia, Kidman Park, Mt Gambier, Brighton, MAP – SEAGas Interconnector, Largs Bay and Magill. ECG has calculated from Envestra's data the total cost to be $5.8million (real $ 2005/06).

The proposed scope, benefits and costs for each project have been outlined by Envestra. They are consistent with Envestra's Asset Management Plan with:

- Priority 1 projects principally to maintain adequate capacity for network growth.
- Priority 2 projects principally to facilitate mains replacement and network optimisation.
- Priority 3 projects principally to reduce the risk of disruption to supply.

The estimated mains unit costs for all the projects are in the range of $200 to $400 per metre. Based on its experience, ECG considers the unit cost to be efficient in accordance with the Code.

From the description of the benefits provided by Envestra, ECG considers all the projects to be reasonable. However it is unclear why the three priority 3 projects should be planned for 2009/10 and 2010/11.

The three priority 3 projects are:

- Largs Bay in 2009/10
- The MAP – SEAGas Interconnector in 20010/11
- Magill in 2010/11

By having two priority 3 projects in 2010/11, the expenditure has increased from $0.68million in 2009/10 to $2.09million in 2010/11, a three fold increase (refer Table 7-30). ECG therefore believes that given that these projects are the lowest priority, a prudent operator will not necessarily plan to complete more than one a year. This will help to smooth a network operator's expenditure commitments per annum. From the information provided and the discussions with Envestra on 19 December 2005, ECG believes that the project that can be deferred into the Access Arrangement period commencing 2012 is the Magill project which costs $1.1million.

ECG considers the expenditure for the other Security of Supply projects that is prudent and efficient is $4.7million. This would reduce the expenditure allowance requested by Envestra for these projects by $1.1million, from $5.8million to $4.7million.

Summary

ECG considers that its forecast expenditure in this category from 2006/07 to 2010/11, as summarised in Table 7-31, to be prudent and efficient.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11. This would reduce the expenditure allowance requested by Envestra for these projects by $7.68million, from $43.54million to $35.86million. This reduction includes about $0.74million advised[108] by Envestra due to the double counting of the Largs Bay project in the AAI submission.

Table 7-31: Recommended Security of Supply Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
North Central Suburbs	0.00	1.09	0.00	0.00	0.00	1.09
Outer Harbour	0.48	0.48	0.48	0.49	0.49	2.42
Eastern Ring Main	0.00	0.00	0.00	7.51	7.55	15.06
Southern Loop	0.00	3.83	3.84	0.00	0.00	7.67
Gawler	2.08	0.00	0.00	2.85	0.00	4.95
Other	1.39	1.62	0.00	0.68	0.99	4.67
Security of Supply – Material Changes	**3.95**	**7.01**	**4.22**	**11.53**	**9.03**	**35.86**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

7.4.4 SCADA (Telemetry)

Stage One

The SCADA capital expenditure shown in Table 7-3 is summarised in Table 7-32.

Table 7-32: SCADA Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
SCADA	1.25	1.26	0.64	1.11	0.71	4.97

In its paper "SA Networks – Pressure Surveillance & Control"[109], Envestra outlines its strategy in the forecast period to extend its SCADA (Supervisory Control and Data Acquisition) system to improve its monitoring of the networks and also to be able to control some critical regulator and valves sites.

The reasons that Envestra has put forward to justify the increase SCADA equipment can be grouped as follows:

- Early warning of equipment failure e.g. filter blockage in regulating installations.

[108] Envestra Email 10 January titled "Action from 19/12 Network Augmentation Meeting
[109] Att 2 SA SCADA improvement project 202005

- Risk mitigation – monitoring of critical sites to avoid loss of supply to large areas and over pressuring networks through equipment failure.

- Validation of computer network models – more accurate information for network analysis to determine scope and timing of augmentation projects.

- Reduction of leaks in the medium pressure cast iron system.

Envestra has included a base cost[110] to continue with the upgrading of its existing sites of approximately $1million over five years. In addition, the cost for implementing its SCADA strategy is approximately $3.8m over five years.

The proposed program includes:

Table 7-33: Details of Proposed SCADA Program

	Sites
Provide telemetry pressure surveillance	70
Data Logging to regulator sites	60
Fringe point monitoring	100
Remote control to MP supply regulators	18
Remote control to critical supply regulators	26
Remote control to critical valves	10
Total	**284**

The average cost per site is $13,400[111]. Based on its experience, ECG is aware that the cost of installation of SCADA equipment could vary considerably. A simple site could cost $5,000 to a more complicated site of $20,000. ECG believes that an average cost of $13,400 is efficient.

Envestra's paper has outlined the benefits but has not shown any evidence that there is a need to mitigate such risks or that it has carried out risk assessment to identify the key risks areas which the installation of additional SCADA equipment will solve. In addition, ECG is unable to identify any costs savings resulting from this initiative.

In view of the lack of details justifying the above expenditure, at this stage, ECG is unable to conclude that the expenditure is prudent.

As such, ECG sought additional information on the risk assessment carried out to identify the key risk areas, evidence of any failures that need mitigating through SCADA and any cost savings.

Stage Two

In its response on 20 December 2005 to ECG's question, Envestra refers to its paper "SA Networks – Pressure Surveillance & Control" where it says that Envestra's pressure monitoring system has grown organically for a number of years and is now becoming a problem in terms of providing reliable data. In addition, the distribution network does not have any remotely controlled facilities for its critical valves and valves located in distant locations.

[110] Att 2 SA SCADA improvement project 202005
[111] $3.8m divided by 284 sites

Envestra also advises that due to the growth of Adelaide, some of the sites with telemetry equipment for monitoring pressures are not in the most optimal locations. To provide more accurate data the equipment at these sites has to be relocated.

ECG recognises that the gas industry uses SCADA to monitor pressures for system planning to determine future augmentation and emergency management. It is therefore important that these sites are located at the most optimal locations. In addition, one of the risk mitigation strategies used by the gas industry is to be able to remotely control valves especially those in critical locations.

As Adelaide currently does not have remote control facilities and that some of the telemetry sites are in sub optimal locations, ECG considers that the project to be prudent. ECG has already considered the cost to be efficient in Stage One.

ECG considers that the forecast expenditure in this category from 2006/07 to 2010/11, as summarised in Table 7-34, to be prudent and efficient.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-34: Recommended SCADA Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
SCADA	1.25	1.26	0.64	1.11	0.71	4.97

7.4.5 Regulators (Stay in Business)

Stage One

This category provides for on going replacement and improvement of regulator stations and valve pits. Envestra advises in its AAI, Section 7.2, that it has 350 district regulators. The deterioration of some regulators in underground pits and current OH&S requirements mean that some installations do not comply with current design standards. In addition, the design configuration of some of the system is also outdated. Forecast expenditure on this work is summarised in Table 7-35.

Table 7-35: Regulator Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Regulators	1.44	1.46	0.83	0.83	0.83	5.40

In response[112] to ECG's request for information, Envestra provided a paper detailing the breakdown of its proposed expenditure (expressed in nominal $) as shown in Table 7-36.

[112] Envestra, document, ECG reply SA Questions, 24 October 2005

Table 7-36: Regulator Expenditure Details
(Nominal $ million)

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
Baseline	0.24	0.25	0.26	0.26	0.27	1.28
Regulator station replacement	0.59	0.61	0.64	0.66	0.68	3.18
Industrial regulators	0.65	0.67	0	0	0	1.32
TOTAL	**1.48**	**1.53**	**0.90**	**0.92**	**0.95**	**5.78**

In its paper, Envestra advises out of the 350 district regulators, 50 of these were installed in underground pits in the 1970's and the late 1980's. These regulators are being affected by salt damp which has weakened the structure of the brick vaults and has allowed water into the vaults. The moisture and dampness has also affected the pipe-work and valves.

Envestra is proposing to carry out an accelerated replacement of these district regulators by replacing seven regulators per annum. The cost of replacement is shown in the table below.

Table 7-37: Regulator Replacement Cost pa
(Real $ thousand 2004/05)

	No.	Unit cost	Total Cost
Twin Stream Concrete Vault District Reg. inc Labour	2	100	200
Single Stream Concrete Vault District Reg. Inc Labour	5	60	300
Ball Valves capable of remote control (not telemetry)	4	15	60
Total			**560**

The Baseline expenditure is for generic regulator station upgrades growth and equipment.

In its paper, Envestra also advises "*the remainder of the forecast pertains to rectification of regulator locations at industrial sites to ensure compliance with current standards. A hazardous area review was carried out at 144 industrial meter station sites, which identified 30 non-compliant sites. Of these, 10 sites will be redesigned while 20 will involve relocation of either the regulator relief stack or other equipment. Approximately $20k per site has been allowed for rectification".*

Based on 30 non-compliant industrial sites and $20,000 per site, the total cost of replacement for industrial regulators is $600,000. However as shown in Table 7-36, the forecast total expenditure for this work in 2006/07 and 2007/08 is $1.32million.

ECG acknowledges that Envestra has provided some detailed information regarding its regulator replacement program. However, ECG has had difficulties reconciling the information in particular for the industrial regulators. As such, at this stage, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought additional information on the reconciliation of the number of industrial regulators to the expenditure, confirmation on the basis for the number of district regulators to be replaced pa and the basis for the provision of the baseline expenditure.

Stage Two

Envestra has provided[113] further clarification and additional information on the expenditure for Regulator (Stay in Business) projects. It confirms that:

- 30 industrial regulator sites are to be upgraded in a two year period.
- Its district regulator upgrade program of seven sites pa for the 50 stations which require more urgent upgrading is based on the risk associated with these assets and the logistics and resources for carrying out the work.
- Its generic regulator upgrade program for the remaining 300 stations is an accelerated program to ensure that all regulators are upgraded before the end of their useful life.

Envestra further advised[114] that the unit price for 20 of the industrial regulator sites was $20,000 each and that the remaining 10 sites require full redesign and will cost up to $100,000 per site. As shown in Table 7-36, the total cost for upgrading the industrial regulators is therefore $1.32million (nominal).

ECG has reviewed the proposals and advises that:

- Industrial regulator sites could vary significantly in size and as such costs to upgrade each site could also vary significantly. The provision of $20,000 for each industrial regulator upgrade may include relocating some equipment such as vent stacks etc. ECG considers this provision to be reasonable. In the case of the provision of up to $100,000 for the other 10 sites. ECG understands that the redesign could also include relocation of the unit. ECG recognises the difficulty in being definite in terms of the cost for each site until the work is carried out. As such, a range up to $100,000 which may include additional service length, new regulator set and possibly additional customer piping to be considered reasonable. ECG therefore considers the provisions of $20,000 for the upgrade and costs up to $100,000 for redesign to be efficient.
- Due to the risk and safety issues associated with the deteriorating condition of the 50 stations advised by Envestra as requiring more urgent upgrading, it considers the program to upgrade seven sites pa to be prudent. The replacement unit prices advised in Table 7-37 for the components of the regulator station are considered efficient, therefore the proposed expenditure of $560,000pa (real $ 2005/06) for 2 large and 5 small regulators each year is considered efficient.
- Envestra has provided insufficient evidence as to why the proposed accelerated generic regulator upgrade program of about $225,000pa is needed. There was minimal expenditure on this type of work in the current period 2001/02 to 2005/06, with only $150,000 being spent in year 2004/05. While it concurs with the need for a generic regulator upgrade program, ECG considers that, on the available evidence, the forecast expenditure should continue at $150,000pa (real $ 2005/06) and recommends this amount.

ECG recommends that the expenditure allowed for this work be its estimate of $4.82million as summarised in Table 7-38. This would reduce the expenditure allowance requested by Envestra for these projects by $0.58million, from $5.4million to $4.82million.

[113] Envestra Email, 20 December 2005
[114] Envestra, Response to ECG draft report, February 2006

Table 7-38: Recommended Regulators Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Baseline	0.15	0.15	0.15	0.15	0.15	0.75
Regulator station replacement	0.56	0.56	0.56	0.56	0.56	2.80
Industrial regulators	0.63	0.64	0.00	0.00	0.00	1.27
Total	**1.34**	**1.35**	**0.71**	**0.71**	**0.71**	**4.82**

ECG considers that its forecast expenditure in this category from 2006-07 to 2010-11, as summarised in Table 7-38, to be prudent and efficient.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

7.4.6 IT Projects

The 2005 AAI has a line item called IT Projects. Table 7-3 has separated separately shown the IT Projects into three categories. These categories are presented in Table 7-39.

Table 7-39: IT Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Non-FRC IT Systems	0.26	0.57	4.52	0.26	0.27	5.88
FRC IT Systems	0.05	0.08	0.15	0.00	3.19	3.47
IT-Material Changes	4.20	4.71	2.43	0.00	0.00	11.34
Total	**4.51**	**5.36**	**7.10**	**0.26**	**3.46**	**20.69**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

In the 2005 AAI, Envestra advises that it has engaged IBM Consulting Services (IBM) to develop an IT strategy for the business. Envestra has also indicated[115] that whilst IBM has prepared this report, Envestra has approved the report for implementation. The report will only be implemented after the Commission confirms that the cost is included in the Access Arrangement. IBM has identified a number of issues for the business and has detailed the expenditure required for the forecast period. Details of IBM's findings are presented in its report titled "Envestra IT Strategy Planning (1 April 2005)". In addition, at the meeting on 21 November 2005, Envestra discussed its IT strategy. At that meeting, Envestra agreed to provide further details on its expenditure.

ECG has reviewed the IBM report and has mapped the costs from the report to the categories as shown in Table 7-39.

[115] ECG reply – SA Questions 241005 Item No 3.5

7.4.6.1 Non-FRC IT Systems

Stage One

ECG believes that Envestra has grouped under the heading "Non FRC IT Systems" specific projects that are central to managing the gas networks such as the asset management system, the works management system and the financial system.

IBM has indicated in its report that the total ongoing maintenance capital costs over the forecast period can be categories as:

Infrastructure Renewal – upgrade of the hardware in accordance with accepted vendor recommendation.

Application portfolio renewal- upgrade of the software in accordance with accepted vendor recommendation. The cost shown in the Table 7-40 is for the upgrade to Maximo, Envestra works management system.

Ongoing IT operations – general support and maintenance and application portfolio.

ECG believes that the Non-FRC IT systems cost appears to be represented in IBM report as "Ongoing Maintenance to Existing Systems – Capex".[116] ECG has shown the cost from the IBM report in Table 7-40.

Table 7-40: IBM Ongoing Maintenance to Existing System - Capital Costs, 2006/07 to 2010/11[117] (Real $ million 2004/05)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Infrastructure Renewal	0.050	0.365	0.205	0	3.00	3.620
Application Portfolio Renewal	0	0	3.980	0	0	3.980
IT Operations	0.250	0.250	0.250	0.250	0.250	1.250
Total	**0.300**	**0.615**	**5.435**	**0.250**	**3.250**	**8.850**

Note: These costs do not correspond exactly with the costs shown in Table 7-39

No information has been provided to shown how the above costs have been derived and how IBM has determined the timing of the projects. However, IBM says in its report that the "*costs represented are fair and reasonable in line with general market conditions"*.[118]

In addition on page 34 of the IBM report, the upgrade of Maximo is expected in 2009/10. However ECG assumes that the cost in Table 7-40 for the Application Portfolio Renewal for the year 2008/09 is for the upgrade of Maximo. At the meeting on 21 November 2005, Envestra advises that its cost is for a typical Maximo application and that it will be investigation the most suitable software at that time when the replacement is due.

ECG believes that in today's IT environment, it is necessary to carry out regular updates to software and hardware. ECG considers that it is reasonable to accept IBM's recommended timetable for updating the software and hardware. On that basis ECG considers that the two categories, infrastructure renewal and the application portfolio renewal cost are prudent.

In addition, no details have been provided regarding what is included in the IT operations. However, ECG recognises that there are ongoing costs associated with any IT operations

[116] IBM Report – Envestra IT Strategy Planning page 44
[117] IBM Report – Envestra IT Strategy Planning page 44
[118] IBM Report – Envestra IT Strategy Planning page 44

but need further information on why there is a provision of $0.25million per year capital expenditure.

Without any supporting information to show how the costs for these three categories have been derived, ECG is unable to determine if the costs are efficient.

As such, ECG sought additional information on the details on the scope of works and how the cost as been derived for the three categories above.

Stage Two

At the meeting on 5 January, Envestra provided a summary reconciling the cost of the Non FRC IT system. In addition, in its response on 24 December 2005 to ECG's questions, Envestra advises[119] that the information that it provided on 24 October is incorrect. The allocation of $0.25million (real 2004/05) pa should have been included in the FRC expenditure and not the non FRC expenditure in Table 7-2. The revised expenditure for non FRC IT is shown in Table 7-41:

Table 7-41: Non FRC IT Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2004/05)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Infrastructure Renewal	0	0.290	0.065	0	0	0.355
Application Portfolio Renewal	0	0	3.980	0	0	3.980
Total	**0**	**0.290**	**4.045**	**0**	**0**	**4.335**

For the purpose of this analysis, ECG has converted this expenditure to real $2005/06 using a factor of 2.5%.

Table 7-42: Non FRC IT Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Infrastructure Renewal	0	0.297	0.067	0	0	0.364
Application Portfolio Renewal	0	0	4.080	0	0	4.080
Total	**0**	**0.297**	**4.147**	**0**	**0**	**4.444**

The infrastructure renewal is required for the replacement of the Dell servers for GIS/Maximo. The IBM report indicates that the servers will no longer be supported by the vendors and as such need to be replaced.

Envestra has estimated the cost of the servers from its current purchase cost of similar servers.

The application portfolio renewal cost is for the replacement of its works management system, Maximo product. IBM has also identified that this product will no longer be supported by 2008/09 and has to be replaced. At the meeting on 21 November 2005, Envestra advised that the cost of Maximo has been derived from the current cost of the product. At the time of replacing Maximo, Envestra will review what is available in the market and will, at that time, select the most appropriate software to meet its needs.

[119] SAA- Reply ECG Q1.8+3.8v1

ECG accepts that servers have to be replaced periodically. ECG does not have any reason to doubt the appropriateness of the IBM's timeframe for replacement of the servers. ECG acknowledges that it is difficult to anticipate the cost of IT systems into the future. As such, ECG believes that the use of historical costs for this purpose is appropriate. ECG therefore considers the replacement of servers to be prudent and efficient.

Similarly, Envestra's software, Maximo will be approximately five years old at the time of replacement. ECG believes that this is an appropriate timeframe for updating the special purpose software and as such considers the project to be prudent. In relation to the cost, ECG believes that using the current cost of Maximo to estimate the forecast expenditure is reasonable and as such considers the cost to be efficient.

ECG considers that the forecast expenditure in this category from 2006/07 to 2010/11, as presented in Table 7-43, to be prudent and efficient.

Table 7-43: Recommended Non FRC IT Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Infrastructure Renewal	0	0.297	0.067	0	0	0.364
Application Portfolio Renewal	0	0	4.080	0	0	4.080
Total	**0**	**0.297**	**4.147**	**0**	**0**	**4.444**

7.4.6.2 FRC IT Systems

Stage One

ECG believes that the cost associated with the FRC IT systems for the period 2006/07 to 2008/09 shown in Table 7-39 is associated with the Dell server replacements[120] for the FRC telemetry. In the IBM report, page 41, IBM has shown that the upgrade to the servers is required because they are no longer supported on the nominated times.

In addition page 41 of the IBM report also shows that in 2010/11, both the production servers and the development servers for the FRC systems will need upgrading. This is due to both servers at that time no longer being supported by the vendor, HP.

ECG recognises that over time technology becomes obsolete and needs to be replaced. As the servers will no longer be supported by the vendors, ECG considers that the costs are prudent.

For ECG to conclude that the cost is efficient, ECG sought additional information on the details of the server replacements and how the cost as been derived.

Stage Two

In the same response to the expenditure on Non FRC IT expenditure, Envestra advises that $0.25million (real 2004/05) expenditure should be included in the FRC expenditure in Table 7-44. The corrected expenditure for FRC expenditure is shown in the table below.

[120] IBM Report – Envestra IT Strategy Planning page 43

Table 7-44: FRC IT Capital Expenditure, 2006/07 to 2010/11
(Real $ million 2004/05)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Infrastructure Renewal	0.50	0.75	0.14	0	3.00	4.39
FRC Operations	0.25	0.25	0.25	0.25	0.25	1.25
Total	**0.75**	**1.00**	**0.39**	**0.25**	**3.25**	**5.64**

For the purpose of this analysis, ECG has converted the expenditure to real $2005/06 using a factor 2.5%.

Table 7-45: FRC IT Capital Expenditure, 2006/07 to 2010/11
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Infrastructure Renewal	0.05	0.08	0.14	0.00	3.08	3.35
FRC Operations	0.26	0.26	0.26	0.26	0.26	1.28
Total	**0.31**	**0.33**	**0.40**	**0.26**	**0.33**	**4.63**

The infrastructure renewal cost for 2006/07 to 2008/09 is related to the renewal of the Dell servers used for the FRC telemetry. As in the case of the non FRC system, IBM has identified that these servers will not be supported over a period of time and as such need to be replaced. Envestra has also advised that the cost of servers is based on its current purchase costs for servers.

The infrastructure renewal cost shown in 2010/11 is for the replacement of both the production and development servers. These servers will be more than five years old at that stage. ECG believes that it is reasonable for the servers to be replaced after that time interval.

Envestra advises that the FRC operations expenditure is a provision[121] for changes to the IT system as a result of SA Market Rules changes.

As in the Non FRC IT expenditure, ECG accepts that the servers will have to be replaced from time to time. ECG therefore considers the cost to be prudent and efficient.

In relation to the cost of IT changes due to SA Market Rules changes, ECG is unaware of any impending changes. ECG believes that the Rule changes should be an impost on the business and as such considered at that point in time. As such, ECG does not consider the expenditure to be prudent and efficient.

In its response to ECG's draft report, Envestra indicated that there should be an allowance for possible future changes to the SA Market Rules. Envestra has not submitted any information detailing the basis for the $250k being sought for this purpose. As such, ECG maintains its view that the forecast expenditure is not prudent and efficient.

ECG considers that the forecast expenditure in this category from 2006/07 to 2010/11, as presented in Table 7-46, to be prudent and efficient.

[121] SAA- Reply ECG Q1.8+3.8v1

Table 7-46: Recommended FRC IT Capital Expenditure, 2006/07 to 2010/11
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Infrastructure Renewal	0.05	0.08	0.14	0	3.08	3.35
FRC Operations	0	0	0	0	0	0
Total	**0.05**	**0.08**	**0.14**	**0**	**3.08**	**3.35**

7.4.6.3 IT-Material Changes

Stage One

The expenditure in the category, IT-Material Change from Table 7-39, is related to new projects that have been identified by IBM to improve Envestra's capabilities. ECG has shown the expenditure for this category in Table 7-47.

Table 7-47: IT Material Change's Capital Expenditure, 2006/07 to 2010/11
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
IT-Material Changes	4.20	4.71	2.43	0.00	0.00	11.34

Envestra has not listed the projects for this category in the 2005 AAI and has referred ECG to the IBM report. ECG assumes that the projects in page 57 of the IBM report are those included in this category. Whilst ECG recognises that the IBM report has not been converted to real $ 2005/06, ECG has shown the details of the projects in the IBM report in Table 7-48 for comparison purposes.

Table 7-48: IBM Project Investment 2006/07 to 2010/11[122]
(Real $ million 2004/05)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Asset Optimisation	2.391	0.368	0.368	0.368	0.368	3.863
Data Integrity and Management	0.690	0.080	0.080	0.080	0.080	1.010
OEAM Data Mart	0	4.069	0.360	0.360	0.360	5.149
Field Data Capture - (PDA)	0.769	0.082	0.082	0.082	0.082	1.097
Knowledge Management solution	0	0	1.742	0.236	0.236	2.214
Work Allocation Optimisation	0	0	1.015	0.210	0.210	1.435
Rapid Customer Connect	0	0.910	0.130	0.130	0.130	1.300
IT Infrastructure Consolidation	0.130	0	0	0	0	0.130
IT Cost Management	0.130	0	0	0	0	0.130
Proactive Market Rule Changes	0.150	0.150	0.150	0.150	0.150	0.750
Risk Management	0.450	0	0	0	0	0.450
Total	**4.710**	**5.659**	**3.927**	**1.616**	**1.616**	**17.527**

[122] IBM Report – Envestra IT Strategy Planning page 57

In the IBM report, it does not differentiate on which projects Envestra should include in the 2005 AAI. As can be seen in Table 7-48, the cost is different to the cost as submitted in the capital expenditure summary in Table 7-47. ECG believes the difference is due to Table 7-48 includes both capital and operating expenditure. As such, ECG has assumed that all the projects are included in the 2005 AAI.

Appendix A of the IBM report provides the scope, details and costs of the projects. The benefits listed are only on a qualitative basis and no quantitative benefits have been identified.

At the meeting on 21 November 2005, Envestra advises that these projects have been identified to build its IT capability to meet the new regulatory environment over in the forecast period. The project on the field data capture is a compliance issue. Envestra currently do not meet the requirements of the Retail Market Rules which requires field data to be provided to the gas market within 24 hours.

In addition, whilst Envestra has provided project capital and operating expenditure, there are no details on how the costs have been derived.

Without any quantifiable benefits listed or what are the specific changes in the operating environment that requires these projects and without cost details, ECG is unable to conclude that the projects are prudent and efficient.

As such, ECG sought information on how the costs for the projects have been derived and also any details regarding the quantifiable benefits or changes in the operating environment that justify these projects.

Stage Two

Envestra has provided further clarification and additional information on the projects listed as material changes. In addition, the Commission and ECG met with Envestra on 5 January 2006 to discuss Envestra's IT strategy and the proposed expenditure. At the meeting, a table showing the expenditure for the material change projects was provided. This expenditure is shown in the table below:

Table 7-49: Envestra IT Project's Capital Expenditure 2006/07 to 2010/11[123]
(Real $ million 2004/05)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Asset Optimisation	2.023	0	0	0	0	2.023
Data Integrity and Management	0.610	0	0	0	0	0.610
OEAM Data Mart	0	3.709	0	0	0	3.709
Field Data Capture - (PDA)	0.687	0	0	0	0	0.687
Knowledge Management solution	0	0	1.506	0	0	1.506
Work Allocation Optimisation	0	0	0.805	0	0	0.805
Rapid Customer Connect	0	0.780	0	0	0	0.780
IT Infrastructure Consolidation	0.130	0	0	0	0	0.130
IT Cost Management	0.130	0	0	0	0	0.130
Risk Management	0.450	0	0	0	0	0.450
Total	**4.029**	**4.489**	**2.311**	**0**	**0**	**10.829**

[123] Envestra document SA AA IT Projects (provided 5 January 2006)

For the purpose of this analysis, ECG has converted the cost to 2005/06.

Table 7-50: Envestra IT Project's Capital Expenditure 2006/07 to 2010/11[124]
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Asset Optimisation	2.074	0	0	0	0	2.074
Data Integrity and Management	0.625	0	0	0	0	0.625
OEAM Data Mart	0	3.802	0	0	0	3.802
Field Data Capture - (PDA)	0.704	0	0	0	0	0.704
Knowledge Management solution	0	0	1.544	0	0	1.544
Work Allocation Optimisation	0	0	0.825	0	0	0.825
Rapid Customer Connect	0	0.800	0	0	0	0.800
IT Infrastructure Consolidation	0.133	0	0	0	0	0.133
IT Cost Management	0.133	0	0	0	0	0.133
Risk Management	0.461	0	0	0	0	0.461
Total	**4.131**	**4.601**	**0.825**	**0**	**0**	**11.101**

Details of the scope of the projects are provided in Appendix 2.

At the meeting on 5 January 2005, Envestra indicated that the projects have been developed because Envestra considers that it needs further capability to meet the changing business environment. Boards are demanding more reports to meet their fiducial responsibilities and legislators are making the business more accountable. Under the Health and Safety Legislation, Envestra/OEAM has prime responsibility for its contractors' accidents. This means that more onerous reporting is required to monitor contractors' performance. In addition, Envestra also believes that as the business environment changes, Regulators will be seeking additional and better information. In Victoria, the technical regulator now requires that some key performance indicators be reported every three months.

ECG acknowledges that following the collapse of Enron in the US and HIH in Australia, Board responsibilities have come under scrutiny. As such, Boards as a rule are seeking more reports to ensure that they are adequately carrying out their responsibilities. ECG is therefore of the view that Envestra is required even now to produce reports for the Board to meet the Board's requirements.

In relation to the Health and Safety legislation, the requirement to adequately monitor contractor's work is not new. ECG believes that Envestra/OEAM would have had to ensure that it has adequate reporting to meet these requirements. Similarly, reporting to the Commission and the Office of the Technical Regulator (OTR) has been in place for a number of years and as such, Envestra must already be fulfilling its obligations. Given this situation, ECG believes that it is reasonable to expect that Envestra is meeting both its business and regulatory obligations by using its current IT systems. In some cases, the work required to produce these reports may be more labour intensive.

ECG acknowledges that there are differences in the reporting requirement in various jurisdictions. However, ECG is unaware of any proposed changes to reporting, both to the Commission or the OTR in line with other jurisdictions.

[124] Envestra document SA AA IT Projects (provided 5 January 2006)

ECG is expected to review whether the cost is prudent and efficient. As such, for a prudent service provider to propose implementing any of these projects, ECG believes that a prudent service provider should be able to demonstrate quantifiable savings. However, as discussed at the start of Section 7.4.6, Envestra will only approve the implementation of the IBM Strategy report following the inclusion of the costs in the forecast expenditure. As such, no business plans have been prepared for any of the individual projects hence no quantifiable benefits have been identified. At this stage, it is therefore difficult to recommend that this expenditure is prudent.

However, ECG recognises that there is an increasing reliance on IT systems in all businesses. In the utilities sector, there is an ongoing investment in IT to increase productivity, ensure data integrity and reduce reliance on an individual's knowledge. Given this situation, it is reasonable to expect that Envestra will need to develop some of its IT capabilities in the forecast period. ECG has therefore reviewed each project on its own merit and has concluded on the prudence of the project based on industry trend. In the Section 8 on Non Capital Costs, ECG has commented on the efficiency gains as a result of these projects.

From the scope of work provided, ECG considers the following projects to be prudent:

- Asset Optimisation: As network assets are long term assets, utilities have been in the last decade developing software to maximise its decision making process.
- Data Integrity and Management: In the current FRC environment, it is necessary to ensure that data integrity is at is optimum.
- Data Mart: Businesses with a number of systems have developed data warehouses and data marts to ensure that reporting and monitoring of businesses performance is based on a reliable set of data.
- Field Data Capture: Market Rule 65 requires that customer information is available within 24 hours of commissioning the customer. Envestra has to have an effective data system to meet this requirement.
- Knowledge Management System: One of most significant issue regarding loss of intellectual property. One of the major initiatives in business is to install a Knowledge Management System.
- Work Allocation Optimisation: This is to replace the current manual system for dispatching resources. This system will ensure more effective deployment of resources.
- Infrastructure Management: Given that these systems will significantly increase the servers, it is prudent to review the total storage requirement before procuring the servers required.

ECG believes that there is sufficient scope in the above projects to incorporate the requirements of the Rapid Customer Connect Project and the Risk Management Project. An effective despatching system (Work Management Optimisation) should be able to effectively manage resources to meet the requirements of this project.

In relation to the Risk Management Project, ECG believes that the scope of Knowledge Management Project and the Data Mart Project should be able to cover the scope of the risk management project.

ECG also believes that the current practice is to ensure that business units have good appreciation of the costs to operate the particular business units. As such, this responsibility for cost allocation to various business units should already be part of the

function of the finance group. As such, ECG considers that there is not a requirement to then propose a project associated with IT cost management. ECG therefore considers this project not prudent.

ECG considers that a prudent service provider will incorporate the requirements of the Rapid Customer Connect Project and the Risk Management Project into the scopes of the other projects.

In response to ECG's draft report, Envestra commented the projects recommended by ECG will not meet the requirements of the Rapid Customer Connect Project. ECG has recommended a number of projects from Envestra's IT proposals. ECG believes that this projects and the upgrading of Maximo should be able to meet the requirements of the Rapid Customer Connect Project.

In relation to the projects in Table 7-51, details of the costs of the projects are shown in Appendix 2. ECG recognises that the costs have been developed as part of IT strategy and not as detailed project plans. On that basis, ECG believes that the cost are what can reasonable be expected for medium size systems. ECG therefore considers the cost to be efficient.

ECG recommended expenditure that is prudent and efficient is shown in the table below:

Table 7-51: Recommended Material IT Project's Capital Expenditure 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Asset Optimisation	2.074	0	0	0	0	2.074
Data Integrity and Management	0.625	0	0	0	0	0.625
OEAM Data Mart	0	3.802	0	0	0	3.802
Field Data Capture - (PDA)	0.704	0	0	0	0	0.704
Knowledge Management solution	0	0	1.544	0	0	1.544
Work Allocation Optimisation	0	0	0.825	0	0	0.825
Rapid Customer Connect	0	0	0	0	0	0
IT Infrastructure Consolidation	0.133	0	0	0	0	0.133
IT Cost Management	0	0	0	0	0	0
Risk Management	0	0	0	0	0	0
Total	**3.536**	**3.802**	**2.369**	**0**	**0**	**9.707**

ECG considers that the forecast expenditure in this category from 2006/07 to 2010/11, as presented in the summary provided in Section 7.4.6.4, to be prudent and efficient.

Note:

At the meeting on 12 January, there was a discussion on whether the expenditure for the "IT infrastructure Consolidation" and the "IT Cost Management" should be capital or operating expenditure. Envestra has since advised[125] that it concurs that the expenditure for both items should be operating expenditure and not capital expenditure.

[125] Envestra Email 11 January 2006 titled "SA AA – Action from 05/01/06 Meeting

However for the purpose of consistency with the Access Arrangement Information, ECG has not re allocated this expenditure. The Commission may decide to reallocate some or all of these costs to the operating and maintenance expenditure after noting ECG's recommendation.

Envestra also advises[126] that after reviewing the material projects, it concurs that the project "Risk Management" can be covered within the scope of "Data Mart". The project is no longer required.

7.4.6.4 Summary of IT Expenditure

From the above review, ECG considers the following expenditure to be prudent and efficient.

Table 7-52: Recommended Non FRC IT Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Non-FRC	0	0.30	4.15	0	0	4.45
FRC	0.05	0.08	0.14	0	3.08	3.35
Material Change	3.54	3.80	2.37	0	0	9.71
Total	**3.59**	**4.18**	**6.66**	**06**	**3.08**	**17.51**

7.4.7 Miscellaneous

Stage One

As in Section 6.4.6, ECG has grouped a number of items into "Miscellaneous". This category comprises of odorisation facilities, corrosion protection equipment and for the category "Others" equipment such as stopple equipment, earth boring equipment gas detectors etc. This approach is similar to what has been described in the WorleyParsons' report[127]. However, in the 2005 Access Arrangement, Envestra advises that the category "Other" includes heating value measurement equipment, corrosion protection equipment and odorisation facilities. Expenditure on these is summarised in Table 7-53.

Table 7-53: Miscellaneous Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Odorising	0.06	0.41	0.06	0.06	0.06	0.64
Corrosion Protection	0.05	0.02	0.05	0.02	0.05	0.19
Other	0.49	0.48	0.46	0.45	0.44	2.32
Miscellaneous	**0.60**	**0.91**	**0.57**	**0.53**	**0.55**	**3.15**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

[126] Envestra Email 11 January 2006 titled "SA AA – Action from 05/01/06 Meeting
[127] WorleyParsons' Report page 65, 66 and 68

In addition, Envestra advises in its AAI, Section 7.2, that:

- The installation of additional monitoring equipment during the forecast period, to provide for more accurate measurement of heating value, is required due to the connection of the SEAGas pipeline to its network.

- Replacement of cathodic protection transformer rectifier units is required for the ongoing operation of the cathodic protection system to protect steel pipeline.

- Adequate spare parts and back up systems will be provided to protect against malfunction at any of its odorising stations.

Given the conflicting information, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought the reconciliation of the expenditure in "Miscellaneous" and the scope, justification and details of the costs for the relevant projects.

Stage Two

Envestra advises[128] the expenditure on Miscellaneous works includes the following items

- Odorising includes expenditure on several pre-constructed modules readily available for immediate replacement of existing equipment should it break down. It also includes spare parts for associated equipment. Quick changeovers are essential as odorising equipment is vital for the provision of safe gas supply. Itemised costs for each proposed module, totalling $218,000, have been provided. An annual allowance of $50,000pa is included to implement this work.

- Provision for an additional three gas chromatographs estimated to cost a total of approximately $300,000 in 2007/08 has been included under the odorising category. This is required due to the recent commissioning of the SEAGas pipeline which provides gas of a different heating value to that from the Moomba pipeline, so that different parts of the Adelaide network receive differing gas mixtures. New chromatographs are required to provide greater accuracy of measurement of heating value for all customers.

- Corrosion Protection includes replacement of one $40,000 20-30 year old transformer rectifier every second year. It also includes $20,000pa for ongoing replacement of sacrificial anodes and other equipment.

- Other expenditure includes the equipment identified in Section 6.4.6. The forecast cost is estimated to be about $500,000pa on the basis of past expenditure incurred in year 2004/05, which is expected to continue to be needed in future.

Envestra further advises[129] that the "Other" expenditure includes $400,000 to replace 20 compressors and $190,000 for items associated with relocating Brompton depot.

ECG considers the provision of the spare equipment as proposed for odorising to be prudent due to the critical nature of this operation. It also considers the unit costs for each equipment module as provided by Envestra, between $30,000 and $50,000 per module and totalling $218,000, to be efficient.

[128] Envestra Document, Reply to ECG Q round , Questions 1.5, 1.6 &1.10, 20&21 December 2005
[129] Envestra, Confidential response to ECG draft report, February 2006

ECG fully concurs with the need for additional gas chromatographs to improve the accuracy of heating value determinations, as this is fundamental to ensuring accurate billing of all customers. ECG is aware that a similar system with multiple gas chromatographs is in use in Victoria. ECG considers the unit costs for chromatographs advised by ECG to be efficient.

ECG considers the unit cost of items required for Corrosion Protection, as advised by Envestra, to be efficient. The forecast expenditure on corrosion protection of $190,000 over the forecast period is consistent with the $160,000 expenditure in the current period.

Therefore ECG considers the forecast expenditure for Odorising and Corrosion Protection equipment to be both prudent and efficient.

ECG advises that it considers Envestra's forecast "Other" expenditure to be high. It considers that using historical expenditure is a valid method for forecasting this type of expenditure, but it should be based on the average expenditure over a number of years rather than the peak expenditure in one year. Envestra's average expenditure over the past 5 years was about $200,000pa (refer Table 6-34), much lower than the about $500,000pa in 2004/05 it has used as its reference to forecast future expenditure. ECG therefore recommends an allowance of $200,000pa for "Other" expenditure in the forecast period to provide for continuing expenditure on items of this type.

In addition ECG considers that replacement of the 20 compressors over the forecast period at an estimated cost of $400,000, averaging $80,000pa, is prudent and efficient. However whilst ECG recognises that the Brompton relocation has to go ahead, it does not necessarily justify upgrading all the equipment. In addition, it is unclear if these equipment upgrades are necessary why it has not been included in the Brompton relocation expenditure. As such, ECG is unable to recommend this expenditure as prudent.

Therefore ECG considers the "Other" expenditure in the forecast period should be its estimate of $280,000pa.

ECG considers that its forecast expenditure in the Miscellaneous category from 2006/07 to 2010/11, as summarised in Table 7-54, to be prudent and efficient. This would reduce the expenditure allowance requested by Envestra for these projects by $0.92million, from $3.15million to $2.23million.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-54: Recommended Miscellaneous Capital Expenditure, 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Odorising	0.06	0.41	0.06	0.06	0.06	0.64
Corrosion Protection	0.05	0.02	0.05	0.02	0.05	0.19
Other	0.28	0.28	0.28	0.28	0.28	1.40
Miscellaneous	**0.39**	**0.71**	**0.39**	**0.36**	**0.39**	**2.23**

7.5 SUMMARY: 2006/07 TO 2010/11

Stage One

In relation to the forecast expenditure, Envestra has provided a number of papers in addition to the consultants' reports. In addition, Envestra has also provided additional information in response to questions from ECG. The consultants' reports sometimes conclude without sufficient substantiation. As such, the level of information provided and the justification from the consultants' report is insufficient for ECG to draw a conclusion on the prudence and efficiency of the expenditure in a number of areas.

The areas in which ECG sought additional information were:

- Large consumers – the supply is only to a small number of large customers. The cost is highly variable due to gas demand and the geographical location of the site. The list of customers has not been provided in this case.

- Improve Supply – the related projects are for augmentation and security of supply. ECG sought additional information on the projects and the justifications for the projects.

- Extension to Towns – this expenditure is related to supplying a number of towns including McLaren Vale, Tanunda and the Monarto Industrial Estate. ECG needed further information on the scope of works and justifications for the towns.

- Other – the cost is related to sub meter removal and provision of higher capacity meters for hot water. ECG sought information on the number of meters to be removed and the number of higher capacity meters installed.

- Periodic Meter Changes – this cost is related replacement of meters in the field after they have exceeded their approved life in the field. ECG sought information on how the numbers of meters have been estimated.

- Security of Supply – the category relates to major projects required to reduce the possibility of gas outage through third party damage or capacity constraints. The total expenditure for the forecast period is $44 million. ECG sought additional information on options being considered and the risk assessment being carried out.

- SCADA – the cost is related to installing remote devices in the field for monitoring and controlling system pressures. Further information on the risk assessment and evidence of any equipment failure was sought to justify this expenditure.

- Regulators – the projects are related to ongoing replacement and improvement of regulator stations and valve pits. ECG has had difficulty reconciling the cost. Further information was sought including the reconciliation of the expenditure.

- IT Projects – IT projects have been divided into non FRC, FRC and a number of projects that are considered as material change projects ECG sought further information on how the costs have been derived for the above systems and further justification for the material projects.

- Miscellaneous – the cost are related to small projects for odorising, corrosion protection and other. ECG sought information on the scope, cost and justification of these projects.

The area in which ECG considers the expenditure to be prudent and efficient is:

- Mains Replacement – this cost is related to replacing old cast iron and unprotected steel mains to reduce UAFG and leak repairs. ECG sought additional information on how rate of UAFG has been determined.

The area in which ECG considers expenditure is not prudent and efficient is:

- Volume customers
  - General Mains – the related projects are for the main supply mains and reticulation mains for new customers. Envestra's cost is high in comparison to other jurisdictions.
  - Meters- the cost of supply and installation of meters is higher than other jurisdictions due to the unique circumstances in South Australia. ECG considers the cost to high in comparison with other jurisdictions.
  - Services –these are pipes that run from the street to the customer's premises. The cost is higher than in other jurisdictions.

Stage Two

Envestra has provided further clarification and additional information on the expenditure for Forecast Period works, as summarised in sections 7.3 and 0 and their associated subsections. For reasons outlined in Section 6.2, ECG has determined the recommended expenditure in different categories to those used by Envestra in its Access Arrangement Information.

The information provided has enable ECG to make recommendations on the prudence and efficiency of expenditure in the forecast period. ECG considers the forecast expenditure proposed by Envestra to be prudent and efficient except for the following items:

- Improve Supply
- Volume Customers: Mains, Services and Meters
- Mains Replacement
- Security of Supply
- Regulators (SIB)
- Miscellaneous: Other

ECG considers that its recommended New Facilities forecast expenditure from 2006/07 to 2010/11, as summarised in Table 7-55, to be prudent and efficient.

ECG therefore recommends that provision for this expenditure be included in the Capital Base for the forecast Access Arrangement period from 2006/07 to 2010/11.

Table 7-55: Recommended New Facilities Capital Expenditure, 2006/07 to 2010/11
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Stay In Business						
Telemetry (SCADA)	1.25	1.26	0.64	1.11	0.71	4.97
Regulators (SIB)	**1.34**	**1.35**	**0.71**	**0.71**	**0.71**	**4.82**
PMC - Domestic	3.50	3.62	3.48	3.33	2.83	16.76
PMC - I&C	1.08	0.83	1.26	1.28	1.19	5.64
Odorising	0.06	0.41	0.06	0.06	0.06	0.64
Corrosion Protection	0.05	0.02	0.05	0.02	0.05	0.19
Mains Renewal	6.79	6.55	6.01	6.14	6.70	32.19
Non-FRC IT Systems	0.00	0.30	4.15	0.00	0.00	4.44
FRC IT Systems	0.05	0.08	0.14	0.00	3.08	3.35
Other	0.28	0.28	0.28	0.28	0.28	1.40
Total Stay-in-Business	**14.40**	**14.70**	**16.78**	**12.93**	**15.61**	**74.40**
Growth						
Large Consumers	0.67	0.82	0.59	0.60	0.60	3.28
Improve Supply	0.69	0.62	0.11	0.11	0.11	1.64
General Mains	5.38	5.25	4.92	5.19	5.62	26.36
Regulators (Growth)	0.00	0.00	0.00	0.00	0.00	0.00
Meters	3.45	3.29	3.06	3.18	3.48	16.46
Services	7.40	7.57	7.17	7.69	8.09	37.92
Other	0.14	0.14	0.14	0.14	0.14	0.70
Total Growth	**17.73**	**17.69**	**15.99**	**16.91**	**18.04**	**86.36**
Material Changes						
Increased Network Utilization	0.00	0.00	0.00	0.00	0.00	0.00
IT	3.54	3.80	2.37	0.00	0.00	9.71
New Townships	1.82	3.83	1.39	1.23	0.32	8.59
Security of Supply	3.95	7.01	4.22	11.53	9.03	35.86
Total Scope Changes	**9.31**	**14.64**	**7.98**	**12.76**	**9.35**	**54.16**
TOTAL NEW FACILITIES INVESTMENT	**41.44**	**47.03**	**40.75**	**42.60**	**43.00**	**214.92**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

The above recommended expenditure has been converted to nominal $ for inclusion into the capital base as shown in Table 7-56.

Table 7-56: Recommended New Facilities Capital Expenditure, 2006/07 to 2010/11 (Nominal $ million)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Stay In Business						
Telemetry (SCADA)	1.28	1.32	0.69	1.23	0.80	5.32
Regulators (SIB)	1.37	1.42	0.76	0.78	0.80	5.14
PMC - Domestic	3.59	3.80	3.75	3.68	3.20	18.02
PMC - I&C	1.11	0.87	1.36	1.41	1.35	6.10
Odorising	0.06	0.43	0.06	0.07	0.07	0.69
Corrosion Protection	0.05	0.02	0.05	0.02	0.06	0.20
Mains Renewal	6.96	6.88	6.47	6.78	7.58	34.67
Non-FRC IT Systems	0.00	0.32	4.47	0.00	0.00	4.78
FRC IT Systems	0.05	0.08	0.15	0.00	3.48	3.77
Other	0.29	0.29	0.30	0.31	0.32	1.51
Total Stay-in-Business	14.76	15.44	18.07	14.27	17.66	80.21
Growth						
Large Consumers	0.69	0.86	0.64	0.66	0.68	3.52
Improve Supply	0.71	0.65	0.12	0.12	0.12	1.72
General Mains	5.51	5.52	5.30	5.73	6.36	28.42
Regulators (Growth)	0.00	0.00	0.00	0.00	0.00	0.00
Meters	3.54	3.46	3.30	3.51	3.94	17.74
Services	7.59	7.95	7.72	8.49	9.15	40.90
Other	0.14	0.15	0.15	0.15	0.16	0.75
Total Growth	18.17	18.59	17.22	18.66	20.41	93.05
Material Changes						
Increased Network Utilisation	0.00	0.00	0.00	0.00	0.00	0.00
IT	3.63	3.99	2.55	0.00	0.00	10.17
New Townships	1.87	4.02	1.50	1.36	0.36	9.11
Security of Supply	4.05	7.36	4.54	12.73	10.22	38.90
Total Scope Changes	9.54	15.38	8.59	14.08	10.58	58.18
TOTAL NEW FACILITIES INVESTMENT	42.48	49.41	43.88	47.02	48.65	231.44

Note: In all tables there may be small arithmetic anomalies due to rounding errors

For comparison with the expenditure requested by Envestra, ECG has grouped the recommended new facilities for the forecast period into the categories given in Table 13 of the AAI and shown in this review Table 7-1, using the following allocations.

- IT projects (SIB) includes Non FRC IT systems, FRC IT systems (both SIB) and IT-Material Changes
- Other (SIB) includes Corrosion Protection, Odorising and Other (all SIB)
- Periodic Meter Changes (SIB) includes PMC-Domestic and PMC-I&C (both SIB)
- Mains/Inlets/meters (Growth) includes all Growth category items except Other

Recommended new Facilities capital expenditure for 2006/07 to 2010/11 is summarised in Table 7-57.

Table 7-57: Recommended New Facilities Capital Expenditure, 2006/07 to 2010/11 (Nominal $ million)

	2006/07	2007/08	2008/09	2009/10	2010/11
Stay in Business					
Mains replacement	6.96	6.88	6.47	6.78	7.58
Periodic meter changes	4.69	4.68	5.10	5.09	4.55
Security of Supply	4.05	7.36	4.54	12.73	10.22
SCADA	1.28	1.32	0.69	1.23	0.80
Regulators	1.37	1.42	0.76	0.78	0.80
IT Projects	3.68	4.39	7.17	0.00	3.48
Other	0.40	0.75	0.42	0.40	0.44
Total replacement	**22.44**	**26.80**	**25.17**	**27.00**	**27.88**
Growth					
Mains/inlets/meters	18.03	18.44	17.07	18.51	20.25
Extensions to Towns	1.87	4.02	1.50	1.36	0.36
Other	0.14	0.15	0.15	0.15	0.16
Total Growth	**20.04**	**22.61**	**18.72**	**20.02**	**20.77**
Total New Facilities	**42.48**	**49.41**	**43.88**	**47.02**	**48.65**

ECG advises this recommendation reduces the Capital expenditure allowance requested by Envestra by $34.67million, from $266.11million to $231.44million (nominal)

8. NON CAPITAL COSTS 2006/07 TO 2010/11

8.1 INTRODUCTION

Operating, maintenance and other non capital costs are also significant components of the revenue requirement for Envestra. Sections 8.36 and 8.37 of the Gas Code cover the provisions related to recovery of non capital costs.

- Section 8.36 defines non capital costs as the operating, maintenance and other costs incurred in the delivery of a reference service.
- Section 8.37 states that reference tariffs may provide for the recovery of all non-capital costs except for any costs that would not be incurred by a prudent service provider, acting efficiently in accordance with good industry practice and to achieve the lowest sustainable cost of delivering the reference services.

The Commission is seeking that ECG undertake a review of the Non Capital expenditure consistent with the Commission's view expressed in the Guidance Paper.

The Commission's Guidance Paper says:

"in submitting its forecast of non-capital costs for the second period, Envestra should include in its supporting information an analysis of the differences between the forecast and actual non-capital costs in each of the major components during the first period, and the factors that it considers to have been the most significant in explaining and justifying such differences;

the Commission, with expert assistance, will undertake an assessment of the 'power" of the regulator as well as market incentives on Envestra for its actual non-capital costs during the first period to approach efficient levels;

providing that such an analysis does not warrant an alternative approach, and with the exceptions of (1) marketing costs and (2) outsourced asset management costs that have not been market tested, the Commission expects to assess forecasts of non-capital costs for the second period using a variance-against-trends approach, with the onus being on Envestra to show why its forecasts of non-capital costs for the second period (other than for marketing and outsourced asset management) should depart from continuation of a trend based upon (normalised) past sending levels; and

for Envestra's forecasts of marketing and outsourced asset management costs, the Commission expects to undertake a 'zero-based budgeting" examination of these components of non-capital costs."

In relation to using a bottom up approach, ECG has interpreted the Commission's requirement to mean that the categories marketing and the asset management activities should be disaggregated into sub categories. These sub categories should be at a level in which meaningful analysis can be carried out to justify the expenditure.

ECG also recognises that the Guidance Paper states that zero-based budgeting examination should be carried out for the components of Marketing and the Outsourced Asset Management function. This means that Envestra has to provide sufficient information to justify its expenditure for these two categories not based on historical performance but on what is required in the forecast period.

However in the 2005 AAI, Envestra has presented its expenditure under the following headings:

- Operating and Maintenance
- Administration and General
- FRC
- Network Development
- IT Projects

Envestra has treated the above categories as business as usual (baseline case) and has included a section called Material Changes. The baseline case expenditure has been justified on a variance-against-trends approach. Envestra has then separately provided details on the material changes. For marketing expenditure, Envestra also provided a Network Development Paper which contains disaggregated information on its network initiatives.

As the information has been presented in that manner, ECG has adopted a similar approach to analyse the non capital expenditure.

For the purposes of this report, ECG has applied the meanings of the terms "prudent" and "efficient" outlined in Section 3.1 to assess whether the non capital costs comply with the relevant sections of the Code.

8.2 ENVESTRA'S OPERATIONAL ARRANGEMENT

Envestra's network assets are managed by Origin Energy Asset Management[130] (OEAM). Envestra has entered[131] into an Operating and Management agreement with OEAM in which OEAM operates and manages the South Australian network.

The services provided by OEAM include:

- Managing the haulage of gas
- Operating and maintaining the network
- Planning, designing and constructing network extensions
- Assisting Envestra with regulatory submissions
- Assisting Envestra in the promotion of natural gas
- Preparing the budget for each financial year
- Providing information to Envestra on its financial and management issues
- Reading meters and billing Retailers

[130] Envestra and OEAM are related parties
[131] Operating and Management Agreements

Envestra advises that under the contract, it is obliged to pay OEAM for all the costs incurred by OEAM in performing its asset management duties. In addition, Envestra pays OEAM a management fee[132] of 3.0% of the total network revenue.

As well as the above payments, Envestra also pays OEAM an incentive bonus each financial year for real reductions in:

- The average capital cost of connecting new consumer sites to the networks
- Controllable costs per gigajoule of gas

The bonus is equal to one third of the reduction in costs from the immediately preceding financial year, after these costs have been adjusted for inflation.

The WorleyParsons report provides details of the management fees to be paid in the forecast period. ECG has replicated the information in Table 8-1.

Table 8-1: OEAM Management Fees for 2006/07 to 2010/11

	O&M	Capital	O&M plus capital	Management Fee	
	$m	**$m**	**$m**	**$m**	%*
2006/07	24.91	46.12	71.03	3.9	5.49
2007/08	24.93	52.49	77.42	4.3	5.55
2008/09	24.74	46.50	71.24	4.5	6.32
2009/10	25.05	47.56	72.61	4.9	6.75
2010/11	25.15	52.26	77.41	5.2	6.72

*Note Percentage of capital and operating expenditure

WorleyParsons indicates that it considers that the management fees paid by Envestra to OEAM to be reasonable and that the incentive bonus to be appropriate as it drives real efficiency gains.

ECG is aware that arrangements similar to those between Envestra and OEAM are not unique. Other network service providers such as AGL Gas Networks, ActewAGL, Multinet and SP Ausnet have contractual relationship with related parties.

However, it is worth noting that the impact of related parties' transactions is an issue that many Regulators are contending with currently. In the Essential Services Commission of Victoria (ESCV) Electricity Price Review 2006 to 2010[133], the ESCV discussed this issue in detail and how it proposes to deal with the issues.

From ECG's perspective, it is difficult to comment on the appropriateness of the 3% management fee without a close examination of the terms and conditions of the contract. However, ECG believes that such management fees should reflect the level of risk that the asset manager takes.

In relation to the incentive payment, ECG recognises that contractual agreements such as the one between Envestra and OEAM often include incentive payments. On face value, a bonus payment equal to one-third of the real reduction in cost for the indicators shown above seems reasonable however how this translates into the average capital cost per customer and controllable cost per gigajoule of gas is a complex issue and would need further investigation before ECG could comment further.

It is worth noting that in the 2002 Review of the Access Arrangement, the Essential Services Commission of Victoria (ESCV) expressed concern about the lack of market

[132] Envestra Operating and Management Agreements
[133] Electricity Price Determination Draft Decision page 162

testing between Envestra and OEAM. However, it concluded that the Envestra's cost including the management fee and incentive bonus for 2001 was lower than the Commission's forecast expenditure for that year. As such, ESCV included the fees and bonus as part of the operating costs for tariff purposes.

It is not apparent where Envestra has allocated the cost for both the management fees and the incentive payment. However, ECG believes that it is reasonable to expect that the management fees and the incentive payments would have been allocated to either the capital and/or the non capital expenditure. As such, ECG is of the view that there these fees do not have to be separately reviewed.

8.3 ENVESTRA NON CAPITAL COSTS

Envestra have forecast Non Capital Costs using its 2004/05 costs as a baseline[134]. The resultant forecast costs represent the 2004/05 costs adjusted for the following variances:

- Changes to expenditure to account for increase in the size of the network. (includes the number of customers and the physical size)
- Changes to the scope of work undertaken. (includes material changes and expenditure)
- Forecast CPI of 2.5%
- Gross wage cost escalation (nominal) of 6.02% (average over 5 years based on advice from BIS Shrapnel). Note: For the purposes of this report, ECG accepts this forecast.
- A 1.2% cumulative productivity factor which equates to 2 FTEs per year[135]

Envestra Non Capital Costs as presented in its 2005 AAI are as per Table 8-2:

Table 8-2: Non Capital Costs 2006/07 to 2010/11 (Nominal $million)

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
Operating and Maintenance	30.3	35.7	30.3	30.7	31.3	158.3
Administration and General	7.5	7.5	8.3	8.4	8.7	40.4
FRC	6.4	6.9	7	7.5	7.6	35.4
Network Development	6.6	6.8	7	7.3	7.5	35.2
IT projects	0.7	1.3	1.8	1.8	1.9	7.5
Total	**51.5**	**58.2**	**54.4**	**55.7**	**57**	**276.8**
Total $m (31 Dec 2004)	**49.1**	**54.1**	**49.4**	**49.3**	**49.3**	**251.2**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-3 converts the nominal $ shown in Table 8-2 to real $ 2005/06.

[134] Envestra's 2005 AAI page 36
[135] Envestra response to ECG dated 24 February 2006

Table 8-3: Non Capital Costs 2006/07 to 2010/11
(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
Operating and Maintenance	29.56	33.98	28.14	27.81	27.66	147.15
Administration and General	7.32	7.14	7.71	7.61	7.69	37.46
FRC	6.24	6.57	6.50	6.79	6.72	32.82
Network Development	6.44	6.47	6.50	6.61	6.63	32.65
IT projects	0.68	1.24	1.67	1.63	1.68	6.90
Total	**50.24**	**55.40**	**50.52**	**50.46**	**50.38**	**257.00**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

In support of its non capital expenditure, Envestra has provided the WorleyParsons' report (with the exception of IT) stating that Envestra's expenditure is efficient. In response to the request for information from ECG seeking information on the current period, Envestra has referred to the WorleyParsons' report. In addition, Envestra also advises[136] that the expenditure details for 2001/02 and 2002/03 are not available in the categories shown above. However, the Commission has provided ECG with the costs from the regulatory accounts as shown in Table 8-4:

Table 8-4: Non Capital Cost Expenditure 2001/02 to 2002/03.
(Nominal $)

	2001/02	2002/03
Operating & Maintenance	19,456	20,615
Administration & General	7,858	6,662
Network Development	10,018	6,056
FRC	0	0
Total	**37,332**	**33,333**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

For ECG to be able to make effective use of the data, the categories such as Operating and Maintenance and Network Development have to be broken down into greater detail. Envestra has not been able to provide any other information related to the costs for these years and as such it is unlikely that Envestra will be able to provide any further details regarding these costs. As a result, the above costs are of only limited value to ECG's analysis.

As such, ECG has referred to the WorleyParsons' report for details on the non capital expenditure. ECG has referred to the IBM report for justification for the IT and the CRA report for justification of the network development.

Details of the non capital expenditure in the WorleyParsons' report are shown in Table 8-5.

[136] Envestra Request for Information, response to Q5.1 and 5.2 24th October, 2005

Table 8-5: Envestra's Non Capital Expenditure 2003/04 to 2010/11[137]
(Real $thousand 2004/05)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 2006/07-2010/11
Operating & Maintenance	25,143	24,437	23,948	24,940	24,954	24,767	25,079	25,169	124,910
Administration & General	5,572	6,225	6,837	7,160	6,971	7,527	7,417	7,510	36,585
Network Development	6,771	6,524	6,266	6,275	6,328	6,372	6,436	6,492	31,903
FRC	229	6,191	6,269	6,133	6,425	6,372	6,633	6,598	32,160
Material Changes				4,608	9,404	4,335	3,707	3,490	25,544
Total	**37,716**	**43,377**	**43,320**	**49,116**	**54,082**	**49,373**	**49,272**	**49,260**	**251,102**

From the information provided, ECG is unable to exactly map WorleyParsons' Table 8-5 to the non capital expenditure in the 2005 AAI shown in Table 8-2. However, as the totals in Table 8-5 correspond to the totals in Table 8-2, ECG assumes that the costs in the various categories in Table 8-5 maps to the categories in Table 8-2.

However, ECG notes that the totals of individual line item components of current Non Capital Costs in WorleyParsons'[138] report (Table 10-2: Operating and Maintenance, Table 10-3:Administration and General, Table 10-4:Network Development and Table 10-5:FRC) do not add up to the totals represented in it's 'Actual Opex' (Table 10-1). ECG believes the $6m discrepancy between Tables 10-2 to 10-5 and Table 10-1 in 2003/04 may be due to incorrect FRC cost allocation in this year.

As mentioned at the start of this section, Envestra proposes to use 2004/05 as the base year and show any variance to trend from that year. Table 8-5 shows that the total cost for 2005/06 is less than 2004/05. At the meeting with ECG on 21 November 2005, Envestra advises that it has selected 2004/05 as the representative year because the 2004/05 expenditure is the most current. ECG believes that this is a reasonable approach.

The Guidance Paper requires that the cost for both Operation and Maintenance which has been outsourced to Origin Energy Asset Management, Network Development be reviewed using a bottom up approach. WorleyParsons has presented the information using a variance-against-trends approach for these categories. However, WorleyParsons has separately provided details of key material changes.

ECG is of the view that most of the asset management activities are determined by Codes, Standards and Manufacturer's recommendations. As such, ECG believes that reviewing the baseline case for the above categories using a variance-against-trends approach also meets the Commission's requirements of a zero base costing approach.

In addition for the purpose of this analysis, ECG has also assumed that the current period non – capital expenditure is efficient.

Envestra advises the first two years of real costs for the current period 2001/02 to 2004/05 is unavailable[139]. As such, ECG has used the real costs for the last three years of the current period and the forecast costs for 2006/07 to 2010/11 provided by Envestra in the WorleyParsons' report. Due to the discrepancy between Table 10-1 and the addition of Tables 10-2 to 10-5 in WorleyParsons' report, ECG has used the disaggregated costs presented in Tables 10-2 to 10-5 of the WorleyParsons' report.

[137] WorleyParsons' Report September 2005 Table 1-4
[138] WorleyParsons' Report, September 2005.
[139] Envestra Request for Information, response to Q5.1 and 5.2, 24th October, 2005

For its analysis, ECG adjusted these costs from 2004/05[140] to real $ 2005/06.

8.3.1 Efficiency Factor

Stage Two

WorleyParsons advises[141] that Envestra has included productivity gains averaging out at 1.24% over the forecast period. Envestra provided details of the productivity gains shown as a separate line item in Table 8-6. This productivity gain is then rolled up into the Operating and Maintenance expenditure of Envestra's Table 15: Non-Capital cost forecast of the Access Arrangement Information shown in Table 8-6.

Table 8-6: Envestra Non Capital Cost Summary Outlining Productivity Gains 2006/07 to 2010/11
(Nominal $million)

	2006/07	2007/08	2008/09	2009/10	2010/11
Operating & Maintenance	26.2	26.8	27.3	28.3	29.1
Administration and general	7.5	7.5	8.3	8.4	8.7
FRC	6.4	6.9	7.0	7.5	7.6
Network development	6.6	6.8	7.0	7.3	7.5
Scope Changes					
Maintenance savings	0.0	-0.2	-0.4	-0.6	-0.8
IT Strategy	0.7	1.3	1.8	1.8	1.9
Productivity Gains	-0.2	-0.4	-0.7	-0.9	-1.2
Regulatory/Governance	1.0	1.0	1.3	1.5	1.7
Ageing Workforce	1.0	1.1	1.1	1.0	1.0
Other	2.4	7.4	1.6	1.4	1.6
TOTAL $m (nominal)	**51.5**	**58.2**	**54.4**	**55.7**	**57.0**
TOTAL $m (31 Dec 2004)	49.1	54.1	49.4	49.3	49.3

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Envestra advises[142] that the forecast productivity gains (or efficiency factor) equates to 1.2% and is based on the savings of 2 FTEs per year. Envestra contends this is a reasonable forecast of productivity improvement in relation to the SA network and is comparable with recent regulatory determinations in other jurisdictions. Envestra also submits that 1.2% recognises that efficiency improvements are becoming more difficult to achieve, particularly post industry privatisation.

[140] WorleyParsons' Report, September 2005, Pg 9.
[141] WorleyParsons' report, Section 10.6.2.7, Pg 100
[142] Envestra response to ECG dated 24 February 2006

In the current access arrangement, SAIPAR set[143] an efficiency gain for all non-capital costs of 4% for each year (excluding UAG, License Fees, Contaminated sites and Telemetry). In addition, SAIPAR set a 6% reduction for UAG, representing a total reduction in Non Capital costs of 30%. WorleyParsons was unable to quantify the efficiency gains made by Envestra during this period but lists several initiatives that were implemented to improve efficiency[144]. ECG sees no reason to doubt the commercial initiatives that Envestra has put in place. ECG therefore considers that the forecast efficiency gain (which equates to a total 10 FTEs over 5 years) is commensurate with recent regulatory determinations in other jurisdictions.

8.3.2 Operation and Maintenance Expenditure

Envestra's Operations and Maintenance expenditure for 2003/04 to 2010/11 is taken from the WorleyParsons' report and is shown in Table 8-7. These costs are essentially business as usual costs and do not include any material changes. The costs include forecast wages escalation but exclude efficiency gains.

Table 8-7: Operation and Maintenance Expenditure[145]
(Real $thousand 2004/05)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 06/07-10/11
Network Management	8,699	7,320	7,361	7,430	7,398	7,405	7,366	7,395	**36,994**
Network Maintenance	2,589	2,512	2,550	2,628	2,685	2,728	2,784	2,843	**13,668**
Meter Reading and Billing	2,524	2,416	2,425	2,465	2,496	2,520	2,554	2,586	**12,621**
Leak Repairs	3,402	3,701	3,741	4,990	5,032	5,068	5,105	5,140	**25,335**
Self Insurance		619	605	619	619	619	619	619	**3,095**
Network Planning	2,171	1,720	1,540	1,423	1,408	1,276	1,401	1,394	**6,902**
Facilities Management	3,900	4,294	3,894	3,554	3,487	3,320	3,412	3,356	**17,129**
Government Charges	1,858	1,854	1,833	1,830	1,829	1,830	1,837	1,837	**9,163**
Total	**25,143**	**24,436**	**23,949**	**24,939**	**24,954**	**24,766**	**25,078**	**25,170**	**124,907**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-8 converts the real $ 2004/05 shown in Table 8-7 to real $ 2005/06.

[143] SAIPAR Gas Access Arrangement Final Decision, Dec 2001, Pg 121
[144] WorleyParsons' Report September 2005 pages 97 & 98
[145] WorleyParsons' Report September 2005 Table 10-2

Table 8-8: Operation and Maintenance Expenditure (Real $million 2005/06)

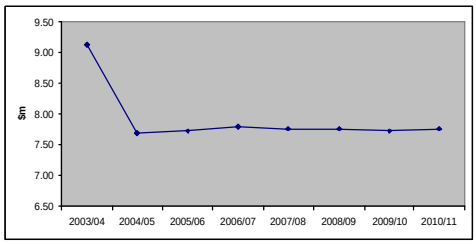
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 06/07-10/11
Network Management	9.13	7.68	7.72	7.80	7.76	7.77	7.73	7.76	**38.81**
Network Maintenance	2.72	2.64	2.68	2.76	2.82	2.86	2.92	2.98	**14.34**
Meter Reading and Billing	2.65	2.53	2.54	2.59	2.62	2.64	2.68	2.71	**13.24**
Leak Repairs	3.57	3.88	3.92	5.24	5.28	5.32	5.36	5.39	**26.58**
Self Insurance	0.00	0.65	0.63	0.65	0.65	0.65	0.65	0.65	**3.25**
Network Planning	2.28	1.80	1.62	1.49	1.48	1.34	1.47	1.46	**7.24**
Facilities Management	4.09	4.51	4.09	3.73	3.66	3.48	3.58	3.52	**17.97**
Government Charges	1.95	1.95	1.92	1.92	1.92	1.92	1.93	1.93	**9.61**
Total	**26.38**	**25.64**	**25.13**	**26.17**	**26.18**	**25.98**	**26.31**	**26.41**	**131.05**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Expenditure shown in Table 8-8 is presented in the graphs below to show the trends for the period from 2002/03 to 2010/11. ECG has assumed that as in the Guidance Paper, the cost in 2004/05 is considered to be efficient.

Network Management

Stage One



Graph 8-1: Network Management 2003/04 to 2010/11 (Real $million 2005/06)

Page 81 of the WorleyParsons' report indicates that the costs include the One Call Centre, operations administration, operations management and training. Page 82 of the report advises that the reduction from 2003/04 to 2004/05 is due to a reduction in management fees.

As 2004/05 is considered an efficient year and the annual expenditure is reasonably constant over the forecast period, ECG considers the expenditure to be prudent and efficient.

Stage Two

In Stage One ECG concluded that forecast expenditure is prudent and efficient. The recommended expenditure is shown in Table 8-9.

Table 8-9: Recommended Network Management Expenditure 2006/07 to 2010/11.

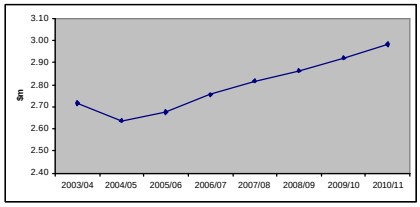
(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Network Management	7.80	7.76	7.77	7.73	7.76	**38.81**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Network Maintenance

Stage One



Graph 8-2: Network Maintenance 2003/04 to 2010/11
(Real $million 2005/06)

WorleyParsons advises[146] that the Network Maintenance expenditure is for activities such as general maintenance, cathodic protection and maintaining gas control and telemetry equipment. The additional expenditure per annum is due to the increase in Average Weekly Earnings being higher than the CPI affecting the labour costs component. In addition, the increase in costs is also due to the installation of additional telemetry equipment.

In regard to the increase due to the average weekly earnings being higher than CPI, ECG has referred to the Commission's 2005 Electricity Distribution Price Determination[147]. The Commission decided that the real increase in ETSA Utilities' unit labour cost of 2.1%per year reflects the pressure on wages for highly skilled electrical workers across Australia. However the Commission also made comment that labour productivity over all sector in the Australian economy is approximately 2.2% pa. The Commission expects that in the long term, the labour productivity in the utilities sector will resemble the market average.

Based on the Commission's Determination for Electricity, ECG believes that it is reasonable to expect that the gas industry will experience similar trends. As such, ECG believes that Envestra's cost increase cannot be justified without considering productivity increases.

In relation to the telemetry equipment in Section 6.4.3, ECG sought additional information to assist in making a decision on the capital expenditure. WorleyParsons' report has shown maintenance of SCADA[148] equipment in its section called "Risk Management". ECG has reviewed this section under Material Changes. However, as WorleyParsons has also indicated that this expenditure includes maintenance of telemetry equipment, ECG needs to understand what has been allocated into this category and what has been allocated into "Risk Management".

In summary, ECG therefore considers that is unable to recommend the cost increase due to wage rises is prudent and efficient as it has not been offset by productivity improvements.

[146] WorleyParsons' Report September 2005 page 82
[147] 2005-2010 Electricity Distribution Price Determination Part A: Statement of Reasons, Pg: 87, April 2005.
[148] It should be noted that Envestra has used the terms SCADA and telemetry as meaning the same.

In the case of the SCADA expenditure, to enable ECG to make a decision on whether the Operating and Maintenance expenditure is prudent and efficient, ECG sought additional information on what telemetry costs have been allocated into this category and the details of the costs.

Stage Two

Envestra advises[149] that while not technically correct, the terms 'SCADA' and 'telemetry' have been used interchangeably and the Network Maintenance costs reflect the business as usual cost. The additional maintenance cost related to widening the SCADA network has been included as a material change cost and reference to this was inadvertently omitted from the AAI.

From the above explanation, ECG believes that the cost increase is primarily due to labour increase and not due to additional telemetry cost. Maintenance expenditure is planned maintenance activities on gas distribution equipment. The maintenance cycle is generally related to Codes, Standards or Legislative requirements. As such, the cost of maintenance should stay constant over the forecast period. ECG therefore concludes that the proposed expenditure is prudent and efficient.

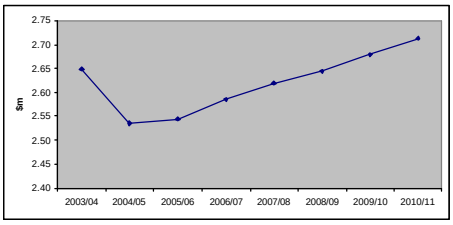
The recommended expenditure considered to be prudent and efficient is shown in Table 8-10.

Table 8-10: Recommended Network Maintenance Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Network Maintenance	2.76	2.82	2.86	2.92	2.98	**14.34**

Meter Reading and Billing

Stage One



Graph 8-3: Meter Reading and Billing 2003/04 to 2010/11 (Real $million 2005/06)

WorleyParsons advises[150] that the Meter Reading and Billing function includes the handling of requests for disconnections and reconnections, meter reading, billing and account investigations.

[149] Email dated 10 January 2006 – Reply to ECG Question 3.2 and 3.19 - Scada
[150] WorleyParsons' Report September 2005 page 83

The graph derived from Table 8-8 is increasing at an average of approximately 2%pa[151]. This increase is approximately the same as the increase in customer numbers. ECG recognises that as the number of customers increases, it can be expected that there will be the same proportional increase in meter reading and possibly other customer related activities. ECG therefore considers the cost for Meter Reading and Billing to be prudent and efficient.

Stage Two

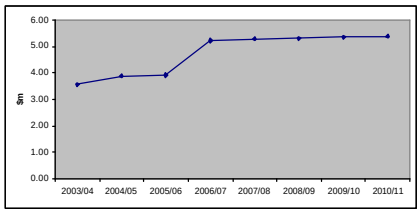
In Stage One, ECG based acceptance of the expenditure for the average yearly increase of 2% on increased meter reading and billing costs due to new connections as advised in WorleyParsons' report. Envestra advises[152] this advice is incorrect and the increase is due to Average Weekly Earnings applied to the direct labour component of Meter Reading and Billing. ECG accepts the amendment and concludes that forecast expenditure is prudent and efficient. The recommended expenditure is shown in Table 8-11.

Table 8-11: Recommended Meter Reading and Billing Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Meter Reading and Billing	2.59	2.62	2.64	2.68	2.71	**13.24**

Leak Repairs

Stage One



Graph 8-4: Leak Repairs 2003/04 to 2010/11. (Real $million 2005/06)

WorleyParsons advises[153] that Leak Repairs covers the repair of leaks, piecemeal renewals and inlet service renewals (includes investigations). It also advises that the cost increase in 2005/06 to 2006/07 is due to a change in policy to expense short length piecemeal repairs. The previous policy is to capitalise the repair costs. The graph shows a step jump and then a constant expenditure for the forecast period.

ECG is of the view that the condition of the cast iron varies depending on the age and the geographical location of the gas mains. As noted in mains replacement in Section 6.4.1, ECG is recommending acceptance of the mains renewal program proposed by Envestra. On that basis, ECG believes that Envestra will prioritise its mains renewal program so that the worst areas are attended to first. Given that situation, ECG expects Envestra will no longer have to attend to the leaks in those areas.

[151] 2006/07 expenditure divided by 2005/06 expenditure etc from Table 8-8
[152] Envestra Response to ECG Report, Additional Information Costs of servicing new customers, Pg 5, 27th Feb 2006.
[153] WorleyParsons' Report September 2005 page 82

As the condition of the assets is very much dependent on the location and age of the cast iron mains, ECG believes that once the worst areas are attended to there should be a reduction in both leaks from the gas mains and the UAFG. As such, ECG expects to see the Leak Repair costs decrease over time which is not what is presented by Envestra in its submitted costs.

In addition, as shown in Table 8-8, the cost increase in 2006/07 from 2005/06 is approximately $1.2million due to a change in policy. Envestra has not shown where there is a cost savings in the capital expenditure due to the change in policy. In the absence of any details showing how the cost increase has been derived and why there is a change in the policy, ECG is unable to comment on the prudence and efficiency of the cost.

At this stage, ECG is unable to conclude that Leak Repair expenditure is prudent and efficient.

In relation to the change in policy, ECG sought additional information on the reasons for this and how Envestra has derived the cost estimates.

Stage Two

Based on additional information[154] provided by Envestra, ECG accepts the reason for changing the accounting policy to expense rather than capitalise forecast piecemeal mains replacement expenditure. Piecemeal renewal keeps the network functioning within its current configuration and therefore provides relatively short term system benefits. In contrast, block replacement recognises that the asset has reached the end of its useful life and it also generally provides the added long term benefit of increased capacity capability resulting from higher system pressures.

Envestra advises[155] that forecast piecemeal renewal expenditure is based on historical costs and is shown in the following tables.

Table 8-12: Leak Repair Cost Derivation, (Nominal $thousand)

	2001/ 02	2002/ 03	2003/ 04	2004/ 05	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11
Capex exc' Expensed $	4,140	3,833	4,055	4,067	7,368	9,230	9,233	8,782	9,296	10,517
Expensed $						1,141	1,143	1,152	1,141	1,130
Total	**4,140**	**3,833**	**4,055**	**4,067**	**7,368**	**10,371**	**10,376**	**9,934**	**10,437**	**11,647**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-13: converts the nominal $ shown in Table 8-12: to real $ 2005/06.

Table 8-13: Leak Repair Cost Derivation, (Real $million 2005/06)

[154] Email dated 20 December 2005
[155] Email dated 23 December 2005

	2001/ 02	2002/ 03	2003/ 04	2004/ 05	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11
Capex exc' Expensed $	4.58	4.10	4.25	4.17	7.37	9.00	8.79	8.15	8.42	9.30
Expensed $						1.11	1.12	1.12	1.11	1.10
Total	**4.58**	**4.10**	**4.25**	**4.17**	**7.37**	**10.12**	**9.90**	**9.28**	**9.53**	**10.40**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

As can be seen from Table 8-13, expenditure is marginally decreasing in real terms over the forecast period which is to be expected as more block renewals are completed and the need for piecemeal renewals decreases.

Envestra further advises[156] that there is a commensurate savings in maintenance (leak repair) costs as shown in the second line of Table 8-14: which is a revised version of Table 15 in the SA Access Arrangement Information.

Table 8-14: Inclusion of Maintenance Savings in Table 15 of AAI, (Nominal $million)

	2006/07	2007/08	2008/09	2009/10	2010/11
Operating & Maintenance	30.3	35.9	30.7	31.3	32.1
Maintenance Savings		-0.2	-0.4	-0.6	-0.8
Total O&M	30.3	35.7	30.3	30.7	31.3
Administration and General	7.5	7.5	8.3	8.4	8.7
FRC	6.4	6.9	7.0	7.5	7.6
Network Development	6.6	6.8	7.0	7.3	7.5
IT Projects	0.7	1.3	1.8	1.8	1.9
TOTAL	**51.5**	**58.2**	**54.4**	**55.7**	**57.0**
TOTAL $m (31 Dec 2004)	**49.1**	**54.1**	**49.4**	**49.3**	**49.3**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-15: converts the nominal $ shown in Table 8-14: to real $ 2005/06.

Table 8-15: Inclusion of Maintenance Savings in Table 15 of AAI.

[156] Response to ECG's Questions dated 20 December 2005

(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11
Operating & Maintenance	29.56	34.17	28.51	28.36	28.37
Maintenance Savings	0.00	-0.19	-0.37	-0.54	-0.71
Total O&M	29.56	33.98	28.14	27.81	27.66
Administration and General	7.32	7.14	7.71	7.61	7.69
FRC	6.24	6.57	6.50	6.79	6.72
Network Development	6.44	6.47	6.50	6.61	6.63
IT Projects	0.68	1.24	1.67	1.63	1.68
TOTAL	**50.24**	**55.40**	**50.52**	**50.46**	**50.38**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Although piecemeal renewal costs and leak repair costs associated with the mains renewal program are forecast to decrease over the period, Envestra advises the marginal increase in the overall leak repair costs shown in Graph 8.4 is due to two factors as follows:

1. In some cases block mains renewal with the highest IRR (takes into account the number of leaks and cost of replacement) may not be given priority over others where, for example, high pressure is required or council repaving programs need to be considered.

2. Labour costs will materially increase.

ECG accepts that circumstances do arise where block renewals with the highest IRR may not always be completed ahead of others, but over time the priority for block renewals is predominantly driven by rising operation and maintenance costs and risk factors and this should be reflected in decreasing overall leak repair costs.

As noted under the section on Network Maintenance above, increasing labour costs should be largely offset by labour productivity increases.

Based on the above, ECG considers that efficient annual leak repair costs in accordance with the Code should reflect the decreasing piecemeal renewal costs and maintenance costs presented by Envestra.

The recommended reductions in costs to be applied to Leak Repairs in Table 8.7 are identified below in Table 8-16.

Table 8-16: Reduction in Leak Repair Expenditure 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/2010	2010/11
Piecemeal saving		0.002	0.009	-0.011	-0.011
Maintenance saving		-0.190	-0.370	-0.540	-0.710
Total Savings		**-0.188**	**-0.361**	**-0.551**	**-0.721**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

The recommended expenditure for Leak Repairs which is considered prudent and efficient is shown in Table 8-17, i.e. Table 8-8 expenditure minus Table 8-16 expenditure.

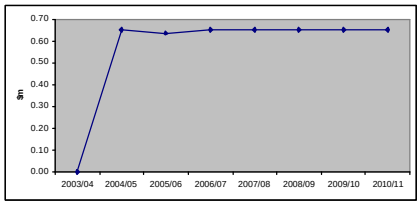
Table 8-17: Recommended Leak Repair Expenditure 2006/07 to 2010/11 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Leak Repairs	5.24	5.09	4.95	4.80	4.67	**24.76**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Self Insurance

Stage One



Graph 8-5: Self Insurance 2003/04 to 2010/11 (Real $million 2005/06)

WorleyParsons advises[157] Self Insurance costs are related to property damage and business interruption. WorleyParsons indicates that Envestra has not previously accounted for these costs as part of the regulated business.

Envestra has sought an external market based estimate to quantify the cost of the Self Insurance. WorleyParsons advises that the 2003/04 segment asset values were then used to apportion the costs to the respective parts of the business. WorleyParsons in its report says that the basis of obtaining market base estimate is reasonable.

ECG has not sighted the market base estimate and how it translates across to the various parts of the business.

In the case of Self Insurance, ECG understands that Envestra is now proposing to set aside an amount for Self Insurance cost purposes. Any accidents that occur in the future should then be paid from this account. WorleyParsons' states[158] that Envestra currently self insures but has not previously accounted for the cost as part of the regulated

[157] WorleyParsons' Report September 2005 page 84
[158] WorleyParsons' Report September 2005 page 84

business. ECG is unaware to what other part of the business this cost would have been charged.

At this stage, ECG is unable to conclude if the Self Insurance cost is prudent and efficient.

ECG sought additional information how Envestra has accounted for its Self Insurance costs previously and what is the historical expenditure for accidents and interruptions.

Stage Two

Envestra has provided further clarification and information on the expenditure for Self Insurance. Envestra advises[159] that in the event of an incident, repair or recovery costs would be paid out of its revenue base and these costs have not been accounted for in the past or charged to any part of the business (regulated or unregulated).

Given that the forecast expenditure is based on market based estimates related to Envestra's network operations, ECG accepts that the allowances are efficient.

However, ECG understands that Self Insurance cost is a notional amount that has been set aside in case of accidents. Whether a notional amount is considered in a regulated environment is an issue that the Commission may need to resolve.

For the purpose of this report, ECG has accepted the cost as prudent and efficient.

Therefore the Self Insurance expenditure for 2006/07 to 2010/11 shown in Table 8-7 is recommended and is shown again in Table 8-18:

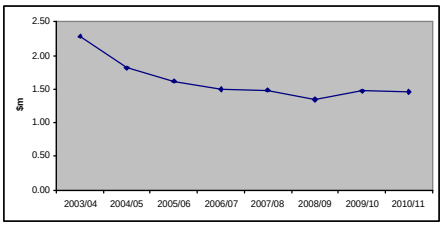
Table 8-18: Recommended Self Insurance Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Self Insurance	0.65	0.65	0.65	0.65	0.65	**3.25**

Gas Network Planning

Stage One

[159] Envestra response to ECG Questions: Q3.4, Pg12, 20th December 2005.



Graph 8-6: Network Planning 2003/04 to 2010/11
(Real $million 2005/06)

WorleyParsons advises[160] that Network Planning includes such activities as network design, technical and engineering support, engineering design and project management of major facilities.

The cost has declined over the current period and remains at the lower level over the forecast period. Additional information was sought from Envestra relating to the reduction in expenditure.

At this stage ECG is unable to conclude that the lower expenditure is prudent and efficient.

Stage Two

Envestra advises[161] of productivity improvements reducing the requirement for external consultants in Network Planning. As a result, costs decreased significantly by $400k in 2004/05 and $150k in 2005/06 with further reductions forecast over the remainder of the forecast period.

ECG accepts this advice and the associated Network Planning expenditure sought by Envestra. The recommended expenditure is shown in Table 8-19:

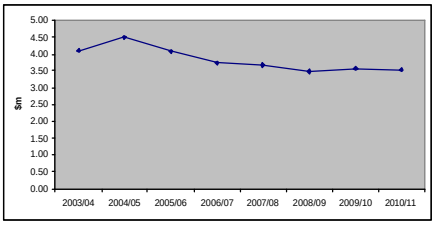
Table 8-19: Recommended Network Planning Expenditure 2006/07 to 2010/11.
(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Network Planning	1.49	1.48	1.34	1.47	1.46	**7.24**

Facilities Management

Stage One

[160] WorleyParsons' Report September 2005 page 84
[161] Envestra SA reply to ECG questions, Q3,8/2/06



Graph 8-7: Facilities Management 2003/04 to 2010/11
(Real $million 2005/06)

WorleyParsons advises[162] the Facilities Management costs are related to property rates and maintenance, site remediation and equipment rental. WorleyParsons indicates that the reduction in cost is due to the impact of the planned remediation in the early part of the forecast period.

ECG is unaware why the cost of remediation is part of the regulated business. However, ECG notes that the SAIPAR decision has included expenditure for monitoring of contaminated sites and not for remediation. In particular, SAIPAR commented[163] that it was not sufficiently convinced of the historical liability of the contaminated sites to customers.

Given SAIPAR' a view, ECG only proposes to discuss the prudence and efficiency of the site remediation costs only.

ECG in the section on Material Changes has accepted Envestra's proposed remediation plan. There are no details provided to show the relationship between the reduction in remediation cost and the costs for the other categories.

However, assuming that the 2004/05 costs are efficient and there is a direct relationship between the reduction in remediation cost with the total Facilities Management costs for the forecast period, ECG considers the Facilities Management expenditure is prudent and efficient.

Stage Two

In Stage One, ECG concluded that forecast expenditure is prudent and efficient. The recommended expenditure is shown in Table 8-20.

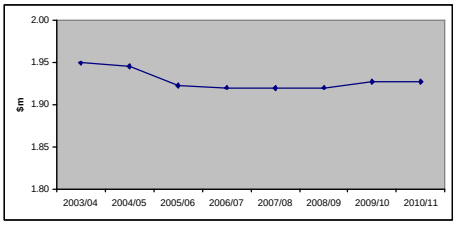
Table 8-20: Recommended Facilities Management Expenditure 2006/07 to 2010/11.
(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Facilities Management	3.73	3.66	3.48	3.58	3.52	**17.97**

Government Charges

Stage One

[162] WorleyParsons' Report September 2005 Page 92
[163] SAIPAR 2001 Final Decision page 106



Graph 8-8: Government Charges 2003/04 to 2010/11
(Real $million 2005/06)

WorleyParsons advises [164] that Government Charges include Envestra licence fees. Envestra has projected the current licence fees to remain at the current level for the forecast period.

ECG believes that the Government Charges should be the actual fees and charges that Envestra incurs. ECG therefore believes that it is appropriate to project the current licence for the forecast period and as such considers the cost to be prudent and efficient.

Stage Two

In Stage One, ECG concluded that forecast expenditure is prudent and efficient. The recommended expenditure is shown in Table 8-21:

Table 8-21: Recommended Government Charges Expenditure 2006/07 to 2010/11.
(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Government Charges	1.92	1.92	1.92	1.93	1.93	**9.61**

Summary – Operation and Maintenance

Based on the above analysis, ECG recommends the following expenditure:

Table 8-22: Recommended Operation and Maintenance Expenditure
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Network Management	7.80	7.76	7.77	7.73	7.76	38.81
Network Maintenance	2.64	2.64	2.64	2.64	2.64	13.2
Meter Reading and Billing	2.59	2.62	2.64	2.68	2.71	13.24
Leak Repairs	5.24	5.09	4.95	4.80	4.67	24.76
Self Insurance	0.65	0.65	0.65	0.65	0.65	3.25
Network Planning	1.49	1.48	1.34	1.47	1.46	7.24
Facilities Management	3.73	3.66	3.48	3.58	3.52	17.97

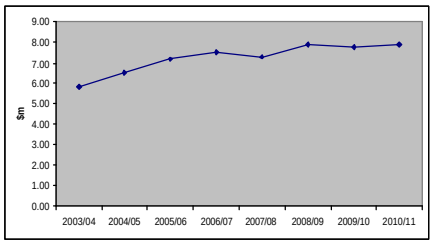
[164] WorleyParsons' Report September 2005 page 86

Government Charges	1.92	1.92	1.92	1.93	1.93	9.61
Total	**26.05**	**25.82**	**25.40**	**25.48**	**25.35**	**128.09**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

8.3.3 Administration and General

Stage One



Graph 8-9: Administration and General 2003/04 to 2010/11
(Real $million 2005/06)

WorleyParsons advises[165] that the Administration costs are for information technology, human resources, accounting and finance and network services. Table 8-5, the administration costs has increased from the baseline cost of $6.23million (real 2004/05) in 2004/05 to $7.51million (real 2004/05) in 2010/11. The cost over that period has increased by $1.28million. Details of the Administration and General cost are shown in Table 8-23.

Table 8-23: Administration & General (Excluding Material Changes)
(Real $million 2004/05)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 2006/07 - 2010/11
Information Technology	1.90	1.95	2.29	2.59	2.32	2.94	2.67	2.72	13.25
Human Resources	0.56	0.65	0.68	0.67	0.68	0.66	0.68	0.68	3.36
Accounting & Finance	2.80	3.27	3.48	3.49	3.56	3.50	3.63	3.66	17.85
Network Services	0.31	0.36	0.40	0.41	0.42	0.42	0.44	0.45	2.14
Total	**5.57**	**6.23**	**6.84**	**7.16**	**6.97**	**7.53**	**7.42**	**7.51**	**36.59**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

For the purpose of the analysis, ECG has converted the above table to 2005/06 $ as shown in the table below.

Table 8-24: Administration & General (Excluding Material Changes)
(Real $million 2005/06)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 2006/07

[165] WorleyParsons' Report September 2005 page 82

									- 2010/11
Information Technology	1.99	2.05	2.40	2.72	2.43	3.08	2.80	2.85	13.89
Human Resources	0.59	0.68	0.71	0.70	0.71	0.69	0.71	0.71	3.54
Accounting & Finance	2.94	3.43	3.65	3.66	3.74	3.67	3.81	3.84	18.72
Network Services	0.33	0.38	0.42	0.43	0.44	0.44	0.46	0.47	2.25
Total	**5.84**	**6.54**	**7.19**	**7.51**	**7.32**	**7.89**	**7.78**	**7.88**	**38.39**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

The major cost increase from 2004/05 to 2010/11 is the Information Technology area. WorleyParsons advises[166] that the cost increase in the Information Technology area is due to the timing of the licence renewals.

In addition, the other major contributor to the cost increase is in Accounting and Finance. WorleyParsons advises[167] that the increase is due to Envestra having to implement the International Accounting Standards. ECG is aware that the implementation of the Standards took place in 2004/05 and that organisations generally require additional resources to implement the new standards. Envestra's increased expenditure in 2004/05 reflects this. However it is unclear why Envestra's forecast expenditure further increases in 2005/06 and towards the end of the forecast period. ECG sought additional information in relation to this. At this stage ECG is unable to conclude that the forecast expenditure is prudent and efficient.

Another cost included in this category is Human Resources. ECG considers this cost to be relatively constant over the forecast period. ECG therefore believes that the cost is prudent and efficient.

The Network Services includes development and analysis, regulatory management, consumer contacting and pricing. The cost shows a marginal increasing trend over the forecast period. ECG considers that the marginal increase is possibly due to additional workload from FRC (e.g. additional pricing for customers, managing haulage agreement etc). ECG therefore considers the expenditure to be prudent and efficient.

However, in the case of IT, the cost increases from $1.95million (using 2004/05 as the base year) to $2.72million in 2010/11. This cost excludes any material changes. It would appear that there are other factors contributing to the cost increases apart from licence renewals. As ECG does not have any other information supporting the increase, ECG is unable to conclude that the expenditure is prudent and efficient.

As such, ECG sought additional information of the software licence costs.

Stage Two

Envestra has provided a reconciliation of the Information Technology expenditure shown in Table 8-24 with the IBM report. This expenditure is shown as Non-FRC expenditure in the IBM report. ECG has replicated the information provided to show details of the Information Technology cost.

Table 8-25: Information Technology Expenditure (Real $ million 2004/05)

[166] WorleyParsons' Report September 2005 page 87
[167] WorleyParsons' Report September 2005 page 88

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Information Technology*	2.59	2.32	2.94	2.67	2.72	13.25
Breakdown of Cost						
General IT Operations	*1.69*	*1.69*	*1.69*	*1.69*	*1.69*	*8.45*
Infrastructure & Application renewal	*0.24*	*0.2*	*0.54*	*0.27*	*0.31*	*1.38*
IT Network Management	*0.65*	*0.60*	*0.71*	*0.70*	*0.71*	*3.38*
Total	2,58	2,32	2,94	2.67	2.72	13.23

Note: The expenditure is shown in 2004/05 as provided in the email dated 12 January 2006.
* Information Technology row refers to information provided in the WorleyParsons' report.
** Minor differences in adding up the rows are due to rounding errors.

ECG believes that the General IT operations costs are the recurring expenditure to support Envestra IT systems. This will include the ongoing support of the application software such as Maximo and GIS and any other software licence arrangements.

The Infrastructure renewal cost is related to the installation of the new servers. Envestra advises[168] that the costs of servers have been allocated to capital expenditure but the installation cost has been allocated to operation and maintenance expenditure. Envestra proposes to install the servers using internal resources and as such have included the installation in the Infrastructure and Application Renewal Cost. ECG has reviewed the need for upgrading the servers in Section 7.4.6 and has recommended that the projects are prudent. As such, ECG is only considering the efficiency of the operating expenditure. ECG understands the installation cost is Envestra's experience for the current system. ECG believes that it is reasonable to use the current cost of installation for forecasting the installation cost. As such, ECG considers the installation cost to be efficient.

The Application Renewal costs are related to the Maximo Upgrade and the GIS upgrade. Envestra has provision for an additional operating cost of $270,000pa (Real 2004/05) from 2008/09 to 2010/11 as part of the Maximo Upgrade. In Section 7.4.6, ECG recommends also acceptance of the Maximo upgrade. However, ECG is concerned about the provision of $270,000. Envestra further advises[169] the $270,000 pa comprises:

1. Additional licence fees - $110,000pa

2. Two additional FTE's as the product is new and more advanced - $160,000pa

Envestra currently uses Maximo and proposes to upgrade it in 2008/09. It is not evident why the upgrade of an existing product with existing licenses would cost an additional $110,000pa. Envestra has based its estimate for the upgrade of Maximo from its current expenditure. It is therefore reasonable to expect that the operating expenditure should also be based on the current costs. Whilst product integration may require additional resources during the transitional period, it is unlikely they will be required thereafter. ECG considers there is insufficient evidence to substantiate an additional $160,000 pa. ECG therefore considers that this expenditure is not prudent and efficient.

The GIS upgrade costs are related to the version upgrades. On the same basis that Envestra has used its current cost to estimate the version upgrades, ECG recommends accepting this cost as efficient.

The IT Network Management cost is related to the maintenance and support required for the infrastructure to support the LAN and WAN. Envestra has shown a fairly constant expenditure over the forecast period. ECG considers that this is reasonable as it expects

[168] Envestra document " Respond to IT Maintenance Cost Question 1.8&3.8
[169] Envestra SA response to ECG Report, Pg 3, 27th February 2006

that there will be an ongoing need to support the IT network. ECG therefore considers this expenditure to be prudent and efficient.

ECG's recommended expenditure that is prudent and efficient is shown in the table below.

Table 8-26: Information Technology Expenditure (Real $ million 2004/05)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
General IT Operations	1.69	1.69	1.69	1.69	1.69	8.45
Infrastructure & Application renewal	0.24	0.02	0.17	0	0.04	0.57
IT Network Management	0.65	0.60	0.71	0.70	0.71	3.38
Total	2.58	2.31	2.67	2.39	2.44	12.39

ECG has converted the expenditure to 2005/06 by using a factor of 2.5% as shown in the table below.

Table 8-27: Information Technology Expenditure (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
General IT Operations	1.73	1.73	1.73	1.73	1.73	8.66
Infrastructure & Application renewal	0.25	0.02	0.17	0.00	0.04	0.58
IT Network Management	0.67	0.62	0.73	0.72	0.73	3.45
Total	2.64	2.37	2.74	2.45	2.50	12.70

In relation to Accounting and Finance expenditure (Table 8-23), Envestra further advises[170] the increases in expenditure comprise of:

- A once-off cost for International Financial Reporting Standards (IFRS) implementation ($100k) over years 2004/05 and 2005/06.
- Ongoing costs have been identified as increased insurance costs ($200k).
- Recharge costs to include system upgrades to Oracle 11I ($80k).
- Increases in audit costs ($50k).
- The development and compliance to Retail Market Rules with respect to UAFG proposals ($50k).

As noted in Stage One, ECG is aware of the implementation of new IFRS. Additional resources to prepare and implement the standards would have been required at the time of implementation and ECG accepts that Envestra's once-off cost of $100k over two years is prudent and efficient.

[170] Envestra SA reply to ECG Questions: Q 4, 8/2/06.

Envestra advises[171] ongoing general insurance increases of $200,000pa relating to public liability, property damage, worker's compensation, vehicle and travel insurance. This increase in expenditure was incurred in the current period and is expected to continue in the forecast period. Based on this advice, ECG finds the expenditure prudent and efficient.

Oracle database upgrades are included by Envestra in the expenditure sought for Infrastructure renewal, however Envestra advises that Accounting and Finance database upgrades are not included in the amounts sought for upgrading Maximo and Cordaptix. Notwithstanding this advice, Envestra refers to the additional ongoing cost of $80,000 being sought as a recharge cost. ECG believes that the upgrade should be a once off charge and not an ongoing cost. As a result, ECG is unable to conclude that Accounting and Finance database upgrade costs are prudent and efficient.

As a result of more stringent reporting and auditing procedures required of businesses in generally, ECG considers it is reasonable to expect auditing costs of financial systems to have increased and $50k each year is reasonable for large companies such as Envestra. Therefore ECG recommends acceptance of the additional auditing expenditure as being prudent and efficient.

Envestra's advice regarding the $50k per year for developing/complying with UAFG proposals associated with Retail Market Rules developed by REMCo does not elaborate on why this is an ongoing rather than a once-off cost. In the absence of this information ECG is unable to conclude the cost is prudent and efficient.

ECG's recommended Accounting and Finance expenditure which is considered prudent and efficient is summarised in the table below.

Table 8-28: Accounting and Finance Expenditure
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Accounting and Finance[172]	3.53	3.59	3.54	3.67	3.71	18.04

Summary – Administration and General

Based on the above analysis, ECG recommends the following expenditure:

Table 8-29: Recommended Administration and General Expenditure 2006/07 to 2010/11.

[171] Envestra SA response to ECG Report, Pg 3, 27th February 2006

[172] The recommended expenditure has been calculated by deducting the ongoing Oracle Database ($80,000) and Retail Rules for UAG ($50,000) from the annual cost for accounting and finance (real 2004/05) in Table 8-23 and the recommended expenditure converted to real $2005/06.

(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Information Technology	2.64	2.37	2.74	2.45	2.5	**12.70**
Human Resources	0.70	0.71	0.69	0.71	0.71	**3.53**
Accounting & Finance	3.53	3.59	3.54	3.67	3.71	**18.04**
Network Services	0.43	0.44	0.44	0.46	0.47	**2.24**
Total	**7.30**	**7.11**	**7.41**	**7.30**	**7.39**	**36.51**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

8.3.4 FRC Operating Costs

Stage One

The introduction of Full Retail Contestability (FRC) took place during the current period. In the 2005 AAI, Envestra advises that the State Government made a contribution to Envestra to offset the start-up costs in rolling out rolling out FRC in South Australia. This contribution extended to Non-Capital costs associated with FRC until 2009.

Envestra has included FRC costs as a line item in the Non-Capital Costs Summary in Table 15 of the Envestra AAI. The State government contribution is represented as an offset in Haulage Reference Services Revenue in Table 20 of the Envestra AAI.

Envestra's FRC expenditure from Table 8-5 is summarised in Table 8-30.

Table 8-30: Envestra's FRC 2003/04 to 2010/11[173]
(Real $thousand 2004/05)

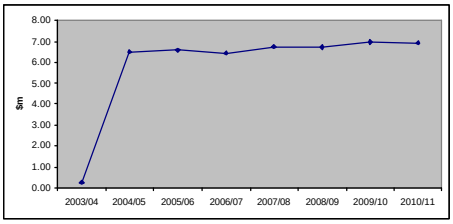
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 2006/07-2010/11
FRC	229	6,191	6,269	6,133	6,425	6,372	6,633	6,598	32,160

ECG has converted the cost to 2005/06 for the purpose of the analysis.

Table 8-31: Envestra's FRC 2003/04 to 2010/11[174]
(Real $thousand 2005/06)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 2006/07-2010/11
FRC	0.24	6.50	6.58	6.43	6.74	6.69	6.96	6.92	33.74

[173] WorleyParsons' Report September 2005 Table 1-4
[174] WorleyParsons' Report September 2005 Table 1-4



Graph 8-10: FRC 2003/04 to 2010/11
(Real $million 2005/06)

As shown in Graph 8-10, Envestra's expenditure is fairly constant over the forecast period. WorleyParsons advises[175] that the slight increase is due to the increase in the average weekly earnings and the transition from the 3 year to annual infrastructure IT support cost.

In the absence of any other information, ECG has referred to the Commission's Price Determination of Envestra FRC expenditure for guidance and information. Whilst ECG understands that the Commission's Price Determination has been carried out under the ESC Act and not the Gas Pipeline Access (South Australia) Act 1997 ("the National Gas Code"), the information and decision made by the Commission provides a sound basis for considering the FRC costs under this review.

The Commission after carrying out the review of the FRC expenditure decided that the prudent expenditure for 2005/06 is $5.508million (real June 2004) and for 2006/07 to 2008/09 is $5.032million (real June 2004). This is equivalent in real $ 2005/06 of $5.78million and $5.28million respectively.

ECG recognises that the Envestra's expenditure is fairly constant for the forecast period. However, neither Envestra nor WorleyParsons have identified why its cost for 2005/06 should be higher than the Commission's decision on prudent expenditure in the FRC Determination or why the expenditure has not decreased in the forecast period as shown in the Commission's decision.

For ECG to make a decision on the prudence and efficiency of the cost, ECG sought additional information on why there should be a cost difference between the Commission's approved expenditure and Envestra's expenditure.

Stage Two

Envestra advises that there a number of factors that have led to the increase in expenditure over the amount approved by the Commission for FRC. The factors include the following:

- The HP Unix servers support contract was only for three years after installation. As such, during the forecast period, the support arrangement has to be renegotiated with HP. Envestra has therefore included the support cost as part of the FRC expenditure.

- The Oracle Database is planned to be upgraded in 2006/07 and 2008/09 as advised by IBM. Envestra also advises[176] it has been its current policy to ensure that it is using the current Oracle database which is fully supported.

[175] WorleyParsons' Report September 2005 Page 92
[176] Envestra's document " reply ECG IT, finance 070202

- The Dell servers need to be progressively replaced from 2006/07 to 2008/09. The cost of installing the servers has been allocated to the operating expenditure.

- The various applications including Cordaptix, Webmethods, Doc 1 and the FRC telemetry softwares will periodically need version upgrades during the forecast period.

ECG is aware that the HP offers a three year maintenance contract as part of the initial purchase and installation cost. After that period, it is usual practice for a business to negotiate a new maintenance arrangement with HP. ECG therefore believes that it is prudent for Envestra to put in place a new maintenance contract. In addition, as the servers are from HP, Envestra only option is to negotiate the maintenance contract with HP. On that basis, ECG considers the cost[177] to be efficient.

ECG recognises that the Oracle Database is a key system for Envestra's FRC billing system. Envestra advises[178] that it is currently expected that the database will not be supported in 2007 and 2009 which the dates for the proposed upgrading. As such, ECG concurs with the upgrading of the version of the database at the nominated dates to ensure that the database is fully supported. This will avoid any extended down time should a problem arise. Envestra proposes to carry out the upgrading using internal staff. ECG has reviewed the cost and considers that the cost to be efficient.

In Section 7.4.6.2, ECG has recommended the installation of the Dell servers. Similarly to the Oracle database, ECG has reviewed the cost and considers the cost to be efficient. As such, ECG accepts the installation cost for the servers as prudent and efficient.

Based on the above analysis, ECG recommends acceptance of this FRC expenditure as being prudent and efficient.

Table 8-32: Recommended FRC Expenditure
(Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
FRC	6.43	6.74	6.69	6.96	6.92	33.74

8.3.5 Network Development Costs

Stage One

Envestra advises[179] that the network development costs are associated with maintaining and growing the gas load on the Envestra's network. The activities related to the costs are:

- Operations Support – processing connection orders and mains extension requests, site visits to determine gas meter locations, coordinating inlet and meter installation with customer and delivering meter boxes to builders.

- Market Development activities such as:

[177] It is worth noting that the FRC cost for the maintenance of the HP server has not decreased in 2010/11 in spite of the fact that Envestra proposes to replace the servers that year. Envestra advises that this is due to the maintenance contract being on an annual basis. ECG believes that it is reasonable to ensure that the maintenance contract continues until such time that the servers are replaced.
[178] Envestra's document " reply ECG IT, finance 070202
[179] 2005 AAI page 38

- Incentive payments to encourage consumers to increase gas consumption or connect to the network.
- Working with appliance retailers and others to ensure that gas appliances are available for sale.
- Working with builders and developers to ensure that gas appliances are specified in developments.
- Marketing campaign targeting specific market segment.
- Generic marketing activities to promote and position natural gas.

Envestra advises[180] that Network Development expenditure could be justified beyond current levels by an additional $2.1million pa. The current level of expenditure is considered by Envestra to achieve growth in gas volumes but insufficient in achieving demand forecasts set in the current period. It is not clear why Envestra has made this statement given that current level of expenditure as shown in Table 8-34 is actually less than the SAIPAR 2001 approved expenditure in Table 8-33.

SAIPAR set Envestra's Network Marketing expenditure as follows in Table 8-33.

Table 8-33: SAIPAR Network Marketing Expenditure 2001 (Real $million 2005/06)

	2001/02	2002/03	2003/04	2004/05	2005/06
SAIPAR Network Marketing	6.86	6.85	6.82	6.87	6.90

The network development costs in WorleyParsons' report[181] are presented in Table 8-34.

Table 8-34: Network Development Expenditure (Real $thousand 2004/05)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 2006/07-2010/11
Operations Support	1,998	1,797	1,448	1,501	1,539	1,569	1,605	1,644	7,858
Market Development	4,773	4,727	4,759	4,775	4,789	4,803	4,831	4,848	24,046
Total	**6,771**	**6,524**	**6,207**	**6,276**	**6,328**	**6,372**	**6,436**	**6,492**	**31,904**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

For the purpose of this analysis, Table 8-35 has been converted from real $ 2004/05 in Table 8-34 to real $ 2005/06.

[180] Envestra Network Development Plan, Pg 3, Sept 2005.
[181] WorleyParsons' Report September 2005 Page 90

Table 8-35: Network Development Expenditure
(Real $million 2005/06)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 2006/07-2010/11
Operations Support	2.10	1.89	1.52	1.57	1.61	1.65	1.68	1.72	8.24
Market Development	5.01	4.96	4.99	5.01	5.02	5.04	5.07	5.09	25.23
Total	**7.10**	**6.84**	**6.51**	**6.58**	**6.64**	**6.69**	**6.75**	**6.81**	**33.47**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

As outlined in the Guidance Paper, to take a bottom up approach in Network Development requires ECG to review individual building block activities separately. For example, incentive payments for respective marketing programs would need to be reviewed and analysed for effectiveness.

However as shown in Table 8-35, the expenditure presented in the WorleyParsons' report is actually on an aggregate level and not on a building blocks approach. Further information has been provided by Envestra in its Network Development Paper, Attachment 1: Activities supported by current level of expenditure. The Attachment provides details of the Network Development activities totalling $6.4million. Whilst the expenditure is approximately the same as the forecast levels in 2005/06 and 2006/07, it is unclear whether the expenditure in the attachment is for both Operations Support and Market Development. ECG has replicated the table in Attachment 1 in Appendix 1 to show the marketing activities detailed by Envestra and the level of expenditure.

The category "Representation" which may also include the Operations Support activities is actually described as natural gas representatives promoting gas to the both existing and new customers in the residential and industrial and commercial sectors.

In addition the Attachment whilst showing the level of expenditure has not provided any details regarding the effectiveness of the various initiatives. However during the meeting on 21 November 2005, there were some discussions on the effectiveness of the program.

To enable ECG to carry out its review, ECG sought additional information on the clarification of Att 1 of Network Development Plan (also reproduced in Appendix 1) identifying the activities related to Operations Support and Market Development. ECG also sought to confirm the effectiveness of the market development initiatives.

8.3.5.1 Benchmarking Cost per New Customer Connection

The results of the comparison of Envestra's cost to other network service providers are shown in Table 8-36.

Table 8-36: Network Development Cost per New Customer Connected
(Real $ 2005/06)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Envestra SA[182]				797	749	745	812	768

[182] Envestra AAI Network Development cost / Gross new connections

AGLN[183]			479	489	489	490	490	
CEG[184]			1,109	1,109	1,109	1,109	1,109	
Envestra QLD[185]				366	346	370	375	379
Allgas[186]				206	187	167	147	121
Multinet[187]	174	174	174	174	174			
Envestra[188]	151	151	151	151	151			
TXU[189]	70	70	70	70	70			

Note: In all tables there may be small arithmetic anomalies due to rounding errors
Note: All costs converted from respective dollars to real $ 2005/06.

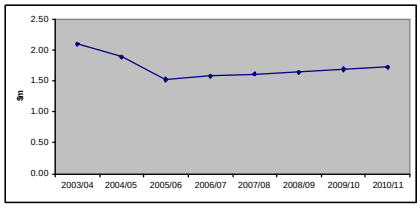
Table 8-36: outlines Envestra's Network Development cost per new customer connected to be much higher than most other jurisdictions. Envestra is operating at a level almost twice that of AGLN. On face value, ECG concludes that Envestra is most likely to be operating at an elevated level of expenditure and therefore not efficient. However, the comparison of Network Development Plans across the jurisdictions is not included in the benchmark study. Each plan contains programs, incentive payments and forecasts of new customer connections. ECG is not in a position to disclose the details of other network operators plans and as such is unable to directly compare the programs proposed.

Accepting that there could be different initiatives and activity levels for the various network service providers, ECG notes that Envestra's network development expenditure is high relative to other network service providers.

ECG's review of the Operations Support and Market Development activities are detailed in the following sections.

8.3.5.2 Operational Support Costs

Stage One



Graph 8-11: Operational Support Cost 2003/04 to 2010/11 (Real $million 2005/06)

WorleyParsons advises[190] that the gas connection costs are effectively maintained at the same level and increased only the Average Weekly Earnings.

[183] ECG review of AGLN, Sept 2005. Network Marketing pg 96 / new customers pg 57
[184] ECG review of CEG, Pg 80, Sept 2005
[185] Envestra QLD AAI 2005 Base Level
[186] Allgas AAI 2005
[187] Review of Gas Access Arrangements, Final Decision, October 2002.
[188] Review of Gas Access Arrangements, Final Decision, October 2002
[189] Review of Gas Access Arrangements, Final Decision, October 2002
[190] WorleyParsons' Report September 2005 Page 90

ECG believes that the gas connection process is an activity carried out by most network service providers. ECG expects that the cost should stay fairly constant on the expected level of market activity in the forecast period.

In regard to the increase due to the average weekly earnings being higher than CPI, ECG has referred to the Commission's 2005 Electricity Distribution Price Determination[191]. The Commission decided that the real increase in ETSA Utilities' unit labour cost of 2.1%per year reflects the pressure on wages for highly skilled electrical workers across Australia. However the Commission also made comment that labour productivity over all sector in the Australian economy is approximately 2.2% pa. The Commission expects that in the long term, the labour productivity in the utilities sector will resemble the market average.

Based on the Commission's Determination for Electricity, ECG believes that it is reasonable to expect that the gas industry will experience similar trends. As such, ECG believes that Envestra's cost increase cannot be justified without considering productivity increases.

In addition, costs relating to the activities within operations support outlined in the Envestra 2005 AAI have not been provided. Without detailed information on the costs for activities underpinning expenditure for Operations support, ECG is unable to conclude the costs are prudent and efficient.

As such, ECG sought additional information on the number of staff to carry out this function.

Stage Two

Envestra has provided further information on Network Development Operational Support. Envestra advises [192] 13 existing resources to continue into the forecast period for operational support activities identified in Stage One. These operational support activities include:

- 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.
- Delivering meter boxes to builders and plumbing merchants.

ECG is aware that other distributors (as in Victoria) have some of these activities carried out by operational staff instead of market development staff. In addition, coordinating the work between the plumbing contractors and the customer is also not the responsibility of the distributor in other jurisdictions. As such, given that the range of activities carried out by the Operational Support staff is unique to the SA market and that there is no change to the current level of staffing in this area, ECG considers Envestra's resource component of the proposed expenditure to be prudent and efficient in accordance with the Code.

As discussed in Stage One, wage escalation increases cannot be justified without considering productivity gains. However, based on BIS Shrapnel wage increase forecasts provided by Envestra and clarification of the efficiency factor applied[193], ECG recommends acceptance of the Operational Support expenditure as prudent and efficient.

[191] 2005-2010 Electricity Distribution Price Determination Part A: Statement of Reasons, Pg: 87, April 2005.
[192] Envestra reply to ECG Questions: Appendix 1, 24th December 2005.
[193] Envestra SA Response to ECG Report, Pg 2, 27th February 2006.

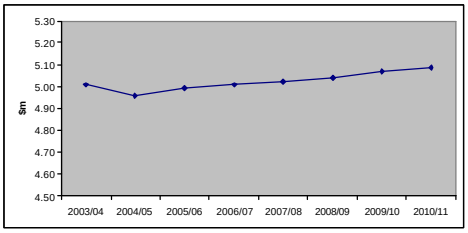
The recommended Operational Support expenditure is shown in Table 8-37.

Table 8-37: Recommended Operational Support Expenditure 2006/07 to 2010/11.
(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Operational Support	1.57	1.61	1.65	1.68	1.72	8.24

8.3.5.3 Market Development Costs

Stage One



Graph 8-12: Market Development 2003/04 to 2010/11
(Real $million 2005/06)

ECG recognises that Envestra has submitted its Network Development Paper supported by the CRA report justifying the expenditure for network development. However as outlined by the Essential Services Commission in Victoria in the 2002 Final Decision on the Victorian Distributors Access Arrangements, the relationship between marketing and demand remains unclear and the benefits are related to long-term customer interests. As such it is still debateable what the appropriate level of marketing activity is.

Although Envestra's Network Development Paper did not disaggregate the costs to various activities such as marketing incentive, generic advertising etc, it still remains unclear which activities relate directly to market development. Envestra has also not demonstrated the effectiveness of the program for the expenditure spent. Even if this information is available there is very little pubic information on the comparative effectiveness of the various activities at this level.

However, on an aggregate level, as can be seen in Table 8-35, the marketing expenditure for the forecast period is approximately the same as in the current period with a small increase of $0.13million from 2004/05 to 2010/11. The reason for the small increase has not been provided. ECG considers the amount to be not significant.

As Envestra propose to continue Market Development at the current period level which is within the level approved by SAIPAR in 2001, ECG can take the view that the expenditure is efficient on SAIPAR's assumptions. ECG can also taken the view that the before it concludes the forecast expenditure is prudent and efficient, further information is required demonstrating the effectiveness of the program and that maintaining the level of expenditure is likely to achieve the growth forecast proposed by Envestra.

On balance, ECG believes that further information to confirm the effectiveness of the various components of the program is consistent with the requirements of the Guidance Paper. As such, ECG is unable to determine that the expenditure is prudent and efficient.

As discussed in Section 8.3.5, ECG sought additional information on the effectiveness of the marketing program including estimated additional connections as a result of the marketing program and any other options considered.

Stage Two

Envestra has provided additional information on the components of the marketing program. In the meeting on 21 November 2005 and the subsequent telephone conference on 10 January 2006, Envestra provided the background on why the SA market requires Envestra to commit to network development expenditure higher than in other jurisdictions.

Essentially when Boral disaggregated the business into a distribution business and a retailing business, the retailing business refocused its business and no longer continued with the promotional activities to support the gas network development function. The new connection process became the distributor's responsibility and the appliance show room promoted other appliances than gas appliances. This change in direction from the retailer made it necessary for Envestra to commit to a network development program to promote the gas network.

[*confidential information removed*]

[*confidential information removed*]

In addition to the 8 incentive scheme activities, Envestra proposes to continue generic fuel advertising and a host of other lower cost programs listed in Appendix 1, most of which Envestra demonstrated[194] some value. The proposed activities are commonly known to be undertaken by other network operators. In addition, as shown in Appendix 1 the cost for each of these activities is not large. Based on its knowledge of what these activities cover, ECG believes that the expenditure would be considered reasonable.

ECG acknowledges Envestra's shift from unmeasurable activities to more transparent performance based activities has assisted in Envestra achieving the lowest sustainable cost. Moreover, Envestra has developed the incentive schemes by testing the market for a level of incentive that stimulates consumer activity, demonstrating a prudent and efficient approach to Market Development.

Based on the above Stage Two discussion and the expenditure falling within the SAIPAR approved current level identified in Stage One, ECG recommends the proposed Market Development expenditure as prudent and efficient.

[194] Envestra meeting with ECG 10th

Table 8-38: Recommended Market Development Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Market Development	5.01	5.02	5.04	5.07	5.09	25.23

Summary – Network Development

Based on the above analysis, ECG recommends the following expenditure:

Table 8-39: Recommended Network Development Expenditure 2006/07 to 2010/2011 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Operations Support	1.57	1.61	1.65	1.68	1.72	8.24
Market Development	5.01	5.02	5.04	5.07	5.09	25.23
Total	**6.58**	**6.63**	**6.69**	**6.75**	**6.81**	**33.47**

8.3.6 IT Projects

IT Projects' costs outlined in Table 15 Non-Capital Costs of the Envestra AAI, can be categorised as a Material Change.

See Material Changes Section 8.3.7.1 IT Projects for further detail.

8.3.7 Material Changes

Stage One

Envestra advises[195] that it has conducted a thorough analysis of its operations with a view to identifying material changes to its baseline (2004/05) expenditure over the next six years. Section 9.7 of the AAI outlines the areas where costs identified by Envestra for the Second Access Arrangement Period are materially higher than for the First Access Arrangement Period. However the 2005 AAI does not include the year-by-year expenditure for each area.

Except for IT Projects' costs which are sourced from the 2005 AAI (refer to assumption explained below), all costs shown in Table 8-40 are from Table 10.6 in the WorleyParsons' report.

[195] Envestra AAI September 2005, Section 9.1, Pg 37.

Table 8-40: Material Changes Expenditure 2006/07 to 2010/11 (Nominal $thousand)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
IT Projects	700	1,300	1,800	1,800	1,900	7,500
Ageing Workforce	956	1,061	1,110	1,001	973	5,101
Regulatory, Governance and Service	986	1,025	1,345	1,501	1,707	6,564
Risk Management	958	944	1,042	654	729	4,327
Miscellaneous Costs	658	503	444	590	618	2,813
Environment Management	349	5,688	-196	-201	-206	5,434
Office and Equipment	414	250	313	358	412	1,747
Total	**5,021**	**10,771**	**5,858**	**5,703**	**6,133**	**33,486**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-41 converts the nominal $ shown in Table 8-40 to real $ 2005/06.

Table 8-41: Material Changes Expenditure 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
IT Projects	0.68	1.24	1.67	1.63	1.68	6.90
Ageing Workforce	0.93	1.01	1.03	0.91	0.86	4.74
Regulatory, Governance and Service	0.96	0.98	1.25	1.36	1.51	6.06
Risk Management	0.93	0.90	0.97	0.59	0.64	4.04
Miscellaneous Costs	0.64	0.48	0.41	0.53	0.55	2.61
Environment Management	0.34	5.41	-0.18	-0.18	-0.18	5.21
Office and Equipment	0.40	0.24	0.29	0.32	0.36	1.62
Total	**4.90**	**10.25**	**5.44**	**5.17**	**5.42**	**31.18**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

For the purposes of this report it is assumed that the IT Projects' costs shown in Table 15 of the 2005 AAI relate to material changes only because there is reasonable correlation between these costs and the average annual cost of $1.34m in Section 9.7 of the 2005 AAI which also equals the average annual project investment operating expenditure calculated from figures given on page 58 of the IBM Strategy Planning Report.

8.3.7.1 IT Projects

Stage One

Forecast expenditure taken from Section 8.2.7 is shown in Table 8-42 and Table 8-43.

Table 8-42: IBM Proposed IT Projects
(Real $ 2004/05)

Project No	Project	Cost
Project 1.1	Asset Optimisation	$1,840,000
Project 2.1	Data Integrity and Management	$400,000
Project 2.2	OEAM Data Mart	$1,440,000
Project 3.1	Field Data Capture	$410,000
Project 4.2	Knowledge Management solution	$708,000
Project 5.1	Work allocation optimisation	$630,000
Project 6.1	Rapid Customer connect	$520,000
Project 9.1	Proactive market rule changes	$750,000
Total		**$6,698,000**

The timing within the forecast period of the proposed projects is outlined in the IBM Report.

The following Table 8-43 outlines the proposed costs taken from the Envestra AAI information:

Table 8-43: IT Projects Expenditure 2006/07 to 2010/11

(Nominal $thousand)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
IT Projects	700	1,300	1,800	1,800	1,900	7,500

Table 8-44 converts the nominal $ shown in Table 8-43 to real $ 2005/06.

Table 8-44: IT Projects Expenditure 2006/07 to 2010/11

(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
IT Projects	0.68	1.24	1.67	1.63	1.68	6.90

Section 7.4.6.3 'IT Material Change' relating to capital expenditure outlines apparent anomalies between information contained in the 2005 AAI (Envestra, Excel Spreadsheet, SA Capex, 24 October 2005) and the IBM Strategy Planning Report. In summary, it is unclear which IT Projects are included in the AAI submission and the IBM information indicates expenditure in each of the forecast years whereas the Envestra spreadsheet does not propose expenditure in 2009/10 and 2010/11.

It is also unclear why in addition to the material change expenditure shown in Table 8-23 above, Table 10.3 in WorleyParsons' report shows a significant increase in non-capital IT expenditure (excluding material changes) between 2003/04 and 2010/11.

ECG also understands that a business case[196] has not yet been submitted to the Envestra Board and this may not occur until the Commission's Final Access Arrangement Decision is known.

Given the circumstances described and in the absence of any clarification, it is difficult for ECG to assess Envestra's IT non-capital material changes as being prudent and efficient. Consequently ECG is unable to recommend acceptance of the forecast expenditure.

As such, ECG sought clarification on the operating expenditure.

Stage Two

Envestra have provided further clarification and information in regard to IT Projects. A description and the derivation of costs[197] for each project identified in Table 8-44 can be found in Appendix 2. In addition, Envestra provided[198] a breakdown of the project costs identified in Table 8-44 above. The breakdown is reproduced in Table 8-45:

Table 8-45: IT Projects - OPEX Breakdown of Expenditure 2006/07 to 2010/11 (Real $ 2004/05)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
1.1 Asset Management Optimisation	368,000	368,000	368,000	368,000	368,000	1,840,000
2.1 Data Integrity and Management	80,000	80,000	80,000	80,000	80,000	400,000
2.2 Data Mart		360,000	360,000	360,000	360,000	1,440,000
3.1 Field Data Capture	82	82	82	82	82	410
4.2 Knowledge Management			236	236	236	708
5.1 Work Allocation			210	210	210	630
6.1 Rapid Customer Connect		130	130	130	130	520
8.2 IT Infrastructure Consolidation						0
8.3 IT Cost Management						0
9.1 Proactive Market Rule Changes	150	150	150	150	150	750
10.1 Risk Management						0
TOTAL						**6,698**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-46 converts the nominal $ shown in Table 8-45 to real $ 2005/06.

[196] Envestra SA–Reply to ECG Questions, Q3.7, 24th October 2005
[197] Envestra meeting with ECG 5th January 2005. Cost Justification Summary Documents
[198] Envestra meeting with ECG 5th January 2005. SA AA IT PROJECTS – OPEX Document.

Table 8-46: IT Projects - OPEX Breakdown of Expenditure 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
1.1 Asset Management Optimisation	0.38	0.38	0.38	0.38	0.38	1.89
2.1 Data Integrity and Management	0.08	0.08	0.08	0.08	0.08	0.41
2.2 Data Mart		0.37	0.37	0.37	0.37	1.48
3.1 Field Data Capture	0.08	0.08	0.08	0.08	0.08	0.42
4.2 Knowledge Management			0.24	0.24	0.24	0.73
5.1 Work Allocation			0.22	0.22	0.22	0.65
6.1 Rapid Customer Connect		0.13	0.13	0.13	0.13	0.53
8.2 IT Infrastructure Consolidation						0.00
8.3 IT Cost Management						0.00
9.1 Proactive Market Rule Changes	0.15	0.15	0.15	0.15	0.15	0.77
10.1 Risk Management						0.00
TOTAL						**6.87**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

At the meeting on 5 January 2006, Envestra advises that the Proactive Rules Changes project is related to engaging a resource to influence the development of the Market Rules so that it could effectively utilise its IT systems. ECG believes that the Market Rules have been developed to ensure that all market participants understand their roles and responsibilities. Changes to the Market Rules are necessary as a result of market behaviour that needs to be defined. ECG does not believe that an additional resource from an IT perspective is efficient as the IT system is to support the Market Rules and not try and influence the Rules. In addition, if the additional resource is to be justified, there should be corresponding savings envisaged through engaging this resource. The cost of the resource should therefore be offset by the benefit.

As there is no offsetting benefit, ECG considers that the cost for the additional resource is not prudent and efficient.

The following projects were identified in the capital expenditure Section 7.4.6.3 as prudent projects for a Network Operator to undertake:

- 1.1 Asset Management Optimisation
- 2.1 Data Integrity and Management
- 2.2 Data Mart
- 3.1 Field Data Capture
- 4.2 Knowledge Management
- 5.1 Work Allocation
- 8.2 IT Infrastructure Consolidation

ECG accepts the above listed projects to have associated operating expenditure. ECG notes that these projects are in their early stages of development and as such no business plans have been prepared. This means that any costs savings from these projects have not been identified or included in the derivation of the proposed project costs.

ECG recognises that Envestra has estimated the number of resources required to support each discrete project. However, given that there is a group of projects involved; ECG

believes there is scope for rationalization of resources, eg. by cross skilling, thereby effectively reducing the total number of FTEs required. ECG therefore considers that an efficiency factor in the order of 10% of the total cost through cross skilling the staff is reasonable and has reduced the recommended expenditure accordingly.

The recommended projects identified include both capital expenditure and operating expenditure in the same year. ECG believes that the cost in the year the project is being implemented should be considered as capital. Given that Envestra has not advised how it proposes to carry out the projects, ECG believes it is reasonable to expect that longer time frame projects will commence much earlier than shorter time projects. As such ECG has assumed that operating expenditure does not take effect until the year following the project completion. ECG considers that efficient IT project costs should reflect operating expenditure beginning in the year following the project implementation; therefore the operating expenditure proposed in the same year as a capital expenditure project has been amended accordingly.

In relation to the cost of the projects shown in Table 8-46, details of the costs of the projects are shown in Appendix 2. ECG recognises that the costs have been developed as part of an IT strategy and not as detailed project plans. On that basis, ECG believes that the costs are what can reasonably be expected for small to medium size business systems. ECG therefore considers the cost to be prudent and efficient.

The recommended IT Projects expenditure is in Table 8-47 below:

Table 8-47: Recommended IT Projects Expenditure 2006/07 to 2010/11.
(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
1.1 Asset Management Optimisation	0	0.34	0.34	0.34	0.34	1.36
2.1 Data Integrity and Management	0	0.07	0.07	0.07	0.07	0.30
2.2 Data Mart	0	0	0.33	0.33	0.33	1.00
3.1 Field Data Capture	0	0.08	0.08	0.08	0.08	0.32
4.2 Knowledge Management	0	0	0	0.22	0.22	0.44
5.1 Work Allocation	0	0	0	0.19	0.19	0.38
TOTAL		**0.49**	**0.82**	**1.23**	**1.23**	**3.77**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

8.3.7.2 Ageing Workforce

Stage One

Envestra advises[199] that the South Australian gas industry has undergone fundamental changes over the last ten years in terms of both the service delivery method and the skill sets required from employees. The number of field staff and supervisory workers involved in operating the South Australian distribution network has reduced from over 200 ten years ago to approximately 140 employees today. In the past, a steady intake of new employees offset the impacts of retirement and natural attrition.

[199] Envestra SA-Reply 24th October to ECG Question 5.7

As at the 1st January 2005, OEAM has the following Age Profile[200]:

- 46% (64 people) below 45 years old
- 34% (47 people) between 46 and 55 years old
- 20% (28 people) over 55 years old

Envestra further advises[201] that due to restructuring, downsizing and a low rate of employment of new staff in more recent years, a sustainable strategy is now required to ensure that adequate skill levels are maintained in the future.

Envestra is particularly concerned about reduced productivity due to health issues associated with an ageing field workforce[202]. Currently 10-15% of the workforce is operating with varying levels of restriction. At any one time, two workers are assigned to office duties and eight workers are only 80% productive.

Envestra is seeking to include costs in the Access Arrangement for employing and training more staff to prepare for expected retirements over the next two regulatory periods and for engaging contractors to compensate for productivity restrictions associated with an ageing workforce.

Table 8-48 outlines the proposed expenditure in the forecast period, taken from WorleyParsons' report[203].

Table 8-48: Ageing Workforce Expenditure 2006/07 to 2010/11 (Nominal $)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Additional Field Workers	514,674	593,695	621,622	511,068	503,332	2,744,391
Additional Graduate Engineers	211,652	250,701	262,649	254,063	222,393	1,201,458
Productivity costs from Ageing Workers	149,392	158,355	166,115	174,587	184,538	832,987
Increased Medical and Health Costs	79848	58,152	59,606	61,096	62,623	321,325
Total	**955,566**	**1,060,903**	**1,109,992**	**1,000,814**	**972,886**	**5,100,161**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-49 converts the nominal $ shown in Table 8-48 to real $ 2005/06.

[200] Envestra SA-Reply to ECG Questions: Material Changes Q5.7, 26th October 2005.
[201] 2005 Access Arrangement Information
[202] Envestra SA-Reply 24th October to ECG Question 5.7
[203] WorleyParsons' report, Table 10-7, Pg93

Table 8-49: Ageing Workforce Expenditure 2006/07 to 2010/11
(Real 2005/06, $m)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Additional Field Workers	0.50	0.57	0.58	0.46	0.44	2.55
Additional Graduate Engineers	0.21	0.24	0.24	0.23	0.20	1.12
Productivity costs from Ageing Workers	0.15	0.15	0.15	0.16	0.16	0.77
Increased Medical and Health Costs	0.08	0.06	0.06	0.06	0.06	0.30
Total	**0.93**	**1.01**	**1.03**	**0.91**	**0.86**	**4.74**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Forecast expenditure allows for:

1. Recruiting 28 additional trainees, 7 graduate engineers
2. Replacing 2 workers assigned to office duties with contractors
3. Replacing 8 workers at 20% productivity = 1.6 contractors
4. Annual health checks costing $100/field staff member (140 x $100 = $14,000 approx per year)

The information provided in the 2005 Access Arrangement Information and in the WorleyParsons report is insufficient for ECG to determine if the proposed expenditure is prudent and efficient. In particular, the information does not outline any other strategic options that may have been evaluated for operating and maintaining the network. Although WorleyParsons indicates in its report that it considers the underlying assumptions and the detailed cost estimates are reasonable, the justification for proposing to recruit more staff and engage ad hoc contractors ahead of any other options remains unclear.

There may be justification for recruiting more graduates for network management activities; however the basis for appointing seven and over what time period is again unclear.

ECG is able to review matters further if appropriate information is made available. As noted in the ESCOSA Guidance Paper, Envestra/OEAM covers 3 jurisdictions therefore ECG would also need to be satisfied that any additional staff are solely related to SA network operations.

In summary, ECG is unable to conclude that the forecast expenditure is prudent and efficient.

As such, ECG sought additional information on alternative options that have been considered and the reason for deciding that this is the best option. As noted in section 8.3.1 ECG has assumed that as in the Guidance Paper, the operating and maintenance cost in 2004/05 is considered to be efficient. However the forecast material cost increases attributed to an Ageing Workforce suggests that the current modus operandi may not offer the most cost effective option in the future.

Stage Two

Envestra has presented more detailed information in support of its forecast expenditure relating to an ageing workforce[204]. The information does not outline any other strategic options that may have been evaluated notwithstanding the WorleyParsons' report indicating that Envestra and OEAM follow a contracting strategy that ensures a significant percentage of the field activities are continuously market tested.

As such, no detailed information has been provided to ECG that demonstrates that recruiting more staff and engaging ad hoc contractors remains the most cost effective option for carrying out ongoing operation and maintenance of the network.

The WorleyParsons' report also describes the first and second tier contractor arrangement which is used to supplement internal field work crews and explains that this arrangement is also used to continuously benchmark the costs and efficiencies of the internal crews. Reference is also made to the productivity bonus incentive scheme adopted by Envestra/OEAM to provide employee work crews with a financial incentive to be as efficient and as productive as possible.

Envestra advises that 80 out of 140 employees are involved with high risk manual tasks which suggest that a comparatively large number of field activities are still performed 'in-house'. However no details have been presented to ECG that demonstrate that these arrangements, including the forecast material ageing workforce costs, deliver the most cost effective option for operating and maintaining the network compared to, for example, competitively tendering and outsourcing the bulk of field activities.

Network operators in other large jurisdictions eg Victoria and NSW outsource the bulk of field activities. However Envestra has not indicated that it has evaluated this option in South Australia and how it compares with maintaining current practices.

Notwithstanding the above, ECG acknowledges there is a case to recruit and train new graduate engineers in activities not normally outsourced. Based on the information provided, ECG considers the expenditure shown in Table 8-49 to engage 7 graduate engineers over the forecast period is prudent and efficient.

In summary, ECG is unable to conclude that the total forecast Ageing Workforce expenditure is prudent and efficient, however ECG recommends acceptance of the expenditure for additional graduate engineers shown in Table 8-50.

Table 8-50 Recommended Ageing Workforce Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Additional Graduate Engineers	0.21	0.24	0.24	0.23	0.20	1.12

[204] Email dated 20 December 2005

8.3.7.3 Regulatory Governance and Service Requirements

Stage One

Envestra identified in its 2005 Access Arrangement Information that increased activity in the following areas will result in materially higher costs as compared with the base year of 2004/05:

- Introduction of new national pipeline standards
- New national and jurisdictional regulatory costs due to the new national regulatory regime
- Disposals of soil and quarry materials
- Governance and risk management requirements
- Corporate governance review and auditing
- Notification to customers of periodic meter changes
- Community expectations of service response
- External enquiries surrounding customer churn throughput

ECG notes there are differences in the descriptions of the activities included in Regulatory governance and service requirements between the 2005 Access Arrangement Information and the WorleyParsons' report. As Envestra has advised[205] ECG to use WorleyParsons' report for its breakdown of categories into line items, ECG has reviewed the activity line items in WorleyParsons' report that directly correspond with those activities identified in the 2005 Access Arrangement Information (dot points above).

The WorleyParsons' report advises[206] of an additional Regulatory governance and service requirements activity: Costs of servicing new customers. Envestra has included these costs in Section 9.8 of its 2005 Access Arrangement, where the costs have been identified as a result of forecast growth rather than a material change. Costs of servicing new customers are therefore excluded from ECG's review of material changes.

Regulatory governance and service requirements costs taken from WorleyParsons' report as aligned with activities in the 2005 Access Arrangement are shown in Table 8-51. No increased costs for disposal of soil and quarry materials are shown in either document so it is assumed these costs are included in Increased Regulatory Compliance Costs.

[205] Envestra SA-Reply to ECG Questions: Q5.1 and 5.2, 26th October 2005
[206] WorleyParsons' report, Table 10-9, Pg96

Table 8-51: Regulatory Governance and Service Requirements Expenditure 2006/07 to 2010/11 (Nominal $)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Changes to Australian Standards	151,122	151,526	63,890	67,149	70,976	504,663
Increased Regulatory Compliance Costs	113,439	103,540	358,955	342,458	361,978	1,280,370
Corporate Governance Review and Auditing	94,556	16,153	16,557	16,971	17,395	161,632
Notification of PMC's	88977	87,828	91,486	95,434	99,969	463,694
Increased Service Response	219,653	215,024	224,785	235,388	247,719	1,142,569
Responding to external enquiries	118,692	116,463	121,859	127,730	134,576	619,320
Costs of Servicing new customers	199,405	334,677	467,675	615,631	773,959	2,391,347
Total	**985,844**	**1,025,211**	**1,345,207**	**1,500,761**	**1,706,572**	**6,563,595**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-52 converts the nominal $ shown in Table 8-51 to real $ 2005/06.

Table 8-52: Regulatory Governance and Service Requirements Expenditure 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Changes to Australian Standards	0.15	0.14	0.06	0.06	0.06	0.47
Increased Regulatory Compliance Costs	0.11	0.10	0.33	0.31	0.32	1.17
Corporate Governance Review and Auditing	0.09	0.02	0.02	0.02	0.02	0.15
Notification of PMC's	0.09	0.08	0.08	0.09	0.09	0.43
Increased Service Response	0.21	0.20	0.21	0.21	0.22	1.06
Responding to external enquiries	0.12	0.11	0.11	0.12	0.12	0.57
Costs of Servicing new customers	0.19	0.32	0.43	0.56	0.68	2.19
Total	**0.77**	**0.66**	**0.81**	**0.80**	**0.82**	**3.87**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Changes to Australian Standards

Stage One

Envestra advises[207] of a possible change to Australian Standard AS 2885.1 and a change relating to the recently revised AS 1697 that are not included in the base 2004/05 expenditure. Future changes to AS 2885.1) may result in a requirement for more frequent

[207] Envestra SA-Reply to ECG Questions: Material Changes, Q5.8, 26th October 2005

pipeline patrols and markers and greater levels of documentation. AS 1697 now specifies that certain welding qualifications are required.

Envestra propose an additional operations employee (@ $50,000 pa) to assist in regulatory compliance issues, and costs for additional marker signs (1,700 markers at $100 each) for the forecast period.

ECG is aware that AS 2885 is under review but changes are not yet published. ECG considers that when they are known and published, there may be justification for expenditure increases. However, at this time it is not possible for ECG to assess these costs are prudent and efficient.

Additional welding expenditure may be justified however no information is provided regarding the options investigated and why recruiting an additional operation's employee is considered more efficient than other options.

In summary, ECG is unable to conclude that the Changes to Australian Standards expenditure are prudent and efficient.

As such, ECG sought additional information on the basis and options explored for the additional welding expenditure.

Stage Two

Envestra has provided additional information on the expenditure for Changes to Australian Standards. Envestra advises Parts 1 and 2 of AS 2885 are currently in consultation with a revised code expected in first half of 2006.

AS 2885 Part 1 applies to the design and construction of transmission pressure pipelines and Part 2 covers welding requirements. Part 3 covers operation and maintenance. Other Australian Standards specify requirements for distribution pressure systems. If changes to AS 2885 were finalised and published and it was also known to what extent industry may be expected to apply them retrospectively, ECG would be able to assess whether Envestra is acting prudently and forecast expenditure is efficient. This is not the case and as advised by Envestra, possible changes are yet to pass the final consultation phase of the process. Based on these factors ECG is unable to recommend acceptance of the forecast expenditure.

Envestra advises additional welding resources are increasingly difficult to source as older welders are leaving the industry, and as such the employment of a suitably qualified welder is the most efficient and best strategic option long term. ECG is aware that the availability of suitably qualified welders is an industry wide problem. One of the difficulties faced by network operators is that distribution networks are now predominantly constructed of plastic pipe materials rather than steel and as a consequence the need for welders on a daily basis has significantly diminished over the last 10-20 years. Other network operators, e.g. in Victoria and NSW have opted to contract these resources on an as required basis and have found this arrangement to be more cost effective than employing full time resources.

Based on the information provided by Envestra, ECG is unable to conclude that recruiting an additional operations employee is prudent and efficient. Therefore the Australian Standard expenditure outlined in Table 8-52 is not recommended.

Increased Regulatory Compliance Cost

Stage One

Envestra advises [208] of a variety of increasing regulatory, license, monitoring and compliance costs which are not included in the base 2004/05 expenditure. Envestra summarises these increases into the following groups of activities:

- A transitional period from ESCOSA to the Australian Energy Regulator (AER) which will require significant input from Envestra regulatory staff.
- Regulatory and license obligations which Envestra expects will not be transferred to the AER and which may also result in duplication within the SA jurisdictional framework.
- Health and safety legislative obligations which Envestra believes will remain within the SA jurisdictional regulatory framework and will become more prescriptive over the forecast period.

In anticipation of these potential increases to compliance and regulatory responsibilities, Envestra proposes to employ one additional FTE in 2006/07 (@$85k pa), and two additional FTE's in 2008/09 (@$85k pa).

No detailed information has been provided in support of the expenditure increases sought and it is unclear why changing regulatory regimes will require increased staffing levels.

ECG is therefore unable to conclude that the forecast expenditure is prudent and efficient.

As such, ECG sought additional information why there should be an increased workload above current levels.

Stage Two

In its response to ECG's question, Envestra advises that it believes that regulatory reforms will increase compliance costs. Furthermore the costs will increase as Regulators seek additional information. In the last few years, Envestra Victoria has seen the introduction of more stringent reporting including quarterly kpi reporting, extensive auditing of licence conditions etc. Envestra believes that SA is following a similar path to other jurisdictions.

ECG is unaware of additional reporting requirements from either the Commission or the OTR. In addition, as discussed in Stage One why Envestra requires additional staff is not to do with the additional reporting but more to do with the transition to the AER.

Based on the above, ECG does not recommend acceptance of the proposed expenditure shown in Table 8-52.

Corporate Governance Review and Auditing

Envestra advises that in 2003, the ASX developed a set of guidelines 'Principles of Good Corporate Governance and Best Practice Recommendations'. This document articulates core principles which the ASX Corporate Governance Council believes underlie good corporate governance.

To date, Envestra advises it has met the obligations set in the guidelines by upgrading and reviewing existing risk management processes and procedures. Envestra further advises

[208] Envestra SA-Reply to ECG Questions: Material Changes Q5.8, 26th October 2005

that certain associated costs are included in the current period however the on-going costs for auditing and verification are not.

Envestra proposes to engage an external professional service firm to conduct a full review of its corporate governance processes and procedures prior to the 2006/07 Annual Report. In addition, future annual external auditing of compliance will also be conducted. ECG is aware that such activities are consistent with the obligations placed on businesses generally and network operators in other jurisdictions.

ECG considers that the forecast expenditure is prudent and efficient.

Stage Two

In Stage One ECG concluded that forecast expenditure is prudent and efficient. The recommended expenditure is shown in Table 8-53.

Table 8-53: Recommended Corporate Governance and Review Auditing Expenditure 2006/07 to 2010/11.
(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Corporate Governance Review and Auditing	0.09	0.02	0.02	0.02	0.02	0.15

Notification of PMC's

Stage One

Envestra advises[209] there are approximately 35,000 periodic meter changes per year. Given requirements specified in the South Australia Gas Distribution Code and following investigations by the SA Ombudsman, Envestra proposes to provide affected customers with at least 5 business days advance written notice of the associated interruption to supply.

Envestra proposes an additional FTE to administer the notification process and to handle subsequent enquiries from customers and the costs of mailing the letters and associated consumables.

Providing customers with advance notice of planned interruptions to supply is common industry practice and ECG supports Envestra's intentions. However no information has been provided regarding possible alternative options for carrying out the required functions including field workers re-assigned to office duties (for reasons explained in Section 8.3.7.2). Envestra advises[210] it expects that at any one time two field workers will be redeployed to perform such duties.

Based on the above, ECG is unable to conclude that the forecast expenditure is prudent and efficient at this stage.

As such, ECG sought additional information on alternative options that have been considered and the reason for deciding that this is the best option.

[209] Envestra SA-Reply to ECG Questions: Material Changes Q5.8, Pg4, 26th October 2005
[210] Envestra SA-Reply to ECG Questions: Material Changes Q5.8, Pg2, 26th October 2005

Stage Two

Envestra further advises[211] that the notification of PMC's is a resource requirement in addition to the two redeployed field workers identified in Section 8.3.7.2.

ECG is aware that asset management systems can largely automate the generation of notification letters which should be able to be managed by existing staff resources. The only additional costs that should apply are the costs of consumables (stationery estimate – $0.20 /letter) plus Australia Post handling (letter folding, franking and postage for business customers - $0.50/letter) which equates to approximately $30,000 per annum for 35,000 letters).

Subsequent enquiries from customers resulting from the notification process should be minimal and would not be expected to exceed the number of calls that may be received currently following meter changes without any advanced warning.

Based on the above, the recommended expenditure that is prudent and efficient for Notification of PMC's is as follows:

Table 8-54: Recommended Notification of PMC's Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Notification of PMC's	0.03	0.03	0.03	0.03	0.03	0.15

Increased Service Response

Stage One

Envestra advises it has identified through customer feedback to OEAM and the number of contacts to the SA Ombudsman, that there is an increasing customer expectation for leaks to be repaired on the same business day or within 24 hours[212]. In response, Envestra proposes to engage an additional gas fitter and an extra leakage repair crew including a truck.

No statistics and examples of specific customer complaints have been provided and whether, for example, the technical regulator has expressed concern about Envestra's current level of service. Common industry practice (normally reflected in network operators' Safety and Operating Plans) is for all publicly reported gas escapes to be attended within 1-2 hours on a 24 hour, 7 day basis. Depending on the nature and seriousness of the escape it would either be repaired immediately or made safe until permanent repairs can be effected at a later time. In this context it is unclear why such actions should lead to customer complaints.

Based on the above, ECG is unable to conclude that the forecast expenditure is prudent and efficient at this stage.

As such, ECG sought additional information on the key drivers that has caused the need for the additional resources and why this is the only option considered.

[211] Envestra reply to ECG Questions: Q3.18, Pg 21, 20th December 2005.
[212] Envestra SA-Reply to ECG Questions: Material Changes Q5.8, 26th October 2005.

Stage Two

Envestra has provided additional information on the expenditure for Increased Service Response. Envestra advises[213] the inclusion of an additional gas fitter and leakage repair crew including a truck is justified as follows:

- Anecdotal evidence from field operations staff indicating timely attendance to leak repairs is not satisfying customer expectations.
- The Technical Regulator has contacted Envestra on occasions in response to customer complaints about timeliness of leak repair.
- A contract crew were considered as an option, but found to be not viable.

No tangible evidence has been presented to show that existing resources are insufficient for repairing leaks in a timely manner in accordance with Envestra's Safety, Reliability, Maintenance and Technical Management Plan. The magnitude of customer dissatisfaction and underlying reasons for this remain unclear. As the recommended mains renewal program is conducted over the forecast period, it is also reasonable to assume that the volume of leak repairs will reduce rather than increase.

ECG is unable to conclude that the Increased Service Response expenditure shown in Table 8-52 is warranted and is therefore not in a position to recommend its acceptance prudent and efficient.

Responding to External Enquiries

Stage One

Envestra advises that there is significant evidence from other jurisdictions and with respect to other utilities of a substantial increase in the volume of consumer complaints as customers become more sensitive to service quality and as retail contestability becomes more entrenched. Envestra indicates it will become more involved in resolving cases with the SA Ombudsman, even though it is not directly at fault.[214]

Envestra proposes to employ a full-time enquiries co-ordinator to ensure that adequate and timely responses to consumer issues can continue to be provided.

It is unclear if there is a material increase in the number of complaints currently received or whether the forecast expenditure is based more on the claim that other jurisdictions have experienced significant increases. No statistics have been provided to demonstrate a materially increasing trend in the number of complaints reported to the Ombudsman.

ECG is unable to conclude that the forecast expenditure is prudent and efficient and is therefore unable to recommend its acceptance

As such, ECG sought additional information on statistics regarding customer complaints demonstrating the need for the additional resource.

Stage Two

Envestra has provided additional information on the expenditure for External Enquiries. Envestra advises[215] that due to being in the Ombudsman Scheme for only one year,

[213] Envestra Response to ECG Questions: Q 3.18, Pg 21. 20th December 2005.
[214] Envestra SA-Reply to ECG Questions: Material Changes Q5.8, 26th October 2005.
[215] Envestra Response to ECG Questions: Q 3.18, Pg 21. 20th December 2005.

information regarding increasing trends in enquiries and complaints is not available. In addition, Envestra do not generally record enquiries made to the Ombudsman's office, however when they are recorded, they can be as time consuming as a complaint.

Envestra advises[216] of undertaking further enquiries to quantify the increasing workload. New information is shown in Table 8-55: .

Table 8-55: Envestra Enquiry numbers

Item	2004/05	2005/06 YTD 7 mths	2005/06 forecast	% increase
Ombudsman Enquiries	26	29	50	191
Retailer Requests for Assistance/Enquiries to Operations	18	12	21	114
OTR Requests for Assistance, follow up or information	26	21	36	138
Retailer and customer enquiries to Envestra	48	420	720	1500
Specific Retailer Reinstatement Enquiries	1001	706	1210	121

ECG would expect the bulk of the enquiries summarised in the above table to be conducted under "fee for service agreements" with the parties requesting the information. In addition, the majority of enquiries (Retailer and customer enquiries to Envestra) appear to be directly related to FRC and should therefore already be covered under FRC operating cost arrangements. Therefore, ECG is unable to conclude the forecast expenditure is prudent and efficient.

Costs of Servicing New Customers

Stage One

The WorleyParsons' report advises[217] of an additional Regulatory governance and service requirements activity: Costs of servicing new customers. Envestra has included these costs in Section 9.8 of its 2005 Access Arrangement, where the costs have been identified as a result of forecast growth rather than a material change. Costs of servicing new customers are therefore excluded from ECG's review of material changes.

Stage Two

Envestra advises[218] the increase in Meter Reading and Billing reflects forecast increases in the cost of providing the service, where the costs of servicing new customers relates to increases due to reading additional meters of new customers. Envestra further advises[219] $11 ($2002) per new customer connected was used for the basis of the costs.

[216] Envestra Response to ECG Report, Pg 6, 27th February 2006.
[217] WorleyParsons' report, Table 10-9, Pg96
[218] Envestra SA response to ECG Report, Pg 4, 27th February 2006.
[219] 2005 AAI, Section 9.8, Fixed vs Variable costs,Pg 42.

Based on Envestra's advice that the cost of reading additional meters of new customers is not included in Meter Reading and Billing, reconsideration of the costs sought by Envestra is appropriate.

Envestra has not provided information showing how the forecast expenditure shown in Table 8-52is derived. For the purposes of this report, Table 8-56 shows how ECG has calculated the amounts considered prudent and efficient.

Table 8-56: ECG Calculation of Costs of Servicing New Customers 2006/07 to 2010/11.

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
No. of Net New Customers[220]	6,736	6,937	6,296	6,867	7,083	
Cost of servicing the above[221] customers (Real $million 2005/06)	0.08	0.08	0.08	0.08	0.09	0.41

It can be seen that ECG's calculation of expenditure is significantly less than that proposed by Envestra. However as noted, the basis for the Envestra amounts is unknown to ECG. Therefore Table 8-57 shows the expenditure recommended by ECG as being prudent and efficient.

Table 8-57: Recommended Costs of Servicing New Customers 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
Cost of servicing new customers	0.08	0.08	0.08	0.08	0.09	0.41

8.3.7.4 Risk Management Costs

Stage One

Envestra advises[222] that it proposes to address a number of risk management areas in the forecast period as follows:

- Provide additional resources in the form of promotion and field staff support for the DBYD (Dial Before You Dig) service to help reduce the incidence of unplanned gas supply interruptions.
- Terrorist management systems will undergo security reviews every second year.
- Location mapping of larger diameter commercial and industrial inlets to strengthen safety and emergency procedures.

The breakdown of Risk Management Costs provided by Envestra in the WorleyParsons[223] report is shown in Table 8-58.

[220] Envestra's Response to ECG Questions, Spreadsheet: SA Disconnections (31-10-05), dated 1-11-2005
[221] $11 ($2002) converted to $12.17 Real $2005/06 times No. of Net New Customers
[222] 2005 AAI, Section 9.7 Cost increases, Risk Management Activity costs, Pg42.
[223] WorleyParsons' report, Table 10-9, Pg96

Table 8-58: WorleyParsons' Risk Management Expenditure 2006/07 to 2010/11 (Nominal $)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Promotion of DBYD	294,248	291,484	303,156	315,156	315,718	1,519,762
Map Services for I&C Customers	637,303	541,902	568,455	64,621	68,305	1,880,586
Terrorist Risk Management	26,431		29,390		32,649	88,470
Extension of SCADA System		110,194	140,518	273,257	298,120	822,089
Total	**957,982**	**943,580**	**1,041,519**	**653,034**	**714,792**	**4,310,907**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-59 converts the nominal $ shown in Table 8-58 to real $ 2005/06.

Table 8-59: Risk Management Expenditure 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Promotion of DBYD	0.29	0.28	0.28	0.29	0.28	1.41
Map Services for I&C Customers	0.62	0.52	0.53	0.06	0.06	1.78
Terrorist Risk Management	0.03	0.00	0.03	0.00	0.03	0.08
Extension of SCADA System	0.00	0.10	0.13	0.25	0.26	0.75
Total	**0.93**	**0.90**	**0.97**	**0.59**	**0.63**	**4.02**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

ECG notes there are differences in the descriptions of the activities included in Risk Management Activity Costs between the 2005 Access Arrangement Information and the WorleyParsons' report. As Envestra has advised[224] ECG to use WorleyParsons' report for its breakdown of categories into line items, ECG has reviewed the activity line items in WorleyParsons' report that directly correspond with those activities identified in the 2005 Access Arrangement Information.

SCADA's cost is not included in the 2005 AAI as a material change and as such has not been reviewed under this category. In addition, the WorleyParsons' report says that in the section under Operations and Maintenance, one of the reasons for the cost increase in the maintenance costs is due to the increase in telemetry equipment (related to SCADA system). ECG believes that this cost is covered under that section.

[224] Envestra SA-Reply to ECG Questions: Q5.1 and 5.2, 26th October 2005

Promotion of DBYD (Dial Before You Dig)

Stage One

Envestra advises[225] the most frequent cause of interruption to consumers' gas supply is other service providers, local government and excavation activities generally. As a result of reviewing the damage incidents, Envestra proposes to appoint three additional staff to promote the DBYD service and for assisting with locating and marking gas mains where major excavation works are planned. Envestra estimates the average additional staff, vehicle and promotional resource cost to be $62,000 pa.

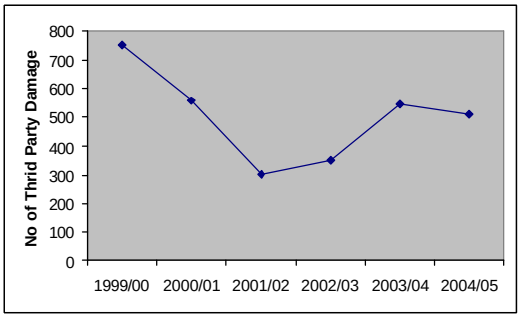
ECG recognises the importance of the DBYD service however it has not been presented with any details of the review of damage incidents to demonstrate a material change in the number of third party damages and those where the offending party failed to obtain maps or seek on site asset location assistance.

ECG is therefore unable to conclude that the forecast expenditure is prudent and efficient.

As such, ECG sought additional information on the increasing trend for third party damage and also any statistics on the offending parties failing to obtain maps or seek site location assistance.

Stage Two

Envestra has provided additional information on the number of third party damage in support of its additional staff for the promotion of DBYD and assisting in the location of distribution assets. Envestra has also indicated that third party damages have been a high profile issue with the Technical Regulator and SA Workplace Services in the last 12 months following a near-fatal incident. Envestra also advises that there are numerous instances of failures to obtain DBYD data but an extensive search of records would be needed to collate the information.



Graph 8-13: Trend in Third Party Damage to Mains and Services

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As acknowledged in Stage One comments above, ECG recognises the importance of the DBYD service. Whilst ECG expects that there will always be discussions with the appropriate safety authority when there is a major accident, ECG believes that there has

[225] Envestra SA-Reply to ECG Questions: Material Changes Q5.9, 26th October 2005

not been a major concern from the OTR to the extent that requires Envestra to add additional staff to promote the service.

In addition, ECG understands that as provided by other utilities, Envestra also provides site supervision to contractors working in close proximity to transmission assets and major hazard sites. Assistance for locating other distribution assets is generally carried out on a request basis and there is no evidence to suggest Envestra has been unable to provide this service. Although Envestra advises of increasing levels of enquiry, this is unrelated to the expenditure sought to promote the DBYD service in order to reduce the number of third party damage incidents. No statistics have been provided showing that third party damage has resulted from contractors unable to find the gas mains after they have received the plans.

Graph 8-13[226] indicates a decreasing overall trend in the number of third party damages between 1999/00 and 2004/05, albeit including fluctuations in annual numbers during this period. As such, given the significant reduction in third party damages achieved since 1999/00, the justification for a material increase in DBYD promotional activities and resources remains unclear. ECG is aware from industry experience that Asset Management systems now largely automate the response to DBYD enquiries, enabling responses to be managed electronically and in a timelier manner. With these more streamlined processes; ECG would expect resulting productivity gains could be channelled into promotion of the service eg. local government activities .

Based on the above, ECG is unable to conclude that the material expenditure increase sought for DBYD services is prudent and efficient. Therefore ECG is unable to recommend acceptance of the amounts shown in Table 8-59.

Terrorist Risk Management

Stage One

Envestra advises that 'gas distribution networks are now more vulnerable to malicious attacks due to the current global political environment.' Terrorist management systems will be further strengthened as a result by periodic security reviews conducted every second year by expert consultants at an estimated cost of $23,000 per review.

Envestra advises[227] that this action will help ensure that systems and procedures are reviewed against international best practice.

ECG considers that Envestra is acting prudently and efficiently and recommends acceptance of the forecast expenditure.

Stage Two

In Stage One ECG concluded that forecast expenditure is prudent and efficient. The recommended expenditure is shown in Table 8-60.

[226] Envestra SA-Reply to ECG Questions: Material Changes Q3.19, 24 December 2005
[227] Envestra SA-Reply to ECG Questions: Material Changes Q5.9, Pg6, 26th October 2005

Table 8-60: Recommended Terrorist Management Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Terrorist Risk Management	0.03	0.00	0.03	0.00	0.03	0.08

Map Services for I&C

Stage One

Envestra advises[228] of 9,000 Industrial and Commercial (I&C) inlets where the precise locations of many are not known and recorded. Some of these inlets are inside buildings, in high density areas such as shopping centres, unit developments and the CBD where inlets can be long and the meters are some distance from the main. Generally these inlets are larger in diameter than domestic inlets and are often located in areas outside of Envestra's control.

From a risk management perspective, Envestra proposes[229] to include costs for mapping the locations of existing larger diameter inlets over the next three years and new inlets will be mapped as the installations occur. This advice implies that not all of the 9,000 need to be mapped – only those generally of larger diameter and installed in higher risk locations. ECG concurs with this intention.

ECG considers that Envestra is acting prudently. However no details have been provided supporting the forecast expenditure, particularly the $1.7m over the first three years, or an estimate of how many inlets may need to be recorded.

In the absence of this information, the magnitude of the project and planned resourcing is unclear, and ECG is unable to conclude that Envestra's forecast expenditure is prudent and efficient.

As such, ECG sought additional information on the number of inlets to be mapped and its unit cost.

Stage Two

Envestra has provided additional information[230] on the expenditure for Mapping of I&C Customer Inlets which includes the following expenditure breakdown in Table 8-61.

Table 8-61: Expenditure Breakdown for Mapping I&C Customer Inlets.

Cost of new I&C services to be mapped	$60
New services per year	$373
Number existing I&C services to be mapped	5,000
Cost per location (I&C)	$104
Number of existing Units developments to be mapped	3250
Cost per location	$207
Set up cost (one-off)	$120,000
Operating cost (licence fees(GIS) and vehicle running)	$25,750pa
Year to map all existing I&C and Units	3

[228] Envestra SA-Reply to ECG Questions: Material Changes Q5.9, 26th October 2005
[229] Envestra SA-Reply to ECG Questions: Material Changes Q5.9, Pg6, 26th October 2005
[230] Envestra SA-Reply to ECG Questions: Material Changes Q3.19, Pg13, 24th December 2005

Based on a cost of $60 per service, ECG estimates that the cost of mapping a new service is equivalent to approximately 1 hour work per FTE. ECG considers that the time to carry out the work to be reasonable. As shown in Table 8-61, the costs for locating and mapping existing services per I&C customer and for mapping units' development are higher than for new services. As services are generally buried, it usually takes some time to locate the service and whether the service connects to the gas mains in the street. Envestra has estimated that the time to locate and record an I&C service is approximately 1.5hours which would be considered reasonable. On the same basis, ECG considers the time for recording and mapping an existing Unit development to be also reasonable. As such, ECG considers the unit cost to be efficient.

In relation to the number of services to be mapped, ECG believes that it is reasonable to accept Envestra's number.

Based on the above table, ECG is unable to reconcile these costs with the expenditure sought in table 8-51 and it appears that there is a difference in costs of approximately $300,000[231].

In light of the above, ECG considers that the prudent and efficient expenditure is ECG's calculated expenditure as shown in Table 8-59.

Table 8-62: Recommended Map Services for I&C Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Map Services for I&C Customers	0.55	0.44	0.46	0.05	0.05	1.55

Extension to SCADA System

Stage Two

In Section 8.3.7.4, ECG commented that the cost related to SCADA was not listed as a material change in the AAI but only in the WorleyParsons' report. ECG was also concern that the cost for SCADA had been accounted for in the Operation and Maintenance expenditure.

In its response[232] to ECG's questions, Envestra advises that the cost for SCADA has only been included in the Material Change section and not in the Operation and Maintenance expenditure as indicated in the WorleyParsons' report. This cost is related to the expansion of the SCADA system. A summary of the cost is shown in Table 8-63.

Table 8-63: SCADA Maintenance Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
SCADA Maintenance	0.00	0.10	0.13	0.25	0.26	0.75

[231] See Appendix 2: Reconciliation of Mapping I&C Services.
[232] Envestra's email dated 10 January 2006 titled " Reply to ECG Question 3.2 and 3.19 - SCADA

Envestra advises that the cost is for the following:

- Two additional resources to operate and maintain the SCADA equipment (wages estimated at $75,000pa including on-cost and vehicle).
- An additional mechanical technician to operate and maintain the mechanical actuator equipment (wages estimated at $75,000pa including on-costs and vehicle).
- Telemetry software licences and telemetry equipment.

In Section 7.4.4 of this report, ECG has recommended that the capital expenditure for the expanded SCADA system be accepted as prudent and efficient. ECG therefore acknowledges that there will be increased maintenance expenditure as a result of the additional SCADA equipment. However, ECG is concern on the number of additional staff required to maintain the equipment. One of the reasons for the SCADA initiative is to replace the current chart recorders. To obtain information from the chart recorders requires a field person to go out on site to remove the charts and to install new charts.

ECG therefore believes that the current resources should be able to carry out some of the work for the additional SCADA equipment. ECG also believes that critical valves are generally serviced periodically and as such there are resources that currently carry out this work. The remote actuators installed in these valves should be serviced as part of the valve maintenance program.

As such, ECG believes that an additional three resources to carry out both the SCADA equipment maintenance and the valve actuator maintenance is high. ECG considers that a provision of two additional staff to handle the additional workload is sufficient.

Acknowledging that Envestra has progressively increased the expenditure in the forecast period, ECG has decreased the expenditure in 2009/10 and 2010/11 by a third to reflect the reduction in staff numbers from three to two. As such, the expenditure that ECG considers that is prudent and efficient is shown in Table 8-64.

Table 8-64: Recommended SCADA Maintenance Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
SCADA Maintenance	0.00	0.10	0.13	0.17	0.17	0.57

8.3.7.5 Miscellaneous Costs

Stage One

Envestra advises[233] of the following additional costs identified over the forecast period:

- Upward movement (in real terms) in contractor charge rates after many years of below CPI charge rate increases;
- Relocation of depot facilities; and
- A likely increase in the Superannuation Guarantee Levy.

Miscellaneous Costs are provided by Envestra in the WorleyParsons[234] report and are shown in Table 8-65.

Table 8-65: Miscellaneous Costs 2006/07 to 2010/11 (Nominal $)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Increase in Contractor Costs	52,873	109,975	112,725	115,543	118,431	509,547
Increasing Material Costs	116,641	74,122	44,153	45,256	46,388	326,560
OEAM Depot Relocation	408,142	202,967	161,681	165,723	175,665	1,114,178
Increase in SGL		115,899	125,210	263,558	277,071	781,738
Additional Smallworld GIS Licenses	79,848					79,848
Total	**657,504**	**502,963**	**443,769**	**590,080**	**617,555**	**2,811,871**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

Table 8-66 converts the nominal $ shown in Table 8-65 to real $ 2005/06.

Table 8-66: Miscellaneous Costs 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Increase in Contractor Costs	0.05	0.10	0.10	0.10	0.10	0.47
Increasing Material Costs	0.11	0.07	0.04	0.04	0.04	0.31
OEAM Depot Relocation	0.40	0.19	0.15	0.15	0.16	1.05
Increase in SGL		0.11	0.12	0.24	0.24	0.71
Additional Smallworld GIS Licenses	0.08					0.08
Total	**0.64**	**0.48**	**0.41**	**0.53**	**0.55**	**2.61**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

ECG notes there are differences in the descriptions of the activities included in Miscellaneous Costs between the 2005 Access Arrangement Information and the

[233] 2005 AAI, Section 9.7 Cost Increases, Miscellaneous Costs, Pg 42
[234] Worley Parson's report, Table 10-10, Pg96

WorleyParsons' report. As Envestra has advised[235] ECG to use WorleyParsons' report for its breakdown of categories into line items, ECG has reviewed the activity line items in WorleyParsons' report that directly correspond with those activities identified in the 2005 Access Arrangement Information.

Envestra advises[236] evidence of contract renewal percentage increases tracking higher than CPI rates in 2005. The WorleyParsons' report also refers to increasing material costs. ECG is aware that network operators in other jurisdictions are experiencing similar cost pressures and this has been recognised by regulators in recent Access Arrangement Final Decisions.

ECG considers that the contractor and material price increases sought by Envestra are commensurate with the size of its South Australian network operations and that Envestra is acting prudently.

ECG accepts that Envestra will incur depot relocation costs but the timing is unclear as are the reasons for the forecast expenditure in each of the five years. ECG would assume that expenditure may be required over 1 or 2 years. In the absence of this information ECG is unable to conclude that the expenditure is prudent and efficient.

ECG is not aware of definite planned increases in the Superannuation Guarantee Levy (SGL) or the rate that may apply. In addition, ECG is of the view that the SGL may be included as part of the wage rise and not as a separate item. This information has not been provided and therefore ECG is unable to conclude that the forecast expenditure is prudent and efficient.

Expenditure for additional Smallworld GIS Licenses is not a material amount but the reasons for the forecast increase have not been provided. Therefore ECG is unable to conclude that it is prudent and efficient.

As such, ECG sought additional information on the relocation including why it is taking five years for relocation. In addition, ECG also sought information on why Envestra believes that there is a planned increase in the superannuation guarantee levy and details of the Smallworld GIS licence fees.

Stage Two

The increase in Contractor and Material cost discussed in Stage One are prudent and efficient.

Envestra advises[237] the derivation of the Depot Relocation expenditure is based on incremental costs. That is, relocating from Brompton initially causes higher costs than if the relocation did not take place. Over time, the relocation is a more economical option. In addition, the expenditure has been estimated taking into account removalists, lease costs, rates and taxes, site cleaning and security and relocation of all IT, PABX and electric equipment.

WorleyParsons identifies[238] the reason given for Depot Relocation to be Occupational Health and Safety. ECG accepts WorleyParsons' reason for Envestra having to relocate from its Brompton Depot. The additional costs are for relocation and additional lease costs. As such, ECG considers the expenditure to be prudent and efficient.

[235] Envestra SA-Reply to ECG Questions: Q5.1 and 5.2, 26th October 2005
[236] Envestra SA-Reply to ECG Questions: Material Changes Q5.10, Pg7, 26th October 2005
[237] Envestra SA Reply to ECG Questions: Q3.20, 11th January 2005.
[238] WorleyParsons Report; Section 10.5.4, September 2005, Pg 96

Envestra advises[239] of an assumed likely increase in the Superannuation Guarantee Levy (SGL) of 1% from 2007/08 and a further increase of 1% from 2009/10. SGL increases are in addition to BIS Shrapnel Average Weekly Earnings. Envestra further advised[240] that increases in superannuation are seen as insufficient for most Australians upon retirement by both ANZ and CPA Australia, and will need to increase by 3%.

As discussed in Stage One, ECG is not aware of definite planned increases in SGL. Whilst there are a number of reports indicating that the current superannuation level may be insufficient to support an ageing workforce, ECG is aware of changes proposed by the Government which encourages more people to invest in superannuation not necessarily related to increase in SGL. ECG is therefore unable to recommend that the additional expenditure for SGL is prudent and efficient.

Envestra advises the expenditure for GIS Smallworld licences is required for an additional 2 licences to enable increased processing from the current 50km/year to the proposed forecast of 100km/year mains replacement. Envestra has based the expenditure on historical licence costs.

As ECG has recommended 100km/year mains replacement and Envestra has used actual historical costs to derive the forecast expenditure, ECG considers the expenditure to be prudent and efficient.

Following is the recommended expenditure for Miscellaneous Costs:

Table 8-67: Recommended Expenditure for Miscellaneous Costs 2006/07 to 2010/11

(Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Increase in Contractor Costs	0.05	0.10	0.10	0.10	0.10	0.47
Increasing Material Costs	0.11	0.07	0.04	0.04	0.04	0.31
OEAM Depot Relocation	0.40	0.19	0.15	0.15	0.16	1.05
Increase in SGL		0.00	0.00	0.00	0.00	0.00
Additional Smallworld GIS Licenses	0.08	0.00	0.00	0.00	0.00	0.08
Total	**0.56**	**0.37**	**0.30**	**0.30**	**0.30**	**1.82**

Note: In all tables there may be small arithmetic anomalies due to rounding errors

8.3.7.6 Environmental Management

Stage One

Envestra advises[241] 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.

[239] Envestra SA Reply to ECG Questions: Q3.20, 20th December 2005.
[240] Envestra SA Reply to ECG Questions; Q3.20, 11th January 2005.
[241] Envestra AAI September 2005, Section 9.7, Pg 41.

[*confidential information removed*]

Envestra has provided an extensive plan of current and forecast costs in Attachment 5 of its 2005 Access Arrangement Information. In addition at the meeting on 21 November, 2005, Envestra outlined its environmental management plan for the forecast period [*confidential information removed*].

As discussed in Section 8.3.2 under Facilities Management, ECG is aware that in the 2001 Final Decision, SAIPAR has expressed concern on the historical liability of contaminated sites to customers and has not included land remediation in its forecast non capital expenditure.

As such, ECG has only confined its review to whether it is prudent and efficient to carry out this environmental management plan without taking the issue of liability into account.

Table 8-68: presents the costs for Environmental Management as outlined in WorleyParsons' report[242]. This table represents the material cost differences between the proposed work to be carried out as outlined in Attachment 5 of the AAI and the 2004/05 base year. A negative sign denotes forecast expenditure below the 2004/05 base year level. ECG believes the base cost has been included in the Facilities Management cost in Section 8.3.2.

Table 8-68: Environmental Management Expenditure 2006/07 to 2010/11 (Nominal $)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Ongoing Monitoring and Remediation		[*confidential information removed*]				5,432,649

Table 8-69: converts the nominal $ shown in Table 8-68: to real $ 2005/06.

[242] WorleyParsons' report, Table 10-11, Pg96

Table 8-69: Environmental Management Expenditure 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Ongoing Monitoring and Remediation		[*confidential information removed*]				5.21

The relatively high expenditure in 2007/08 reflects [*confidential information removed*].

ECG has reviewed the detailed costing and schedule information for each site which is contained in the Envestra paper (Appendix 1 of Attachment 5 of the AAI). Based on its industry experience ECG is aware that there is always a degree of uncertainty associated with estimating costs for ongoing monitoring and remediation of former gas works sites. However based on the detailed information provided in the Envestra paper it is evident that Envestra is acting prudently and that the forecast costs are within a range that would be expected for the number of sites involved.

ECG therefore concludes that recommends acceptance of the forecast expenditure as being prudent and efficient.

Stage Two

In Stage One ECG concluded that forecast expenditure is prudent and efficient. The recommended expenditure is shown in Table 8-70.

Table 8-70: Recommended Environmental Management Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Ongoing Monitoring and Remediation		[*confidential information removed*]				5.21

Note: Negative denotes expenditure below the baseline the 2004/05

8.3.7.7 Office and Equipment Costs

Stage One

Envestra's 2005 Access Arrangement Information does not appear to explicitly reference Office and Equipment Costs and it is unclear where these costs are included. However, ECG has been advised[243] by Envestra to use WorleyParsons' data as a breakdown for line by line activities and costs for Office and Equipment are included in the WorleyParsons' Report. These costs are shown in Table 8-71:

[243] Envestra SA-Reply to ECG Questions: Q5.1 and 5.2, 26th October 2005

Table 8-71: Office and Equipment Costs 2006/07 to 2010/11 (Nominal $)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Incremental FTE Costs	414,153	249,958	313,285	357,848	411,770	1,747,014

Table 8-72: converts the nominal $ shown in Table 8-71: to real $ 2005/06.

Table 8-72: Office and Equipment Costs 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Incremental FTE Costs	0.40	0.24	0.29	0.32	0.36	1.62

WorleyParsons advises[244] of incremental FTE costs on a marginal basis for office space, fit-out costs, rent, office facilities including computers, and standard issue equipment for field based personnel.

ECG assumes that forecast expenditure is associated with the additional FTE's being sought as a result of the ageing workforce (refer to Section 8.3.7.2). As a consequence of ECG being unable to recommend the forecast expenditure associated with the ageing workforce (refer also to Section 8.3.7.2 for details) it is unable to recommend expenditure for office and equipment costs for the same reasons.

It is not apparent where this cost has been included in the 2005 AAI and in spite of the fact that WorleyParsons in its report has shown it as a material change item.

As such, at this stage, ECG is unable to conclude that Office and Equipment costs are prudent and efficient.

As such, ECG sought a reconciliation of this cost to the 2005 AAI. In addition ECG also sought information on the number of FTE related to this cost.

Stage Two

Envestra advises[245] the incremental Office and Equipment costs are included in Operating and Maintenance, Table 15 of the Access Arrangement. The expenditure is required to service the additional staff identified under material change non-capital costs. It is assumed that 50% of additional staff will require desk space and related equipment.

In section 8.3.7.2, ECG reconsidered the expenditure sought for Ageing Workforce and consequently recommends acceptance of the amount relating only to the appointment of seven graduate engineers over the forecast period. ECG accepts these appointments will attract incremental Office and Equipment costs. The amount attributable solely to the graduate engineers has been derived by ECG from the information provided by Envestra[246]. Equipment costs for field based FTEs have been subtracted from the total Office and Equipment costs shown in Table 8-71to determine the amount sought for office based FTEs alone. The portion of this amount that ECG considers prudent and efficient

[244] WorleyParsons' report, Section 10.5.6, Pg 96
[245] Envestra SA Reply to ECG Questions: Q3.22, 11th January 2005.
[246] Envestra response to ECG Report, Attachment 1: Additional Information Cost Justification Summary – Office and Equipment Costs, 27th February 2006.

for office and computer facilities for the engineers has been calculated on a pro rata basis according to the proportion of engineers in each of the forecast years.

As a result, the recommended Office and Equipment expenditure for 7 additional graduate engineers is shown in Table 8-73.

Table 8-73: Recommended Office and Equipment Costs 2006/07 to 2010/11 (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Incremental Engineer FTE Costs	0.10	0.06	0.07	0.11	0.12	0.46

Summary – Material Changes

Based on the above analysis, ECG recommends the following expenditure:

Table 8-74: Recommended Expenditure for Material Changes 2006/07 to 2010/10 (Real $ million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
IT Projects	0.00	0.49	0.82	1.23	1.23	3.77
Ageing Workforce	0.21	0.24	0.24	0.23	0.20	1.12
Regulatory, Governance and Service	0.18	0.10	0.09	0.10	0.10	0.57
Risk Management	0.58	0.54	0.61	0.22	0.25	2.20
Miscellaneous Costs	0.56	0.37	0.30	0.30	0.30	1.82
Environment Management		[*confidential information removed*]				5.21
Office and Equipment	0.10	0.06	0.07	0.11	0.12	0.46
Total		[*confidential information removed*]				15.23

Note: In all tables there may be small arithmetic anomalies due to rounding errors

8.4 SUMMARY

Stage One

A summary of ECG's key findings are:

Operations and Maintenance expenditure for the forecast period includes a number of activities such as network management, network maintenance, meter reading and billing, leak repairs, self insurance etc. ECG's findings are listed below.

- Network Management – this expenditure is related to the One Call Centre and other administration function. ECG considers this cost to be prudent and efficient.
- Network Maintenance – this expenditure is related to routine maintenance of the network. ECG considers that the expenditure is not prudent and efficient. However, ECG sought additional information on the SCADA operating and maintenance expenditure.
- Network Reading and Billing – this expenditure includes the reading and billing function and the disconnection/reconnection function. ECG considers the cost prudent and efficient.
- Leaks Repairs – this expenditure is related to the repair of leaking gas mains. ECG considers the expenditure is not prudent and efficient.
- Self Insurance - this expenditure is a new expenditure not included in the regulatory business previously. ECG sought additional information where the cost would have been previously.
- Gas Network Planning – this expenditure is related the engineering and network planning functions. At this stage ECG considers this expenditure not prudent and efficient and has sought additional information.
- Facilities Management – this expenditure is associated with environmental management of contaminated sites, property rates etc. ECG considers this expenditure is prudent and efficient.
- Government Charges – this expenditure is related to licence fees and charges. ECG considers this expenditure is prudent and efficient.

Administration and General expenditure includes the costs for IT, Human Resources, Accounting and Finance and Network Services. At this stage ECG considers this expenditure not prudent and efficient and has sought additional information in relation to Accounting and Finance costs

FRC cost is shown as over $6million per annum from 2004/05 onwards. In the absence of any other information, ECG has referred to the Commission's Final Decision on FRC for information regarding the efficient costs. Whilst ECG recognises that the Commission's Final Decision has been carried out under a different legislation, the efficient cost shown in the Final Decision is approximately $5million. As there is no information to why there should be a difference, ECG sought additional information on why there is a difference between the Commission's approved FRC expenditure and Envestra's expenditure.

Network Development includes operations support and market development activities. ECG's benchmarking study compared Envestra's cost per new customer connected to other jurisdictions. Envestra's cost benchmarked much higher than most other

jurisdictions. Cost disaggregation down to activities within operations support and market development is unclear. ECG is unable to conclude on whether the network marketing cost is prudent and efficient. ECG sought additional information on the reconciliation of the network marketing cost, the number of staff in the operations support function and the effectiveness of the marketing program.

Material Changes includes a number items such as IT projects, ageing workforce, regulatory governance, risk management etc.

- IT project costs are linked to the new initiative proposed by Envestra. As ECG is unable to reconcile the projects and in the absence of any clarification on the projects, ECG sought clarification of the operating expenditure before it can conclude that the cost is prudent and efficient.

- Aging Workforce includes the costs of recruiting a number of staff as a result of an aging workforce. There is no information on what options Envestra has considered and concluded that this is the best option. As such, ECG sought information on the options considered before it can conclude that the cost is prudent and efficient.

- Regulatory Governance and Service Requirements relates to a number of activities such as compliance costs, review and auditing, etc. As there is a lack of supporting information justifying the increase level of service, ECG is unable to conclude that the expenditure is prudent and efficient except for the cost related to Corporate Governance which ECG considers to be prudent and efficient. ECG sought additional information on the other activities.

- Risk Management includes a number of activities such as promotion of "Dial before You Dig", terrorist risk management and map services for I&C etc.

    - Except for the terrorist risk management category, due to the lack of supporting information, ECG is unable to conclude that the costs are prudent and efficient. ECG sought additional information on the other items before it is able to conclude that the costs are prudent and efficient.

- Environmental Management covers such activities as management of contaminated sites and land remediation. ECG considers this expenditure to be prudent and efficient.

- Miscellaneous Cost covers activities which includes increases in contractors' costs, material costs, OEAM depot relocation etc.

    - ECG has concluded that the price increases for contractors and materials are prudent and efficient.

    - However, in the case of the relocation costs, superannuation guarantee and Smallworld licence fees, ECG is unable to conclude that the expenditure is prudent and efficient. ECG sought additional information on a number of these activities.

- Office and Equipment costs are not associated with the increase in the workforce. As ECG has not concluded that the costs for addressing the ageing workforce are prudent and efficient, it therefore is unable to recommend that the cost for the additional office and equipment is also prudent and efficient. ECG sought information additional information on the number of FTE related to the costs.

Stage Two

In the areas where ECG was seeking additional information, Envestra has provided clarification on the various activities which ECG has incorporated the additional information into its analysis. A summary of the key findings in the outstanding areas not concluded in Stage One are set out below.

Operations and Maintenance

- Network Maintenance expenditure increase is due to higher labour costs resulting from wage increases.
- Leak Repairs expenditure has been adjusted consistent with the increased mains renewal program. The recommended expenditure also reflects a reduction in piece meal renewal costs.
- Self Insurance cost is a notional amount. ECG considers this expenditure to be efficient but the Commission may need to consider how it treats a notational cost in a regulated environment.

Administration and General

- The outstanding issue relating to Administration and General expenditure is related to IT costs. ECG considers the cost to be prudent and efficient except for the additional expenditure following the upgrade of the software, Maximo. ECG considers this cost is already part of the ongoing IT operations expenditure. Accounting and Finance expenditure has been adjusted to reflect ECG's findings and recommendations in Section 8.3.3.

FRC Operating Cost

- The difference in the Commission's approved FRC expenditure and the forecast expenditure is due to the additional maintenance cost for the HP servers and also the ongoing version upgrades of the software. ECG considers these costs to be prudent and efficient.

Network Development

- Envestra has divided the network development into operational support and network marketing. The operational support staff carries out activities performed by network operational staff in other distribution networks. ECG only recommends acceptance of labour costs due to wage increases as prudent and efficient
- Due to the uniqueness of the SA market, ECG is recommending acceptance of the Network Marketing expenditure as prudent and efficient.

Material Changes

- IT Projects is the operating expenditure for the new IT projects. ECG has in principle concluded that the expenditure is prudent. However, ECG considers the expenditure not to be efficient as in some cases, operating expenditure and capital expenditure has been incurred in the same year.
- Aging Workforce expenditure is not considered to be prudent and efficient (except for additional graduate engineers) as no other option has been considered. ECG believes that whilst this is an issue, other considerations such as outsourcing should be reviewed before the expenditure can be considered as being in accordance with the Code.

- Regulatory Governance and Services Requirements expenditure is only partially considered to be prudent and efficient. There is insufficient justification for increased cost in a number of areas such as changes to Australian Standards and responding to service enquiries. Other areas such as Corporate Governance and notification of programmed meter changes (partially) are considered to be prudent and efficient.

- Risk Management costs that are in accordance with the Code include Terrorist Risk Management and SCADA Maintenance costs. Mapping of I&C services is considered to be partially prudent and efficient.

- Miscellaneous costs cover a range of activities. ECG considers the costs to be prudent and efficient except for the costs related to the superannuation guarantee.

- Office and Equipment is related to the additional staff proposed by Envestra. As ECG is only recommending the additional a partial amount which is related solely to the additional graduate engineers

Details of ECG's recommended expenditure are shown in Table 8-75.

Table 8-75: Recommended Non Capital Expenditure 2006/07 to 2010/11. (Real $million 2005/06)

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
Operating & Maintenance	26.17	25.99	25.62	25.76	25.69	129.23
Administration & General	7.30	7.11	7.41	7.30	7.39	36.51
Network Development	6.58	6.64	6.69	6.75	6.81	33.47
FRC	6.43	6.74	6.69	6.96	6.92	33.74
Material Changes						
IT Projects	0.00	0.49	0.82	1.23	1.23	3.77
Ageing Workforce	0.21	0.24	0.24	0.23	0.20	1.12
New Regulatory, Governance and Service Requirements	0.18	0.10	0.09	0.10	0.10	0.57
Risk Management	0.58	0.54	0.61	0.22	0.25	2.20
Miscellaneous Costs	0.64	0.37	0.30	0.30	0.30	1.90
Environmental Management	0.34	5.41	-0.18	-0.18	-0.18	5.21
Office and Equipment Costs	0.10	0.06	0.07	0.11	0.12	0.46
Sub Total	2.04	7.21	1.96	2.00	2.01	15.23
TOTAL	**48.52**	**53.70**	**48.37**	**48.76**	**48.82**	**248.18**

ECG has converted the above table to nominal $.

Table 8-76: Recommended Non Capital Expenditure 2006/07 to 2010/11.
(Nominal $million)

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
Operating & Maintenance	26.82	27.31	27.59	28.43	29.07	139.22
Administration & General	7.48	7.47	7.98	8.05	8.36	39.35
Network Development	6.75	6.98	7.20	7.45	7.71	36.08
FRC	6.59	7.08	7.20	7.68	7.83	36.39
Material Changes						
IT Projects	0.00	0.51	0.88	1.36	1.39	4.15
Ageing Workforce	0.21	0.25	0.26	0.25	0.22	1.20
New Regulatory, Governance and Service Requirements	0.18	0.11	0.10	0.11	0.11	0.61
Risk Management	0.59	0.57	0.66	0.24	0.28	2.34
Miscellaneous Costs	0.66	0.39	0.32	0.33	0.34	2.03
Environmental Management	0.35	5.69	-0.20	-0.20	-0.21	5.43
Office and Equipment Costs	0.10	0.06	0.08	0.12	0.14	0.50
Sub Total	2.09	7.58	2.11	2.21	2.28	16.27
TOTAL	**49.73**	**56.42**	**52.09**	**53.83**	**55.24**	**267.30**

ECG advises this recommendation reduces the Non Capital expenditure by $9.5million, from $276.80million to $267.3million (nominal).

Appendix 1

Marketing Activities Supported by the Current Level of Approved Expenditure

[*confidential information removed*]

Appendix 2

IT Material Projects[247]

[*confidential information removed*]

[247] Detailed description of the projects is in the IBM Report: AAI SA Att 3 IBM Report

Appendix 3

Reconciliation of Mapping of I&C Services

Envestra information provided 24th December 2005 (Assumption: $nominal):

Cost of new I&C services to be mapped	$60
New services per year	$373
Number existing I&C services to be mapped	5000
Cost per location (I&C)	$104
Number of existing Units developments to be mapped	3250
Cost per location	$207
Set up cost (one-off)	$120,000
Operating cost (licence fees(GIS) and vehicle running)	$25,750pa
Year to map all existing I&C and Units	3

Envestra advises[248] that existing services will be mapped over the next three years and new services as they are installed.

In first three years 2006/07 to 2008/09:

New Services (3yrs x 373 x $60)	=	67,140
Existing I&C (5000 over 3 yrs x $104)	=	520,000
Existing Unit Dev (3250 x $207)	=	672,750
Set-up cost in first year	=	120,000
Operating cost (25,750 x 3)	=	77,250
TOTAL	=	**1,457,140**

Proposed expenditure in WorleyParsons' report (Table 10-9) converted to Real $ million from Table 8-59

	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL 06/07-10/11
Map Services for I&C Customers	0.62	0.52	0.53	0.06	0.06	1.78

The first three years (2006/07 – 2008/09) expenditure = 1.67million.

Reconciliation for 2006/07 to 2008/09:

Envestra information provided 24th December 2005	= 1,457,140
Envestra proposed AAI (WorleyParsons)	= 1,670,000

Over the first three years, the Envestra information provided 24th December 2005 results in a shortfall of: = 212,860 (70,953pa).

In the remaining years 2009/10 to 2010/11:

Envestra provided information 24th December, 2005:

New Services (2yrs x 373 x $60)	=	44,760
Operating cost (2 x 25,750)	=	51,500

[248] Envestra SA-Reply to ECG Questions: Risk Management, 26th October 2005

TOTAL = 96,260

Proposed expenditure in WorleyParsons from Table 8-59 ($Real 2005/06l): = 0.12m

Reconciliation for 2009/10 to 2010/11:

Envestra information provided 24th December 2005 = 96,260
Envestra proposed (WorleyParsons) = 120,000

Over the remaining two years, the Envestra information provided 24th December 2005 results in a shortfall of: = 23,740 (11,870pa).

The recommended expenditure reflects the costs in the information provided 24th December 2005 divided in the same ration as WorleyParsons' report.