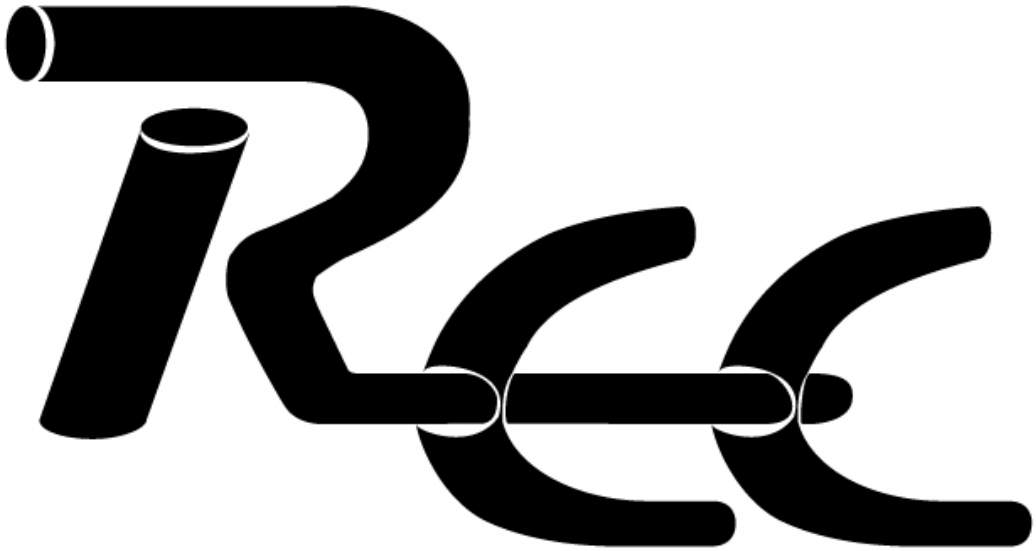

GasNet Revised Access Arrangement –

Assessment of Proposed Operating Expenditure Scope and Workload Changes

Ross Calvert Consulting Pty Ltd

September 2007

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Introduction

Ross Calvert Consulting Pty Ltd has been requested by the Australian Competition and Consumer Commission (ACCC) to provide an advisory report to assist in the assessment of the GasNet Access Arrangement that was lodged with the regulator on 30 April 2007. Details of the nature of the advice sought are provided in Appendix 1.

GasNet's proposed workload changes include a step change for the increase in operations and maintenance expenditure as a result of capital expenditure in the regulated network. Such is the extent of the capital expenditure that GasNet proposes an increase in its regulatory asset base of approximately 60 percent. GasNet's proposed scope changes include:

- the escalation of labour costs above inflation, including increases in labour costs arising from an ageing workforce;
- the costs of updating GasNet's existing procedures as the result of recent changes in legislation;
- the cost of increased security at GasNet's facilities;
- the increased costs of monitoring GasNet's infrastructure and facilities due to urban encroachment;
- pipeline risk assessments not incurred in 2006;
- the increasing need for hazardous area reviews of GasNet's assets.
- increases in IT costs for disaster recovery measures; and
- costs associated with increased regulatory accounting and compliance obligations.

The major capital works program proposed by GasNet over the forthcoming access arrangement period encompasses:

- the construction of a number of new pipelines including loops;
- major refurbishment of existing compressor stations;
- construction of some new compressor stations;
- replacement of some existing pressure regulators;
- replacement of some existing gas heaters; and
- construction of some new gas heaters.

The amounts GasNet has claimed in relation to scope and workload changes for each year of the forthcoming access arrangement period are set out in Table 1 below:

Table 1 : GasNet's Proposed Scope and Workload Cost Increases 2008-12 ($M 2006 June)

Year	2008	2009	2010	2011	2012
Scope changes	1.51	1.96	2.29	2.63	2.98
Workload changes	0.74	1.47	1.73	2.14	2.62
Workload changes – fuel gas	1.35	1.50	1.58	1.65	1.80

GasNet submits that the principal operating cost driver associated with each class of asset is as set out in Table 2 below:

Table 2 : Operations and Maintenance Cost Drivers

Activity	Cost driver
Pipeline costs	Total length of the pipeline system
Compressor costs	Total replacement cost of the compressor stations
Regulator/ heater costs	Total replacement cost of the regulator stations/ heater

GasNet claims that the cost of operating and maintaining a compressor station, regulator station or heater facility depends upon the complexity of the asset which is reasonably represented by its capital cost. Based on the forecast capital expenditure for the various proposed new assets set out in its submissions for the access arrangements GasNet has produced a forecast of operating costs for the new access arrangement period by applying the unit rates applicable in 2006.

Workload Changes – Direct Operating Costs (Labour)

Increase in real labour costs

GasNet advised that direct labour comprises 55.1% of its forecast direct operating costs. It has applied a real escalator of 2.8 per cent per annum to the labour component of its forecast Non Capital Costs. To support this escalation rate it cites the following evidence:

- Real wages growth in the electricity, gas and water sector is forecast by BIS Shrapnel to average 2.8 per cent per annum over the six years from 2007-08 to 2012-13[1].
- The Commonwealth Treasury Budget 2006-07 noted that wages are expected to increase solidly, with the Wage Price Index forecast to grow by 4 per cent in 2006-07[2].
- The electricity, gas and water sector has experienced skills shortages over the past two to three years and job vacancies in the sector remain relatively high.
- Skilled labour shortages are expected to be exacerbated by a number of electricity and gas utilities across Australia embarking on significantly increased maintenance and refurbishment programs.
- Strong wage pressures have seen wage increases in the electricity, gas and water sector (as measured by the Wage Price Index and the labour price index) well above the national average over the past six years. The ABS wage cost index and the BIS Shrapnel labour price index for the electricity, gas and water sector have

[1] *Outlook for Wages to 2012-13: Electricity, Gas and Water Sector Australia and Victoria*, BIS Shrapnel , prepared for Envestra, SP-Ausnet and Multinet Gas, March 2007, p3.
[2] Commonwealth Treasury Budget 2006-07, Paper Number 3.

averaged around 0.6 per cent and 0.7 per cent higher than the national average from 1998 to 2006[3].

GasNet considers that, given the current levels of skill shortages being reported and the factors listed above, the differential between wages growth in the electricity, gas and water sector and the national average is expected to be maintained over the medium term.

ECONtech was commissioned to prepare an updating report on labour cost movements and forecast wage movements in the electricity, gas and water sectors in connection with the AER's electricity transmission assessment of SP AusNet and VENCorp[4]. ECONtech's forecasts of both national wage inflation and wages growth in the electricity gas and water sector were quite similar to that of BIS Shrapnel.

It is concluded from ECONtech's recent work that GasNet's forecast rate of increase is reasonable. Accordingly, it is recommended that GasNet's claim of a real escalation rate of 2.8% per annum for labour costs be accepted as reasonable.

Workload Changes – Corporate Overheads (Labour)

GasNet advised that direct labour comprises 56.4% of its forecast corporate overheads. It is concluded that the forecast rate of increase in overheads labour is reasonable for the reasons outlined in the section on direct labour costs.

Workload changes – Direct Operating Costs (Pipelines)

Table 3 below lists new pipeline capital projects proposed by GasNet during the third access arrangement period.

Table 3 : GasNet's Proposed New Pipelines 2008-12

Project	Diameter (DN)	Length (km)	Year of Completion
Northern Zone	450	11	2009
Sunbury loop	200	8.3	2012
Ballarat loop	300	40.1	2010
Warragul loop	150	4.8	2009
Pakenham	150	0.452	2009
Carisbrook loop	300	31.2	2010
Brooklyn Lara (Corio) Pipeline	500	57	2008

GasNet has proposed additional amounts, commencing at $160,000 per annum in 2008 rising to $450,000 per annum in 2012, to provide for the additional costs of maintaining

[3] *Operating and Maintenance Expenditure Scope and Workload Changes 2008 to 2012*, GasNet, April 2007, p5.
[4] *Forecast of Labour Costs Growth*, Econtech report to Australian Energy Regulator, August 2007

the extra length of pipelines. The amounts were derived by dividing direct pipeline maintenance for all of GasNet's PTN pipelines by the number of kilometres of pipeline to yield a cost per km of $2,820 for the base year of 2006. Notwithstanding that maintenance cost increases for looped pipelines will be somewhat less than for new pipelines because of lower costs for easement maintenance and reduced traveling time, the methodology is considered reasonable in principle, provided it is accepted that 2006 is a representative base year. GasNet has advised that two unforeseen events occurred in 2006 which had some impact on maintenance costs:

- A compressor blade failure; and
- A gas leak near Pakenham.

Its estimated additional costs for these two events were $115,000 for the blade failure and $200,000 for the gas leak. No other factor has been identified that would render 2006 as an unrepresentative base year in pipeline maintenance. However it also noted that abnormal events of this nature could potentially occur during any regulatory period. As the aggregate additional cost for the two events amounts to only around 1.5% of base non capital costs, it is accepted that 2006 was a sufficiently representative year for the purpose of providing a baseline.

If all projects proposed by GasNet were approved and constructed, there would be an additional 153 km of pipeline length to be maintained by the end of the forthcoming access arrangement period. However, the Carisbrook, Ballarat and the Sunbury loops are not expected to be accepted as reasonable capital expenditure by the ACCC for the third access arrangement period. Moreover, some additional looping of the Wollert to Wodonga Pipeline immediately north of Wollert has been assessed as a more cost effective alternative to the Euroa Compressor Station[5]. A total of 27 km of looping was assessed as more appropriate than the compressor station and 11 km of looping.

Accordingly, it is considered that 75% of the average unit cost for pipeline maintenance is a reasonable unit rate for sections of looped pipeline (i.e. $2,115 per km for 2006).

Table 4 below sets out the amounts claimed by GasNet for maintenance of new pipeline loops. Table 5 sets out the amounts recommended the amounts recommended as reasonable for maintenance of new pipeline loops, having regard to the actual lengths expected to be approved by the ACCC in the capital expenditure program and a reasonable unit cost for their maintenance.

Table 4: GasNet's Claimed Maintenance Costs for New Pipeline Loops (2006$ thousand)

	2008	2009	2010	2011	2012
Total	160	210	410	410	450

[5] *GasNet Principal Transmission System Review of Proposed New Facilities Investments,* Sleeman Consulting, 2007, p 24.

Table 5: Recommended additional maintenance costs for new pipeline loops (2006$ thousand)

Project	2008	2009	2010	2011	2012
Northern Zone	n/a	38	57	57	57
Sunbury loops	n/a	n/a	n/a	n/a	n/a
Ballarat loop	n/a	n/a	n/a	n/a	n/a
Warragul loop	n/a	7	10	10	10
Pakenham	n/a	1	1	1	1
Carisbrook loop	n/a	n/a	n/a	n/a	n/a
Brooklyn Lara (Corio) Pipeline	80	121	121	121	121
Total	**80**	**166**	**189**	**189**	**189**

Workload Changes – Direct Operating Costs (Compression, Regulators and Heaters)

Compression

In its access arrangement for 2008-2012 GasNet has proposed a major capital works program involving refurbishment of each of its existing compressor stations as well as construction of additional stations at Euroa and Stonehaven.

Table 6 quantifies the proposed expenditure at the various stations.

Table 6: Forecast Capital Expenditure on Compression ($2006 million)

	2008	2009	2010	2011	2012
Brooklyn		37.76		11.81	
Wollert		1.58			
Stonehaven					26.17
Other stations	1.34				
Total	**1.34**	**39.34**		**11.81**	**26.17**

In response to a directive from Energy Safe Victoria[6] GasNet is in the process of replacing all of its oil-sealed compressors with dry-seal units. In some instances the compressor engines are being upgraded. Three of the four engines at Gooding Compressor Station were overhauled in 1997-98 with the fourth scheduled for 2008. The unit and station control systems were upgraded during 1998. One dry seal compressor at Gooding has been installed to replace a wet-seal unit with the remaining three to be installed in 2007. The compressor units have improved staging.

[6] Letter to GasNet from Energy Safe Victoria dated 27 March 2006.

One Solar Centaur T6100 unit is proposed by GasNet for installation at the Stonehaven Compressor Station by 2012. One Solar Saturn T1600 unit is also proposed for installation at the Euroa Compressor Station by 2009.

At the Wollert Compressor Station the existing three Solar Saturn units are to be replaced by two Centaur T4700 units. At the Brooklyn Compressor Station the existing four Saturn and two Centaur T4000 units are to be replaced by two Centaur T4700 units with one Centaur T4000 unit to remain.

The total estimated capital expenditure proposed for compressor stations is $78.66 million ($2006) for the period 2008-2012. This compares with a capital base for compressors of $77.78 million at 1 January 2008. The $9.67 million capital base for land and buildings would also include a significant proportion associated with compressor stations. Nevertheless the proposed expenditure program for compression would involve an approximate doubling of the capital base associated with compression. Table 7 compares new with previous configuration for each station.

Table 7: Proposed and previous compressor configurations

Station	Previous Configuration	Proposed Configuration
Gooding	4 Solar Centaur T4000 units	4 Solar Centaur T4000 units
Wollert	1 Solar Saturn T1300 units 2 Solar Saturn T1200 units	2 Solar Centaur T4700 units
Brooklyn	2 Solar Saturn T1300 units 2 Solar Saturn T1200 units 2 Solar Centaur T4000 units	3 Solar Centaur T4700 units 1 Solar Centaur T4000 unit
Iona	2 x 300kW Caterpillar engines with reciprocating compressors	2 x 300kW Caterpillar engines with reciprocating compressors
Euroa		1 Solar Saturn T1600 unit
Springhurst	1 Solar Centaur T6100 unit	1 Solar Centaur T6100 unit
Stonehaven		1 Solar Centaur T6100 unit

GasNet has submitted that the total replacement cost of the compressor stations is a cost driver for the operation and maintenance costs of these stations. This implies that GasNet is seeking an approximate doubling of the allowance for compression maintenance. The impact of compression workload changes claimed by GasNet is set out in Table 8 below.

Table 8: Additional compression maintenance workload claimed by GasNet (2006$million)

	2008	2009	2010	2011	2012
Compression Maintenance	nil	0.52	0.52	0.87	1.24

A number of factors come into consideration in evaluating GasNet's claim for this item. Where units have been upgraded (e.g. from a Saturn to a Centaur) the greater size will tend to increase the time required for maintenance.

To a certain extent also, greater complexity of units will have a similar impact.

On the other hand, the better control systems and communications data and improved station design and layout are expected to reduce the time required for maintenance. In addition, the larger units will have higher maintenance materials costs. The construction of new stations would have material impact on maintenance requirements because of the need for additional travel and extra units to service. However, it is expected that neither the Stonehaven nor the Euroa stations will be approved by the ACCC as prudent capital expenditure during the 2008-12 period.

At the Gooding station the number of units is unchanged and no additional labour costs are considered to be justified. At the Wollert and Brooklyn stations the size and complexity of units is greater but the number of units is reduced. It is considered that the overall impact on labour requirements will be neutral and hence no additional labour is considered to be justified. At Springhurst and Iona the number of units remains the same and again no additional labour is considered to be justified.

Due to the increased size and complexity of a number of compressor units, additional allowance for materials and services is considered reasonable. The suggested amount is $100,000 per annum (2006 dollars) from 2009.

The overall impact of the additional workload on compression maintenance costs is assessed as being marginal during the period. The following additional costs considered to be reasonable are set out in Table 9 below:

Table 9 : Additional Compression Maintenance Costs for GasNet 2008-12 (2006 thousand dollars)

	2008	2009	2010	2011	2012
Compression Maintenance	nil	100	100	100	100

Heaters and regulators

GasNet has also submitted that it will face increased costs arising from the installation of additional in-line regulators and heaters, including new or upgraded or substantially upgraded regulators, and new heaters at Dandenong, Wollert, Lara, Brooklyn, Wandong, Clonbinane, North Laverton and Morwell[7]. The requirement for gas heating arises from the fall in gas temperature which occurs when gas pressures are reduced at a regulator station. The reduced gas temperature can have adverse effects on the transmission system such as:

- ice formation on control equipment which can cause operational failures;
- hydrate formation in the pipeline system (which can cause blockages); and
- gas liquids formation in the gas stream where higher hydrocarbons are present.

Accordingly the Gas Safety Regulations specify a minimum gas temperature of 2 deg C.

[7] GasNet Access Arrangement Submission, 8 May 2007.

GasNet has estimated the costs of maintaining these new and upgraded facilities by determining the relationship between the optimized replacement cost (ORC) and the cost of maintaining the facilities in the base year, 2006. It has assessed the maintenance cost in that year as 4.81% of the ORC. Accordingly it has used the same percentage of the ORC of the new facilities to justify additional maintenance workload changes as set out in Table 10 below[8].

Table 10: Additional heater and regulator maintenance costs (2006$million) claimed by GasNet

Year	2008	2009	2010	2011	2012
Heaters and regulators maintenance	0.58	0.74	0.80	0.86	0.93

The methodology used by GasNet for determining the costs associated with the additional workload is considered reasonable for this item. However, application of the 4.81% ratio is not considered appropriate in the circumstances because recent escalation in the cost of installing these facilities means that the actual workload is exaggerated. A ratio of 3.5% is considered more appropriate. The resulting recommended costs are set out in Table 11 below.

Table 11: Recommended additional heater and regulator maintenance costs (2006$million)

Year	2008	2009	2010	2011	2012
Heaters and regulators maintenance	0.42	0.54	0.58	0.63	0.68

Workload changes – direct operating costs (Fuel gas)

GasNet has forecast that fuel gas costs for the forthcoming access arrangement period will be as set out in Table 12 below.

Table 12 : Forecast Fuel Gas Costs 2008-2012 ($2006 million)

	2008	2009	2010	2011	2012
Fuel Gas - Total[9]	2.73	2.88	2.97	3.04	3.18
Fuel Gas - Workload changes[10]	1.35	1.50	1.58	1.65	1.80

Although the forecast annual use of fuel gas in the PTS could be predicted with reasonable certainty in the past, three major factors make this task increasingly difficult for the next five years. The first is the shift in the gas production mix as the traditional dominance of Gippsland Basin gas weakens. Significant proportions of the state's gas demand are now sourced from the Minerva, Casino and Thylacine fields in the Otway Basin (with Geographe to follow) and the Yolla field in the Bass Basin. The second is the move to 4 hour trading intervals during the gas day. Re-bidding processes in the event of a reduction in demand generally leads to reduction of injections from higher priced gas (typically from the Otway Basin) which in turn creates the potential for a high pressure

[8] Spreadsheet supplied by GasNet (confidential)
[9] Access Arrangement Information, Table 3-6, p8.
[10] Access Arrangement Information, Table 3-5, p8.

constraint in the eastern part of the system. VENCorp manages such situations by moving Longford gas into the South West Pipeline using compression at Gooding and Brooklyn[11].

The third factor is the influence of increased use of gas as a fuel for electricity generation which is discussed below.

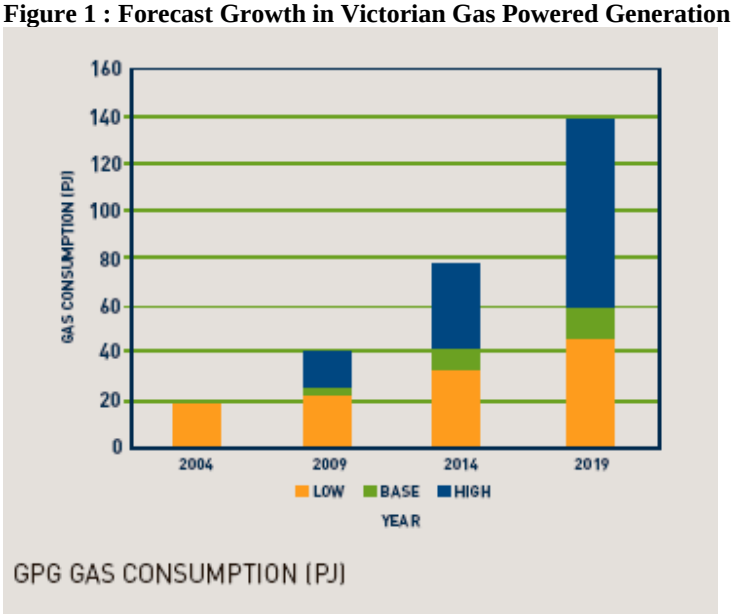
In addition to these trends there are changes occurring in the composition of compression capacity in the PTS as the older compressor stations are progressively refurbished and larger engines are installed. Table 7 above sets out the capacity previously installed and capacity proposed to be installed at the various compressor stations in the PTS.

Increased gas powered generation (GPG) in Victoria has a significant effect on compressor fuel use in the PTS because the GPG stations consume large quantities of fuel within relatively short periods of time. They also require relatively high inlet gas pressures. It therefore becomes necessary to move significant linepack to ensure that the GPG stations have sufficient fuel available to operate. The compressor stations are used to move the linepack and hence increased GPG means increased compressor fuel usage.

Although GPG consumption represented less than 6% of total annual gas use in Victoria in 2004-05, it could comprise 20% or more of the total gas demand on the gas peak day in winter[12]. The substantial excess of generating capacity that existed in south-eastern Australia for a long period has now been absorbed, particularly with the strong growth in demand for air-conditioning. GPG is forecast to supply an increasing proportion of electricity demand, particularly in Victoria. Figure 1 below shows that GPG is forecast by VENCorp to increase dramatically over the next 12 years. By 2009 it is forecast to consume between 22 and 40 PJ per year and by 2014, between 32 and 78 PJ per year. By 2019 GPG is forecast by VENCorp to comprise 16-31% of Victoria's total annual gas demand[13]. VENCorp also notes that the increased penetration of wind power in the generation mix may increase the demand for GPG because the flexibility of GPG can be used to compensate for the variability of wind power by providing frequency control ancillary services[14]. In peaking and intermediate roles GPG demand is typically much more volatile than most other categories of gas demand.

[11] *Compressor Strategy 2007 to 2017,* GasNet March 2007.
[12] *Vision 2030,* VENCorp p35.
[13] *Vision 2030,* VENCorp p35.
[14] *Vision 2030,* VENCorp p36.

Figure 1 : Forecast Growth in Victorian Gas Powered Generation to 2019.



The ACCC obtained more recent independent advice from ACIL Tasman regarding forecast GPG demand in Victoria over the next few years[15]. This information was of particular interest because changes in the National Electricity Market (NEM) over the past few months have led to substantial increases in GPG in Victoria and other NEM regions. ACIL Tasman derived its forecasts by detailed modeling of the NEM, taking into account committed new generation capacity during the forecast period. ACIL Tasman's forecast annual GPG quantities are set out in below.

Table 13: ACIL Tasman forecast annual GPG quantities to 2012 (PJ)

2006[16]	2007	2008	2009	2010	2011	2012
8.4	32.3	16.4	6.4	4.4	6.2	8.1

Differences between the ACIL Tasman and VENCorp forecasts underline the uncertainty associated with forecasting GPG use which will translate into uncertainty about compressor fuel usage in the PTS over the next few years.

Brooklyn Compressor Station has 6 functions: WUGS[17] shutdown, WUGS refill, SEAGas Pipeline exports, providing linepack for the North Laverton GPG, intraday refill of linepack on the South West Pipeline and peaking duty. Of these the SEAGas exports purpose is no longer relevant. For the remaining functions GasNet has forecast that gas usage will remain the same over AA3 except that peaking duty operating hours will increase by 2% per annum due to increased Ballarat peak demand.

[15] *GasNet GPG forecasts*, ACIL Tasman 13 August 2007.
[16] For reference
[17] Western Underground Storage facility

Stonehaven Compressor Station is forecast by GasNet to commence providing peak gas supply to Melbourne in 2012.

Gooding Compressor Station is required to provide the capacity to serve peak flows during the winter and shoulder seasons. With the advent of greater pipeline capacity in the western part of the PTS, it is also expected to provide transfers of linepack from the eastern part of the PTS to the western part. GasNet's forecast rate of increase in fuel usage for the station is 2% per annum.

Iona Compressor Station provides capacity for the refill of the WUGS facility during winter weekends and summer as well as peaking duty for the former western transmission system to centres including Portland. Gas usage for the latter requirement is forecast by GasNet to increase at 7% per annum.

Wollert Compressor Station's function in providing peak gas supplies to the northern part of the state is forecast by GasNet to increase its fuel gas demand by 7% per annum.

In the case of the proposed Euroa Compressor Station, its function of providing peak gas supplies to the northern part of the state is forecast by GasNet to increase its fuel gas demand at a rate of 7% per annum from a forecast commencement of operations in 2009. Figure 2 depicts GasNet's actual fuel gas demand for the years from 1996 to 2006 and its forecast of aggregate fuel demand for the period to 2017. It should be noted that the demand in year 2004 was an anomaly because of the abnormally high volume of gas exported to South Australia due to delays in completion of the Minerva Project. Moreover, fuel gas usage in 2006 was abnormally low because Brooklyn usage was down from 2005 by approximately 130 TJ due to high pressures delivered from the newly developed Casino field.

In considering the reasonableness or otherwise of the forecast cost of fuel gas the following items need to be considered:

- the assumed cost of the gas;
- the assumed hourly rates of usage of equipment;
- the assumed operating hours of compressor units; and
- the assumed operating hours of gas heaters.

GasNet is required to purchase its fuel gas requirements from the market and its supply contract will be renegotiated in 2008. In forecasting its fuel gas costs for the 2008-12 period it has made allowance for a price increase of up to 10%[18].

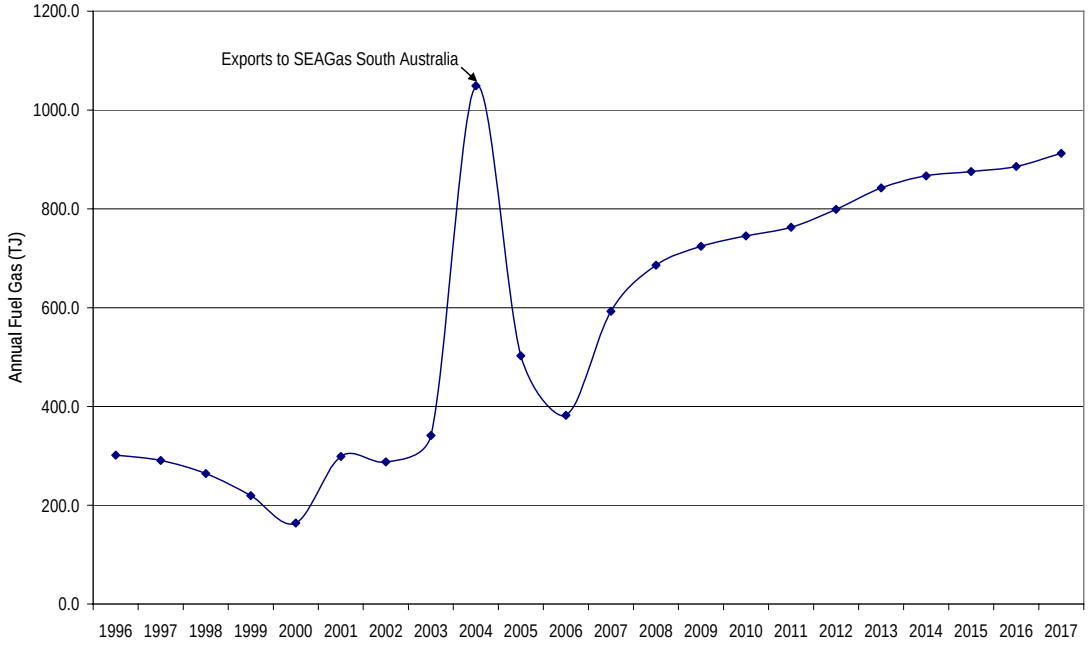
It is noteworthy that the average price between 1 May 2006 and 31 January 2007 (i.e. the 9 months immediately preceding the change to the gas trading market in Victoria) the average daily price was $3.19/GJ. From the advent of the new market on 1 February 2007 until 11 July 2007 the average price had increased to $3.87/GJ. This reflects a recent

[18] GasNet Access Arrangement Submission, 8 May 2007, p76.

upward trend in gas prices in the eastern Australian market. While GasNet's estimated gas price is highly speculative, it is considered to be within reasonable bounds.

The assumed hourly rates of usage of the various types of compressor engines in the network were provided by GasNet and are considered to be reasonable. Historical operating hours data was provided by GasNet. The assumed operating hours of compressor units at the various stations by year were also provided and are considered to be generally reasonable. (The exceptions are that the Euroa and Stonehaven stations are not expected to be approved by the ACCC as prudent capital expenditure in the current review and are not expected to be in operation during the forthcoming access arrangement period. However the impact of these two stations on total fuel gas costs is relatively minor. Euroa fuel gas was forecast by GasNet to increase from 8TJ in 2009 to 9.8 TJ in 2012. Stonehaven usage in its first year of operation, 2012, was forecast to be 16.3 TJ. The impact on forecast fuel gas costs arising from elimination of these two stations would therefore amount to $32,000 in 2009, rising to just over $100,000 in 2012 at an assumed gas price of $4 per GJ.)

Figure 2 : GasNet's Actual and Forecast Fuel Gas Usage 1996-2017



The following factors associated with the use of compressor fuel in the PTS over the next five years are relevant to consideration of how best to deal with the uncertainties in forecasting this cost item:

- the extensive changes expected to occur in compressor fuel use;
- the extreme volatility of fuel usage in an environment with increasing use of GPG;
- the magnitude of the costs involved; and
- the fact that GasNet has little control over compressor fuel usage.

In order to test the sensitivity of fuel usage to annual growth in consumption, the forecast rate of increase for the Wollert and Iona stations was reduced to 5% per annum. The resulting impact was a reduction in usage of 2.1 TJ in 2009 with the reduction increasing to 10.8 TJ by 2012. At a cost of $4 per GJ the 2012 impact of the reduced annual fuel gas consumption growth rate of 5% alone would amount to approximately $43,000. This example serves to illustrate the scale of uncertainty associated with fuel gas costs. GasNet has proposed in its Access Arrangement[19] that it should not be required to prepare a statement for a pass through event unless the aggregate amount for all pass through events is $50,000 or more in any regulatory year.

In the circumstances it is recommended that compressor fuel use be treated as a pass-through cost. To safeguard the interests of gas users it is recommended that GasNet be required to seek tenders for the supply of its fuel gas requirements. As the level of fuel costs during the regulatory period is unlikely to fall below the base year cost of $1.38 million (June 2006 dollars), it may be preferable to allow the 2006 base year cost as approved expenditure and to treat the incremental cost as a pass-through item. This would have the benefit of minimizing the necessary annual tariff adjustment.

Scope Changes – Direct Operating Costs

Review and Updating of Operating Procedures

GasNet has advised that a review of all of its existing operating procedures is required to ensure that they are all compliant with recent changes to health and safety legislation, the *Pipelines Act* (Vic) and recent changes to Australian Standard 2885. The *Pipelines Act 2005* (Vic) replaced the previous 1967 Act which regulated gas pipelines in the state from the time natural gas was first supplied. A new version of AS 2885 Part 1, relating to design and construction was issued in 2007. Section 37 of the *Gas Safety Act 1997* requires gas companies to submit a safety case and to comply with that Safety Case. The Safety Case details the safety management system and the formal safety assessments which have been implemented to ensure the ongoing safety and integrity of the described facilities. To remain compliant with its Safety Case, GasNet is obliged to review all of its policies and procedures periodically. Factors that may change and have an impact on policies and procedures include tools and equipment, technology, safety requirements, and legislation, enterprise bargaining agreements and the environment around the asset.

AS 2885 Part 3 (Operation and Maintenance) requires GasNet to:

- have written procedures (controlled document), which shall be approved and reviewed at nominated intervals, for the operation and maintenance of its pipelines and associated systems, including those necessary for maintaining structural integrity in accordance with the standard;
- maintain a list of positions responsible for approval of operation and maintenance procedures and risk assessment as defined in the standard;

[19] Access Arrangement, section 6.6, p10.

- document and record the interval between reviews of the safety and operating plan, emergency plan, and operation and maintenance procedures; and
- operate and maintain the pipelines in accordance with these procedures.

A consequence of GasNet's legal obligations is that a backlog of outstanding policies and procedures has arisen. GasNet further advises that only 20 policies and procedures were prepared in 2006 and hence submits that the majority of this work amounts to a scope change. Work required in this category comprises:

- Drafting of 400 new policies or procedures to ensure the company is up to date; and
- Work to review approximately 1,000 policies and procedures every three years.

GasNet proposes to employ an additional technical manager within the pipelines group to assume responsibility for this task for both pipelines and facilities management. Estimated expenditure for this change of scope is estimated by GasNet to be $60,000 per annum including non-salary labour costs (other than office accommodation and other fixed costs already included in the 2006 base year.)

The need for this work has been demonstrated and the cost claimed by GasNet is considered reasonable.

Security upgrades of Key Facilities and Pipelines

Part 6 of the *Terrorism (Community Protection) Act 2003* (Vic) requires essential services operators to plan for the protection of essential services from the effects of terrorist acts. The GasNet transmission system was declared an essential service under the Act with the result that GasNet is required to:

- prepare a risk management plan;
- audit the risk management plan annually and update it promptly to address any identified deficiencies; and
- prepare a training exercise to test the operation of the risk management plan and participate in that training exercise under the supervision of government.

The external audit conducted in 2006 recommended a range of capital and non capital expenditure to meet GasNet's risk management plan. The non capital expenditure covered additional security patrols, remote monitoring as well as security assessment and capability programs. The relevant O&M items have been estimated by GasNet to cost annual amounts rising to $180,000 by 2009, based on escalation at the CPI. The $180,000 is comprised as follows:

- three visits per year to check security equipment ($85,000);
- operation and maintenance of upgraded site lighting at approximately nine sites ($20,000);
- $20,000 to provide for the cost of staging the emergency exercise.

- $55,000 for additional support from a security firm, including response to alarms on-site.

Site visits to check security equipment

GasNet has advised that its estimate of $85,000 per annum is based on the 2006 cost for maintenance visits at head office of $3,400 per visit plus an allowance for cherry picker hire and travelling time, and for the greater complexity of the new systems. As there are seven sites to be visited three times per year, the basic cost would be $71,400 without the extra allowance. Accordingly, the estimate of $85,000 per annum is considered reasonable.

Site Lighting

The $20,000 cost of operation and maintenance of upgraded site lighting at approximately nine sites is estimated to cover an average of approximately 5 kW per site and is considered to be reasonable.

Emergency Exercise

GasNet stated that it lacked the expertise to conduct an emergency exercise. This claim appears to contradict GasNet's commentary on its staffing philosophy which has favoured retaining in-house expertise. GasNet also states that it enhances the credibility of the exercise in the eyes of the regulator. There is some value in having the performance of the organisation during the emergency exercise assessed independently. In the writer's opinion the regulator would prefer that the expertise be retained in-house as the consultant may or may not be available at short notice in the event of a real emergency. On the other hand, an independent consultant is better placed to write an independent critique of the company's performance in conducting the exercise. Nevertheless the amount involved is small and appears a realistic estimate. It would provide for planning of the exercise, its execution and writing a critique of the exercise. It is concluded that the cost allowance of $20,000 for the emergency exercise is reasonable.

Security Firm Support

GasNet has advised that a security firm currently makes daily visits to the Dandenong site and to the Brooklyn and Gooding Compressor Stations at an annual cost of $45,000. The Brooklyn and Gooding sites are not currently alarmed. The estimated additional cost for nightly attendance at the secured sites as well as daylight weekend visits and response to alarms is $55,000 per annum. This estimate is considered to be reasonable.

Risk Assessments of Pipelines

Section 8.6 of the Australian Standard AS 2885 Part 3 requires that the Maximum Allowable Operating Pressure (MAOP) of each pipeline be reviewed at approved intervals not exceeding five years. Investigations, tests and calculations must be made

during the review to establish the current condition of the pipeline and to determine an MAOP in accordance with AS 2885 Parts 1 and 3.

Section 8.7 of the standard requires that a review of class locations along the route of each pipeline be conducted at approved intervals not exceeding five years and at any time when patrolling indicates the possibility of a need to change the classification of a location. Appropriate corrective action must be taken, including a risk assessment in accordance with the requirements of AS 2885 Part 1.

Section 8.8 of the standard calls for the identification, at approved intervals not exceeding five years, of the threats that could result in hazardous events affecting the pipeline together with a review of threat mitigation procedures, failure analysis and risk evaluation.

GasNet states that it conducts these risk assessments under AS 2885.3 at the same time. It forecasts that MAOP assessments will be required for around 8 pipelines per year at an estimated five days per assessment. Its estimated cost for these MAOP assessments is $25,600 for each year in the access arrangement period. The costs estimate is reasonable but the case is not made that the work is additional to that which GasNet is already required to carry out. AS 2885 Part 3 was issued in 2001 so its requirements have not changed. A significant element of the revision of AS 2885 Part 1, which was issued in 2007, was the rewriting of section 2 dealing with safety.

Hence the requirement to conduct risk assessments has existed since 2001. The issue of whether the requirement of the new standard constitutes a greater scope of work than previously turns on the workload implications of the revised section 2. There is evidence that the new risk assessment requirement is more onerous because the new standard is more prescriptive in the way the risk assessment is addressed. Appendix H of the standard (Integrity of the Safety Management Process) notes that:

- "Effective mitigation can only be developed and implemented if there is a high level of detailed information regarding the specific threat"; and
- "The level of specific information that can be identified in a report provides an indication of the degree of rigour applied to the pipeline safety management process."

Furthermore, it states that "Where possible, information should be positively confirmed and documented, rather than assumed. Where assumptions are made, these should be documented. It is preferable to explicitly discount an issue rather than infer it by silence. This demonstrates that any given issue has been thought of and discounted rather than simply forgotten."

Previously the standard was less prescriptive in the way an engineer described how professional judgment was applied. It is apparent that the new standard requires greater substantiation and this imposes a greater burden on the engineer conducting the risk assessment and this in turn will require more time to complete the task adequately.

The reasonableness of the claimed amount of $25,600 per year must then be examined in light of this. It is concluded that GasNet's claim is reasonable.

Increased Costs for Infrastructure Patrols

GasNet has indicated that it requires an additional pipeline patroller due to the increasing workload on this section of its workforce, particularly where construction activity is greater due to expansion of metropolitan areas and growth of high density areas within metropolitan areas. It notes the importance to the company of having suitably skilled workers located in sufficient proximity to enable deployment where digging or trenching activity in the vicinity of pipelines is to be undertaken. GasNet's proposed additional expenditure of $60,000 per annum is considered reasonable for this purpose.

Measures to Counter Effect of Ageing Workforce and Skills Shortages

GasNet advises that like other pipeline companies, it is facing a shortage of skilled labour and engineering support for its pipeline and facilities O&M works and that this shortage exacerbates the problem of an ageing workforce. It says these factors pose particular challenges in order to manage the impacts on the provision of service and also to retain, recruit and train workers to replace a significant cohort of staff due to retire in the next few years. GasNet notes that with the focus for many years having been on microeconomic reform and efficiency, there has been little emphasis on succession planning. Because it does not outsource its O&M activities, GasNet further notes that it is more adversely affected by these issues than other pipeline operators in Australia. The company considers that its strategy of maintaining core expertise in-house offers it the ability to:

- maintain quality of work;
- control the cost of core services;
- plan and control the timeliness and delivery of services;
- retain corporate knowledge and ensure continuity and hence efficiencies; and
- control succession planning and training.

In its submission[20] GasNet noted that 6 of the 29 members of its Facilities Management Group are due to retire over the forthcoming access arrangement period. GasNet has claimed an additional $150,000 in scope to provide an overlap period in which existing staff would train their replacements. Pipeline engineering is a highly specialised field for which no formal training is provided in tertiary institutions. Universities and technical colleges equip their graduates with the basic skills to carry out pipeline design, construction, operation and maintenance but professionals who enter the gas pipeline industry must necessarily learn the specialised skills on the job. Moreover, the GasNet

[20] *Operating and Maintenance Expenditure Scope and Work Load Changes 2008 to 2012*, GasNet April 2007.

workforce is a relatively small one and there is currently little opportunity for new recruits to rotate between jobs during a training period. It is clear that where a new industry entrant is to learn the critical job skills on the job he or she will need to work alongside an incumbent for a significant period.

GasNet has advised that in estimating what additional costs might be incurred in addressing this issue, it had allowed for new graduates to be employed in years 1, 3 and 5 of the access arrangement period at $85,000 per annum[21]. This yields a total cost of $765,000 over the five years, or approximately $150,000 per annum on average. The need is justified and the sum of $150,000 claimed by GasNet for this item is considered reasonable.

GasNet is also expecting a dramatic increase in its training budget to cater for the influx of new employees as well changes in roles that will be required for existing workers. The company also anticipates an increased obligation to train staff under its Enterprise Bargaining Agreement and the Safety Case. It notes that the increased level of training activity is, in part, a consequence of the chronic skills shortage currently being experienced across the energy sector and the need to offer competitive employment terms and conditions to attract and retain staff. GasNet has claimed an additional $82,000 in costs to provide for this additional training for the PTS workforce. This is based on an assumed attendance by two-thirds of the workforce at one additional training course per year costing $1,500 per course. Considering current rates charged for training courses and making allowance for associated extra travel and accommodation costs in some instances, the amount claimed is considered to be reasonable.

Hazardous Area Review

GasNet has advised that due to the requirements under the *Electrical Safety Act 1998* (Vic) and the *Electrical Safety Regulations 1999* (Vic) that hazardous areas be compliant with electrical safety standards, it needs to compile a dossier for each of the GasNet sites that has electrical equipment installed within hazardous areas. It proposes to capitalise the initial cost of establishing the database but anticipates that the ongoing task of reviewing all relevant assets on a three-yearly basis and updating the database will lead to a requirement for an additional full-time employee at a cost of $80,000 per annum[22]. GasNet has provided only limited information of this item but it is understood that 20 regulator sites and 5 compressor station sites are involved.

In this instance GasNet's assessment of the workload seems excessive. An allowance of $40,000 per annum is considered to be more appropriate to the expected workload.

[21] Email dated 17 August 2007.
[22] *Operating and Maintenance Expenditure Scope and Workload Changes 2008 to 2012*, GasNet, April 2007, p22.

Odorant Costs

GasNet is required to add odorant to natural gas so that gas leakages are detectable at low gas concentrations for reasons of public and workforce safety. The supply of odorant is arranged by tender every 5 years[23]. The cost of odorant in 2006 was $152,000. GasNet notes that its current supplier of odorant on 29 December 2006 notified an increase of 20% to apply to the cost of odorant from 1 January 2007. The increase is attributed to a world-wide scarcity of odorant due to the closure of one of the few plants in the world that produce the compounds. A further price increase of the same order is also expected in late 2007. Hence GasNet forecasts that the cost of purchasing odorant will increase to $184,000 in 2007 and $230,000 in 2008[24].

The cost of odorant is beyond the control of GasNet but the magnitude of the increases, especially the second, remains uncertain. In these circumstances it is recommended that increases in the cost of odorant during the forthcoming access arrangement period be subject to a pass-through. If the magnitude of the second cost increase is known before the final decision is published, the need for a pass-through can be averted.

Scope Changes – Corporate Overheads

IT costs

Disaster Recovery Site

GasNet has forecast ongoing additional costs of $50,000 per annum for the ongoing operation of an IT disaster recovery centre to be established in Brooklyn. It will be located away from GasNet's head office so that the company would be able to continue with core activities that ensure the safety and integrity of GasNet's pipelines and facilities and that GasNet's systems would be recoverable without delay. The company's finance, email, SCADA[25] and critical file storage systems will be duplicated and stored at the Brooklyn centre.

The additional costs are attributed to:

- the additional costs for telecommunications services to support the duplicated systems;
- maintaining the facility in an air-conditioned environment; and
- updating the systems so that they remain compatible with the main GasNet IT system as well as VENCorp's system.

[23] *Operating and Maintenance Expenditure Scope and Workload Changes 2008 to 2012*, GasNet, April 2007, p21.
[24] GasNet Excel Spreadsheet (confidential)
[25] Supervisory control and data acquisition system

The requirement for the disaster recovery site is considered to be reasonable. A prudent pipeline owner would adopt these measures in order to minimize the disruption to the gas transmission system and its customers in the event of an IT disaster.

Having regard to the three elements of the additional costs associated with maintaining the disaster recovery site, GasNet's estimate of $50,000 per annum is considered to be reasonable in accordance with the Gas Code.

Compressor Station Communications Upgrades

GasNet proposes to upgrade the communications to its compressor station sites from the current low speed copper wire system (DDN) to a frame relay based network in 2007. Operation of the new system is estimated to cost an additional $30,000 per annum in leased line charges. The existing technology is outmoded. Moreover, the greater complexity of the new or upgraded compressor stations involves transmission of much more data than with the older stations. The additional cost of operating these new communications systems is based on the additional Telstra charge for the service and is considered reasonable.

Regulatory Accountant

GasNet has submitted that its current regulatory reporting obligation is simply to provide a ring-fencing report but it anticipates as a result of the current Ministerial Council on Energy regulatory review process that its reporting obligations will increase during the third access arrangement period[26]. It noted that the recommendations of the Expert Panel were likely to result in an increased workload, particularly in the areas of:

- *preparation of regulatory compliance reports, including regulatory accounts, ring-fencing reports, cost allocation reports, and other issues that may be covered by future AER guidelines; and*
- *responding to issues raised as a result of regulatory compliance reports and submissions*.

GasNet considers that the increased workload would necessitate the employment of a regulatory accountant as it could no longer be performed by its management accountant. The responsibilities of the proposed regulatory accountant would be:

- the design and maintenance of the regulatory accounts;
- preparation of reports to the regulator;
- maintenance of the regulatory asset base model;
- organising and preparing for external audit of the regulatory accounts.

[26] *Operating and Maintenance Expenditure Scope and Workload Changes 2008 to 2012*, GasNet, April 2007, p14.

GasNet forecasts that external audit of its regulatory accounts will involve an additional cost of $30,000 per year[27].

Attachment A of the National Third Party Access Code for Natural Gas Pipelines currently sets out the minimum information required from service providers in an access arrangement information document pursuant to section 2.7 of the Gas Code. The following are the categories of information sought:

- Access and pricing principles;
- Capital costs;
- Operations and maintenance costs;
- Overheads and marketing costs;
- System capacity and volume assumptions; and
- Key performance indicators.

Section 4 of the Gas Code requires a service provider to establish ring-fencing arrangements for a covered pipeline, including:

- establishing and maintaining separate accounts for the activity that is the subject of the access arrangement; and

- establishing and maintaining consolidated accounts for all the activities undertaken by the service provider.

The second exposure draft of the National Gas Law, published in July 2007, imposes similar requirements[28].

Hence it is not clear that the new regulatory regime will entail greater accounting workload requirements than those already faced by GasNet. It is true, however, that service providers have had strong differences of opinion with regulators with regard to the provision of accounting information since the advent of the Gas Code and Attachment A has been interpreted differently by the two groups. Moreover, GasNet will commence its third access arrangement period before the new National Gas Law is enacted (due to delays in the introduction of the new law) and consequently the new law is unlikely to be applicable to the third access arrangement period.

Accordingly, there is an argument that the additional workload to be performed by the proposed regulatory accountant contains major elements that have not been performed previously by GasNet and that the additional cost is a reasonable expense. On the other hand, it could be argued that even under the new gas law GasNet will not be required to perform any regulatory accounting tasks that it should not have been doing already. The

[27] *Operating and Maintenance Expenditure Scope and Workload Changes 2008 to 2012*, GasNet, April 2007, p14.
[28] Section 135.

issue of whether the cost of a regulatory accountant is a reasonable expense that would be incurred by a prudent pipeline owner is one better decided upon by the regulator.

Enterprise Risk Manager

GasNet states that it has identified the need for an Enterprise Risk Manager, noting that the Financial Services Reform Act Compliance Plan of 2003 requires certain responsible officers to complete monthly and quarterly checklists and ensure that an internal bi-annual audit and external audits of compliance are conducted. The following would be the duties of the proposed position[29]:

- create and oversee the Enterprise Risk Management (ERM) Framework, which will be a database of all GasNet's compliance obligations;
- on-going review of strategic, operational, compliance/reporting objectives, risk appetite and tolerances;
- oversee the maintenance of an enterprise-wide system that integrates existing policies, procedures and standards with regulatory obligations;
- develop risk management assessment procedures that engage staff at all levels of the organisation and promote a commitment to continual improvement;
- establish an internal audit program aimed at determining whether the ERM framework has been properly implemented and maintained;
- oversee the compilation and periodic review of the risk register; and
- communicate the status of ERM initiatives to the Regulatory Compliance and Audit Committees of the Board.

GasNet states that currently each of its departments has its own procedures for complying with obligations which is not audited because nobody has systematically analysed the risks associated with all activities. Employment of an Enterprise Risk Manager would seek to adopt a more holistic approach to compliance reporting and checking within the organisation.

It is considered that GasNet's approach to this issue is likely to achieve a more efficient and more effective approach to achieving compliance with the myriad of complex legal obligations. Accordingly it is recommended that GasNet's proposed annual expenditure of $140,000 be approved as reasonable.

[29] *Operating and Maintenance Expenditure Scope and Workload Changes 2008 to 2012*, GasNet, April 2007, p15.

Summary of Scope and Workload Cost Recommendations

Item	Proposal by GasNet	Recommendation
Workload Changes - Direct Operating Costs		
Labour	Escalate at 2.8% p.a. real	Approval
Pipelines	$160,000 in 2008 to $450,000 in 2012	Approval of 75% of GasNet's proposed unit rate for approved new pipelines only.
Compression	$0.52 M in 2009 to $1.24 M in 2012, based on proportion of asset replacement cost	Allowance for additional material costs of $100,000 p.a. but no additional costs for labour.
Heaters and Regulators	$580,000 in 2008 to $930,000 in 2012, based on proportion of asset replacement cost	Approval of $420,000 in 2008 rising to $680,000 in 2012
Fuel Gas	$2.73 M in 2008 rising to $ M in 2012.	Base cost of $1.38 M approved. Actual fuel gas costs exceeding that amount to be subject to pass-through.
Scope Changes – Direct Operating Costs		
Update and Review of Operating Procedures	$60,000 p.a.	Approved
Security Upgrades	$180,000 p.a.	Approval
Risk Assessment of Pipelines	$25,600 p.a.	Approval
Infrastructure Patrols	$60,000 p.a.	Approval
Measures to Counter Effect of Ageing Workforce • Apprenticeships and Graduates • Training	 $150,000 p.a. $100,000 p.a.	 Approval Approval
Odorant Costs	$230,000 in 2008	Pass-through
Hazardous Area Review	$80,000 p.a.	Approval of $40,000 p.a.
Scope Changes – Corporate Overheads		
Disaster Recovery Site	$50,000 p.a.	Approval
Compressor Station Communications Upgrades	$30,000 p.a.	Approval
Regulatory Accountant	$100,000 p.a.	At discretion of regulator.
Enterprise Risk Manager	$140,000 p.a.	Approval

Appendix 1

The consultant is required to advise on the items specified in the table below.

		Reference
1	Workload changes – direct operating costs (Pipelines) Assess the inputs, assumptions and the calculations carried out to determine whether the proposed direct operating costs are reasonable.	AAI, section3 Attachment D (Scope and Workload Changes Report) Submission section 9.3.7 Excel models
2	Workload changes – direct operating costs (Compressors/regulators) Assess the inputs, assumptions and the calculations carried out to determine whether the proposed direct operating costs are reasonable.	Attachment D (Scope and Workload changes Report) Submission section 9.3.7 Excel models
3	Workload changes – direct operating costs (Fuel gas) Assess the inputs, assumptions and the calculations carried out to determine whether the proposed direct operating costs are reasonable.	Attachment D (Scope and Workload changes Report) Submission section 9.3.8 Excel models
4	Scope changes – direct operating costs Assess the inputs, assumptions and the calculations carried out to determine whether the proposed direct operating costs are reasonable for the following: (a) reviewing and updating of existing policies and procedures to ensure that they comply with the recent and proposed changes to health and safety legislation and the Australian Standard (AS) 2885; (b) updating of policies and procedures for new assets installed during AA3; (c) security upgrades of key facilities and pipelines resulting from the Terrorism Act; (d) measures to counteract the effect of an	Attachment D (scope and Workload changes Report) Submission section 9.3.6 Excel models

	ageing workforce and labour shortage issues; (e) GasNet's obligations under the Service Envelope Agreement.	
5	Scope changes – corporate overheads Assess the inputs, assumptions and the calculations carried out to determine whether the proposed direct operating costs are reasonable for the following: (a) anticipated IT cost increases attributable to the PTS and the establishment of a disaster recovery site; (b) costs associated with a regulatory accountant and compliance function attributable to GasNet;	Attachment D (scope and Workload changes Report) Submission section 9.3.6 Excel models