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APA GasNet Australia (Operations) Pty Ltd

Access Arrangement Submission

1 January 2013 to
31 December 2017

March 2012

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Executive summary

APA GasNet Australia (Operations) Pty Limited (APA GasNet) is required to submit proposed revisions to the full access arrangement applying to the Victorian Transmission System (VTS) by 31 March 2012.

The VTS consists of 45 licensed pipelines and associated facilities supplying the Melbourne metropolitan area, country Victoria and supply to New South Wales and South Australia. The VTS also transports gas across the system and into NSW at Culcairn.

This submission provides supporting information for APA GasNet's proposed revision of the access arrangement for the VTS to apply for five years from 1 January 2013. This submission accompanies APA GasNet's proposed revised access arrangement and access arrangement information, and should be read in conjunction with those documents. This document also addresses relevant requirements of the Regulatory Information Notice under the National Gas Law (NGL) served on APA GasNet by the Australian Energy Regulator on 13 February 2012.

Context for the review

Ageing pipeline network

The VTS consists of assets of varying ages, ranging from pipelines built in 1956 to those being built in 2012. The system therefore carries problems associated with ageing assets such as corrosion, obsolete systems and out of date safety and protection systems. This access arrangement revision proposal includes a number of projects related to replacement and upgrade of obsolete or out of date systems, as well as the reconfiguration of existing assets to meet current requirements.

Need to improve security of supply for Victorian customers

APA GasNet has included in this access arrangement a proposal to complete the backbone of the VTS, through the construction of the Western Outer Ring Main. This project will reduce exposure to loss of supply from major gas plant (especially Longford), and facilitate incremental capacity of the pipelines between Iona, Melbourne and Culcairn.

Limited growth in Victorian demand, increased volumes crossing the system

APA GasNet adopts the Australian Energy Market Operator's mid-range forecasts for Victorian gas demand, supplementing these forecasts with its own forecasts for interstate gas transfers, storage refill volumes and volumes associated with gas fired generators.

Victorian domestic and commercial/industrial demand is forecast to be relatively flat over the access arrangement period, however volumes for interstate gas transfers are expected to increase, driving the need for significant forecast capital expenditure in the Northern zone to support increased flows into NSW at Culcairn.

Building block revenue proposal

APA GasNet's forecast capital and operating expenditure over the access arrangement period are set out in Table 0.1 and in chapter 6 and chapter 9 of this submission.

Table 0.1 – Forecast capital and operating expenditures over the access arrangement period

$m ($2012)	2013	2014	2015	2016	2017	Total
Capital expenditure	49.3	248.4	24	13.2	11.5	**346.4**
Operating and maintenance expenditure	32.6	35.2	37.4	38.6	38.6	**182.2**

Forecast capital expenditure for the access arrangement period is $346.4 million.

This expenditure includes significant Augmentation capital expenditure (total $275.6 million over the access arrangement period), dominated by the construction of the Western Outer Ring Main and completion of the Gas to Culcairn Project (to support increased interstate gas transfers), both in 2013 and 2014.

Refurbishment and upgrade capital expenditure is essentially in line with that in the earlier access arrangement period, however significant expenditure in this driver category is effectively replaced by the proposed Western Outer Ring Main Project. Total forecast expenditure in this driver category over the period is $54.4 million.

Non-system capital expenditure is forecast at $16.4 million, and is dominated by a project to redevelop the APA GasNet Dandenong office.

Total forecast operating and maintenance expenditure for the access arrangement period is $182.2 million. This value represents an increase compared to the earlier access arrangement period due mainly to increases in costs associated with increased corporate responsibilities, and a number of smaller step changes. The significant Augmentation capital expenditure above also increases the scope of APA GasNet's operations which are also reflected in scope changes in the operating expenditure forecast.

Other elements of the building blocks proposal include:

- A nominal vanilla weighted average cost of capital of 9.06 per cent based on current market parameters;
- A capital base rolled forward in accordance with the roll forward model provided at Attachment B-3, yielding an opening capital base for the access arrangement period of $620.6 million ($nominal);

- A tax asset base (TAB) derived using the opening TAB in the earlier access arrangement period, and rolling it forward using the actual capital expenditure; and

- Depreciation calculated by applying the remaining economic life of assets over the opening capital base value as at 1 January 2013, and forecast expenditure using straight line depreciation.

Revenue requirement

APA GasNet's proposed revenue requirement and X-factors are shown in Table 0.2. The revenue requirement is translated into a price path in a CPI-X format.

Table 0.2 – Forecast revenue requirement and X-factors

$m ($nominal)	2013	2014	2015	2016	2017
APA GasNet Building block revenue requirement	130.0	134.2	166.0	167.2	167.1
Smoothed revenue requirement	129.0	136.1	156.0	167.0	178.0
X Factors (%)	-3	-3	-3	-3	-3

Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
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AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AGP	Amadeus Gas Pipeline
ALARP	as low as reasonably practical
AMDQ	Authorised Maximum Daily Quantity or Authorised MDQ
APA FM	APA Facilities Management
APA GasNet	APA GasNet Australia (Operations) Pty Limited
API	American Petroleum Institute
APIA	Australian Pipeline Industry Association
APR	Annual Planning Review
AS	Australian Standard
ASIC	Australian Securities and Investments Commission
ASV	Anti-Surge Valve
ASX	Australian Stock Exchange
ATO	Australian Tax Office
ATT	Average Transmission Tariff
AWOTE	Average Weekly Ordinary Times Earnings
BCG	Brooklyn City Gate
CAPM	Capital Asset Pricing Model
CEG	Consulting Economics Group
CGS	Commonwealth Government Securities
CO2	carbon dioxide
CPI	Consumer Price Index
CPU	Central Processing Unit
CTM	Custody Transfer Meter
DCG	Dandenong City Gate
DGM	dividend growth model
DPI	Department of Primary Industries

DRP	debt risk premium
DWGM	Declared Wholesale Gas Market
EBSS	Efficiency Benefit Sharing Scheme
EDD	Effective Degree Day
EGP	Eastern Gas Pipeline
EGW	Electricity, Gas and Water
EPA	Environmental Protection Act 1970 and Environmental Protection (Amendment) Act 2006
ESV	Energy Safe Victoria
FEED	Front End Engineering and Design
FCA	First Carry Over Amount
FSV	Fast Stop Valve
GasNet	GasNet Australia (Operations) Pty Ltd and GasNet (NSW) Pty Ltd
GFC	Global Financial Crisis
HAVD	Hazardous Area Verification Dossier
HAZOP	Hazard and Operability Study
ILI	Inline Inspection
IMF	International Monetary Fund
IT	Information Technology
km	kilometre
LNG	Liquefied Natural Gas
LPI	Labour Price Index
MAOP	Maximum Allowable Operating Pressure
MDQ	Maximum Daily Quantity
MEGT	Melbourne Eastern Group Training
MFL	Magnetic Flux Leakage
MHF	Major Hazard Facility
mm	millimetre
MRP	market risk premium
MSO	Market and System Operations
NERA	NERA Economic Consulting
NGL	National Gas Law
NGR	National Gas Rules
NPV	Net Present Value

NSW	New South Wales
NZS	New Zealand Standard
OECD	Organisation for Economic Cooperation and Development
ORC	Optimised Replacement Cost
PJ	petajoules
PL	Pipeline License
PPOM	Portfolio and Project Operating Model
PRS	Pressure Reduction Stations
PwC	PwC Australia
RBA	Reserve Bank of Australia
RET	Renewable Energy Target
RIN	Regulatory Information Notice
SA	South Australia
SCADA	Supervisory Control and Data Acquisition
SCS	Stress Corrosion Cracking
SEA	Service Envelope Agreement
SEAGas	South East Australia Gas Pty Ltd
SIB	Stay In Business
SMS	Safety Management Studies
SORI	Statement of Regulatory Intent
SWP	South West Pipeline
TAB	Tax Asset Base
TJ	terajoules
TJ/d or TJ/day	terajoules per day
TPA	Transmission Pipeline Australia
TPD	Transmission Payment Deed
TR	Transformer Rectifier
Tribunal	Australian Competition Tribunal
VAA	Value Advisor Associates
VENcorp	Victorian Energy Networks Corporation
Vic	Victoria
VTS	Victorian Transmission System
WA	Western Australia
WACC	Weighted Cost of Capital

WORM	Western Outer Ring Main
WTS	Western Transmission System
WUGS	Western Underground Storage

1 Introduction

1.1. Purpose of this submission

This submission provides supporting information for APA GasNet Australia (Operations) Pty Limited's (APA GasNet's) proposed revision of the Access Arrangement applying to the Victorian Transmission System (VTS) from 1 January 2013.

In accordance with the requirements of section 132 of the National Gas Law (NGL) and section 43(1) of the National Gas Rules (NGR)[1], APA GasNet has provided to the Australian Energy Regulator (AER) with this submission:

- Revisions to the access arrangement applying in respect of the VTS; and
- An Access Arrangement Information document.

Together these documents make APA GasNet's access arrangement revision proposal.

1.2. Layout of this submission

Subsequent sections and chapters of this submission incorporate detailed information supporting the access arrangement proposal and access arrangement information, set out as follows:

- The remainder of this Chapter 1 outlines the history of the VTS and describes the operations of the service provider and context for the access arrangement revision proposal;
- Chapter 2 specifies the services offered and non-price terms and conditions under the access arrangement;
- Chapter 3 discusses key regulatory instruments and obligations, including new and changed regulatory obligations impacting demand and cost forecasts;
- Chapter 4 provides an overview of APA GasNet's long-term strategy, planning and governance processes and documents;
- Chapter 5 discusses pipeline demand and utilisation during the earlier access arrangement period and forecast demand over the access arrangement period;
- Chapter 6 sets out capital expenditure undertaken and to be undertaken during the earlier access arrangement period and the justification and forecast cost of capital projects during the access arrangement period;

[1] Hereinafter, a reference to a Rule shall, unless otherwise specified, be understood to refer to a Rule of the *National Gas Rules 2008 version 12*.

- Chapter 7 outlines the derivation of the opening capital base of the VTS from which a return on and of capital are calculated;
- Chapter 8 explains the parameters of the capital asset pricing model proposed for calculation of the weighted average cost of capital for the rate of return during the access arrangement period;
- Chapter 9 explains the derivation of operating and maintenance costs;
- Chapter 10 calculates the total revenue to be derived from the VTS;
- Chapter 11 explains the basis and derivation of the reference tariff, including cost allocation and tariff variation mechanisms; and
- Attachments contain explanatory and supporting material required by the Regulatory Information Notice (RIN) or referred to in the text.

1.3. Requirements for an access arrangement revision proposal

1.3.1. Information required under the National Gas Law and Rules

With the commencement of the NGL on 1 July 2008, the AER assumed the role of economic regulator for covered (that is, regulated) transmission pipelines in all states and territories except Western Australia. The NGL has been enacted in these jurisdictions via mirror legislation.[2] The NGR forms a schedule to the legislation and has the force of law.

Distribution and transmission pipelines covered under the former National Gas Code immediately before the commencement of the NGL are deemed to be covered pipelines under the NGL.[3] The NGL also specifies that current access arrangements, approved or drafted and approved by a relevant regulator under the National Gas Code, are deemed to be full access arrangements approved or made by the AER under the NGL.

The provisions in Schedule 3 of the NGL and Schedule 1 of the NGR apply to the VTS since the earlier access arrangement falls under these provisions within the definition of a *transitional access arrangement*.

The *General savings provisions* of the NGL state that the repeal of the National Gas Code does not affect “the previous operation of the old access law or Gas Code or

[2] In Victoria, this is under section 7 of the *National Gas (Victoria) Act 2008* (Vic), which applies the National Gas Law set out in the schedule to the *National Gas (South Australia) Act 2008* (SA) as the law in Victoria and as so applying may be referred to as the *National Gas (Vic) Law*.
[3] NGL, schedule 3, sections 6 and 7

anything suffered, done or begun under or in accordance with the old access law or Code".[4]

Under the *Transitional provisions* of the NGL, sections 3, 8 and 10.8 of the National Gas Code "continue to apply to a transitioned access arrangement" until revisions to that access arrangement take effect.[5]

APA GasNet has prepared its access arrangement revision proposal in accordance with applicable law, including the transitional provisions set out in the NGL.

The NGL and NGR set out detailed requirements for information to be included in an access arrangement revision proposal and associated access arrangement information. Where relevant, these requirements are referenced throughout this submission. APA GasNet has also provided an Index at Attachment A of this submission which includes guidance on where requirements under the Rules can be found in the revision proposal.

1.3.2. Information required under Regulatory Information Notice

On 13 February 2012, the AER served on APA GasNet a Regulatory Information Notice (RIN) under Division 4 of Part 1 of Chapter 2 of the NGL. The RIN specifies information to be provided to the AER by APA GasNet in its access arrangement revision proposal, and the form of that information.

This submission, along with the access arrangement proposal and access arrangement information, provides information in satisfaction of the requirements placed on APA GasNet in the RIN.

The RIN also requires that APA GasNet submit to the AER an Index of Information outlining where the information to be provided under the RIN is contained in the access arrangement revision proposal.[6] This Index of Information can be found at Attachment A to this submission.

1.3.3. Basis of information in the access arrangement revision proposal

Rule 73 states that:

(a) Financial information must be provided on:

(i) a nominal basis

(ii) a real basis

(iii) some other recognised basis for dealing with the effects of inflation.

4 NGL, Schedule 3, section 3

5 NGL, Schedule 3, section 30. Section 3 of the National Gas Code related to the content of an access arrangement, section 8 governs reference tariff principles, and section 10.8 contains definitions.

6 Regulatory Information Notice section 1.1(h)

(b) The basis on which financial information is provided must be stated in the access arrangement information.

(c) All financial information must be provided, and all calculations made, consistently on the same basis.

Unless otherwise stated, all information in the access arrangement revision proposal is provided in 2012 dollars. Past values are brought to this basis using the Consumer Price Index (CPI) all groups, eight capital cities average December over December published by the Australian Bureau of Statistics (ABS). Values in the Capital Base and Revenue chapters are presented in nominal dollars.

Forecast inflation for the access arrangement period for the financial modelling is forecast as discussed in section 8.8 of this submission.

Units used in the access arrangement revision proposal are noted throughout and described in the abbreviation list at page xiii of this submission.

The access arrangement revision proposal uses the convention established in the NGR of referring to the *access arrangement period*, being for the VTS the period in which the revised access arrangement will apply (proposed to be the period between 1 January 2013 and 31 December 2017), and the *earlier access arrangement period*, being the period 9 July 2008 to 31 December 2012.

1.4. Overview of Victorian market regulatory arrangements and history

1.4.1. Victorian wholesale gas market

The Victorian Wholesale Gas Market is a market carriage system, implemented by the Victorian Government as part of the restructuring and privatisation of the Victorian gas industry in 1997 and 1998. The Victorian Wholesale Gas market is a Declared Wholesale Gas Market under the NGL.

Market Carriage incorporates a number of important features that are different from traditional contract carriage pipelines. In particular:

- shippers are not required to reserve capacity under long-term take or pay contracts in order to ship gas through the Market Carriage system. Instead, tariffs are recovered via a pay-as-you-go system;
- the Australian Energy Market Operator (AEMO) operates a spot market into which Market Participants must bid gas supply and through which all gas imbalances are taken to be bought or sold; and
- subject to residual curtailment powers, AEMO will schedule gas supply from Market Participants as accepted in the spot market sufficient to meet demand.

This has a number of significant implications for APA GasNet. For example, unlike other pipeline owners in Australia, APA GasNet does not have contractual certainty, either on the term of gas supply to users or minimum capacity payments from users at particular sites. This means that APA GasNet is subject to more gas demand volume risk, which is extremely sensitive to circumstances outside APA GasNet's control such as weather patterns and expansions and contractions in the economy. Some mechanisms were put in place in the earlier access arrangement period to alleviate some of these risks, such as normalisation of gas flows to weather and a mechanism to bound non (cold) weather related volume risk.[7]

1.4.2. Access regulation

The regulatory arrangements for the VTS have changed significantly over time, largely related to the operation of the Victorian Wholesale Gas Market and the role of the market operator.

Once finalised, the access arrangement to which this access arrangement revision proposal relates will be the fourth to apply to the VTS.[8]

The first access arrangement period spanned 1998 to 2002. At the time the Victorian system consisted of two pipelines; the Principal Transmission System and the Western Transmission System, owned by Transmission Pipeline Australia (later called GPU GasNet). VENCorp (the Victorian predecessor to AEMO), was also required to submit an access arrangement as the operator of the Principal and Western Transmission Systems under the Market and System Operations (MSO) Rules. All three access arrangements were prepared by the Victorian Government. The Australian Competition and Consumer Commission (ACCC) assessed the access arrangement proposal under the Victorian Third Party Access Code for Natural Gas Pipelines.

The second access arrangement period spanned 2003 to 2007. Again, there were two service providers (GasNet (Australia) and VENCorp). GasNet's access arrangement proposal sought (and was granted) the merging of access arrangements for the Principal Transmission System and the Western Transmission System into a single access arrangement. The ACCC assessed the access arrangement proposal under the National Gas Code and the MSO Rules.

The third access arrangement period spans 2008 to 2012, and for the purposes of this access arrangement revision proposal is referred to as the earlier access arrangement. Amendments to Victorian legislation meant that VENCorp was no longer required to submit an access arrangement to the ACCC for approval. The main change arising from those amendments was that GasNet and not VENCorp would enter into gas transportation agreements directly with Shippers, with consequences for the terms and conditions contained in the access arrangement.

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[7] Australian Competition and Consumer Commission 2008, *Revised Access Arrangement by GasNet Australia (Operations) Pty Ltd and GasNet (NSW) Pty Ltd for the Principle Transmission System: Final Approval*, 25 June, p 22

[8] Many of the supporting documents to this submission refer to AA4, meaning the access arrangement period, and AA3, meaning the earlier access arrangement period.

As noted above, the new NGL and NGR came into effect on 1 July 2008, and with them the transfer of responsibility for regulating gas transmission pipelines from the ACCC to the AER. This access arrangement revision proposal, applying to the period 1 January 2013 and 31 December 2017, will be the first VTS access arrangement under the NGL and NGR, and the first conducted by the AER.

The Victorian MSO Rules were also incorporated into the NGL and NGR in 2008. Under these provisions the VTS is a declared transmission system under section 91B of the NGL, and the Victorian Wholesale Gas Market is a Declared Wholesale Gas Market under Victorian law. The AER is responsible for monitoring and enforcing compliance with the Victorian wholesale gas market rules, and AEMO operates the system in accordance with the Service Envelope Agreement (SEA) between APA GasNet and AEMO.

1.4.3. Service Envelope Agreement

Section 91BE of the NGL requires the service provider for a declared transmission system to have in place an agreement (referred to as the Service Envelope Agreement) with AEMO for the control, operation, safety, security and reliability of the declared transmission system. Under the law and reflected in the SEA, APA GasNet makes the VTS available to AEMO, and in doing so provides a pipeline service within the meaning of the NGL.

The current SEA expires on 31 December 2012. APA GasNet and AEMO are in the final stages of negotiating a new SEA. Under the terms of this agreement:

- GasNet agrees to:
  - Make available the APA GasNet System to AEMO (section 4(a)); and
  - Provide a range of supporting services to AEMO (section 4(d)); and
- AEMO agrees to:
  - Operate the APA GasNet System in accordance with the NGL and NGR; and
  - Amongst other things, observe good practice in operating the system and not operate facilities in a manner that will materially adversely affect APA GasNet’s ability to comply with its obligations under the SEA (section 81(a)).

As a result of the SEA, AEMO has operational control of APA GasNet System Capacity, which comprises the covered pipeline and is agreed with AEMO. Extension to or expansions of the VTS can impact the APA GasNet System Capacity if they form part of the covered pipeline.

While AEMO operates the APA GasNet System, APA GasNet has a direct contractual arrangement with shippers for the payment of transmission tariffs, as was the case under the earlier access arrangement (and SEA).

The new SEA is expected to expire on 31 December 2022.

1.5. Overview of the Victorian Transmission System

1.5.1. Ownership of the system

APA GasNet (together with its predecessors) has over a forty year history in gas transmission in Victoria. GasNet was created from the disaggregation of the Gas and Fuel Corporation of Victoria, the former Victorian state owned gas utility, and was listed on the Australian Stock Exchange in December 2001 as part of the GasNet Group.

In late 2006, GasNet became a wholly owned subsidiary of the APA Group, and became APA GasNet.

APA GasNet is the owner of the VTS, which is the primary transmission system for the delivery of gas throughout Victoria, APA GasNet's subsidiary, APA GasNet (NSW), is the owner of that portion of the VTS that is located in NSW. However, APA GasNet NSW leases those assets to APA GasNet under an operating lease agreement.

1.5.2. Service providers of the covered pipeline

The Service Providers in respect of the VTS are APA GasNet Australia (Operations) Pty Ltd and APA GasNet (NSW) Pty Ltd. APA GasNet Australia (Operations) Pty Ltd is the complying service provider under the NGL[9] and submits this access arrangement revision proposal as:

- Owner to the VTS (other than the portion of the Interconnect Pipeline located in NSW); and
- The lessee (controller) of the portion of the Interconnect Pipeline located in NSW.

In this access arrangement revision proposal, APA GasNet (NSW) Pty Ltd and APA GasNet Australia (Operations) Pty Ltd (which together own the entire VTS) will be collectively referred to as APA GasNet.

There are no local agents of the service provider.

1.5.3. Pipeline system characteristics

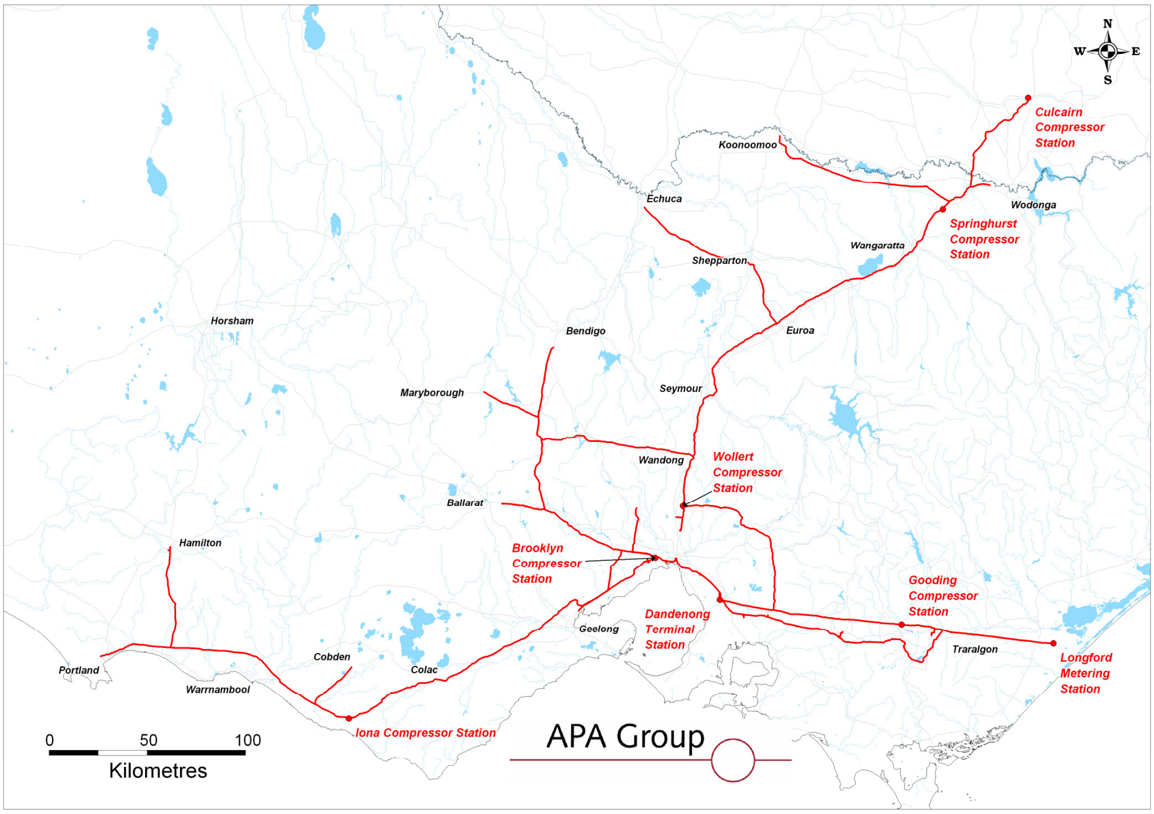
Overview

The VTS consists of 45 licensed pipelines and associated facilities supplying the Melbourne metropolitan area and country Victoria. The VTS also transports gas

[9] NGL section 10

across the system and into interconnecting pipelines at Port Campbell, Longford and Culcairn. A map of the VTS is at Figure 1.1 below.

Figure 1.1 - Victorian Transmission System



Gas enters and exits the system in the West via the Sea Gas connection point and Western Underground Storage (WUGS) facility at Iona, to the North via the APA GasNet Northern Lateral Pipeline at Culcairn and to the East at Longford, VicHub and Bass Gas.

The Dandenong Liquefied Natural Gas (LNG) Facility owned and operated by APA Facilities Management augments capacity in the VTS. The Facility is not part of the covered pipeline and is instead regulated through WorkSafe Victoria as a Major Hazard Facility.

APA GasNet operates 131 Custody Transfer Metering (CTM) sites outside the limits of the VTS (not part of the regulated asset). Additional connections governed by Connection Point Agreements (also outside the limits of the VTS) exist for CTMs sites operated by connecting parties. These sites are located at injection and withdrawal points to the system and are used to manage the flow of gas and settlement of the gas market. An additional eight CTMs are registered for system use gas (compressor and heater fuel gas) and form part of the VTS.

Pipelines

The VTS comprises 45 different pipelines of differing lengths, diameters, ages, construction materials and methodologies. On the whole these pipelines are generally in good condition, though corrosion induced metal loss, the deterioration of coatings systems and third party encroachment remains a continued threat.

Pipeline condition is monitored through a number of systems including in-line inspection (pigging), direct current voltage gradient surveys (where pigging is not possible) and physical inspection. The pipeline is protected by pipeline coating (of various types and quality) and cathodic protection.

Pipeline assemblies include scraper assemblies (pig traps), and mainline, isolating and branch valve assemblies and are generally designed to the same life as the pipeline.

Stations

The broad category of ‘Stations’ encapsulates the gas facilities that allow for control, measurement, storage, or pressure maintenance of pipeline fluids within the VTS including compressor stations, odourisation stations, pressure regulation and metering facilities.

Electrical equipment of stations includes station control systems, SCADA and communication systems, instrumentation, fire suppression systems, power systems (including emergency power generation) and earthing systems. Mechanical equipment of stations comprises emergency response equipment, isolation valves and actuators, station valves, pressure regulators, station pipework, siphons, filters and coalescers, gas heaters, oil and gas coolers, instrument air facilities, piping supports and pressurised control and power systems.

The current condition of most station components is good, though some are becoming obsolete due to age, changing Australian Standards or inability to obtain spare parts. APA GasNet proposes a number of projects associated with station facilities in the access arrangement period, reflecting the diverse range of equipment this comprises.

Compression facilities

The VTS includes compressor stations at Gooding, Brooklyn, Iona, Wollert, Euroa and Springhurst. AEMO remotely operates the compressor stations in accordance with the SEA. The key features of each compressor station are as follows.

Gooding compressor station is located approximately halfway along the Longford to Dandenong pipeline and compresses gas from Longford to Melbourne. The compressor station was constructed in 1977 and currently comprises four Solar Centaur 40 gas turbine driven dry seal centrifugal compressors.

Brooklyn compressor station is located in western Melbourne and provides gas compression from the Dandenong to Brooklyn pipeline into the Brooklyn to Geelong and Brooklyn to Ballarat transmission systems. The current facilities were constructed between 1977 and 2006 and comprise two Saturn 10 and one Centaur 40 wet-seal centrifugal compressor packages and two Centaur 40 dry-seal centrifugal compressor packages.

Iona compressor station, built in 2001, is located within the Iona Underground Storage Facility compound and provides compression from the South-West pipeline into the Western Transmission System to Portland to maintain system capacity when inlet pressure at Port Campbell is low.

Wollert compressor station is located north of Melbourne and is the key supply point for the Wollert to Wodonga transmission systems compressing Longford gas from the outer ring main from Pakenham. The original station (Station ‘A’) was built in 1981 and comprises three Solar Saturn 10 wet-seal centrifugal compressor sets. In 2011 the Wollert Compressor Station ‘B’ comprising two Centaur 50 dry-seal compressor packages was commissioned as part of the Northern Augmentation project. Station ‘A’ is scheduled to be decommissioned during the access arrangement period.

Euroa compressor station, located in the mid-section of the Wollert to Wodonga/Culcairn transmission system, is being constructed in 2012 to maintain up to 38 TJ/d transfer to NSW and 92 TJ/d transfer from NSW in winter. The station comprises one packaged Centaur 50 dry-seal centrifugal compressor.

Springhurst compressor station, located in the northern section of the Wollert to Wodonga/Culcairn transmission system, was constructed in 1999 to support up to 92 TJ/d transfer of gas from NSW in winter. The station comprises one packaged Centaur 50 dry-seal centrifugal compressor. Although the station was initially capable of compression south only, bi-directional compression was made possible in 2011 with station pipework and valving alterations as part of the Northern Augmentation project..

APA GasNet has included forecast expenditure for the installation of a new compressor facility at Stonehaven in the forecast period. This compressor is required to support forecast gas flows from Iona to Culcairn, as well as to compress east during peak demand periods, both in winter and in the event of emergency loss of supply from Longford. This project is discussed further in section 6.3.2 below.

Plant and operational assets

Plant and operational assets include mobile plant and emergency response tools and equipment such as emergency portable lighting, vehicles, vent systems and emergency vent equipment.

1.5.4. Context for this access arrangement

The Victorian gas market is a relatively mature market, with high gas penetration and significant infrastructure in place.

The VTS consists of assets of varying ages, some quite old such as the Dandenong to Morwell Pipeline built in 1956, and others quite new such as the Sunbury lateral to be completed in 2012. The system therefore carries problems associated with ageing assets such as corrosion, obsolete systems and out of date safety and protection systems. The design of the system also bears the marks of numerous legacy investment decisions, asset management philosophies and operational approaches. While some of these may not be optimal for current operational and demand conditions, these legacy systems and approaches must be adapted to meet the current needs of the system.

This access arrangement revision proposal includes a number of projects related to replacement and upgrade of obsolete or out of date systems, as well as the reconfiguration of existing assets to meet current requirements. Significant investment is also proposed to accommodate growth in the south east Australian gas market, as well as to address the current needs of Victorian consumers for security of supply.

APA GasNet has included in this access arrangement a proposal to complete the backbone of the VTS, through the construction of the Western Outer Ring Main. This project will reduce exposure to loss of supply from major gas plant (esp Longford), and facilitate incremental capacity of the pipelines between Iona, Melbourne and Culcairn.

Urban development is proving a key challenge for APA GasNet in managing and growing the VTS. APA GasNet is seeing significant encroachment on existing pipelines through urban development that sometimes extends to the edge of pipeline easements. This significantly limits the scope for further development of capacity along existing easements, necessitating procurement of new easements for pipeline development.

For new developments, urban development has made it difficult to secure easements for optimal pipeline development, and instead APA GasNet has needed to adapt 'ideal' pipeline routes to fit existing developments. The lack of an existing easement for the Western Outer Ring Main project creates uncertainty over the eventual location of this pipeline, and is reflected in the project proposal.

This access arrangement will be the fourth access arrangement to apply to the VTS. APA GasNet is not proposing significant revisions to tariff and cost allocation procedures in this access arrangement period.

2 Services

2.1. Rule requirements

The Rules require an access arrangement to:

- describe the pipeline services the service provider proposes to offer to provide by means of the pipeline[10];
- specify the reference services[11]; and
- specify for each reference service[12];
  - the reference tariff; and
  - the other terms and conditions on which the reference service will be provided.

This chapter describes the basis for proposing the services set out in the access arrangement, as well as proposed changes to non-tariff components in the access arrangement.

2.2. Pipeline and Reference Services

APA GasNet provides a single Pipeline Service which is also the Reference Service. This is a bundled service called the Tariffed Transmission Service and comprises the transportation of gas in accordance with the NGR for a declared transmission system. This service is provided to AEMO, who is the only User of the pipeline under the National Gas Law definition.

This legal arrangement arises from the market carriage model set out in the NGL and NGR. Under these arrangements, AEMO operates the VTS. Shippers (registered Market Participants of the Victorian Declared Wholesale Gas Market) access the reference service through AEMO in accordance with the NGL and NGR. The only relationship between APA GasNet and Shippers is through the Transmission Payment Deed, key terms of which make up part of the Access Arrangement (Schedule F). For clarity, APA GasNet does not provide any service directly to Shippers on the pipeline.

As there is only a single Pipeline service available on the VTS by virtue of the market carriage model and role of AEMO, there is no demand (or associated volume)

[10] Rule 48(1)(b)
[11] Rule 48(1)(c)
[12] Rule 48(1)(d)

information able to be provided in respect of services other than the Reference Service.[13]

2.2.1. Authorised Maximum Daily Quantity Credit Certificates

What are Authorised Maximum Daily Quantity Credit Certificates?

As noted above, the Victorian Wholesale Gas Market operates under a market carriage system where gas is transported on a volume basis rather than under longer term capacity-based transportation agreements.

Under this system, transportation rights are available in the form of Authorised Maximum Daily Quantity (Authorised MDQ) and AMDQ Credit Certificates, which are collectively called AMDQ.

Authorised MDQ relates to the peak capacity of the VTS at the time of market start when there was only a single injection point at Longford (990TJ/day). Authorised MDQ was allocated at market start to the following loads:

- ‘Contract’ customer sites - large customer sites typically with demand exceeding 10TJ per year and now classified as Tariff-D. The authorised MDQ allocated to each site was set equal to the pre-existing Gas & Fuel contract MDQ with any revisions approved by an independent panel;
- The Interconnect, Wimmera pipeline, Murray Valley towns and VTS compressors; and
- The balance of the 990TJ was assigned as a block to all residential and small to medium sized commercial and industrial customers - now classified as Tariff-V customers.

As Authorised MDQ comes available (for example when a holder of Authorised MDQ ceases operations) the Authorised MDQ can be surrendered to AEMO or traded to another participant. Surrendered MDQ is allocated by AEMO once it has accumulated a marketable package. Where demand for available authorised MDQ exceeds supply, AEMO auctions the capacity.

AMDQ Credit Certificates are allocated by the pipeline owner (APA GasNet), and relate to injection capacity developed after market start. APA GasNet, as pipeline owner, currently auctions available AMDQ Credit Certificates. Market Participants buy a fixed term certificate lease related to a particular injection zone which can than be assigned to a specific demand site or the Reference Hub. AMDQ Credit Certificates are also traded between participants, though at a relatively minor level.

Role of AMDQ Credit Certificates in the Victorian Market

It is not necessary to hold AMDQ to transport gas in the Victorian system. Holders of AMDQ get the following benefits over the Reference Service:

[13] RIN Requirement 3.1(a)

- Curtailment rights - in the event of transmission constraints, customers that do not hold AMDQ (Authorised MDQ or AMDQ Credit Certificates) will be disconnected from the system ahead of customers with AMDQ;

- Priority in scheduled injections – when there are equally priced injection bids, those associated with Authorised MDQ or AMDQ Credit Certificates will be scheduled first; and

- Reduced Uplift payments as market participants can use part or the whole of their Authorised MDQ or AMDQ Credit Certificates as Uplift hedges.

These AMDQ transportation rights are intended to provide a level of security to pipeline users as to their access to pipeline capacity, and the creation and allocation of AMDQ Credit Certificates provide important (if imperfect) signalling for capacity in the VTS. They have been created to support Victorian market as it operates on a market-carriage model, meaning that capacity is not allocated through contract as it is for other pipelines in Australia.

Under a contract carriage model, capacity needs are signalled by individual shippers entering into contractual negotiations, and ultimately contractual arrangements, with a pipeline operator for additional capacity. For regulated pipelines, this capacity can be offered at the reference tariff, or may be provided at a negotiated tariff, particularly where the costs of additional capacity are higher than supported by the reference tariff, or where the shipper seeks terms that are different from the reference service. Contractual terms for firm services provide the shipper with capacity rights for the transportation of gas.

Under a Victorian market carriage model, there is no equivalent way for shippers to signal the need for additional capacity. Shippers cannot contract with the pipeline owner (APA GasNet) or operator (AEMO) to secure firm capacity rights on the covered pipeline. Instead, gas is transported on the basis of a merit order of market bids made by shippers. The daily market price is not an investment signal. Moreover, surprise uplift (arising largely from daily variations in demand compared to forecast) masks the price signal effect arising from congestion uplift (arising where a capacity constraint in the system gives rise to uplift payments).[14] Congestion uplift is also a trailing indicator of capacity needs. Ideally, capacity should be increased ahead of constraints.

The inclusion of the mechanism for the creation and allocation of AMDQ Credit Certificates by the service provider is intended to provide a type of leading capacity signal under the Victorian market carriage model. As capacity on the VTS becomes constrained, demand for AMDQ Credit Certificates will increase as the risk that the shippers' volumes will not be injected (and/or that they will be exposed to congestion uplift charges) increases.

This mechanism can be observed with respect to APA GasNet's recent auction of AMDQ Credit Certificates for injections at Port Campbell.

[14] Australian Energy Market Operator 2012, *Guide to Victoria's Declared Wholesale Gas Market*, February, p14

Allocation of AMDQ Credit Certificates

APA GasNet currently allocates AMDQ Credit Certificates on the basis of a fixed price auction. APA GasNet intends to continue allocating AMDQ Credit Certificates on this basis in the forecast period.

AMDQ Credit Certificates have been allocated by APA GasNet (and its predecessors) since it was introduced in 2002. Initially, AMDQ Credit Certificates were allocated on a first come first served basis due to the fact that there was not significant demand for the product. At that time the pricing was set in relation to the regulated injection tariff for the relevant injection zone. AMDQ Credit Certificates were priced at the regulated injection tariff but were charged on a take or pay basis.

Following the change in the wholesale gas market introduced in February 2007 and unusual market conditions that applied during winter 2007, demand for AMDQ Credit Certificates increased dramatically. The earlier tranche of contracts expired at the end of 2007. APA GasNet, after consultation with the ACCC, agreed that it would auction the available AMDQ Credit Certificates. This consisted of the original 200TJ/day plus another 65TJ/day that APA GasNet and AEMO had agreed could be defined on the South West Pipeline due to changes in operational conditions. This would be further increased by another 82TJ/day on commissioning of the Brooklyn Lara Pipeline.

The auction for the 265 TJ/day available before the commissioning of the Brooklyn Lara Pipeline was based on fixed tranches at a floor price of the regulated injection tariff but with both price and term at the shippers' discretion. The pricing was still subject to the requirement under contract that any AMDQ Credit Certificate revenue was in lieu of the regulated injection revenue. In this auction all 265TJ/day was sold at prices ranging upwards from the regulated injection tariff and for periods between 3 and 5 years.

The auction of the extra 82TJ/day created by the Brooklyn Lara Pipeline was also fully subscribed. This capacity was tendered at a fixed price for the period ending December 2012. Again, the pricing was subject to offset against regulated injection revenue. All auctions held since the auctioning of the Brooklyn Lara Pipeline capacity have been conducted at a fixed price.

Relationship to the Reference Service

The current access arrangement includes a single pipeline service, which is the Tariffed Transmission Service (the Reference Service). This is maintained in the revised access arrangement making up part of APA GasNet revision proposal.

The tariff associated with the Reference Service Tariffed Transmission Service is a zonal-distance-based volume tariff, with no capacity component. The Reference Service does not include any Authorised MDQ or AMDQ Credit Certificates, however where a user has an AMDQ Credit Certificate for a certain capacity, AMDQ charges are netted off from injection tariffs that would otherwise be applicable for that capacity. This means that where AMDQ Credit Certificates are allocated at the reference tariff, APA GasNet does not earn any additional revenue. These arrangements are retaining in the price control model proposed for the access arrangement period.

As the tariff structure is based on volumes with no capacity component, APA GasNet's revenue is highly exposed to circumstances outside of APA GasNet's control, such as weather. A control mechanism was introduced in the earlier access arrangement period to alleviate this risk, where movements in weather-driven demand are able to be recovered from (or returned to) customers.

Previous regulatory treatment of AMDQ credit certificates

The ACCC's Draft Decision for the earlier access arrangement sought to include APA GasNet's 'additional' revenue from AMDQ Credit Certificates in regulated revenue. At the time, the ACCC considered AMDQ Credit Certificate allocation as a service 'ancillary' to the reference service. The ACCC also stated that it did not consider that AMDQ Credit Certificate allocation satisfied National Gas Code provisions as a rebateable service.[15]

In response to submissions made by APA GasNet, the ACCC did not require that AMDQ Credit Certificates be treated as an ancillary service in its Final Decision. APA GasNet submitted that AMDQ Credit Certificates could not be considered a service ancillary to the reference service, as it did not meet the requirements under the National Gas Code for an ancillary service. In short, the concept of 'ancillary' contemplates that an ancillary service is one which supports or aids the provision of the main service. This was not the case in respect of APA GasNet's Reference Service in the earlier access arrangement, which was (and remains) capable of being provided without the support of the AMDQ rights/certificates.[16]

Developments since the earlier access arrangement decision

Since the earlier access arrangement decision, the National Gas Code has been replaced by the NGL and NGR, and the former MSO Rules have been incorporated into the NGR. In addition, APA GasNet is negotiating a new Service Envelope Agreement with AEMO to take effect from 1 January 2013.

APA GasNet considers that the rules governing the gas market, the SEA and the Reference Service are not materially different to those in place in 2008.

The AER has, however, identified what it considers to be a key difference between the former National Gas Code and the NGR in respect to the regulatory treatment of services sought by a significant part of the market.

In a recent Rule change proposal lodged with the AEMC by the AER, the AER states that while the former National Gas Code provided a degree of discretion to the

[15] Australia Competition and Consumer Commission 2008, *Revised Access Arrangement by GasNet (Operations) Pty Ltd GasNet (NSW) Pty Ltd for the Principle Transmission System: Final Decision, 30 April,* p 15

[16] APA Group 2007, *Response to the Commission's draft decision on proposed access arrangement for the Principal Transmission System*, December, p 51

regulator as to whether a service sought by a significant part of the market was considered a reference service (with an associated reference tariff), NGR does not provide this discretion, and all services sought by a significant part of the market must be treated as a reference service with an associated reference tariff.[17] The AER has sought changes to the NGR to provide the AER with discretion as to whether it determines that every service sought by a significant part of the market is considered a reference service.

The AEMC is currently considering this Rule change proposal, and released a draft decision on 15 March 2012. APA GasNet has prepared its access arrangement revision proposal on the basis of version 12 of the NGR, which commenced on 13 October 2011. As this Rule change is not yet final, APA Group has not incorporated its implications in its access arrangement revision proposal.

Appropriate regulatory treatment of AMDQ Credit Certificate revenues

The AER stated in its Rule change proposal that it considered that under the NGR, it "would have been forced to determine a reference tariff for AMDQ CC given considerations that it was likely to be sought by a significant part of the market".[18] APA GasNet is disappointed that the AER appear to have predetermined this matter, in particular whether APA GasNet's role in directing AEMO to allocate AMDQ Credit Certificates to parties is appropriately considered a pipeline service under the NGR.

APA GasNet maintains its position put in respect of the earlier access arrangement that the allocation of AMDQ Credit Certificates is not a service ancillary to a pipeline service. Similarly, APA GasNet does not consider that the allocation of AMDQ Credit Certificates is a pipeline service.

Under Rule 329, APA GasNet can direct AEMO to allocate AMDQ Credit Certificates arising from an extension or expansion of the system to a particular Market Participant (or group of Market Participants). Subject to Rule 329(5), AEMO must comply with that direction. APA GasNet is not obliged to direct AEMO to allocate AMDQ Credit Certificates, and may choose not to direct AEMO to allocate available certificates to any Market Participants.

The NGL defines "pipeline service" as:

> (a) a service provided by means of a pipeline, including:
>
> (i) a haulage service (such as firm haulage, interruptible haulage, spot haulage and backhaul); and
>
> (ii) a service provided for, or facilitating, the interconnection of pipelines; and
>
> (b) a service ancillary to the provision of a service referred to in paragraph (a).

APA GasNet considers that when the NGR refer to pipeline services it is referring to physical services such as haulage or pipeline interconnection services (in the case of

[17] Australian Energy Regulator 2011, *National Gas Law: Request for making of a Rule relating to rebateable service and reference service definitions and criteria*, 5 August, p 4

[18] AER 2011, *Rebateable and Reference Services Rule change proposal*, p 7

pipeline services) and gas balancing or metering services (in the case of ancillary services). Under the Victorian Declared Wholesale Gas Market, pipeline services of this type are provided to market participants by AEMO, not by APA GasNet.

APA GasNet's sole role is to make the VTS available to AEMO under the SEA. It is this service that constitutes a Pipeline Service under the NGR.

In contrast to the above, an agreement with a Market Participant in relation to AMDQ Credit Certificates (an AMDQ Credit Certificate agreement) constitutes a promise by APA GasNet to exercise a statutory right to make a direction to AEMO. It cannot be considered a pipeline service or an ancillary service under the meaning above as it is not related to the delivery of a physical service. An AMDQ Credit Certificate agreement is more akin to a financial instrument than a pipeline service or an ancillary service.

APA GasNet has further concerns, some of which it also raised in response to the ACCC's draft decision in 2007, regarding the impact of setting a reference tariff for AMDQ Credit Certificates.[19]

Revenues for reference services are determined in relation to the cost of providing the service. In respect of allocating AMDQ Credit Certificates, APA GasNet costs are low compared to the value that market participants place on those certificates. APA GasNet derives no volume or other benefits from allocating AMDQ Credit Certificates, and is not obliged to allocate these certificates under the NGR. Simple cost recovery will therefore remove any incentive that APA GasNet may have to allocate AMDQ Credit Certificates to shippers.

The disparity between the value placed on AMDQ Credit Certificates and the costs incurred by APA GasNet in allocating those certificates was also raised by the AER in its Rule change proposal. The AER stated:

> The AER considers that issuing AMDQ CC through an auction is efficient and consistent with the NGO [National Gas Objective] and RPP [Revenue and Pricing Principles] of promoting efficient investment in pipeline services by providing an investment signal in terms of the cost of network capacity constraints. Alternatively assigning a reference tariff (at a low cost) in these circumstances would lead to future AMDQ CC being over-subscribed and potentially prevent users who value the service most of acquiring it.[20]

APA GasNet concurs with the AER that setting a reference tariff for AMDQ Credit Certificates would undermine the role of AMDQ Credit Certificates in signalling the need for investment in capacity in the VTS. As noted above, capacity signalling was one of the key reasons for creating AMDQ Credit Certificates under the Victorian market, which included the role of transmission service providers in allocating those certificates under a market (as opposed to regulated) model.

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[19] APA Group 2007, *Response to the Commission's draft decision*, p 52

[20] AER 2011, *Rebateable and Reference Services Rule change proposal*, p 8

APA GasNet also considers that it is important to place in context the revenue earned by APA GasNet in respect of allocating AMDQ Credit Certificates compared to total revenue earned form regulated services, and the importance of an efficient allocation methodology for the operation of the Victorian gas market. For example, in 2010 APA GasNet retained $2.5 million in AMDQ Credit Certificate revenue above regulated revenue in the same year of $120 million. Further, in its draft Rule determination, the AEMC concluded that APA GasNet does not earn inappropriate ‘excess’ revenues from the sale of gas volumes otherwise contracted under AMDQ Credit Certificate contracts.[21]

While APA GasNet earns extra revenue in the short term from constraints in the pipeline system through AMDQ Credit Certificates, in the longer term APA GasNet is better off by making efficient investments in the pipeline system. These investments are signalled by the demand for AMDQ Credit Certificates, as they are not otherwise signalled in the Victorian market carriage system.

2.3. Non-tariff components of the access arrangement

APA GasNet has revised its access arrangement to apply in the access arrangement period. Key revisions made to the earlier access arrangement relate to:

- The move from the National Gas Code to the Rules;
- Changes to governance bodies;
- Ensuring the structure is consistent with other APA Group access arrangements, most notably involving moving details on tariff allocation from the schedules to the body of the document;
- To the extent relevant given the VTS operating arrangements under the SEA, the adoption of terms and conditions consistent with APA Group’s standard terms and conditions for gas transportation services;
- Updating pipeline and tariff details; and
- Updating key provisions such as extensions and expansions requirements, the capital redundancy mechanism and the tariff variation mechanism to reflect recent regulatory practice.

These changes are discussed in the following sections, with further details provided in Attachment E.

2.3.1. Transfer to the National Gas Rules

APA GasNet’s earlier access arrangement has been revised to be consistent with the NGR. Revisions are largely associated with the adoption of new terms used in the

[21] Australian Energy Market Commission 2012, *National Gas Amendment (Reference service and rebateable service definitions) Rule 2012: Draft Rule Determination*, 15 March, p 21

Rules, however some further revisions are required to comply with new requirements. Necessary revisions to the earlier access arrangement have been made to:

- Introduction (Part 1) – substantial rewrite to adopt changes in governing law;
- Reference Tariff Policy (Part 3) – Part now called Determination of total revenue and describes the building block approach required under the Rules, and refers to revenue and pricing principles set out in the NGL;
- Reference Tariffs (Part 4) – New part that contains information previously included in the Reference Tariff Policy. This part also includes a substantially revised reference tariff variation mechanism, reflecting the new Rules and changes in the level of process detail previously included in the National Gas Code;
- Trading Policy (Part 5) – Part now called Capacity trading and includes new requirement under the Rules specifying the relationship between the access arrangement and any rules or procedures in a relevant gas market, as well as the process for the change of receipt or delivery point by a user;
- Queuing (Part 6) – New part that contains information on queuing arrangements on the VTS, as required under the NGR; and
- Definitions and interpretation (Schedule B) – revised definitions of terms in line with the NGL and NGR.

Capacity Trading and Queuing

APA GasNet is a registered participant in the Victorian Declared Wholesale Gas Market. These market rules govern capacity trading between participants.

Under the market rules, any registered shipper can deliver to and receipt from any receipt or delivery point in the VTS. This process is not controlled by APA GasNet. The terms and conditions of transfer are therefore as per the Victorian Declared Wholesale Gas Market Rules.

The Victorian Declared Wholesale Gas Market also provides queuing arrangements by establishing a merit order for injections through a bidding process. This process is not controlled by APA GasNet.

Further, under the SEA, if APA GasNet and AEMO agree that spare or developable capacity that is or will be made available as a consequence of an extension or expansion becomes part of the VTS, that spare or developable capacity must be made available to AEMO under the SEA, and AEMO must allocate that capacity in accordance with the NGR.

2.3.2. Changes to governance arrangements

Changes in governance arrangements during the earlier access arrangement period mean that the relevant regulator has changed from the ACCC to the AER, and the operator of the pipeline has changed from VENCorp to AEMO. These changes mean that references to these bodies must be revised throughout the access arrangement.

Expected revisions to the SEA have also led to changes to Part 2.

2.3.3. Consistency with other APA Group access arrangements

APA Group is seeking to apply a consistent structure in all its access arrangements. APA GasNet has made a number of revisions to the earlier access arrangement to move to this consistent style:

- Moving Details to Attachment A, including applicable tariffs;
- Moving revision commencement and submission dates to Part 1;
- Moving important information on tariffs and how they are assigned from Schedules to the body of the access arrangement (Part 4);
- Moving the tariff variation mechanism to the Reference Tariffs section (Part 4);
- Referring to 'Service Provider' throughout the document, in place of 'GasNet'; and
- Ensuring Schedules C and D contain only technical tariff details that supplement tariff information set out in Part 4.

2.3.4. APA Group's standard terms and conditions

The Victorian gas market arrangements, in particular the role of AEMO in operating the VTS, mean that the scope of relevant terms and conditions of access to the VTS are significantly different to those for contract carriage pipelines. Terms and conditions in the access arrangement are limited to those related to payments made by shippers to APA GasNet under the Transmission Payment Deed. Under Rule 327, each market participant (shipper) must have an agreement with APA GasNet (the declared transmission system service provider) that provides for the payment of transmission charges to APA GasNet.

APA GasNet is owned by the APA Group, which also owns a number of other regulated and unregulated gas assets across Australia. These assets have in place existing access arrangements and gas transportation agreements which in many cases reflect outdated or redundant contracting practices, or contain unnecessary variations to core terms and conditions. These inconsistencies across assets add to APA Group's costs as an operator of multiple gas assets and limit its ability to access the full benefits that can arise from economies of scale in owning multiple gas assets.

To address these issues, APA Group is implementing a standard form Gas Transportation Agreement across the all assets in the Group, which is also reflected in the terms and conditions of various access arrangements for covered pipelines.

APA Group first proposed these standard form terms in respect of the Amadeus Gas Pipeline (AGP) access arrangement revision process. As part of that public process, the AER undertook a comprehensive review of those provisions, with submissions made by a number of large national users of pipeline services. As a result of that review, a number of changes were made to the standard form provisions.

Recognising the significant benefits that APA Group derives from consistent arrangements, APA GasNet has, where relevant, incorporated the terms and conditions approved by the AER in respect of the AGP into the VTS access arrangement.

The different market and operating arrangements for the VTS mean that a signification number of APA Group's standard terms and conditions are not relevant to the VTS. These include provisions relevant to operation of the pipeline such as nominations, scheduling, curtailment, system use gas and allocation of receipts and deliveries. Liability and indemnity are also significantly different for the VTS compared to the standard terms and conditions.

Using the terms and conditions in the earlier access arrangement as a base, APA GasNet has amended those provisions, where relevant and appropriate, to be consistent with APA Group's standard form terms and conditions. A description of each part of the new terms and conditions is provided in Attachment E to this submission.

APA GasNet considers that the revised terms and conditions are necessary and that they are consistent with the National Gas Objective. The terms and conditions as proposed support a number of obligations imposed on APA GasNet (such as the SEA), as well as provide necessary commercial protections for APA GasNet and shippers in the provision of the reference service.

APA GasNet also considers that there are considerable benefits potentially available to APA GasNet, and to APA Group more broadly, in adopting consistent terms across its gas transportation agreements. These largely arise from lower legal drafting and advice costs, and in improvements in the business-wide understanding of contracting arrangements in place for particular pipelines and shippers.

Shippers and prospective shippers will also benefit from consistency in contracting arrangements across APA Group's assets (where that consistency is possible and appropriate given the specific circumstances of the pipeline) as many shippers are common across a number of APA Group assets in different states and territories. These shippers are likely to benefit from lower administrative and legal costs associated with understanding and complying with gas transportation arrangements.

Consistent terms and conditions are also necessary to support APA Group's one-APA vision for the delivery of pipeline services across an east coast grid, as embodied in APA Group's 'Project Colin' IT project (discussed under non-system capital expenditure in chapter 6).

2.3.5. Update of pipeline and tariff details

Since the earlier access arrangement period, certain pipeline characteristics have changed, such as pipeline length and installation of new meters. Relevant revisions are in section 1.3 and Schedule E of the access arrangement.

Tariffs for the first year of the access arrangement have also been revised to reflect APA GasNet's revenue proposal for the period. Tariffs and revenue control formula are discussed in chapter 11 of this submission.

2.3.6. Revisions to Pipeline Services

Revisions to pipeline services are discussed above in section 2.2.

2.3.7. Extensions and expansions

Application of the access arrangement to extensions and expansions

The extensions and expansions policy included in the earlier access arrangement contained the following elements:

- Automatic coverage of all extensions and expansions to the VTS unless:
  - in respect of an extension, APA GasNet gives the AER written notice before the extension comes into service that the extension will not be covered by the access arrangement; and
  - in respect of an expansion to increase withdrawals at Culcairn above 17TJ/day, the AER agrees with APA GasNet that the expansion should not be covered before a decision the construct the facility has been made; and
- Provision that if an extension or expansion is covered by the access arrangement, then APA GasNet may submit revisions to the access arrangement to the AER to recognise actual capital costs incurred in constructing the extension or expansion.

APA GasNet has revised its extensions and expansion policy included in the access arrangement such that, for extensions and expansions not already included in approved reference tariffs:

- The AER will determine whether the access arrangement will apply to an extension on a case by case basis; and

- The access arrangement will apply to all expansions unless the AER agrees with a proposal from the service provider that the expansion not be covered by the access arrangement.

These arrangements are consistent with the access arrangement recently approved by the AER in respect of the Amadeus Gas Pipeline.

Effect of extensions and expansions on reference tariffs

As described above, the market carriage model means that APA GasNet cannot meaningfully contract with users in respect of an extension to the network as it cannot offer capacity services. This undermines incentives for APA GasNet to invest in extensions to the network that are covered by the access arrangement. To address this issue, APA GasNet has included scope in its proposed extensions and expansions arrangements for it to elect to derive a new tariff zone relevant to an extension and have revenue associated with that extension excluded from the target revenue calculation in the price control formula. This allows an extension to the VTS to operate as a stand-alone investment in the access arrangement period, so that revenue associated with the extension can effectively track capital investment.

For expansions to the pipeline there is generally no need to create a new tariff zone, so APA GasNet proposes that reference tariffs will vary in accordance with the price control formula included in the access arrangement period (which would incorporate increases in demand) during the period (that is, the prevailing reference tariff for the zone will apply) associated with the capacity expansion.

Arrangements to support investment during the access arrangement period

APA GasNet does not consider that aspects of the extensions and expansions policy included in the earlier access arrangement provide adequate incentives for APA GasNet to invest in speculative capital expenditure.

Under a contract carriage model, capacity making up part of non-conforming capital expenditure can still be contracted with users and the service provider can earn revenue associated with those assets. This approach is consistent with section 322 of the NGL allowing a service provider to enter into agreements for access that are different from the applicable access arrangement. Services can be delivered to those users in accordance with contractual terms as the service provider operates and controls the pipeline (and associated line pack, storage services etc).

The same scope does not apply in respect of the Victorian wholesale gas market. As APA GasNet does not control the declared transmission system (which would include any speculative capital expenditure to which the access arrangement applies), it does not have scope to contract with a user in relation to capacity provided by that non-conforming capital expenditure.

To address this issue, APA GasNet proposes that, in circumstances where the AER has determined that an extension or expansion (or part of an extension or expansion) is non-conforming capital expenditure, APA GasNet can elect for incremental capacity associated with that non-conforming capital expenditure not to be covered by the access arrangement.

2.3.8. Capital redundancy mechanism

APA GasNet revised the capital redundancy mechanism in the access arrangement to include a mechanism for sharing with users the costs associated with a decline in the volume of sales of the Reference Service by means of the covered pipeline. As with all revisions to the access arrangement, revisions to the capital redundancy mechanism will take effect at the start of the access arrangement period.

The capital redundancy mechanism is consistent with Rule 85, and provides for assets to be removed from the capital base where they cease to contribute in any way to the delivery of the Reference Service. The mechanism also provides for the sharing of costs associated with a decline in demand for pipeline services between APA GasNet and users, consistent with Rule 85(3). APA GasNet considers that such a sharing mechanism reduces the uncertainty of including a capital redundancy mechanism in the access arrangement, by reducing the risk faced by the service provider where volumes decline unexpectedly.

The proposed capital redundancy mechanism is consistent with that approved by the AER for the AGP.[22]

2.3.9. Efficiency Benefit Sharing Scheme

APA GasNet's earlier access arrangement included Efficiency Benefit Sharing Scheme (EBSS) with a methodology for calculating the efficiency benefit sharing allowance to apply in the forecast period.[23]

APA GasNet has retained this mechanism in the forecast period.

Under the EBSS, APA GasNet retains any benefits (or penalties) for a period of five years after the year in which it was realised. This means that the benefits carry over into the next access arrangement period. The EBSS only applies to the first four years of an access arrangement period as the final year has not been completed when the calculation is made.

The calculation of the efficiency benefit for each year is cumulative, ie, benefits in a year accrue only to the extent that the savings in that year are greater than those already identified in prior years. This means that, especially in the later years of an access arrangement period, a saving from the originally approved operating and maintenance forecast can still generate a negative efficiency benefit.

[22] Australian Energy Regulator 2011, *Access Arrangement for the Amadeus Gas Pipeline 01 August 2011 to 30 June 2016*, clause 4.9
[23] APA GasNet 2008-12 Access Arrangement clause 7.2

2.3.10. Tariff variation mechanism

Revisions to the Tariff Variation Mechanism are discussed in section 11.9 below.

2.3.11. Review of access arrangement

APA GasNet proposes a five year access arrangement period. Consistent with Rule 50(1), APA GasNet proposes to include an access arrangement revisions submission date of 1 January 2017. This date provides the AER with a 12 month revision period, consistent with the general rule.

2.3.12. Fixed principles

APA GasNet proposes fixed principles to apply to the determination of allowed revenue for the next access arrangement period (the fifth period) covering the inclusion of carry forward amounts arising from the operation of the revenue control calculation and cost pass through amounts arising from the cost pass through tariff variation mechanism that have not been included in revenue adjustments in the access arrangement period. The purpose of these fixed principles is to ensure that revenue adjustments (whether positive or negative) generated late in the access arrangement period can be realised by APA GasNet.

Carry Forward Amounts

The operation of the revenue control mechanism during the access arrangement period may result in APA GasNet being unable to adjust tariffs sufficiently to allow it to recover the adjusted target Net Present Value (NPV) revenue for the access arrangement period. In addition, there may be a recoverable shortfall in revenue in the final year of the access arrangement period. In these cases, APA GasNet will calculate carry forward amounts to be incorporated into the revenue requirement for the fifth access arrangement period.

A First Carry Over Amount will be calculated if the operation of the revenue control calculation used to set the tariffs for the final year of the access arrangement period does not allow APA GasNet to meet the Adjusted Target NPV for the access arrangement period. The First Carry Over Amount will be incorporated as an allowance in the required revenue for the first year of the Fifth access arrangement period in the access arrangement review process.

A Second Carry Over Amount will be calculated if the revenue generated in the final year of the access arrangement period results in a shortfall to the final Adjusted Target NPV for the access arrangement period. The Second carry Over Amount will be incorporated into the revenue control calculation for the Fifth access arrangement period as an adjustment to the allowed revenue for the second year of the access arrangement period.

Pass Through Amounts

In the event that a Cost Pass-through Event occurs in the access arrangement period that has a financial effect on APA GasNet in the access arrangement period but is not the subject of a notice to the regulator within the access arrangement period, then APA GasNet may make a statement to the AER in relation to that event and the effect (if approved as the AER) will be allowed as an adjustment to the allowed revenue for the next revenue control calculation.

3 Regulatory obligations

Compliance with regulatory obligations and requirements is one of the four factors listed under Rule 79(2)(c) for the justification of capital expenditure, and is embedded in the concepts of expenditure incurred by a prudent service provider and accepted good industry practice, which are requirements for both capital and operating expenditure under the Rules.[24] This chapter provides an overview of relevant regulatory obligations applying to APA GasNet in its operations in Victoria.

Compliance with regulatory obligations is a key driver of costs for the VTS in operation and maintenance of the pipeline. This section provides an overview of the main regulatory instruments and obligations applying to APA GasNet in its operations in Victoria, and which drive asset management plans and processes for the VTS. The details of regulatory requirements listed here are therefore referenced throughout this submission and in the supporting information provided to the AER in the access arrangement revision proposal. This chapter does not consider regulatory obligations arising from generic legislation such as the Corporations Act that applies to a wide spectrum of businesses across Australia.

Legislation, Regulations and Policies referred to in this chapter are included in the resource document pack provided with this revision proposal.

3.1. National Regulatory Obligations

3.1.1. National Gas Law and National Gas Rules

In July 2008 the new National Gas Law and Rules were introduced. These provisions replaced the former National Gas Code, under which the earlier access arrangement was approved.

While many aspects of the former National Gas Code are replicated in the new NGL and NGR, there are some significant differences in the regimes that are likely to drive costs for APA GasNet in the access arrangement period. Key changes in the NGL (compared to the previous Act) include:

- Establishment of new information gathering powers, allowing the AER to issue binding *Regulatory Information Notices* and *Regulatory Information Orders* on service providers. These powers differ from the previous National Gas Code as they allow the AER to specify the form and content of information to be provided to the AER;
- Extension of regulatory information powers to related providers;
- Extension of compliance monitoring and enforcement powers; and

[24] NGR 79(1)(a) and 91(1)

- Establishment of new arrangements for greenfield developments and scope for light regulation of covered pipelines and networks.

APA GasNet has included costs for preparing revisions to the existing and next access arrangement in 9.3 in its forecast operating expenditure proposal.

3.1.2. National Greenhouse and Energy Reporting Act 2007

The *National Greenhouse and Energy Reporting Act 2007* requires that organisations triggering thresholds as defined by the Act report energy and emissions data. Thresholds relate to emissions of CO_2 equivalent, total amount of energy produced and total amount of energy consumed.[25]

APA GasNet currently develops monthly reports on emissions associated with the pipeline (largely related to the operation of compressors) and provides these to APA Group, who collate emissions reports from across the business group and reports these to the federal government as required under the Act.

In addition, as outlined below, APA GasNet may have obligations under the *Clean Energy Act 2011* relating to the purchase of carbon permits.

3.1.3. Clean Energy Act 2011

The *Clean Energy Act 2011* will come into effect from 1 July 2012. At this point, APA Group will implement a carbon IT system to manage APA GasNet's carbon liability and procure permits. Costs associated with the development of APA Group's carbon IT system are included in capital expenditure incurred in the earlier access arrangement period at section 6.2.4.

APA GasNet's potential direct carbon costs incurred in purchasing permits are included in APA GasNet's forecast operating expenditure as a step change to the 2011 base year at section 9.3.2. Further information on APA GasNet's potential liabilities under the Act are set out in Attachment D-4.

3.1.4. National Environmental Protection Council Act 1994

The *National Environmental Protection Council Act 1994* was established to ensure that by means of establishment of the National Environment Protection Council that there is a uniform approach to protection from air, water or soil pollution and noise pollution.

APA GasNet produces an annual National Pollution Inventory for any large compressor stations on the VTS.

[25] National Greenhouse and Energy Reporting Act 2007, Part 3, section 19

3.2. Victorian Regulatory Obligations

3.2.1. Australian Energy Market Operator

Part 19 of the NGR relate to the Declared Wholesale Gas Market Rules applicable to the VTS. It sets out the obligations on APA GasNet and AEMO. AEMO operates the Declared Wholesale Gas Market and the Declared Transmission System (referred to in this submission as the VTS). As described in section 1.4.3 above, APA GasNet and AEMO have in place a Service Envelope Agreement which specifies the details of the relationship between AEMO and APA GasNet and what is included in the VTS. Under the SEA, APA GasNet has a limited liability for failure to provide the specified capacity of the system.

3.2.2. Pipeline Act 2005

The *Pipeline Act 2005* and associated *Pipelines Regulations 2007* relate to the construction and operation of pipelines in Victoria. The objective of this Act is to facilitate the development of pipelines in Victoria, ensure that pipelines constructed minimise environmental impacts and that pipelines are constructed in accordance with recognised Australian Standards and Codes (see section 3.3 below).

Obligations under this Act require APA GasNet to submit to the Department of Primary Industries (DPI) an application to vary the Pipeline Licence when facilities within the Pipeline Licence are modified or varied or if a pipeline is built, to apply for a new Pipeline Licence.[26] These applications include the following:

- A Consultation Plan must be developed and approved by DPI prior to commencing stakeholder consultation (for new pipeline licences or Significant Alterations under Section 68 of the Act).
- An Environment Management Plan must be approved by the Minister (or a delegate) before construction commences. The plan must include details of how construction will satisfy any native vegetation net gain obligations.[27]

VTS Pipeline Licences

VTS pipelines are licensed by the Department of Primary Industries as required under the *Pipelines Act 2005*.

Table 3.1 below provides a summary of the VTS Pipeline Licences.

[26] Pipelines Act 2005, Part 5, Division 1,

[27] Native Vegetation Management - A Framework for Action

Table 3.1 - APA GasNet pipeline licences

Victorian Pipeline System, Pipeline Licence Summary					
Pipeline Licence Name	**Pipeline Licence Number**	**Pipeline 'T' Number**	**Pipeline Licence Name**	**Pipeline Licence Number**	**Pipeline 'T' Number**
Dandenong to West Melbourne	36	T15/T16	Bunyip to Pakenham	135	T60
Morwell to Dandenong	50	T1	Tatura to Kyabram	136	T71
Maryvale	67	T37	Pakenham to Wollert	141	T161
Pakenham	68	T38/T116	Wandong to Kyneton	143	T75
Longford to Dandenong	75	T60	Paaratte to Allansford	145	T81
Brooklyn - Ballarat - Bendigo	78	T56/57/T70	Kyabram to Echuca	152	T85
Brooklyn to Corio	81	T24	Allansford to Portland	155	T86
Warragul	91	T44	Laverton to Coogee	162	T88
Melbourne - Wodonga - Shepparton	101	T74/T59	Bay St to SYMEX	164	T89
Clyde North	107	T32	Cobden	168	T91
South Melbourne to Brooklyn	108	T33	Hamilton	171	T93
Rosedale to Tyers	117	T60	Chiltern Valley to Rutherglen	176	T96
Longford to Rosedale	120	T60	Barnawartha to Murray River	178	T99
Tyers to Morwell	121	T63	Rutherglen to Koonoomoo	182	T98
Derrimut to Sunbury	122	T62	Dandenong to West Melbourne	202	T18

Newport	124	T64	Iona Underground Storage Terminus to Lara City Gate	231	T92
Maryborough	125	T67	Iona to Paaratte	227	T100
Mt Franklin to Kyneton	128	T66	Somerton Pipeline	238	T102
Dandenong to Princes Hwy	129	T65	Supply to Iluka Resources, Hamilton	252	T109
Mt Franklin to Bendigo	131	T70	Supply to Snowy Hydro Power Plant, Laverton North	253	T110
Tatura	132	T71	Brooklyn to Lara	266	T112
Ballan to Ballarat	134	T57	Murray River to Culcairn (NSW Licence)	24	T99

3.2.3. Gas Safety Act 1997

The purpose of the *Gas Safety Act 1997* is to make provision for the safe conveyance, sale, supply, measurement, control and use of gas and to regulate gas safety. The associated Regulations governed under this Act are as described below:

Gas Safety (Safety Case) Regulations 2008

The *Gas Safety Act 1997* and the associated regulations makes provision for safety cases[28] in relation to facilities, gas installations and appliances and provide for the reporting of gas incidents and includes obligations for APA GasNet in the preparation of a Safety Case.

The VTS Safety Case[29] is submitted to, and approved by, Energy Safe Victoria (ESV). The ESV audit different aspects of the Safety Case twice per year and the Safety Case must be reviewed and resubmitted for approval every five years

[28] Gas Safety Act 1997, Part 3, Division 2
[29] ESV Safety Case Victoria

The Safety Case must:

- Specify the person responsible for the operation of the gas company;
- Specify the person responsible for the preparation and submission of the Safety Case;
- Contain a facility description;
- Contain a formal safety assessment;
- Specify the Safety Management System adhered to in relation to the facility; and
- Establish an emergency management structure to be deployed in the event of an emergency.

Gas Safety (Gas Installation) Regulations 2008

These Regulations provide for standards and procedures for gasfitting work and general safety requirements of gas appliances and gas installations.

Gas Safety (Gas Quality) Regulations 2007

These Regulations set minimum safety standards for the quality and testing of gas conveyed through pipelines. Obligations for APA GasNet under these regulations are to:

- ensure that the gas transported through the VTS is consistent with the quality standard specified in the regulations[30]; and
- ensure that the gas is tested in accordance with the requirements set out in the regulations[31].

3.2.4. Environmental Protection Act 1970 and Environmental Protection (Amendment) Act 2006

The *Environmental Protection Act 1970* and *Environmental Protection (Amendment) Act 2006* (EPA) provide for the regulation of activities which impact air, land or water and covers contamination, noise and waste. The Act applies to APA GasNet's operations in both the construction and operation of the VTS and associated facilities.

[30] Gas Safety (Gas Quality) Regulations 2007, Regulation 6
[31] Gas Safety (Gas Quality) Regulations 2007, Regulation 9

Among the various regulations and Victorian State policies under the EPA, the following apply to the VTS:

- State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1, and the Noise from Industry in Regional Victoria Guidelines

Under this policy and associated guidelines, APA GasNet controls its land around its facilities which is within the metropolitan and regional areas to within 600 metres to restrict noise emissions down to the limits specified.

- Environment Protection (Scheduled Premises and Exemptions) Regulations 2007

Under these Regulations the VTS facilities are prescribed for the purposes of the EPA.

In addition to its obligations under the EPA, APA GasNet uses the *APIA Code of Environmental Practice for Onshore Pipelines* as guidance in meeting its obligations under this Act and associated Regulations.

3.2.5. Environment Effects Act 1978 and Environment Plan

Under the *Pipeline Act 2005*[32], APA GasNet is required to establish an environment management plan for the Victorian pipelines. In addition, under the *Environment Effects Act 1978*, APA GasNet must submit to the Department of Primary Industries any developments on the VTS which may have an impact on the environment. The DPI determines the levels of assessment required and makes a social and environmental effect statement.

The environmental management system for the Victorian pipelines is documented in the *Environmental Management Plan.*

The main projects which will be subject to the above process in this access arrangement period will be the Western Outer Ring Main and the Wollert to Barnawartha Pipeline Projects as they follow new pipeline easements.

3.2.6. Occupational Health and Safety Act 2004

The purpose of this Act is to secure the health, safety and welfare of employees, to eliminate sources of risk and ensure employees are not placed at risk by the conduct of employees and employers.

The associated *Occupational Health and Safety Regulations 2007* set out the obligations that APA GasNet must comply with in accordance with the Act.

[32] Pipeline Act, 2005, Part 9, Division 2

3.2.7. Terrorism (Community Protection) Act 2003

APA GasNet has been declared an 'Operator of an Essential Service' under the *Terrorism (Community Protection) Act 2003*. The purpose of this act is provide for new powers and obligations for the prevention of and response to terrorist acts and with respect to operators of essential services, prepare risk management plans to identify and mitigate the risk of terrorist acts.

Obligations relating to this Act require that APA GasNet to:

- prepare a risk management plan;
- conduct an annual audit of the plan;
- ensure amendments are completed following any determination of a deficiency in the plan; and
- conduct an annual training exercise to test the plan.

The *Security Plan* and the attachment *Security Plan Att 1*, *Emergency Manual* and *Dandenong Site Emergency Manual* provides for the actions which APA GasNet must take in case of a change to the terrorism threat level or terrorist act.

3.3. Australian Standards and Codes

The most significant Australian Standards that impact the day-to-day operations of the VTS is AS2885. This legislative instrument is mandatory or the preferred standard and therefore considered to be the primary code of practice applicable to APA GasNet's activities.

The AS2885 suite of Standards establishes requirements for the safe design, construction, inspection, testing, operation and maintenance of a land or submarine pipeline constructed from steel pipe, and designed to transport gas or liquid petroleum.

In general, AS2885 does not require that physical plant already in place be altered to comply with changes in the standard (and the standards it references), except where changes relate to areas of public safety in high consequence areas.

AS2885 lists the standards and codes generally applicable[33] to the design and construction of a pipeline. In addition, Table 3.2 provides a list of other relevant standards applied by APA GasNet.

[33] Australian Standard 2885.1, Part 1:Design and Construction, Appendix A.

Table 3.2 - Relevant standards applied by APA GasNet

Number	Standard
API STD 617	Axial and Centrifugal compressors and expanders compressors for petroleum, chemical and gas industry services
APIA	Code of environmental practice
AS 2381	Electrical equipment for explosive atmospheres - selection, installation and maintenance
AS/NZS2832	Cathodic Protection of Metals - Part 1
AS/NZS 3000	Electrical installations – Buildings, structures and premises (SAA Wiring rules)
AS 4041	Pressure piping

In 2007 two new process requirements were added to the standard:

- A requirement to undertake safety management studies; and
- A requirement for design life reviews.

The changes requiring APA GasNet to under safety management studies largely codify current practices for APA GasNet, however APA GasNet does expect to incur additional incremental costs associated with monitoring compliance with studies and in rectification works identified through the studies. These costs are discussed further in section 9.3.2 below in respect of forecast operating expenditure. Requirements for design life reviews are a major component of APA GasNet's forecast capital expenditure discussion in section 6.2.3 below.

Safety Management Studies

The *Safety Management Study (SMS)* identifies threats to the VTS and applies controls to ensure residual risk is reduced to an acceptable level. The SMS is performed at a minimum every five years in accordance with the standard and was last completed over 2010 and 2011. The next review will be completed within the access arrangement period.

As part of the SMS, a risk management framework and policy is developed to ensure that all risks and controls identified in an SMS are managed and implemented accordingly. This is used to prioritise maintenance and replacement decisions. The Australian Standard AS2885 has its own risk definitions of consequence severity and likelihood, this is used for safety analysis. The document *VT Safety Management System* documents the SMS applicable to the VTS.

Design Life Reviews

The other additional requirement under AS2885 is that a review be undertaken of the design life of all high pressure pipelines. This is discussed more fully under section 4.3.5 of this submission.

3.4. Regulatory reporting

APA GasNet has a number of regulatory reporting obligations to both the AER and other government departments of Victoria and nationally. Table 3.3 provides a summary of these reporting requirements.

Table 3.3 - APA GasNet reporting requirements

Reporting Body	Report Type	Frequency
Australian Energy Regulator	Volume Report	Annual
	Compliance Notice for covered pipelines	Annual
Energy Safe Victoria	VTS Safety Case	End of 2013
	KPI	Quarterly
	Pigging Report	Annual
	Cathodic Protection Survey	Annual per pipeline
Environmental Protection Agency (Victoria)	Environment Resource Efficiency Plan	Annual
	National Pollution Inventory	Annual
	EPA Licence CL67868 Report	Annual
Department of Climate Change and Energy Efficiency (National)	Greenhouse Gas Emissions Report	Annual
AEMO	Maintenance Forecast	5-yearly
	Maintenance Forecast	Weekly, Quarterly, Annual
Department of Primary Industries	Terrorism Plan and Exercises	Annual
NSW Department of Industry and Investment	Annual Report	Annual

In addition to the scheduled reporting obligations, APA GasNet must also advise the ESV of any:

- Uncontrolled escape or ignition of gas;
- Serious injury or death arising in connection with the operation, modification and decommissioning of the pipeline;
- Any incident involving the pipeline causing loss, destruction or damage to the asset; and
- Any incident involving a threat to the pipeline or a contravention of section 66 of the Act.

APA GasNet must also provide Energy Safe Victoria a report on any of these incidents with 28 days of occurrence.

4 Pipeline planning and asset management

This chapter provides an overview of APA GasNet's long-term pipeline strategy and direction, planning and governance processes and key documents.

Policies, plans and procedures discussed in this section are included either as an attachment to this submission or as part of the Resource Document pack provided with this submission.

4.1. Overarching objectives

The VTS assets are managed to ensure the long term objectives and key stakeholder demands are met with a focus on the safe and reliable operation of the system. Assets are maintained to preserve operability and enhance the useful life of the asset. Replacement or upgrade is primarily based on condition assessment with an understanding of the assets predefined life cycle. Changed functional demands may also necessitate asset upgrade or replacement.

4.2. Planning components

The *Asset Management Plans and High Level Process Policy* provides the overarching guidance for the asset management planning process.

4.2.1. Asset Management Process

The Asset Management process is a continuous loop as depicted in the flowchart at Figure 4.1 below. The process is divided into four major phases:

- Issue identification

  Issues are identified from a range of sources including asset assessments, change management processes and commercial considerations. They are assessed and potential solutions evaluated in terms of cost benefit and technical quality.

- Scoping and prioritisation

  Funding proposals are developed based on the evaluation performed in issue Identification. Proposals are submitted for committee prioritisation and an options analysis is performed from a business perspective.

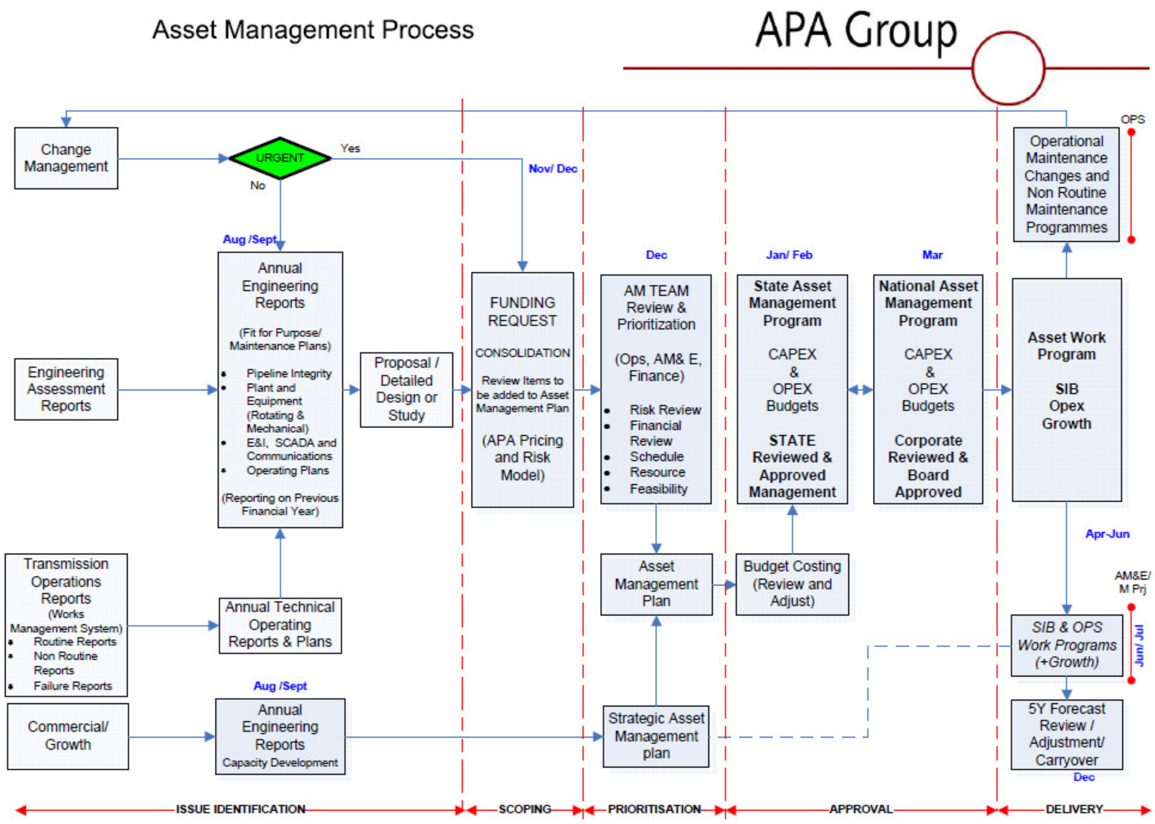
- Funding approval

  Final plans and associated budgets are submitted to the executive for national and strategic review and approval.

- Work program delivery

Approved projects proceed through the five steps of the APA Project Management Framework.

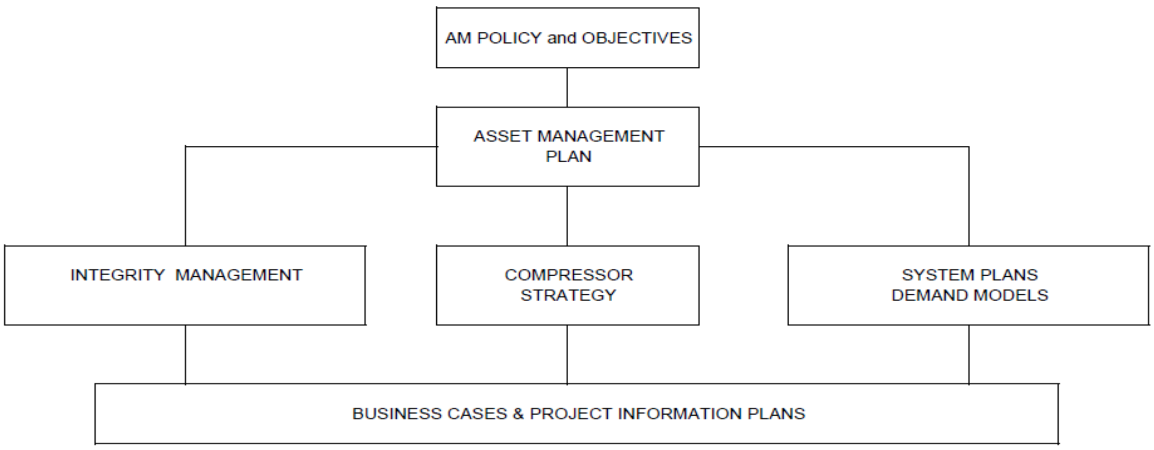
Figure 4.1 - Asset Management Process



4.3. Key planning and asset management documents

Figure 4.2 below sets out the overall asset management planning process.

Figure 4.2 - Asset Management Planning process



4.3.1. Asset Management Plan

The VTS assets transport sales quality natural gas from processing facilities and other pipelines to and from Melbourne and regional towns or significant consumers in a safe and reliable manner. The VTS is comprised of 45 licenced pipelines of various diameters and operating pressures totalling 1,993 km with various metering facilities and compression facilities at Gooding, Brooklyn, Euroa, Iona, Wollert, and Springhurst. The total replacement value of the VTS is estimated at $3 billion.

The *Asset Management Plan* (AMP) details the asset management process, policy and long term objectives of the VTS.

The objective of the AMP is to ensure the VTS is maintained to its current condition and level of risk whilst meeting stakeholder expectations through systematic management of all threats to the operation and expansion of the asset, and achieving operational efficiency over the entire lifetime of the assets in line with:

- Legislative obligations;
- Effective risk management;
- Regulated financial parameters;
- Best asset management practice; and
- Extraction of maximum value from assets.

Asset investment is primarily driven by increasing demand or to improve utilisation or risk profile.

Pipelines of the VTS are in good condition though corrosion induced metal loss, the deterioration of coatings systems and third party encroachment, remains a continued threat. These threats are maintained and controlled to an As Low As Reasonably Practicable (ALARP - as defined in AS2885.1) state through existing physical and procedural protection measures.

Pipelines are maintained by condition based maintenance predominately determined by Inline Inspection (ILI) results as is the frequency of ILIs.

Compressor and pressure regulating stations and cathodic protection systems are generally maintained and inspected on a time based schedule.

The intended strategy is, as far reasonably practical, for the pipelines to be maintained to their current level of integrity, without any decrease in Maximum Allowable Operating Pressure (MAOP).

4.3.2. General Procurement Policy

APA Group's *General Procurement Policy* provides the guidance for best practice procurement processes to achieve cost savings leveraging APA Group's purchasing power. Consideration must be given to the following prior to any approval to purchase being sought:

- Is it necessary to purchase the good or service;
- Total cost – including, where appropriate, maintenance costs, disposal cost/ benefit, cost of finance and any alternatives, and life cycle costing;
- Fit for purpose including quality and timeliness;
- Health, Safety and Environment requirements are met;
- Professional excellence, including regulatory compliance; and
- Environmental sustainability.

4.3.3. Risk Management Policy

APA Group's *Risk Management Policy* provides for a systematic view of the risks faced in the course of APA Group's business activities. The aim of the policy is not to eliminate all risk, rather to provide a mechanism to manage the risks involved in all APA Group activities to maximise opportunities and minimise adversity.

APA Group's approach to risk management applies the following steps:

- Establish a context: This is the strategic, organisational and risk management context against which the rest of the risk management process in APA Group takes place. Criteria against which risk is evaluated are established and the structure of the risk analysis is defined.
- Identify Risks: This is the identification of what, why and how events arise as the basis for further analysis.
- Analyse Risks: This involves the analysis of risks in terms of the consequence and likelihood in the context of the risk management controls identified. The analysis considers the range of potential consequences to APA Group and how likely those consequences are to occur. The analysis combines the consequence and likelihood of the risk using the established evaluation criteria to produce an estimated level of risk.
- Evaluate Risks: This is a comparison of estimated risk levels against APA Group’s established risk measurement and control criteria. This enables risks to be ranked and prioritised.
- Treat Risks: For higher priority risks, APA Group is required to develop and implement specific risk management plans including funding considerations. Lower priority risks may be accepted and monitored without further treatment.

- Monitor and Review: This is the oversight and review of the risk management system and any changes that might affect it. Monitoring and reviewing occurs concurrently throughout the risk management process.

- Communication and Consultation: Appropriate communication and consultation with internal and external stakeholders should occur at each stage of the risk management process as well as on the process as a whole.

The above process is regularly reviewed and updated via APA Group's Audit & Risk Management Committee.

4.3.4. Project Management Policy

APA Group's *Project Management Policy* for Major Capital Projects provides the framework for project management across the Operations Divisions of APA Group. The objective of the standardised project management methodologies is to improve decision making and enable effective execution of projects by fostering better planning, collaboration and communication.

The Policy covers five phases of project delivery:

- Phase 1 – Concept: Includes the identification of the opportunity and approval of the concept for development.

- Phase 2 – Initiation: This phase includes development of an implementation plan, development and evaluation of proposals, development of the business case and attainment of project approval.

- Phase 3 – Planning: This phase involves undertaking preliminary project risk assessment and developing an overall description and project structure required for execution.

- Phase 4 – Delivery: This phase commences once the project has been approved and involves implementation of the plan, management of project issues and variations, producing deliverables, managing audits and test, commission and handover of the project.

- Phase 5 – Finalisation: The main components included in this phase are preparation of handover plan, confirmation of project completion and project closeout.

4.3.5. Design Life Reviews - Gas and Liquid Pipelines

The APA Group policy - *Design Life Reviews - Gas and Liquid Pipelines* establishes the requirements for review of the design life of all high pressure pipelines operating to AS2885 and ancillary items integral to the pipeline. Any below ground facilities that directly affect the integrity of the pipeline (such as line valves) are also included in any design life review.

The Design Life Review is carried out prior to the expiry of the design life and the outcome of the review determines any actions and/or recommendations that are required to ensure that the pipeline is fit for continued service.

Failure to comply with the requirements of the Australian Standard with respect to design life could involve increased integrity risks going forward and may therefore also involve regulatory action and potentially having its pipeline licences questioned with potential cancellation of licence.

APA GasNet has multiple facilities that are reaching the end of their technical life during the access arrangement period. A capital program is proposed to undertake necessary design life reviews. This is discussed further in section 6.3.2 below. Table 4.1 provides the design life where the design life has not been determined during construction.

Table 4.1 - Default design lives of assets

Asset Category	Technical Life
Compressor Stations	30 years
Heaters	20 years
Regulator & Meter Stations	30 years
Pipelines	60 years
Telemetry Equipment	10 years

A design life review requires physical inspection of the assets and an engineering review. Of the design life reviews that will be required to be undertaken during the access arrangement period, the most significant in terms of the impact of cost to APA GasNet will be the review of three compressor stations and the 127 kilometres of 450mm pipeline from Morwell to Dandenong.

4.3.6. MFL Metal Loss Pigging Frequency Policy

APA Group's *MFL Metal Loss Pigging Frequency Policy* provides the standard criteria for determining the time interval for metal loss inspections using Magnetic Flux Leakage (MFL) technology for every pipeline either owned or operated by APA Group.

The policy addresses the following five criteria that can determine the frequency of initial and subsequent inspection runs:

- corrosion rate;
- special integrity concerns;
- initial survey; and

- rupture potential.

For non-piggable pipelines, approved alternate methods of determining structural integrity must be implemented such as application of direct assessment methodology.

In respect of Stress Corrosion Cracking, MFL pigs are not suitable tools for detection, in this case, the most suitable method is direct assessment.

4.3.7. Management of Transmission Pipeline Easements

The major threat to the integrity of APA GasNet's assets, particularly pipelines, is that posed by other authorities carrying out activities in the vicinity of the asset. This risk increases with urban development in the vicinity of APA GasNet's once remote facilities (such as the Brooklyn Compressor Station). It is therefore necessary that APA GasNet becomes aware of any such proposed activity and then takes appropriate action.

This awareness is achieved in part firstly by APA GasNet being advised of relevant planning permit applications and secondly by being advised of future proposals through the referral authority/notification body process or by direct application by property owners or tenants. This process is outlined in the document *Management of Trans Pipeline Easements.*

4.3.8. Maintenance Schedules

Maintenance schedules are used to ensure that the equipment on the VTS is operating in the context of its intended use. The schedules specify the frequencies for inspection/monitoring, calibration and adjustment, servicing, replacement of parts, overall etc. of the assets.

The schedules are developed using the Reliability-centred Maintenance methodology with input from the manufacturer's recommendations, past experience and history, industry practice, regulations, standards, codes, failure consequence analysis and customer needs. Details of the maintenance schedules applicable to the VTS System are contained in the document *Maintenance Schedules*.

4.4. Expenditure governance

APA Group's *Corporate Governance Statement* has been developed in accordance with the Corporate Governance Principles and Recommendations issued by the Australian Stock Exchange Corporate Governance Council in August 2007. The statement sets out the principles and framework to be followed by the APA Group Board and senior management for the management of the business in areas such as risk management, ethical and responsible decision making and management and oversight.

APA Group Board responsibilities are set out in the *Board Charter*. Focusing on areas of particular relevance to this Management Framework, the APA Group Board is responsible for ensuring that effective audit, risk management, compliance and control systems are in place to protect the APA GasNet's assets and to minimise the possibility of the business operating beyond legal requirements or beyond acceptable risk parameters. The APA Group Board is also responsible for monitoring compliance with regulatory requirements.

APA Group has in place detailed capital expenditure governance processes to ensure that projects undertaken are prudent, efficient and in line with the overall strategy.

The capital expenditure budget is developed as an outcome of the AMP and includes concept plans, implementation schedules for any augmentation, and high level cost estimates for all proposed capital expenditure projects.

Replacement and upgrade capital expenditure works (otherwise known as 'stay-in-business' (SIB) works) are included in the approved capital expenditure budget. Capital expenditure approval is required for all other capital projects and includes relevant information like identified needs, risk assessment, options considered, cost estimation, project justification and recommendation.

4.4.1. Budget Planning Tools

The following tools are used in the process described above

- Budget Planning for SIB Projects - How to Formulate Priorities for Expenditure

  This procedure is applicable to all APA Group capital expenditure and SIB projects that relate to all physical assets owned by APA Group and those that APA Group manages on behalf of third party owners to ensure that all physical assets will continue to meet the required level of service at efficient life-cycle cost.

  The procedure outlines the process needed to address efficiency improvements and risk mitigation prior to submission for approval. The document *Budget Planning for SIB* and Appendices - *Appendix A-SIB Efficiency Project Form, Appendix B-Risk Matrix for SIB Projects* and *Appendix C- Risk SIB Project Form* cover the procedures for SIB projects.

- Project Analysis for Prioritisation of Proposed SIB - Efficiency Improvement Projects

  This tool compares the returns of short term projects using an array of indices including Profitability Index (NPV of Inflows / NPV of Outflows), Net Present Value, Discounted Payback Period, Internal Rate of Return and Cumulative Cash Flow.

4.4.2. Expenditure approval process

APA Group has in place the *APA Delegations of Authority Policy* to ensure that the financial integrity of APA Group is never put at risk through inappropriate authorisation of transactions by employees. The policy applies to APA Group and all staff of those entities who authorise transactions that expose APA Group to a financial obligation or commitment including its subsidiaries and any ventures that are controlled by APA Group.

All transactions which require the financial commitment of APA Group or its controlled entities, which includes APA GasNet, must be authorised and approved within the delegated limits of authority. The limits are detailed in the document *APA Table of Delegated Limits of Authority.*

4.4.3. Allocation between Regulated and non-regulated works

APA GasNet has a robust process in place for allocating its costs and revenue between regulated and non-regulated activities to ensure that there is no cross subsidisation between regulated and non-regulated activities.

Capital Expenditure

All capital expenditure activities are directly coded to job names. Job names are created for regulated and non-regulated activities. Therefore any expenditure incurred for non-regulated activities are not included in capital and operating expenditure allocated to the VTS or reported in the access arrangement revision proposal.

Operating Expenditure

Operating activities are either directly coded to job names or if the activity relates to both regulated and non-regulated activities (such as electricity for the Dandenong office), then a weighting is applied to the activity. The weighting is based on relative asset base values of regulated and unregulated assets as is discussed further in section 9.3.2 below.

Employee times

The majority of APA GasNet employees also complete a timesheet which must be submitted to their leader for approval on a weekly basis. These timesheets accurately record time spent on either regulated or non-regulated activities and all the times related to the non-regulated activity is not included in recorded expenditure on regulated assets.

Corporate Overheads

After direct costs have been allocated to the assets that drive those costs, general APA Group Corporate Overheads are allocated to each asset based on the revenues received for each asset. This process is described in Attachment H.

4.5. Systems and Processes

4.5.1. Measurement systems

APA GasNet has derived data relating to historical loads via the SCADA[34] system. For the VTS the raw SCADA data is provided to AEMO who do validation and substitution as per the NGR and subsidiary Procedures.

4.5.2. Information systems

To determine the historical capital and operating expenditures, APA GasNet uses Oracle financing system. Prior to Oracle, Finance One was used. The Asset Management Plan is used to develop the forecast capital and operating expenditures.

APA Group utilises and develops various processes within these information systems to ensure data integrity and complete analysis. An example is the Portfolio and Project Operating Model (PPOM) tool that can be used for future cost estimation of similar projects. The PPOM tool has rigorous processes and checks to ensure data integrity is high and an approval process to ensure data input occurs. Further details on the PPOM Project are set out in section 6.2.4 in respect of non-system capital expenditure in the earlier access arrangement period.

4.6. Impacts in Changes in Plans and Policies

Changes in plans and policies applicable to APA GasNet's operations which have had a material impact on forecast expenditures for the access arrangement period are limited to the MFL policy. Changes to this policy include the expansion of in line inspection activities for all pipelines 150mm diameter or greater, or any pipeline 10km or greater in length.

4.7. Outsourced expenditure

The AER's regulatory information notice seeks information on contracts that APA GasNet or APA Group have in place in relation to capital and operating expenditure that is material to those forecasts.

APA GasNet performs the majority of asset management functions in house, but does outsource some functions that either require specialist knowledge or equipment, or are intermittent in nature, making it inefficient for APA GasNet or APA Group to retain the relevant capability in house.

No outsourcing arrangements are with parties related to APA Group. Details of contracts as required under the RIN are provided at Attachment F (confidential).

[34] Supervisory Control and Data Acquisition

5 Pipeline demand and utilisation

This chapter of the submission discusses pipeline demand and utilisation over the earlier access arrangement period, and provides a forecast of pipeline demand and utilisation over the access arrangement period.

5.1. Demand and utilisation during earlier access arrangement period

This section sets out usage of the pipeline over the earlier access arrangement period and discusses key drivers and trends for that usage.

5.1.1. Gas demand and volumes over the earlier access arrangement period

Gas Demand on the VTS can be divided into a number of categories:

- Domestic and Commercial;
- Industrial;
- Electricity Generation; and
- Interstate transfers.

There is a further category that is not technically demand but does result in the flow of gas through the VTS. This is refill of the two storage facilities on the VTS, underground (the WUGS) and LNG.

Gas demand on the VTS is subject to a number of drivers that vary with the type of demand, but also to two overall drivers that affect all types of demand. These are the level of economic activity in the state, and the weather. The level of economic activity drives the ongoing changes in gas demand as adjusted for population growth and energy efficiency.

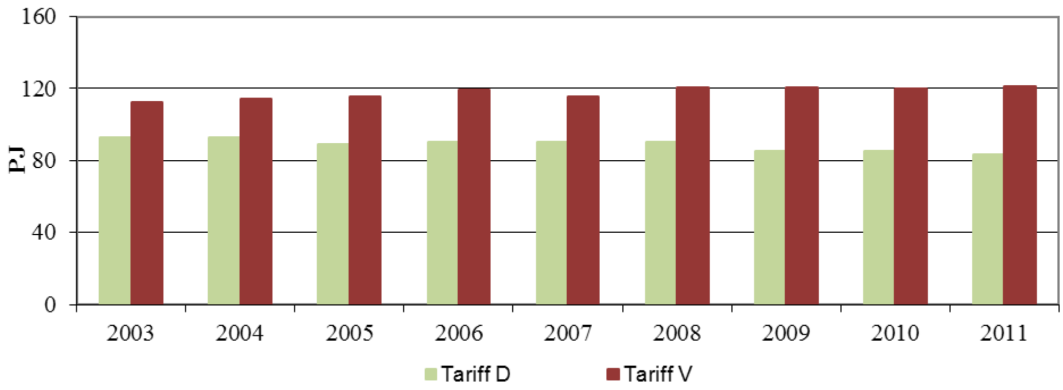
Weather

The weather is an important driver of gas demand in Victoria because of the high level of penetration of gas supply at the domestic and commercial level, and the amount of that demand directly related to space heating. However, it is also important to note that the variability of weather can have a significant effect on peak and annual gas demand.

Victoria uses a specific version of the more generally known Heating Degree Day to measure the weather as it applies to gas demand. This version is known as the Effective Degree Day (EDD) The EDD is correlated with gas demand where such demand varies by 44.7TJ/EDD.

Over the earlier access arrangement period, the total annual EDDs have varied from 1283 to 1419 - a difference of 136 EDD (10 per cent variance). This weather variance by itself accounts for 6PJ or about 3 per cent of total demand. This cause of demand variance is not forecastable.

Figure 5.1 - Normalised base annual gas demand



Domestic and Commercial (Tariff-V)

This demand is driven largely by population with growth rates correlated to population growth but adjusted by ongoing technology changes mostly related to energy efficiency. Thus increases in penetration of reverse cycle air conditioning and the requirement for new housing to meet 6 star energy efficiency ratings reduce the rate of gas demand growth.

After adjusting for weather variances, the average annual growth over the earlier access arrangement period has been 1.06 per cent per annum, as shown in Figure 5.1 above.

Industrial (Tariff-D)

The VTS supplies a significant number of large industrial gas consumers. There are about 440 gas customers taking more than 10TJ of gas annually. The largest customer takes about 7.5PJ/annum. Since the beginning of the GFC in 2007 industrial demand has declined at an annual rate of 2.0 per cent reflecting the decline in the manufacturing industry in Victoria in response to a weak global economy and a very strong Australian dollar. As can be seen from Figure 5.1, this represents a continuation of a longer term trend.

Electricity Generation

The demand from electricity generation has declined over the earlier access arrangement period from 23PJ in 2008 to 7.6PJ in 2010 before increasing slightly in 2011 to 8.4PJ. The earlier years reflect the continuing effects of the long drought that constrained hydro power and some coal fuelled generation. The minor uptick in 2011 probably reflects effects of flooding in Queensland and NSW reducing generation. About 7.5PJ/annum reflects peaking demand in generally cooler summers. There has been no reflection of increased gas fired generation due to carbon pricing as was originally forecast for the end of the earlier access arrangement period, and implementation of the scheme has been delayed

Interstate gas transfers

Gas is transferred from the VTS at a number of locations:

- Port Campbell;
- Culcairn; and
- VicHub.

At Port Campbell, gas is transferred to the SEA Gas pipeline through both the SEA Gas connection point and the Iona connection point. The latter transfers are not distinguishable from refill of underground storage and are treated as such. While it was originally forecast that transfers from the VTS through the SEA Gas connection point would be minimal during the earlier access arrangement period due to the availability of gas from local fields, especially the offshore Minerva, Casino and Thylacine fields, this has not been the outcome and transfers have risen from about 1PJ/annum in 2008 to 4.2PJ/annum in 2011. APA GasNet understands that this is due to a number of factors including production delays and problems with local gas supplies and the commercial decisions of the shippers.

At Culcairn, the recent expansion of capacity in the Northern zone of the VTS has enabled more secure supply through to the NSW system. This has allowed interstate transfers to rise significantly, however, we understand that the 9PJ/annum rate experienced in 2011 was due to a number of one off factors that make it unlikely to be repeated in 2012. These are discussed in section 5.2.1 in respect of forecasts at this zone.

At VicHub there has been a change in ownership and operating methods such that gas flows through VicHub are no longer aggregated by the operator as was the case until 2008. This means that gross injections and withdrawals at VicHub are now reported separately. In addition the Tasmanian gas retailers are now active in the Victorian wholesale gas market and some Tasmanian gas supply is now being sourced from the Victorian market.

While refill of the two storage facilities connected to the VTS does not represent gas demand, it does cause gas to flow through the system from the gas production facilities to the storage facilities.

Acutal annaul withdrawal volumes over the earlier access arrangement period are shown in Table 5.1 below.

Table 5.1 - Annual volumes over the earlier access arrangement period

	2008	2009	2010	2011	2012
Annual (PJ)					
AEMO (Excl Fuel gas & GPG)	212.4	203.1	209.8	202.9	205.6
GPG	23.0	17.8	7.6	8.4	6.4
Culcairn	4.5	6.4	4.6	9.0	7.5
VicHub	0.1	0.3	1.5	2.4	2.0
SEA Gas	1.2	3.6	3.7	4.2	0.0
Sub-Total	**241.2**	**231.2**	**227.2**	**226.9**	**217.5**
UGS/LNG Refill	5.5	4.2	9.3	10.7	8.0
Total	**246.7**	**235.4**	**236.5**	**237.6**	**225.5**
Peak (TJ/day)					
AEMO	1,070	1,103	1,163	1,134	1,217
GPG	162	58	24	1	50
Culcairn	15	31	0	22	17
VicHub	0	0	0	25	6
SEA Gas	5	6	0	0	0
UGS/LNG Refill	1	10	0	0	0
Total	**1,253**	**1,208**	**1,187**	**1,182**	**1,290**

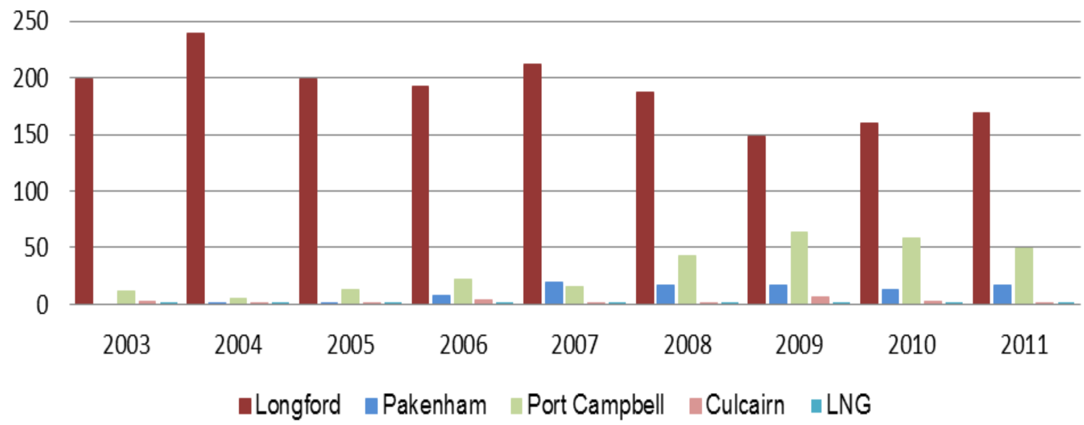
Injections

The VTS receives injections of gas from five zones:

- Longford;
- Port Campbell;
- Culcairn;
- Pakenham; and
- Dandenong

Actual annual injections over the period for each zone are shown in Figure 5.2 below.

Figure 5.2 - Annual injections by zone (PJ)



Longford injections come from the ESSO/BHPP gas plant and from the VicHub interconnection with the Eastern Gas Pipeline (EGP). Both peak day and average injections from Longford have declined over the course of the earlier access arrangement period. However, the average injections have increased from their low point in 2009.

Port Campbell injections come from the production facilities in the area and the underground storage facility. Since the capacity of the South West Pipeline was expanded in 2008 with the completion of the Brooklyn – Lara Loop, injections at Port Campbell have increased.

Pakenham injections are sourced from the Lang Lang gas plant supplied from the Yolla gas field. That plant was commissioned in 2006. During the earlier access arrangement period, peak production has declined but average production has been maintained except for 2010 when the plant was shut down for an extended period for major maintenance.

Culcairn injections are sourced from the NSW transmission system. Injections from this source are small and variable. In some years advantage is taken of the lower peak injection tariffs at Culcairn but often that factor is outweighed by the availability or cost of gas from NSW. As a result, peak injections have varied from 12 to 58TJ/day and annual injections from 0.2 to 6.5PJ/annum.

LNG injections are used for peak shaving in the Victorian wholesale gas market. The amount of gas injected from the LNG facility in any year depends on the severity of the peak demand days and whether there have been any occasions during the year when AEMO has not been able to address unexpected situations in the VTS without recourse to the use of LNG. Generally, this usage amounts to between 0.1 and 0.3 PJ/annum. LNG injections exceed this level only when a major unexpected supply disruption occurs. This has not occurred since 1998.

Total annual injections have declined from 2008 and then remained constant over the earlier access arrangement period. The initial decline was caused by declines in Tariff-D and GPG demand. Over the balance of the earlier access arrangement period, interstate transfers and Tariff-V growth has offset the continued declines in Tariff-D and GPG demand.

5.1.2. User numbers over the earlier access arrangement period

The VTS is operated by AEMO under the market carriage system. This means that shippers register with AEMO to operate in the Victorian wholesale gas market and, once registered, can make use of the VTS, subject to the gas market bid stack, without reference to APA GasNet. APA GasNet is able to provide user numbers only from the data provided by AEMO.

The VTS is divided into a number of withdrawal zones each of which contains one to more than 20 offtakes. APA GasNet is able to provide user numbers for the VTS only at the level of withdrawal zones. These are set out in Table 5.2 below.

There are currently 21 active registered Market Participants in the Victorian wholesale gas market who use the VTS. This is an increase of seven over earlier access arrangement period. The increase is partly due to new companies becoming involved in the Victorian wholesale gas market and partly to some companies registering multiple Market Participants for operational reasons. The number of Market Participants using each withdrawal zone ranges from 1 to 12. Note that there are 2 inactive withdrawal zones.

Table 5.2 - User numbers by withdrawal zone over the earlier access arrangement period

User numbers (by zone)	2008	2009	2010	2011	2012
LaTrobe	9	9	9	9	9
West Gippsland	0	0	0	0	0
Lurgi	10	8	8	9	9
Metro North West	10	10	12	12	12
Calder	8	8	8	8	8
South Hume	8	8	8	8	8
Echuca	9	9	9	9	9
North Hume	8	8	8	8	8
Western	7	8	8	8	8
Murray Valley	9	9	9	9	9
Interconnect	1	1	1	1	1
South West	8	8	8	8	8
Wodonga	10	10	10	10	10
Tyers	8	8	8	8	8

NSW Transfers	6	6	6	6	6
Metro South East	10	10	10	10	10
Warrnambool	8	8	8	8	8
Koroit	6	8	8	8	8
Refill LNG	7	7	10	10	10
Geelong	8	8	9	9	9
Maryvale	1	1	1	1	1
VicHub	1	3	5	6	6
Refill WUGS	3	5	5	7	7
SEAGas	2	2	2	3	3
Otway Gas	0	0	0	0	0
Total number of users	**14**	**16**	**20**	**21**	**21**

5.1.3. Pipeline capacity and utilisation over the earlier access arrangement period

Capacity

As the VTS is a meshed system rather than a single main pipeline with a number of laterals, the capacity is variable. Therefore, only the capacity of the main pipelines rather than the system can be defined.

The main pipelines for flows towards Melbourne are the Longford to Melbourne Pipeline, the South West Pipeline, and the NSW Interconnect. Capacities for each of these pipelines, comparing 2008 to 2011, are set out in Table 5.3 below.

Table 5.3 - Pipeline capacity 2008-2011 - Flows towards Melbourne

Pipeline (TJ/day)	2008	2011
Longford to Melbourne	990	990
South West Pipeline	265	353
NSW Interconnect	92	92

As an example of the complexity of the VTS capacity, 68TJ/day can also be sourced from Pakenham for flow along the Longford pipeline towards Melbourne but only if the capacity from Longford is reduced by 18TJ/day.

The main pipelines for flows away from Melbourne are the South West Pipeline, and the NSW Interconnect. Capacities for each of these pipelines, comparing 2008 to 2011, are set out in Table 5.4 below.

Table 5.4 - Pipeline capacity 2008-2011 - Flows away from Melbourne

Pipeline (TJ/day)	2008	2011
South West Pipeline	50	129
NSW Interconnect	17 (Winter)	28 (Winter)
	35 (Summer)	73 (Summer)
Western Transmission System	28	28

The section of the VTS west of Port Campbell can be regarded as a separate system for capacity definition. It has a capacity of 21TJ/day.

Utilisation

The 2011 utilisation of the main pipelines for flows towards Melbourne are set out in Table 5.5.

Table 5.5 - Pipeline utilisation - Flows towards Melbourne

Pipeline	Utilisation
Longford to Melbourne	45%
South West Pipeline	38%
NSW Interconnect	1%
Pakenham	68%

The 2011 utilisation of the pipelines for flows away from Melbourne are set out in Table 5.6.

Table 5.6 - Pipeline utilisation - Flows away from Melbourne

Pipeline	Utilisation
South West Pipeline	Indeterminate
NSW Interconnect	36% (Summer)
	82% (Winter)
Western Transmission System	46%

Usage of the South West Pipeline for flows away from Melbourne is indeterminate because physical flows are currently always in the reverse direction.

The current peak utilisation of the main pipelines for flows towards Melbourne is set out in Table 5.7.

Table 5.7 - Peak pipeline utilisation - Flows towards Melbourne

Pipeline	Peak utilisation
Longford to Melbourne	83%
South West Pipeline	106%
NSW Interconnect	13%
Pakenham	95%

The current peak utilisation of the pipelines for flows away from Melbourne is set out in Table 5.8.

Table 5.8 - Peak pipeline utilisation - Flows away from Melbourne

Pipeline	Peak utilisation
South West Pipeline	Indeterminate
NSW Interconnect	100%
Western Transmission System	86%

The peak usage of the South West Pipeline is greater than 100 per cent because, if system conditions are optimum the pipeline can - on a once off basis - carry more than its rated capacity.

5.2. Demand and utilisation forecasts

5.2.1. Forecast demand

Rule requirements

Under Rule 72, the Access Arrangement Information document accompanying an access arrangement must include to the extent practicable a forecast of pipeline capacity and utilisation. As the VTS is a market carriage pipeline and operates as a meshed network with multiple injection points feeding a hub and spoke system, capacity is an ill-defined concept. The tariff calculations are based on annual and peak volumes, not capacity. APA GasNet can provide capacity and utilisation of individual pipelines within the system as defined under the National Gas Bulletin Board. The forecasts provided are those relevant to the tariff calculations.

Rule 74 requires that any forecasts used in setting the Reference Tariff represent best estimates arrived at on a reasonable basis. This section provides an explanation of the assumptions underlying those forecasts.

Withdrawal volumes

For the purposes of the access arrangement revision proposal, APA GasNet requires forecasts of the annual and peak day gas volumes withdrawn from the VTS. These forecasts are used for the setting of transmission tariffs, and for the calibration of the revenue control formula. The forecast annual withdrawal volumes for the access arrangement period and the forecast peak day withdrawal volumes are set out in Table 5.9 below.

Table 5.9 - Annual withdrawal volumes forecast for the access arrangement period

	2013	2014	2015	2016	2017
Annual (PJ)					
AEMO (Excl Fuel gas & GPG)	208.2	207.7	209.6	213.5	215.6
GPG	6.4	6.4	6.9	7.4	7.9
Culcairn	8.0	8.0	17.0	17.0	17.0
VicHub	2.0	2.0	2.0	2.0	2.0
Sub-Total	**224.6**	**224.1**	**235.5**	**239.9**	**242.5**
UGS/LNG Refill	8.0	8.0	8.0	8.0	8.0
Total	**232.6**	**232.1**	**243.5**	**247.9**	**250.5**
Peak (TJ/day)					
AEMO	1,234	1,240	1,241	1,244	1,251
GPG	50	50	50	50	50
Culcairn	17	17	62	62	62
VicHub	6	6	6	6	6
UGS/LNG Refill	0	0	0	0	0
Total	**1,307**	**1,313**	**1,359**	**1,362**	**1,369**

For the majority of the gas demand, APA GasNet has elected to use the forecasts prepared by AEMO as part of the AEMO annual planning processes. AEMO is required to prepare forecasts of gas demand and supply capabilities for a five year period. The AEMO planning documents (Victorian Annual Planning Report, Gas Statement of Opportunities) provide forecasts of the general demand (that is, for the residential, industrial and commercial markets) and the demand in gas-fired power generators. APA GasNet has used the most recent of these documents, the 2011 Gas Statement of Opportunities, for the majority of its forecast. The AEMO forecasts include an allowance for system use gas largely required to fuel compressors and heaters in the system.

The AEMO forecasts do not address all gas flows through the VTS. AEMO does not forecast gas flows from the VTS into connecting pipeline systems nor gas flows required to refill the storage facilities connected to the VTS. APA GasNet also provides its own forecast of GPG demand rather than use the AEMO forecast as explained below.

APA GasNet has therefore supplemented these forecasts with its own estimates of:

- interstate gas transfers;
- storage refill volumes; and
- Annual and peak day volumes associated with gas-fired power generators.

Interstate transfer volumes

Historically, gas has been transferred from the VTS into other pipelines at Culcairn, VicHub and at the Iona and SEAGas interconnection points.

Transfers at VicHub have increased during the earlier access arrangement period from 0.1 PJ/annum in 2008 to 2.4 PJ in 2011. This increase reflects changes in operation of the VicHub connection point and opportunistic purchase of gas for transmission to Tasmania from the Victorian wholesale gas market. APA GasNet is projecting indicative volumes of 2.0 PJ/annum going forward.

Transfers at the SEAGas interconnection point have generally been increasing over the earlier access arrangement period to 4.2 PJ/annum in 2011. The reason for this increase is not known to APA GasNet although it comes as the Minerva gas field production capability is declining. APA GasNet has no further information on which to base its forecast for the access arrangement period. APA GasNet is forecasting no flows from the VTS through the SEA Gas connection point during the access arrangement period. APA GasNet understands that this forecast may not eventuate but also notes that any gas flows that do eventuate at this connection point will be captured in the price control calculations and will be reflected in tariff rates from 2014 onwards.

APA GasNet cannot differentiate gas flows leaving the VTS at the Iona connection point between those being injected into the underground storage facility and those shipped to the SEA Gas pipeline. In accordance with prior ACCC decisions, all gas withdrawn from the VTS at the Iona connection point is designated as refill gas and is excluded from the standard tariff calculations.

Culcairn transfers to NSW have increased from 4.5 PJ/annum for 2008-10 to 9.0 PJ/annum in 2011. However, the level of transfers in 2011 is not expected to be maintained as it was due to some one-off factors related to the increased use of the Uranquinty gas powered electricity generator as a result of electricity generation constraints arising from the Queensland floods and, later in the year, an accident at the Eraring plant. The transfer capacity in winter has increased from about 10 TJ/day to 28TJ/day with the commissioning of stage 1 of the Northern Expansion project and will further increase to about 38TJ/day with the completion of Stage 2 (Euroa compressor station) in winter 2012. Outside the winter period, the completion of Stage 2 will allow transfer volumes up to about 83TJ/day.

The Northern Expansion project proposed for the access arrangement period, consisting of partial looping of the Wollert to Barnawartha Pipeline will add a further 43TJ/day capacity for transfers to NSW at Culcairn throughout the year. In the access arrangement period, APA GasNet forecasts additional transfers to NSW at Culcairn of 45TJ/ day giving a total of 62 TJ/day. This project is discussed in section 6.3.2.

APA GasNet has projected a transfer volume of 6.5 PJ for 2013 and 2014 and 15.5 PJ/annum from 2015 onwards, being the available transfer capacity flowing at a 55 per cent load factor.

Storage Refill

The underground storage facility at Port Campbell has a capacity of approximately 15 PJ. However, the connection point from the VTS to WUGS also services the SEA Gas Pipeline and APA GasNet has no means of differentiating between gas flows to either of these facilities. Flows through the Iona connection point, into storage or en route to the SEA Gas pipeline, have been as high as 18.3 PJ/annum in 2004, but then declined dramatically to 0.9 PJ/annum in 2006. During the earlier access arrangement period, they have risen again to 8.6 PJ in 2011. The fluctuations are understood to be due to both variations in the use of storage gas resulting from warmer or colder weather in Victoria, and production variations in the Otway basin gas fields. The latter have two effects on Iona withdrawals:

- More or less gas is withdrawn at Iona to supply South Australia via SEA Gas; and
- More or less gas from local gas fields is available to refill storage replacing gas withdrawn from the VTS at Iona.

Although it was originally expected that the storage could be filled with gas taken directly from the adjacent offshore fields with only minimal refill volumes taken from the VTS, this has not eventuated and it appears that most of the local gas supplies are otherwise committed. APA GasNet is therefore projecting volumes of 7.0 PJ/annum for the underground storage facility at Port Campbell.

The LNG facility now services two demands, peak shaving and transport fuel. In addition there have been changes in the commercial relationships between the APA Group and BOC. In early 2010, APA took the decision to become an active participant in the sale of LNG from the Dandenong facility on an open access basis into a growing Merchant market for use as a transport fuel, LPG substitution, and supply to remote communities.

To facilitate this transaction:

- APA GasNet transferred all the rights associated with the LNG facility across into a ring fenced entity APA Facilities Management (APA FM), to ensure appropriate ring-fencing arrangements consistent with the National Gas Act 2008;
- APA FM sought an exemption from the Victorian Retail regulations to enable the sale of LNG (effectively Natural Gas by definition) from the Dandenong site;
- APA FM entered into a Gas Supply Agreement with a Market participant for the purchase of gas, which is converted into LNG, and sold into the Merchant Market; and
- APA FM entered into a long term agreement with BOC for the supply of liquefaction services.

At the same time, AEMO took the decision to no longer hold LNG stock as a security reserve on behalf of the Victorian Gas Market. This decision forced APA FM to become a registered participant within the Victorian Gas Market, to manage the purchase and sale of operational gas. To run the LNG and BOC Liquefaction plants, a continuous stream of gas flows from the market into the facility and then flows back on a daily basis. This gas is purely operational in nature, and had historically been managed by AEMO.

With the change from AEMO, the operating gas flows through the LNG facility in the earlier access arrangement period flowed through the Victorian gas market. These operational gas flows amount to about 1.5 PJ/annum. However, these flows will decline to much lower levels of about 0.2 PJ/annum by the beginning of the access arrangement period due to changed operational procedures resulting from the recent APA FM agreement. Refill of the LNG facility for peak shaving is usually between 0.1 and 0.3 PJ/annum depending on peak winter days. The heavy transport fuel demand is increasing and reached 0.5 PJ/annum in 2011. Aggregating these forecasted amounts, APA GasNet is projecting refill of 1.0 PJ/annum going forward.

Gas Powered Generation Demand Forecasts

The AEMO forecast of GPG demand over the access arrangement period envisages a significant increase in that demand especially in the last two years of the period.[35] The AEMO forecast is intended to reflect carbon pricing legislation, however the carbon price path used in that forecast is not the most current available.[36]

AEMO's carbon price values underpinning its forecast are significantly higher than the more current Treasury modelling of the Clean Energy Future package passed by the Federal Government. Treasury modelling forecasts the carbon price will be $24.60 per tonne in 2016 and $25.60 in 2017 ($2010). This compares to AEMO values of approximately $40 in this same period.

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[35] Australian Energy Market Operator 2011, *Gas Statement of Opportunities for eastern and south eastern Australia*, p A1-18

[36] Australian Energy Market Operator 2011, *Victorian Annual Planning Report: Electricity and Gas Transmission Network Planning for Victoria*, p 206

Treasury modelling in the *Strong Growth Low Pollution* Paper September 2011[37], using a carbon price consistent with the Clean Energy Future package, shows that new base-load gas-fired generation in Victoria is not expected to arise during the access arrangement period. It should be noted that to incentivise the shift from coal to GPG requires a carbon price in excess of $50 per tonne, depending on gas prices. This level of carbon price is not forecast for the access arrangement period.

The Clean Energy Future package relies heavily on an efficient international carbon market to source overseas permits and for price setting for domestic abatement activities, such as the shift from coal to low emission fuels. The recent United Nations Framework Convention on Climate Change conference held in Durban resulted in a commitment for country carbon policies to be announced by 2015 and implemented by 2020. Therefore it is very unlikely that there will be a mature and efficient international carbon market until after 2020. Therefore the carbon price is expected to remain too low to shift coal to gas for base-load generation during the access arrangement period.

There is also uncertainty surrounding future carbon policy in the event of a change of government. Until this uncertainty is resolved, GPG developers have not been willing to proceed with new GPG.

During the access arrangement period, emissions reductions in the electricity sector are expected to be achieved by the Renewable Energy Target policy and the proposed buy back or closure of 2,000 MW of brown coal power stations through a competitive bidding scheme. The proposed buy back scheme is likely to result in the replacement of brown coal generation with GPG in Victoria, however this is not expected to occur until after the access arrangement period, due to expected long lead times in the announcement of successful brown coal generation facilities. This makes it unreasonable to expect the announcement and construction of new generation plant in Victoria during the access arrangement period.

Further, APA GasNet has also not been approached by Victorian brown coal generators for gas transportation services for replacement GPG under this scheme. Due to the uncertainties outlined above, APA GasNet regards the carbon price outlook underpinning the AEMO forecast as being too high. With a lower carbon price the effect on GPG demand is likely to be significantly lower than is projected by AEMO.

Therefore APA GasNet proposes to use a GPG demand forecast that is based on the AEMO mid-range forecast for 2012 with an annual growth in demand of 0.5 PJ/annum in 2015 to 2017.

Peak Day Forecasts

AEMO provided a forecast of the 1:2 winter peak day for the general market in the 2011 Annual Planning Review. This forecast excludes transfers and refill.

[37] Commonwealth of Australia 2011, *Strong Growth, Low Pollution: Modelling a Carbon Price*

For the interstate markets, APA GasNet is assuming 6 TJ/day at VicHub (based on a 70 per cent load factor), and a peak day of 23 TJ/day in 2013, rising to 62 TJ/day from 2015 at Culcairn, which is within available capacity following completion of Stages 1 & 2 of the Northern Expansion Project approved in the earlier access arrangement period and the proposed further expansion in the access arrangement period.

Storages are not expected to be filled on the peak day.

With respect to gas-fired power generation, there is wide variation in the observed peak day, particularly given that the relevant peak day volume is coincident with the total system peak day. Forecasting is complicated by the fact that gas-fired power generation is a controllable load driven by prices in the electricity market.

Based on historical analysis and previous statements from AEMO, APA GasNet is projecting a peak day contribution of 50 TJ/day from gas-fired power generation.

Supply Volume Forecasts

APA GasNet also requires a forecast of injection volumes at each of the five gas injection points on the VTS.

Forecasts of the annual and peak day injection volumes are required by the Tariff Model in order to determine flow paths and to allocate costs to the tariff withdrawal zones.

There is no independent source of information that provides injection volume forecasts. Gas supply is a competitive process whereby retailers and gas producers compete with each other to supply the demand for gas.

The forecast annual and peak injection volumes for the access arrangement period are set out in Table 5.10 below.

Table 5.10 - Forecast annual and peak injection volumes

Injection Point (PJ)	2013	2014	2015	2016	2017
Annual					
Longford	162.8	162.8	162.3	162.5	163.0
Port Campbell	46.5	46.1	57.9	62.1	64.2
Culcairn	1.0	1.0	1.0	1.0	1.0
Pakenham	14.0	14.0	14.0	14.0	14.0
Dandenong	0.3	0.3	0.3	0.3	0.3
Total	**224.6**	**224.1**	**235.5**	**239.9**	**242.5**
Peak (TJ/day)					

Longford	809	815	816	819	826
Port Campbell	353	353	398	398	398
Culcairn	60	60	60	60	60
Pakenham	55	55	55	55	55
Dandenong	30	30	30	30	30
Total	**1,307**	**1,313**	**1,359**	**1,362**	**1,369**

The gas injection forecasts have been derived from a combination of historical data, known developments in the producing fields, and from the necessity to balance supply and demand each year.

Known Developments

In the Otway Basin, the Minerva, Casino and Thylacine/Geographe fields are currently in production. Total annual production is anticipated to exceed 120 PJ/annum. Production is split between Victoria and South Australia, and of that, volumes of between 50 to 60PJ/year are currently being injected into Victoria. However the actual volumes to be injected into Victoria in future can only be conjectured as they depend on many factors including changes in production profiles of producing fields, new field developments, commercial arrangements between producers and shippers, and new demands such as the Mortlake electricity generation plant.

The underground storage and the LNG facility will continue to be available to balance demand on the winter peaks.

The Longford/VicHub Injection point is the largest supplier into Victoria. Volumes have fallen over the earlier access arrangement period as a result of competition from Yolla and the Otway Basin. However, declining production from Yolla and Minerva fields and commitment of other gas to different markets means that Longford supplies will remain predominant in the VTS.

Pakenham Injection Point

The Yolla gas field in Bass Strait is projected to supply base load gas volumes of 14 PJ/annum and a peak of 55 TJ/day (70 per cent load factor). This is in line with the experience of recent years.

Longford/VicHub Injection Point

Longford/VicHub has supplied in the order of 160 PJ/annum over the last five years, with the peak injection reducing to approximately 800 TJ/day.

There is ample spare capacity at Longford and it is anticipated that both peak and annual volumes will not fall further in the access arrangement period.

It is assumed that further growth in gas demand will be met first from the Otway Basin and underground storage but any significant growth such as large new interstate flows through Culcairn will require increased supply from Longford.

APA GasNet forecasts the peak Injection volume will grow from around 810 to 825 TJ/day over the access arrangement period.

Port Campbell (Otway Basin gas and Underground storage)

Port Campbell originally supplied up to 10 PJ/annum from the underground storage during the winter months, but from 2006 this was supplemented by base load injections of Otway Basin gas.

Base load injections increased as the Thylacine/Geographe fields were brought into production in 2007. Injections rose to 43 PJ/annum in 2008 and by 2011 were 49 PJ/annum

APA GasNet projects 44 PJ/annum of injections from 2013. Further injections are forecast from 2015 to supply transfers to NSW and growth in underlying gas demand.

On the peak day, the injection volume from Port Campbell is calculated as the balancing item after deducting the forecast peak day volumes from all other injection sources. This value is tested against the capacity of the South West Pipeline to ensure that the volumes can be carried.

Culcairn

Over the last five years Culcairn injections have varied from a low of 0.2 PJ/annum in 2008 to a high of 2.3 PJ/annum in 2010. In 2011, Culcairn injections were 0.26 PJ.

These injections occurred randomly throughout the year.

APA GasNet projects annual injections of 1.0 PJ in 2013. Injections are forecast to remain flat over the access arrangement period.

APA GasNet has AMDQ Credit Certificate contracts in place at Culcairn for 60 TJ/day. On this basis the peak day is forecast to be 60 TJ/day.

Dandenong

The LNG facility at Dandenong is used principally for peak shaving.

Over the earlier access arrangement period, injections for peak shaving have varied from less than 100 TJ/annum to about 300 TJ/annum. APA GasNet projects an annual volume of 300 TJ/annum going forward, which is slightly higher than historical averages. This is consistent with the view that, with a broader base of Shippers holding LNG stock, it will be utilised to a greater extent in the multi period Victorian wholesale gas market.

Peak injections are assumed to be 30 TJ/day.

5.2.2. Forecast user numbers

User numbers on the VTS are related to registration with AEMO to operate in the Victorian wholesale gas market. APA GasNet does not have any knowledge of further registrations of Market Participants nor of any current Market Participants withdrawing from the Victorian gas market. On this basis APA GasNet forecasts that the number of users of the VTS will remain relatively constant over the access arrangement period.

5.2.3. Forecast capacity and utilisation

Capacity

With the commissioning of a compressor station at Stonehaven in 2015, the capacity of the South West Pipeline will increase from the current 353 TJ/day to 408TJ/day in 2015. The Northern Expansion project will increase the export capacity at Culcairn from 2015 to 81 TJ/day in Winter and up to 126 TJ/day in Summer.

Forecast capacities of the pipelines for flows towards Melbourne are set out Table 5.11.

Table 5.11 - Forecast pipeline capacity (TJ/day) - Flows towards Melbourne

Pipeline	Capacity (TJ/day)
Longford to Melbourne	1030
South West Pipeline	353 - 408
NSW Interconnect - Winter	38 - 81
Summer	83 - 126
Pakenham	68

Forecast capacities of the pipelines for flows away from Melbourne are set out in Table 5.12.

Table 5.12 - Forecast pipeline capacity - Flows away from Melbourne

Pipeline	Capacity (TJ/day)
South West Pipeline	61 - 190
NSW Interconnect	92
Western Transmission System	28

Utilisation

Utilisation of the main pipelines will increase over the access arrangement period largely because of the increased gas flows from the main injection zones at Longford and Port Campbell to Culcairn.

Forecast annual utilisation of the main pipelines for flows towards Melbourne are set out in Table 5.13.

Table 5.13 - Forecast pipeline utilisation - Flows towards Melbourne

Pipeline	Utilisation
Longford to Melbourne	45%
South West Pipeline	34%-51%
NSW Interconnect	0%
Pakenham	56%

Forecast annual utilisation of the pipelines for flows away from Melbourne is set out in Table 5.14.

Table 5.14 - Forecast pipeline utilisation - Flows away from Melbourne

Pipeline	Utilisation
South West Pipeline	Indeterminate
NSW Interconnect	77%
Western Transmission System	60%

Usage of the South West Pipeline for flows away from Melbourne is indeterminate because physical flows are currently always in the reverse direction.

The forecast peak utilisation of the main pipelines for flows towards Melbourne is set out in Table 5.15.

Table 5.15 - Forecast peak pipeline utilisation - Flows towards Melbourne

Pipeline	Utilisation
Longford to Melbourne	82%-83%
South West Pipeline	95%-105%
NSW Interconnect	0%-100%
Pakenham	80%

The peak usage of the South West Pipeline can be greater than 100 per cent because, if system conditions are optimum the pipeline can, on a once off basis, carry more than its rated capacity.

The forecast peak utilisation of the pipelines for flows away from Melbourne is set out in Table 5.16.

Table 5.16 - Forecast peak pipeline utilisation - Flows away from Melbourne

Pipeline	Utilisation
South West Pipeline	Indeterminate
NSW Interconnect	64%-100%
Western Transmission System	88%

6 Capital expenditure

This chapter sets out capital expenditure undertaken in the earlier access arrangement period and forecast capital expenditure for the access arrangement period, and provides explanations and justifications for actual and forecast capital expenditure by reference to the Rules.

For the purposes of the access arrangement revision proposal, APA GasNet classifies its capital expenditure according to driver as follows:

- Augmentations, which are required to increase the capacity of transmission assets to ensure that the VTS can continue to supply services as demand changes (for example growth or change in flow paths);
- Refurbishments and upgrades, which are required to maintain the service potential of existing facilities as they age and deteriorate over time, as well as expenditure to upgrade and improve assets because of obsolescence, to deal with changed operating requirements (such as a wider gas specification), to meet new regulatory or legislated obligations, or to meet higher environmental or safety standards over time; and
- Non-system, which is required to augment, maintain or replace capital facilities that are essential for the delivery of pipeline services, but which do not make up part of the pipeline system itself. Types of expenditure include buildings, vehicles, office equipment and IT and SCADA systems.

While these categories were used in the earlier access arrangement period, only very limited expenditure was coded to the Non-system category. This is because Non-system expenditure is usually also either Augmentation or Refurbishment and upgrade expenditure, and where Non-system expenditure is incurred as part of a larger project that is in one of the other categories, all expenditure is usually coded to that category. For example, major refurbishment work at a compressor station is likely to also include works on buildings on site, however this expenditure is likely to be categorised as Refurbishment and upgrade as that is the major project driver.

Similarly, it is important to note that when optimising the development of the VTS, the distinction between Refurbishment and Augmentation can become blurred, as there will be a degree of overlap in these types of projects. For example, where assets are near the end of their life but at the same time are requiring augmentation to increase capacity, it is more efficient to replace the assets with larger units rather than add smaller units to existing facilities. This is cost effective both in the short and the long term, as it provides a more efficient base for future growth.

The NGR accommodate this degree of overlap by allowing capital expenditure to be justified as more than one type of capital expenditure.[38] Where relevant, the project descriptions in this section, the VTS Asset Management Plan, and individual business cases identify where multiple outcomes are sought from expenditure (eg.

[38] See Rule 79(2)(d)

increased capacity and refurbishment) and provide an analysis showing the efficiency of this approach compared to other options. Projects are categorised by their primary driver below.

6.1. Rules governing conforming capital expenditure

Rule 79(1) specifies that capital expenditure

> … must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services. The capital expenditure must also be justifiable on a ground stated in subrule (2).

Rule 79(2) goes on to set out three main subrules for capital expenditure as follows:

> (a) the overall economic value of the expenditure is positive; or
>
> (b) the present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure; or
>
> (c) the capital expenditure is necessary:
>
> (i) to maintain and improve the safety of services; or
>
> (ii) to maintain the integrity of services; or
>
> (iii) to comply with a regulatory obligation or requirement; or
>
> (iv) to maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity)

The AER's discretion under this rule is limited such that the AER must not withhold its approval of capital expenditure if it is satisfied that it complies with the requirements of the law and is consistent with Rule 79. All forecasts and estimates must also comply with Rule 74.

6.2. Capital expenditure over the earlier access arrangement period

The ACCC's 2008 Further Final Decision approved APA GasNet's amended access arrangement, which incorporated the AER's required amendments to forecast capital expenditure set out in its Final Decision.[39]

[39] Australian Competition and Consumer Commission 2008, *Revised Access Arrangement by GasNet Australia (Operations) Pty Ltd and GasNet (NSW) Pty Ltd for the Principal Transmission System*, 25 June, p 6

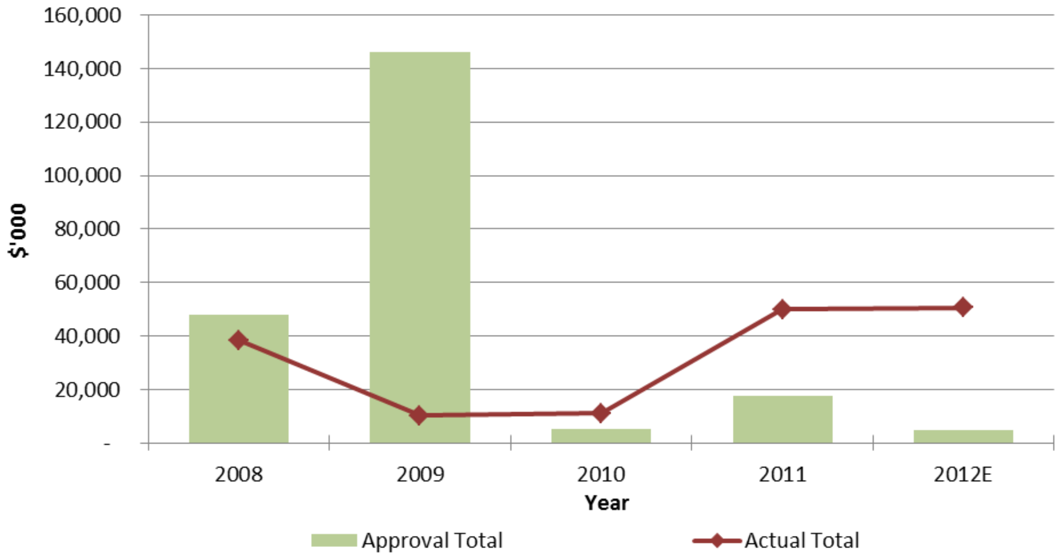
Table 6.1 compares forecast capital expenditure approved by the ACCC in its 2008 Final Decision with APA GasNet's actual and estimated capital expenditure over the earlier access arrangement period in constant dollar terms ($2012). As shown in Table 6.1, APA GasNet's total capital expenditure over the earlier period is expected to be $160.4 million. This is $61.4 million below that approved by the ACCC for the period. This is also shown graphically in Figure 6.1 below.

Table 6.1 - Comparison of ACCC 2008 Final Decision and outturn capital expenditure over the earlier access arrangement period [40]

$'000 (2012)	2008	2009	2010	2011	E2012	Total
ACCC 2008 Final Decision						
Augmentation	16,803	94,900	-	-	-	**111,703**
Refurbishment and upgrade	29,922	51,074	5,242	15,566	4,398	**106,202**
Non-system	1,238	146	125	1,936	458	**3,902**
Total forecast	**47,963**	**146,120**	**5,367**	**17,502**	**4,856**	**221,807**
Actual and forecast capital expenditure						
Augmentation	18,600	2,384	4,284	43,467	23,356	92,090
Refurbishment and upgrade	19,240	7,070	1,289	4, 805	22,503	54,907
Non-system	619	799	5,512	1,666	4,783	13,379
Total actual	**38,459**	**10,253**	**11,085**	**49,939**	**50,641**	**160,376**
Variance between ACCC 2008 Final Decisions and APA GasNet actual and forecast capital expenditure						
Augmentation	1,797	(92,516)	4,284	43,467	23,356	**(19,612)**
Refurbishment and upgrade	(10,682)	(44,004)	(3,954)	(10,761)	18,105	**(51,295)**
Non-system	(620)	653	5,387	(269)	4,325	**9,477**
Total variance	**(9,505)**	**(135,867)**	**5,718**	**32,437**	**45,786**	**(61,431)**

[40] APA GasNet has used the capital expenditure values included in the ACCC's final approved model that was used to derive the reference tariff for the earlier access arrangement period. These values differ slightly from those set out in the AER's final decision document.

Figure 6.1 - Actual versus forecast capital expenditure over the earlier access arrangement period



6.2.1. Main drivers of capital expenditure outcome

During the earlier access arrangement period, APA GasNet significantly underspent its Refurbishment and upgrade capital expenditure allocation, while at the same time delivering all its proposed Augmentation capital projects, achieving significant efficiencies in the delivery of these projects.

APA GasNet's capital expenditure over the earlier access arrangement period was impacted by the Global Financial Crisis (GFC) and uncertainty over the availability of funds from early 2009 through 2010. APA Group responded to this uncertainty by limiting all non-time critical capital and operating expenditure during this period.[41] This had a significant impact on stay-in-business type capital expenditure, which generally runs to periodic timetables, but in many cases can be deferred in the short term without an undue impact on safety or integrity of assets. This expenditure, however, must be 'caught up' in order to maintain safety and condition of the assets. APA GasNet's forecast for Refurbishment and upgrade capital expenditure to some extent reflects the need to undertake this catch-up.

As can be seen from the capital expenditure results, APA GasNet focused on Augmentation expenditure during the period that was underpinned by secure volumes. This was a prudent response to the financial uncertainty of the period, as it is an approach which ensures continued growth in the business, and that the needs of the market are met without constraints, without capital outlay that may attract higher financing costs (or may not be able to be financed at all). The AER has previously recognised that this approach constitutes a prudent response to capital

[41] See Rule 79(2)(d)

uncertainty, for example in relation to the APA Allgas distribution network in Queensland.[42]

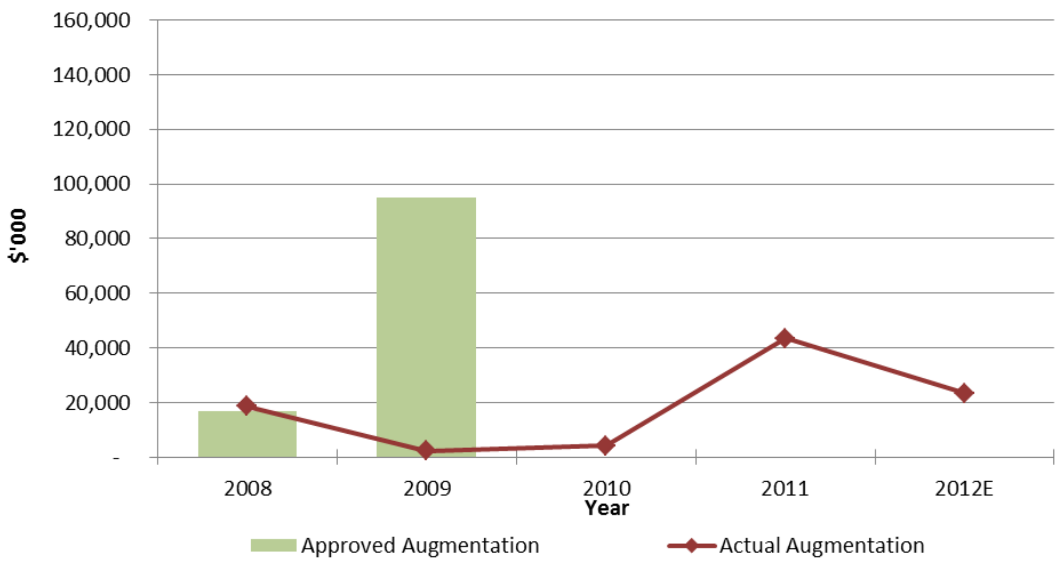
Further details of particular capital expenditure projects forecast and completed during the earlier access arrangement period are set out below.

6.2.2. Augmentation capital expenditure

Augmentation capital expenditure in the earlier access arrangement period was derived using VENCorp's Annual Planning Review (APR), in which VENCorp identified the likely emergence of network constraints on various pipelines in the VTS in the period.[43]

Actual Augmentation capital expenditure compared to forecast is shown in Figure 6.2 below.

Figure 6.2 - Actual versus forecast Augmentation capital expenditure over the earlier access arrangement period



APA GasNet undertook the following augmentation projects approved by the ACCC in its 2008 decision. The scope of some projects has varied from that originally proposed and approved by the ACCC, as described below. APA GasNet considers that all variations from that originally approved were necessary and prudent, and the resulting expenditure should be rolled into the opening capital base for the access arrangement period as conforming capital expenditure.

[42] Australian Energy Regulator 2011, *APA Allgas access arrangement proposal for the Qld gas network 1 July 2011 – 30 June 2016: Draft Decision*, February, pp 14 and 17
[43] APA Group 2007, *GasNet Access Arrangement Submission*, 14 May, p 45

Northern Augmentation

In the second access arrangement period it was identified that the GasNet allocation of 17TJ of AMDQ for the transfer of gas through Culcairn was not able to be met on days of high system demand. Under the then MSO Rules, any transfers through Culcairn up to 17TJ have priority over non-authorised loads where gas is being injected to match withdrawals. The Northern zone project was required to re-establish capacity in the Northern Zone to achieve the 17TJ of transfer capacity through Culcairn.

The Northern zone project was approved by the ACCC and included the following components (all in $2012):

- Upgrade of the Wollert compressor station at an expected cost of $46.8 million;
- Partial duplication (11km) of the Wollert to Wandong pipeline downstream of the Wollert compressor station to Line Valve 3 in 450mm pipe at an expected cost of $17.2 million; and
- Installation of two Saturn 20 compressors at Euroa at an expected cost of $29.5 million.

The project was scheduled for completion in 2009 at a total cost of $93.5 million ($2012).

Commencement of this project was delayed due to the delay in completing the earlier access arrangement process. This effectively moved earliest possible completion date for this project to February 2010. This project (as well as other APA GasNet projects) was also delayed by the advent of the GFC which led APA Group to review all capital expenditure across its business to ensure that business cash flows would remain within its credit rating metrics during that time of uncertainty.

The review of capital expenditure effectively delayed the project by a further 12 months, however during this time (late 2008/early 2009) APA GasNet did undertake a detailed Front End Engineering and Design (FEED) study, as well as investigating alternative options for the project that had the potential to deliver higher benefits at a lower short and long term cost.

APA GasNet subsequently undertook to stage the implementation of the project, starting with the upgrade of the Wollert compressor station. The upgrade of this station was also required to meet a gas quality recommendation from ESV to replace wet-seal compressors with dry-seal units.[44] It is also good gas industry practice to continuously reduce liquid injection into pipeline systems.

The original scope for the Wollert compressor upgrade (approved by the AER in the earlier access arrangement) was to replace three existing Saturn compressor units with two Centaur 40 compressor units. Further analysis of the long term demand growth expected in the Northern zone, however, meant that the installation of two

[44] EnergySafe Victoria 2006, *Letter to GasNet Australia Pty Ltd*, 27 March

Centaur 50 compressors yielded a greater NPV. This stage of the project was completed in 2011 at a cost of $35.5 million ($2012). This is a reduction of $11.3 million or 24 per cent compared to the forecast cost, despite the increased size of compressors installed.

In the course of project development and detailed design, APA GasNet identified an alternative solution to looping the Wollert to Wandong Pipeline involving a pressure upgrade at Wollert, as well as modifying the existing Springhurst compressor station to make it bidirectional.

The feasibility of the pressure upgrade option was subject to approval by DPI to vary the licence, and ESV. To gain these approvals, APA GasNet undertook a detailed engineering review, which included:

- Pigging of the relevant section of the Wollert to Wandong Pipeline, which is required under AS2885 for any proposed increase in pressure;
- Conducting sample inspections in unpiggable sections of the pipeline to otherwise verify asset condition;
- Reviewing relevant documents for all assets subject to the proposed increase in pressure, including assets not owned by APA GasNet, to show the proposed pressure increase was safe; and
- Where there were gaps in relevant documentation required under AS2885, replacement or upgrade of facilities to support increase in pressure.

This process was lengthy, however the resulting approval to increase the pressure of the pipeline, alongside modifications to the Springhurst compressor station, meant that the Northern expansion project (stage 1) could deliver a higher capacity than the original project design at lower cost, as it replaced the proposed looping project, and deferred the installation of the new compressor at Euroa by two years. The scope to undertake this option, however, was not known at the time of making the access arrangement proposal, and was subject to considerable uncertainty due to technical limitations, asset assessment, and approvals required.

The pressure upgrade and Springhurst compressor modifications cost $7.3 million ($2012). This series of works replaced the original looping project that was forecast to cost $17.2 million. The replacement works also significantly increased the additional capacity arising from the total project from 14TJ to 28TJ.

APA GasNet is also currently undertaking the Euroa compressor station construction (stage 2). Completion of this project was prudently delayed due to the additional capacity derived from the pressure upgrade works. This project is expected to be completed in 2012, at an estimated cost of $24 million.

The total expenditure on the Northern Augmentation project in the earlier access arrangement is $66.8 million. This compares to forecast expenditure of $93.5 million ($2012). This project satisfies the requirements under Rule 79(2)(c)(iv) as it was required to restore the transfer capacity of Culcairn to 17TJ/day, as determined by the ACCC in 2008. By pursuing more efficient options such as the pressure upgrade, APA GasNet was able to achieve a higher capacity at Culcairn compared to the original forecast at lower cost.

Pakenham loop

The Pakenham loop project was proposed to address increasing loads along the Lurgi (Morwell-Dandenong) pipeline and higher than average growth at Pakenham South. While a network planning assessment indicated that a breach in the minimum pressure obligation was not expected at Pakenham South during the earlier access arrangement period, the model indicated that the increased gas flow velocity will require augmentation of the pipeline.

In late 2005, approximately two thirds of the 80mm diameter Pakenham South branch pipeline was replaced with 150mm diameter pipe. APA GasNet proposed to duplicate the remaining section of the 80mm pipeline (approximately 0.55 kilometres) with 150mm diameter pipe to address the flow velocity issue. The ACCC approved the project as needed for system integrity to be completed by winter 2009, at a forecast cost of $1.4 million ($2012).

APA GasNet completed this project in 2010 at a cost of $1.3 million ($2012). The project undertaken was as approved by the ACCC, and APA GasNet considers this project, which was delivered below forecast costs, meets the requirement under Rule 79 as prudent expenditure and should be rolled into the asset base.

Brooklyn Lara Pipeline (Corio Loop)

In June 2006 the ACCC approved expenditure associated with looping part of the Brooklyn Lara Pipeline under section 8.21 of the National Gas Code. The NGR corollary of this approval is a Rule 80 approval, where the regulator can make a binding determination during an access arrangement period that expenditure complies with Rule 79, and can be rolled into the capital base at the start of the next access arrangement period.

At the time, the ACCC approved $61.7 million ($2005) for the Brooklyn Lara Loop project, to be completed in 2007.

In its final decision on the earlier access arrangement, the ACCC approved an increase in capital expenditure associated with the Brooklyn Lara Loop due to increases in construction costs, noting that the project was competitively tendered.[45] The ACCC also noted delays in the completion of the project until 2008.

Because of Code requirements associated with the establishment of the opening asset base for the 2008 period (discussed further in section 7.2), the ACCC also required project costs to be split between 2007 and 2008.[46] This was despite the established methodology for the access arrangement period which was to only add capital expenditure to the capital base at commissioning. APA GasNet complied with

[45] ACCC 2008, *Final Decision*, p 15
[46] ACCC 2008, *Final Decision*, p 15

the ACCC's requirements and included an estimate of the split of capital expenditure for this project for 2007 of $54.3 million, and in 2008 of $16.8 million ($2012).

APA GasNet's actual expenditure in 2007 was $46.3 million. There were delays in undertaking some stages of the project, pushing more expenditure into the earlier access arrangement period. The project was still completed (and commissioned) as expected in 2008, with some additional expenditure after commissioning. Total project costs in the period for the project were $24 million. Further expenditure on this project was also incurred in 2011 and 2012, associated with the finalisation of easements, which had to be compulsorily acquired.

Compared to a total approved amount of $71.1 million ($2012), APA GasNet's total expenditure on this project was $70.3 million ($2012). While actual expenditure was close to the total project costs approved by the ACCC, the split of costs across years has caused significant deviations in both the 2007 and 2008 outturn costs compared to forecast. For 2008, this project contributes an additional $7.2 million in Augmentation capital expenditure compared to the forecast.

APA GasNet considers that its expenditure in the period on the Brooklyn Lara Pipeline project was prudent and efficient, and the costs incurred reflect the outcome of a competitive tendering process allowing project delivery at least cost. Increases in costs were largely associated with delays in the projects, driven in the main by issues in acquiring easements, and the costs and uncertainty associated with the compulsory acquisition of easements. Unfortunately, urban development and increased land values have made it increasingly difficult for APA GasNet to acquire required easements, and these processes can impose considerable time delays and costs on projects that are difficult to forecast.

Further details regarding costs for this project are provided in confidential Attachment D-1.

Summary

APA GasNet completed three major augmentation projects in the earlier access arrangement period, with total expenditure of $92.1 million ($2012). This compared to approved augmentation expenditure of $111.7 million ($2012). While APA GasNet achieved significant savings in respect of the Northern zone projects, some of those savings were offset by delays in completing the Brooklyn Lara Pipeline project. A summary of expenditure against each sub-category reported in the earlier access arrangement is set out in Table 6.2 below, as well as a summary explanation of the reasons for variance as discussed above.

APA GasNet considers that its augmentation capital expenditure over the earlier access arrangement period is consistent with that incurred by a prudent service provider acting efficiently in accordance with good gas industry practice. APA GasNet's approach, also demonstrated in its forecast capital expenditure proposal, is to take a prudent long term view of the development of the VTS by ensuring that investments in the system maximise system flexibility and provide a basis to accommodate potential development and growth scenarios in the future. APA GasNet has also shown that it is willing to pursue options to deliver cost savings in respect of capital expenditure, delivering efficient and prudent expenditure outcomes at least cost.

Table 6.2 - Summary Augmentation capital expenditure against forecast

Sub-category $'000 (2012)	Forecast expenditure	Actual expenditure	Main driver of variance
Northern Augmentation	93,457	66,802	Identification of more efficient alternatives
Pakenham loop	1,443	1,280	Deliver of project below budget
Brooklyn Lara Pipeline (Corio Loop)	16,803	24,008	Carry-over of expenditure from 2007
Total	**111,703**	**92,090**	**Identification of more efficient alternatives, delays in project delivery**

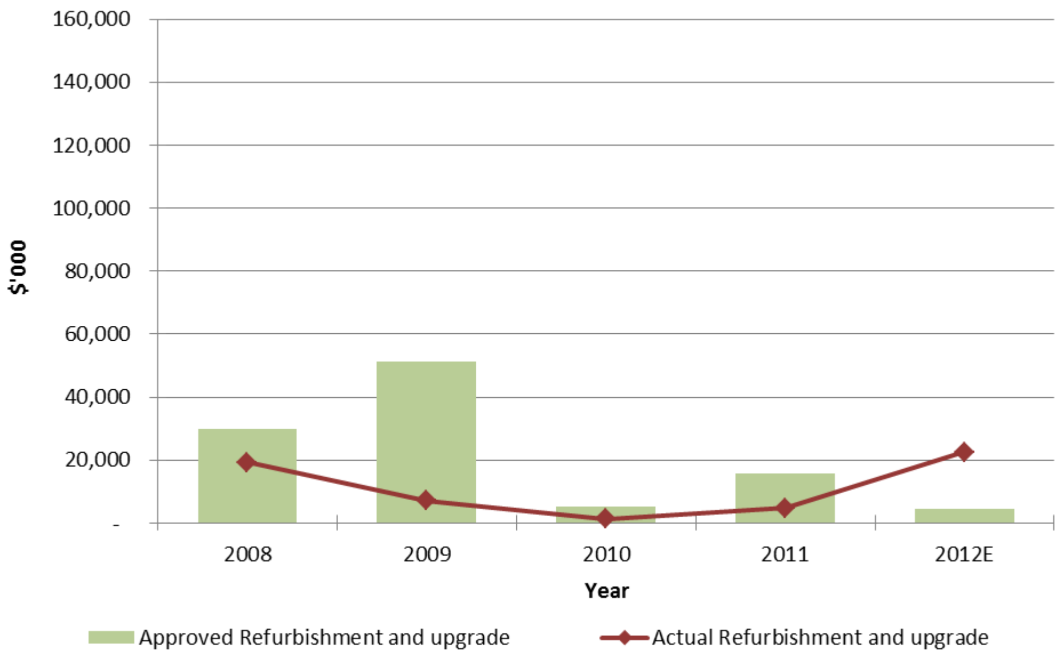
6.2.3. Refurbishment and upgrade capital expenditure

The ACCC largely accepted the scope of refurbishment and upgrade capital expenditure forecast by APA GasNet for the earlier access arrangement period, however it removed project contingency allowances from project costings.

Actual Refurbishment and upgrade capital expenditure compared to forecast is shown in Figure 6.3 below.

APA GasNet undertook the following Refurbishment and upgrade projects in the earlier access arrangement period. The scope of some projects has varied from that originally proposed to and approved by the ACCC, as described below. APA GasNet considers that all variations from that originally approved were necessary, prudent and good asset management practice, and the resulting expenditure should be rolled into the opening capital base for the access arrangement period as conforming capital expenditure.

Figure 6.3 - Actual versus forecast Refurbishment and Upgrade capital expenditure over the earlier access arrangement period



Gas Heating Facilities

The ACCC approved a total of $9.2 million ($2012) for gas heating facilities over the earlier access arrangement period. This amount comprised of work at seven sites with various costings and was scheduled for 2008 and 2009.

Gas heaters may be required where there is a reduction in gas pressures at a regulator station, which leads to a fall in gas temperature, and can either damage downstream assets or cause formation of natural gas condensates or hydrates. Depending on the gas composition and the extent of the pressure drop, it may be necessary to pre-heat the gas to avoid these detrimental effects. AS4564 sets a gas dewpoint specification which APA GasNet must comply with under *Gas Safety (Gas Quality) Regulations 2007*.

APA GasNet spent $8.4 million ($2012) on gas heating facilities over the period.

As noted above, APA GasNet's forecast expenditure on gas heating facilities was concentrated in the first two years of the earlier access arrangement period. The projects completed were impacted by significant increases in costs associated with increased scope of works on the Brooklyn Lara Pipeline and Brooklyn Corio Pipeline heater facilities in 2008 and 2009, and then through delays due to uncertainty associated with the GFC.

APA GasNet forecast to spend $2 million ($2012) on the Brooklyn Lara Pipeline City Gate heater upgrade in 2008. The detailed FEED study and AEMO design reviews (for example, HAZOP) undertaken following lodgement of the original submission identified that larger heaters were required at the Brooklyn Lara Pipeline City Gate.

A key issue arising from the FEED study was a need for AEMO to have a high degree of flexibility in respect of delivery pressures in the Brooklyn Corio Pipeline. This meant that for the Brooklyn Lara Pipeline facilities, the heaters are required to operate with high flow and high differential pressure, thus requiring a higher heater duty. Similarly, the Brooklyn Corio Pipeline City Gate (supplying gas to Melbourne) required concurrent high flow and high differential pressure especially during start up, again leading to the need for much higher heating duty. Actual expenditure on this project was $6.2 million in 2008 and $0.8 million in 2009.

The increased scope of the Brooklyn Lara Pipeline heater project led to delays in starting scheduled work on other facilities, most notably work on the Dandenong City Gate heater (forecast expenditure in 2008 of $3.8 million ($2012)). The impact of the GFC then led APA GasNet to reschedule this work to the forecast period.

In respect of other projects forecast for the period, the scope of work on the Lara South West Pipeline City Gate was reduced due to a number of factors impacting the need for installation of facilities as forecast. For example, APA GasNet identified that supplier liquid removal facilities had been improved, removing the need to install a knock out drum, and changes in AEMO's operation of the Geelong Pipeline that ensured that pressures were maintained, eliminated the need to install an additional 500kW heater at the site. AEMO's operations changed making Brooklyn Lara Pipeline facilities the preferred facilities for normal operations where previously they had used Lara to supply loads to Geelong. Compared to forecast expenditure of $0.4 million, APA GasNet was able to complete all necessary works at the site for $0.04 million.

Work was completed on heating facilities at the Dandenong Terminal station as forecast, while work on the North Laverton Heater has been largely deferred to the forecast period to coincide with pressure increases on the Geelong Pipeline arising from the Wester Outer Ring Main Project (discussed further in section 6.3 below).

APA GasNet did not undertake the forecast work on the Clonbinane heater (forecast expenditure of $0.9 million) as the pressure upgrade associated with the Northern Zone Augmentation project (discussed above) made this expenditure unnecessary in the period.

APA GasNet considers that its expenditure on gas heating facilities in the earlier access arrangement period was prudent and efficient, and demonstrates APA GasNet's commitment to finding efficient low cost alternatives to capital investment where possible. Work was driven by regulatory requirements to maintain gas temperatures as required under Victorian Gas Safety (Gas Quality) Regulations.

City Gate Works

The ACCC approved a total of $15.4 million ($2012) for city gate works over the earlier access arrangement period. This amount comprised of work at seven sites with various costings and timings for each site.

APA GasNet spent $15.4 million ($2012) on city gate works over the period. The ultimate program of work undertaken differed somewhat from that forecast. This reflects APA GasNet's reprioritisation in response to changing pipeline operation and dynamics. This reprioritisation of works means that some projects originally intended to be completed in the earlier access arrangement period are now included in the forecast period.

Pipeline upgrades

The ACCC approved a total of $11.4 million ($2012) for pipeline upgrade works over the earlier access arrangement period.

Expenditure in the pipeline upgrade category was dominated by work on the Sunbury loop. APA GasNet had previously forecast the need to complete the Sunbury loop in its 2007 access arrangement revision proposal. The ACCC did not approve this forecast on the basis of advice from VENCorp at the time that forecast work on the Brooklyn Compressor Station (installation of units 13 and 14) meant that minimum system pressure requirements were unlikely to be breached in the earlier access arrangement period.[47]

Shortly after the ACCC's decision in respect of the earlier access arrangement, VENCorp revised its position and determined that the Sunbury loop was required in 2009.[48]

APA Group will complete the Sunbury loop in 2012 at a cost of $13.5 million. The project scope addresses the immediate capacity needs identified by VENCorp (and now AEMO), but has also been sized to provide a foundation for the future development of the VTS, by effectively delivering stage one of the Western Outer Ring Main Project. Further details of the Western Outer Ring Main Project are discussed in relation to forecast capital expenditure in section 6.3 below.

The decision to size the Sunbury loop to support the future development of the Western Outer Ring Main was a prudent decision based on known and expected pipeline flows and security of supply concerns on the VTS. Completion of the Western Outer Ring Main also provides significant cost savings to other projects forecast for the earlier access arrangement period, in particular the avoidance of installation of Brooklyn Compressor Station units 13 and 14, and the relocation of unit 11. These projects are discussed further below in respect of Brooklyn Compressor Station expenditure.

Total expenditure in the pipeline upgrade category for the earlier access arrangement period was $17.8 million. As noted above, this amount was dominated by the Sunbury loop project which was not included in forecast expenditure.

Forecast pipeline upgrade work was concentrated on routine works such as pipeline recoating, replacement of cathodic protection, and the longer term program of works associated with line valve automation. While all of this work is required to be

[47] ACCC 2008, *Draft Decision*, pp 45-6

[48] VENCorp 2009, Annual Planning Report Victoria 2009, p 167

undertaken to maintain the safety and integrity of the pipeline in the longer term, some of the work can be deferred without impacting safety and integrity in the short term. Many of these projects were therefore deferred, some to the forecast period, due to the uncertainty in the availability of funds arising from the GFC, and the expenditure on the Sunbury loop.

APA GasNet completed works as forecast on an emergency vent upgrade, anode bed and CPU replacement, and the Keon Park pig trap. APA GasNet also completed works not part of the original forecast such as installation of a pig trap at Bunyip. This installation was part of a wider program set out in the forecast period of making unpiggable pipelines piggable.

Safety and Security Systems

The ACCC approved a total of $5 million ($2012) for safety and security systems over the earlier access arrangement period. This amount comprised of work at seven sites with various costings and timings for each site.

APA GasNet spent $1.5 million ($2012) on safety and security systems over the period. The ultimate program of work undertaken differed somewhat from that forecast.

Much of the work forecast in this category was deferred on the basis of risk assessment in light of uncertainty in the availability of funds arising from the GFC.

Work on security fencing (making up more than half of the forecast amount) arises from risk management plans prepared by APA GasNet in accordance with the Victorian *Terrorism (Community Protection) Act 2003*. Assessment and management of risks identified in the risk management plan rests with the operator of declared essential facilities, and compliance with the plan is monitored under the Act.[49] APA GasNet is compliant with the Act, and has completed security work in accordance with its risk management plan in place in the earlier access arrangement period. Further work under the current risk management plan is included in capital expenditure forecasts.

Another significant contributor to forecast costs in the earlier period was the replacement of emergency response equipment (forecast cost $0.8 million ($2012)). Emergency response equipment is rarely used but must be kept in operable condition at all times. Depending on use (including use in emergency training exercises), it is sometimes possible to defer scheduled replacement based on condition monitoring and risk assessment. On this basis APA GasNet deferred the replacement of this equipment until the forecast period.

Brooklyn Compressor Station

The ACCC approved a total of $58.6 million ($2012) for the Brooklyn Compressor Station over the earlier access arrangement period. This amount comprised of a number of components with various costings and timings.

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[49] *Terrorism (Community Protection) Act 2003*,sections 29 and 34

APA GasNet spent $4.4 million ($2012) on the Brooklyn Compressor Station over the period. The ultimate program of work undertaken differed significantly from that forecast.

Some work on the Brooklyn Compressor Station undertaken in the earlier access arrangement period was approved in the preceding access arrangement to be completed in 2007. This involved the replacement of Brooklyn Compressor 10 with Brooklyn Compressor 12 (a dry seal compressor[50]), and works on the vent stack at a total cost of $16.1 million ($2012).

As discussed in the following chapter in relation to establishing the opening capital base for the earlier access arrangement period, some of this expenditure carried over to 2008. While the expenditure was forecast and approved for the previous access arrangement period, APA GasNet effectively spent $2.1 million ($2012) in the current period that was not forecast for that period. Total expenditure on the project however, was $14.7 million, which compared favourably with the 2007 forecast.

Expenditure was also forecast in the earlier access arrangement period on the Brooklyn Compressor Station to maintain gas supply to the Sunbury and Ballarat regions. This involved building two new compressors (units 13 and 14) and relocating unit 11.

During the earlier access arrangement period, APA GasNet identified a superior option to address the constraints in the Sunbury and Ballarat areas at lower cost, while at the same time providing a foundation for the future development of the VTS, by effectively delivering stage 1 of the Western Outer Ring Main project.

The Sunbury Loop project (as the first stage of the Western Outer Ring Main project) effectively replaced an approved forecast $58.6 million expenditure at the Brooklyn Compressor Station in relation to compressor units 11, 13 and 14. As noted above, the Sunbury Loop project will be completed in 2012 at a cost of $13.5 million.

Further details of the Western Outer Ring Main project are discussed in relation to forecast capital expenditure in section 6.3 below.

APA GasNet also spent $2.1 million on the Brooklyn Compressor Station in 2011 and 2012 that was not included in forecast expenditure. This expenditure arose because of an unanticipated failure of cooling equipment at the site due to corrosion of the water/gas heat exchanger used to cool the hot compressor outlet gas.

Gooding compressor station

Expenditure on the Gooding compressor station was originally approved as part of the 2002-2007 access arrangement. In 2007, however, APA GasNet forecast that the project would not be complete until 2008. Similar to the discussion above in respect of the Brooklyn Lara Pipeline project, the ACCC required APA GasNet to split costs

[50] EnergySafe Victoria 2006, *Letter to GasNet Australia Pty Ltd*, 27 March

associated with the Gooding compressor station project between 2007 and 2008, with $16.5 million forecast for 2007 and $1.4 million forecast for 2008.[51]

APA GasNet completed the Gooding compressor project early in 2008, with $1.8 million spent in that year. The total cost of the project was $19.7 million, compared to an approved forecast amount of $17.9 million.

Wollert Compressor Station

APA GasNet incurred expenditure in 2008 on Wollert Compressor Station automation that was not part of forecast capital expenditure for the earlier access arrangement period. The compressor station automation was forecast for completion in 2007 at an approved forecast amount of $3.1 million ($2012). In undertaking this project, APA GasNet spent $2.6 million in 2007 and $1.9 million in 2009 (total project cost of $4.5 million ($2012)).

The requirement for compressor station automation arose due to the increase in northern interstate transfer demand and extensive operation of compressors. The required safety and reliability of the station controls and the backup generator are fundamental to the continued operation of the Centaur (Station 'B') compressors.

Iona Compressor Station

APA GasNet forecast $0.8 million of expenditure on Iona Compressor Station after cooler upgrade in the earlier access arrangement period. This project is effectively avoided by the proposed Western Outer Ring Main, and therefore APA GasNet deferred expenditure on this project in the earlier period on the basis of the Western Outer Ring Main Project being approved in the forecast period.

The Western Outer Ring Main allows supply of Longford gas into the western system (Brooklyn Lara Pipeline, South West Pipeline and Western Transmission System) (often without compression) when Otway gas plants are offline, which usually occurs for a few weeks each year. This lowers dependence on the Iona Compressor Station and effectively removes the need for cooling at Iona.

Other Compressor Stations

The ACCC approved a total of $3.4 million ($2012) for the various compressor projects over the earlier access arrangement period. APA GasNet spent $2.5 million ($2012) on compressor projects over the period. The ultimate program of work undertaken differed somewhat from that forecast.

Based on risk assessment due to the low utilisation of the Iona Compressor Station, APA GasNet deferred expenditure on the Iona Compressor Station control upgrade and fire suppression works to the forecast period. The original forecast included $2.3 million for these works. These works will be required in the forecast period, however, as access to spares and faulty equipment necessitate replacement in the near future.

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[51] ACCC 2008, *Final Decision*, p 15

While the Gooding Compressor unit 3 is the oldest in service in the VTS (with other units of similar and younger ages all having required overhaul or replacement before reaching the age of unit 3) condition monitoring on the unit has allowed APA GasNet to delay the overhaul of this unit to the forecast period. This unit, however, will reach scheduled overhaul time limits in the forecast period.

APA GasNet undertook expenditure at Gooding Compressor Station that was not part of forecast expenditure. This work on safety control systems and control systems was due to critical equipment at the end of its lifecycle and no longer supported by the manufacturers. The upgrades will improve safety and reliability and also reduce greenhouse gas emissions.

Other Refurbishment and Upgrade

APA GasNet forecast expenditure of $1 million on ‘Other’ refurbishment and upgrades works, involving work on Longford Odourant facilities ($0.2 million), Brooklyn Fuel Gas System ($0.4 million) and replacement of gas chromatographs and sample probes ($0.3 million).

APA GasNet completed an increased scope of works undertaken on the odourant facilities than originally forecast, with unforecast work required on line valves that were not previously anticipated, as well as electrical work on the odourant building. Total expenditure on odourant facilities was $0.4 million. Work on the Brooklyn Fuel Gas System was completed as forecast, but at a higher than forecast cost due to more stringent original equipment manufacturer fuel gas heating specifications. Total expenditure on the Brooklyn Fuel Gas System amounted to $0.9 million.

Total expenditure in this category during the period was $1.3 million.

Summary

While expenditure in Refurbishment and upgrade was significantly below forecast, APA GasNet’s approach to capital expenditure demonstrates prudent and efficient asset and capital management in light of the uncertainty brought about by the GFC, and changes to system use and operation during the period. A summary of expenditure against each category reported in the earlier access arrangement is set out in Table 6.3 below, as well as a summary explanation of the reasons for variance as discussed above.

APA GasNet considers that its Refurbishment and upgrade capital expenditure over the earlier access arrangement period is consistent with that incurred by a prudent service provider acting efficiently in accordance with good gas industry practice. APA GasNet’s approach, also demonstrated in its forecast capital expenditure proposal, is to undertake Refurbishment and upgrade capital expenditure as required on the basis of prudent risk assessment, as well as ensuring that its expenditure in the system maximises flexibility and provides a basis to accommodate potential development and growth scenarios in the future. APA GasNet has also shown that it is willing to pursue options to deliver cost savings in respect of capital expenditure, delivering efficient prudent expenditure outcomes at least cost.

Table 6.3 - Caption Summary Refurbishment and Upgrade capital expenditure against forecast

Sub-category $'000 (2012)	Forecast expenditure	Actual expenditure	Main driver of variance
Gas Heating facilities	9,154	8,409	Scope of work change due to higher Brooklyn Lara Pipeline City Gate upgrade costs, deferral of expenditure due to GFC
City Gate Works	15,350	15,351	Change priorities within budget
Pipeline Upgrades	11,395	17,755	Scope of work change due to Sunbury loop, deferral of other expenditure due to GFC
Safety and Security Systems	5,023	1,451	Revisions to risk management plan, deferral of expenditure due to GFC
Brooklyn Compressor Station	58,598	4,442	Avoided need to install new compressors (Sunbury loop), carry-over of expenditure from 2007
Wollert Compressor Station	6	1,926	Carry-over of expenditure from 2007
Iona Compressor Station	798	-	Avoided because of forecast Western Outer Ring Main
Gooding Compressor Station	1,445	1,777	Carry-over of expenditure from 2007
Other Compressor Stations	3,435	2,512	Unforecast work at Gooding, deferral of expenditure due to GFC
Other	997	1,282	Scope of work change due to higher odourant plant costs
Total	**106,202**	**54,907**	**Prudent deferral due to identification of alternative projects, lower cost delivery of outcomes and uncertainty due to GFC**

6.2.4. Non-system capital expenditure

While not specifically discussed in the ACCC's draft or final decisions, APA GasNet's forecast capital expenditure also included a Non-system category. This was generally reported with the Refurbishment and upgrade category, though for clarity and ease of comparison APA GasNet as split these forecast and incurred amounts from the Refurbishment and upgrade category.

Due to the nature of assets in the Non-system category (buildings office fittings and the like), expenditure is generally shared between APA GasNet's regulated and unregulated functions. Reported expenditure in this category therefore represents the allocation of expenditure to the regulated asset, using the same allocation used to derive the forecast. This allocation was based on proportional asset values between regulated and unregulated assets.

APA GasNet forecast $3.9 million of expenditure in the earlier access arrangement period on Non-system assets. Actual expenditure was $13.5 million.

Expenditure on Victorian-based non-system assets was essentially as forecast, amounting to $3.6 million. There was some deviation in the program of works compared to originally forecast, however, in particular in relation to forecast repair and maintenance works on the Dandenong office in 2011 and 2012. These works were not completed in the period, largely because it was identified that replacement of the Dandenong office buildings was the only option available to address known issues with the site. This project (at increased scope) now forms part of forecast non-system expenditure, and is discussed further in section 6.3.4 below.

The main driver of expenditure in this category, however is IT system expenditure undertaken at a corporate level, and described below. These IT projects contribute $9.7 million of expenditure, and were not part of capital expenditure forecast for the earlier access arrangement period.

IT system capital expenditure

Since the start of the earlier access arrangement, APA Group has been required to undertake significant expenditure in IT systems to meet the ongoing needs of the business. These systems include:

- Portfolio and Project Operating Model

The PPOM project seeks to establish a single portfolio and project management operating model across APA Group. This is achieved by having consistent and aligned methods across the organisation, supported by a tool that will remove inefficiencies in project delivery and portfolio reporting. The foundations set by implementing the process and technology pieces will then help develop APA Group project delivery competencies based on industry best practice in project/portfolio management. The PPOM project is highly integrated with the Financial Transformation Project to support a common set of financial project management tools within APA Group.

Total PPOM project expenditure is expected to be $2.4 million ($2012), with an allocation to the VTS of $0.5 million in the earlier access arrangement period, and a further $0.04 million in the forecast period.

- Financial Transformation System

APA Group businesses have, over the years, utilised multiple finance systems and charts of accounts, reflecting numerous legacy systems. Until recently, APA Group had three different finance systems creating considerable complexity in managing financial reporting, analysis and controls. APA Group has undertaken a project to rationalise the previous suite of finance systems to deliver ongoing savings to the APA Group businesses.

Total expenditure on the Financial Transformation Project is expected to be $19.9 million ($2012), with an allocation to the VTS of $3.7 million in the earlier access arrangement period, and a further $0.8 million in the forecast period.

- Project Colin

Project Colin comprises a number of functions which seek to transform APA Group's management of its gas assets. Project Colin comprises a new web-based customer interface to provide metering, billing and contractual information for users, a single nominations tool for transport of gas across multiple assets, customer invoicing capabilities and customer access to real time pipeline capacity information to support nominations. Due to operational arrangements on the VTS, only the billing, invoicing and contractual aspects of Project Colin are relevant to the VTS.

Total expenditure on Project Colin is expected to be $16.4 million ($2012), with an allocation to the VTS of $1.9 million in the earlier access arrangement period (no allocation in the forecast period).

- Enterprise Historian

The SCADA Historian project involves the development and implementation of a SCADA Enterprise Historian within APA Group. A SCADA Historian provides a secure warehouse for validated data from various SCADA systems, and provides facilities to view, manage and audit data from disparate SCADA systems in a consistent and controlled environment.

An Enterprise Historian is a key input to Project Colin, which requires a consistent data layer as an input into the Energy Components System (part of Project Colin).

Total expenditure on the Enterprise Historian is expected to be $3.4 million ($2012), with an allocation to the VTS of $0.7 million in the earlier access arrangement period (no allocation in the forecast period).

- Integrity Data Management Project

The Integrity Data Management Project provides a solution for management of data arising from intelligent pigging, including comparison of pigging results over time.

As pipelines age, integrity issues such as Stress Corrosion Cracking, corrosion and other anomalies can detract from optional transmission pressures (reductions in Maximum Allowable Operating Pressure (MAOP)).

Historically, diagnostic pigging data has been merged with other inspection reports using spreadsheets in order to plan for maintenance of the pipeline. The sheer volumes of data and the complexity of the data to be used has, over time, outgrown the use of spreadsheets, and requires a more robust solution which is able to transparently import the input data, process this data and provide outputs in the form of relevant information. More detail on these projects and project drivers is set out in confidential Attachment D-2. Total expenditure on the Integrity Data Management Project is expected to be $1.9 million, with an allocation to the VTS of $0.4 million in the earlier access arrangement period (no allocation in the forecast period).

APA Group has also undertaken a number of smaller corporate IT projects of which a proportion of capital costs have been allocated to the VTS. These projects include:

- Enterprise Risk Management;
- Procurement Management;
- Carbon IT System;
- National Training Project;
- Human Resources Information System; and
- Transmission Transformation.

In total, the capitalised amounts associated with these projects amount to $2.5 million ($2012) in the earlier access arrangement period. These projects have been undertaken to address a variety of needs, mostly associated with gaining national consistency in systems and/or processes, thereby reducing risks to the business. All projects contribute to the provision of pipeline services by providing essential back office risk management, human resources or financial management functionality.

As the above projects are undertaken nationally, only a portion of the cost of these projects has been capitalised in the VTS. The allocation methodology is consistent with that for corporate costs more generally, whereby costs are allocated to specific assets first by driver, with the remainder allocated in proportion to APA Group revenue. In all cases the amount capitalised for the VTS is less than the cost that an equivalent system could be built on a stand-alone basis.

6.2.5. Capital expenditure over the earlier access arrangement period by asset class

Table 6.4 shows capital expenditure by asset class over the earlier access arrangement period.

Table 6.4 - Capital Expenditure by asset class over the earlier access arrangement period

$'000 (2012)	2008	2009	2010	2011	2012	Total
Pipelines	19,366	2,735	1,514	5,777	16,901	**46,294**
Compressors	2,517	2,572	4,011	36,019	27,155	**72,274**
City gates and field regulators	15,090	3,667	48	4,208	1,802	**25,115**
Odourant plants	54	19	-	142	-	**216**
Gas Quality	-	-	-	-	-	**-**
Land	-	-	-	1,223	-	**1,223**
Buildings	917	444	162	951	242	**2, 715**
Other	514	516	5,350	1,619	4,541	**12,539**
Total	**38,459**	**10,253**	**11,085**	**49,939**	**50,641**	**160,376**

6.3. Forecast capital expenditure

APA GasNet forecasts total capital expenditure of $346.4 million in the access arrangement period. Table 6.5 below shows forecast capital expenditure by driver.

Table 6.5 - Forecast capital expenditure by driver

$'000 (2012)	2013	2014	2015	2016	2017	Total
Augmentation	32,222	231,455	11,935	0	0	275,613
Refurbishment and upgrade	11,917	11,091	11,067	11,491	8,790	54,356
Non-system	5,118	5,818	1,021	1,731	2,724	16,411
Total	**49,257**	**248,364**	**24,023**	**13,222**	**11,514**	**346,380**

Key projects and drivers for this forecast are discussed in the following sections.

6.3.1. Forecasting methodology

Base capital expenditure

The capital expenditure forecasting methodology employed by APA GasNet is detailed in Chapter 4 above and in the Asset Management Plan at Attachment C-2 (confidential). Conceptually the methodology employed is to:

- identify issues;
- scope the solutions;

- assess and prioritise issues and solutions; and
- deliver the project.

Issues are initiated from many sources, such as a change in engineering policy, changes in external influences such as laws and standards, identification of demand growth, and field or inspection identification of issues. The issues that arise from inspections or field reports are the most difficult to forecast as the lead time is usually short from identification to the need for a solution. However, condition monitoring of compressors, valves, pipe and other components can permit reasonably accurate forecasts of replacement or overhaul. A good example of this involves compressor overhaul, as set out in the Compressor Strategy (Attachment C – confidential).

The prioritisation of issues and solutions is an important step in the process of forecasting and asset management. The threshold used by APA Group is $500 000 for formal prioritisation. Below this value, the asset manager will decide on the necessity of the project using an assessment of risk and practical alternatives.

The formal process for prioritisation is to perform a risk assessment and options analysis. The risk assessment is used to determine if the residual risk to the pipeline is unacceptable if the project is not completed. The options analysis (where applicable) is used to determine which option achieves the most cost effective solution to the problem. Often the options analysis is not applicable as there are limited or no other reasonable options available, for example where there is general replacement of failing components.

Real cost escalation

Base capital expenditure forecasts were prepared in $2012. These forecasts were then escalated annually using appropriate Labour escalators.

For capitalised Labour, APA GasNet has applied two escalators:

- Electricity, Gas and Water (EGW): Gas Network Related, Real Adjusted Productivity EGW AWOTE – Victoria; and
- Construction: Real Adjusted Productivity Weighted Index AWOTE – Victoria.

The methodology for forecasting escalators is set out in the BIS Shrapnel real cost escalation provided at Attachment J (confidential). APA GasNet intends to provide an update of forecast escalators presented in that report in response to the AER's Draft Decision to ensure that the most recent available figures are used.

<u>Application of real cost escalators</u>

The EGW labour cost escalator has been applied to capitalised APA Group staff labour costs. The Construction labour cost escalator has been applied to outsourced labour (to the extent it is known) in each project. General labour does not make up a material proportion of capitalised labour costs and therefore has not been used.

For large projects, the relevant split between EGW and Construction labour has been determined on a project by project basis. For smaller projects, a percentage allocator has been derived based on a sample of projects.

Further confidential information relevant to APA Group's current Enterprise Agreement negotiations are provided at Attachment D-3. This information is relevant to the EGW Labour category.

Further details on APA GasNet's rationale for the choice of escalator (in particular the use of a productivity-adjusted AWOTE measures for labour) are set out in section 9.3 of this submission.

Presentation of capital expenditure forecast

The capital expenditure forecast is prepared and provided below in $2012, including labour escalation (see above methodology).

Forecast capital expenditure is also reported on an 'as incurred' basis, in line with APA GasNet's proposal to move to this approach in the forecast period in respect of its modelling of revenues. The earlier access arrangement was determined on an 'as commissioned' basis. The modelling approach is discussed further in section 7.2 below.

All forecast capital expenditure is included in APA GasNet's Asset Management Plan, which is provided with this submission. APA GasNet has also prepared (and submitted) detailed business case documents for all projects with forecast expenditure greater than $500,000. This threshold has been chosen as these projects represent greater than 95 per cent of the total capital expenditure forecast. These projects are discussed briefly below, however further information on capital expenditure projects can be found in the above mentioned documents.

Assessment of capital expenditure

APA GasNet has engaged expert engineering firm, JP Kenny, to review its capital and operating expenditure forecasts and provide an assessment of those forecasts and their consistency with the NGL and NGR. JP Kenny has found that APA GasNet's forecast capital expenditure is consistent with the requirements of the NGL and NGR.

The JP Kenny engineering report can be found at Attachment C-1 of this submission (confidential).

6.3.2. Augmentation capital expenditure

Augmentation capital expenditure increases the capacity of transmission assets. There can be a number of drivers to for increasing capacity, including:

1. to meet actual or forecast increases in demand (usually justified on the basis of a positive net present value under Rule 79(2)(b));

2. to ensure continued reliability of supply to parts of the system where flow paths or pressures change in the system (usually justified on the basis of maintaining capacity for existing users under Rule 79(2)(c)(iv)); and
3. to improve the security of supply for some or all system users (usually justified on the basis of maintaining the integrity of services under Rules 79(2)(c)(ii) and (iv).

At times more than one of these drivers will apply to the single project.

APA GasNet proposes the following augmentation projects, each of which falls under one of the above categories:

- Expansion of South West Pipeline and Northern Zone capacity (Gas to Culcairn Project) (category 1);
- Western Outer Ring Main Project (category 3);
- Anglesea Pipeline extension (category 3);
- Looping of the Warragul lateral (category 1); and
- Kalkallo lateral (category 1).

Each of these projects are discussed below.

Gas to Culcairn Project

APA GasNet has received requests from shippers to increase the injection capacity of the South West Pipeline, as well as the capacity of the system for withdrawals at Culcairn. Details of these requests and expected loads are provided in the relevant business case at Attachment C-4.

The following incremental flows have been incorporated into APA GasNet's demand forecast set out in 5 above:

- 53 TJ/day of additional injections at Iona; and
- 45TJ/day of additional withdrawals at Culcairn.

To meet these incremental flows, APA GasNet proposes to undertake the following augmentation capital works within the VTS in 2013 and 2014:

- Installation of a Taurus 60 5.5 MW compressor station at Stonehaven on the South West Pipeline; and
- Lay 104.1 km of 450 mm pipeline looping the Wollert to Barnawartha pipeline, comprising:
  - Wollert to Wandong (27.8 km);
  - Line Valve 12 to inlet Euroa Compressor Station (30.0 km); and

- Outlet Euroa Compressor Station to Line Valve 17 Benalla (46.3 km).

The forecast cost of these works is $158.1 million.

This project is justified under Rule 79(2)(a) as the overall economic value of the project is positive, when benefits to shippers are included in the analysis. Details of these benefits are confidential, and are provided in the confidential business case prepared for this project (Attachment C-4).

Western Outer Ring Main Project

APA GasNet proposes a significant capital project, the completion of the Western Outer Ring Main (WORM) in the access arrangement period. The project is primarily driven by security of supply concerns for domestic customers that rely on the VTS, and addresses an identified system vulnerability associated with failure of the Longford gas processing plant or associated infrastructure leading to the potential need for domestic load shedding in the winter and shoulder periods.

<u>Characteristics of the VTS</u>

The VTS currently transports approximately 220PJ/a of gas to delivery points supplying over 1.5 million domestic, industrial and commercial customers, five gas power generator plants on the VTS, and also transfers to NSW and South Australia.

The VTS has various gas receipt points, that is, Longford, Vic Hub, Pakenham BassGas, Iona (Western Underground Storage (WUGS) and SEA Gas), Culcairn and from the LNG storage tank at Dandenong. Longford is the major receipt point, providing over 73 per cent of the gas into the VTS on a peak day basis. Iona supplies about 14 per cent of the total gas receipts on an annual basis. During the winter peak periods, LNG is used to provide the peak shaving capability and also for line-pack management. Gas can also be transferred into the VTS from NSW via Culcairn.

The VTS in its current configuration can be viewed as three major corridors of supply, that is, East from Longford to Melbourne via Dandenong; West from Iona to Melbourne via Brooklyn and North to Culcairn via Wollert.

Each of these corridors moves gas to and away from Melbourne with a combination of compression and pressure regulation. The pipeline system was designed primarily for gas flow from east, that is, from Longford, which was, for the majority of the history of the system, the only injection point into the Victorian system.

Gas demand on the VTS is seasonal with average daily demands of approximately 350 TJ/d, 600 TJ/d and 1000 TJ/d during the summer, shoulder and winter periods, respectively.

Due to the configuration and seasonal nature of the demand on the VTS, linepack management to meet load supply-demand on the VTS is complex. For example, the management of inter-day demand-supply of the VTS requires gas from Longford to be stored and withdrawn from the South West Pipeline (SWP), otherwise, gas cannot be receipted into the Longford pipeline during low demand days.

Current risks to security of supply

APA GasNet has conducted an independent risk study of the VTS gas supply chain. This study is provided at Attachment C-5. This study has demonstrated that the VTS, in its current configuration, has an unacceptable risk to security of supply in the event of a major gas plant outage at Longford. In short, an outage at Longford of the scope and duration as has been seen in the last decade would lead to forced curtailment of domestic customers in both shoulder and winter periods.

The major constraining section contributing to this risk is the Melbourne section of the VTS, which is where the three corridors of supply interchange. The lower operating pressure within the Melbourne zone limits the capacity to move larger volumes of gas east or westbound during a receipt point outage at Longford.

An extended outage of the Longford plant could affect gas supply to over 1.5 million gas customers on the VTS, causing major expenditure for the gas distributors to relight customer pilot lights and reinstatement of the distribution networks, as well as loss of revenue for gas retailers.

During a receipt point outage, shipper access to gas would be constrained, hence causing a large increase to the market price of gas. The monetary impact on the Victorian gas market is substantial, as shown in the R2A report at Attachment C-5.

Methodology for determining prudent security of supply capital expenditure

Having identified the above risks to security of supply on the VTS, APA GasNet has considered options and approaches to address these risks.

In undertaking this analysis, APA GasNet has adopted the methodology recently established by the AER in respect of the ActewAGL gas distribution network in assessing a security of supply project. In the AER's draft decision on ActewAGL's 2010-2015 access arrangement revision proposal, the AER established that an appropriate assessment of whether a security of supply project constitutes prudent capital expenditure would need to include an assessment of the benefits of risk reduction against the costs of the project, involving:

- quantification of the risks involved;
- the expected duration of any interruption to supply; and
- the costs of load shedding.[52]

The assessment would also need to adequately consider alternative projects and their impact on security of supply.[53]

[52] Australian Energy Regulator 2009, *ActewAGL access arrangement proposal for the ACT, Queanbeyan and Palerang gas distribution network 1 July 2010-30 June 2015: Draft Decision*, November, p34

APA GasNet has addressed these areas in the supporting documentation provided with this submission and discussed in brief below. In summary, APA GasNet has quantified the risk (likelihood and duration of an event) and the benefits (avoided costs of an event) to derive a value for the improvement in supply security delivered by this proposed project (construction of the WORM). These benefits are clearly shown to outweigh the costs of the WORM for customers currently supplied via the VTS in the event of any single outage of Longford supply exceeding 5 day's duration.

Mitigation of supply risk delivered by proposal

The proposed WORM Project provides security of supply for customers on the VTS by providing greater flexibility of supply sources and management during an outage.

In event of loss of supply from any of the market scheduled gas trains at Longford, Iona, WUGS or Pakenham, the WORM makes it possible for alternate supplies to be scheduled. Flow constraints on either South West Pipeline/Brooklyn Lara Pipeline or Eastern systems are removed with the WORM. For example, gas from the WUGS or from the North from Culcairn would be able to respond with additional shortfall volumes should a supply issue occur at Longford, and vice-versa.

As noted above, APA GasNet commissioned a due diligence review from independent risk consultant R2A Due Diligence Engineers on the security of supply of the VTS. A functional model was set up to demonstrate the impact of lost load during 5, 10 and 15 day receipt point outages for winter, shoulder and summer load demands. The study also looked at the availability of the supply chain components from well head to the pipeline and facilities, and the likelihood of supply interruptions, for example plant failure, bushfire, terrorism and accidents.

The findings of the study showed that the WORM has a major benefit to security of supply for domestic (Tariff-V) customers, particularly for a supply disruption from Longford, during the shoulder demand period of the VTS and also significantly reduces the impact of a winter supply disruption.

This benefit is shown graphically in Figure 6.4 below, demonstrating the current risk to domestic customers (block shading in blue) in the event of a supply outage at Longford before construction of the WORM (black dotted line) and after construction of the WORM (blue line). In particular, the graph shows the number of days in a year where an outage at Longford greater than five days could lead to domestic customer curtailment. This moves from 148 days of potential risk to 60 days of potential risk in each year based on the current load duration curve.

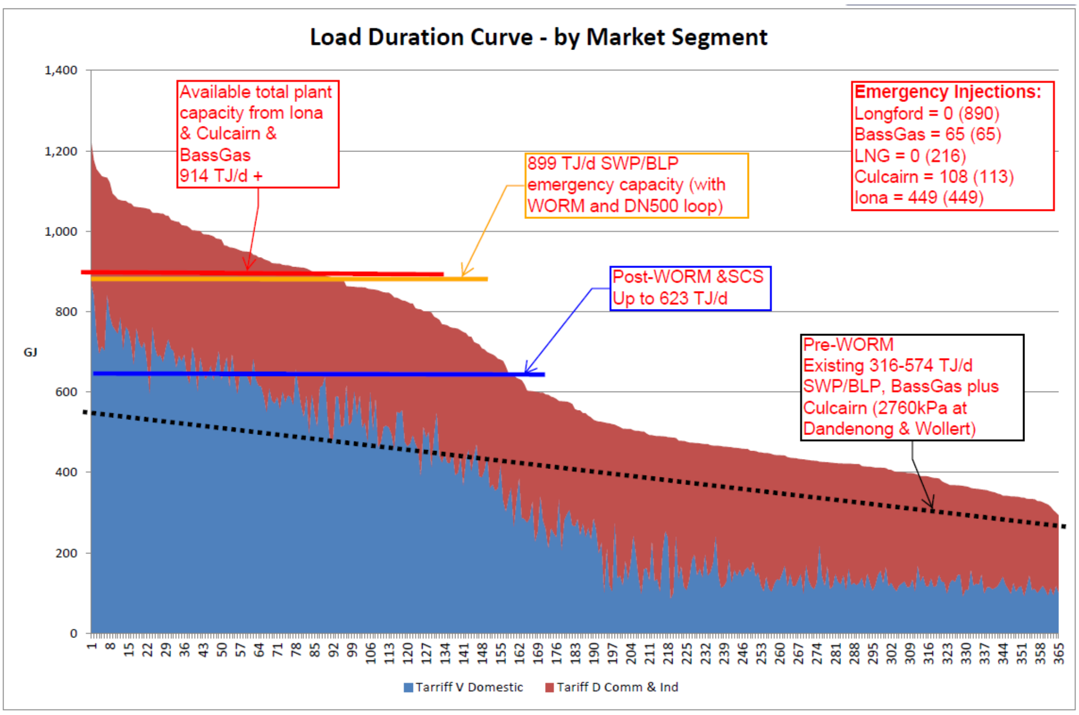
As can also be seen from Figure 6.4, the WORM does not fully mitigate the risk of supply disruption to domestic customers arising from a total supply failure from the east in all seasons due to the remaining constraints in the VTS configuration. However, the project delivers a necessary strategic link to enable further expansion

[53] Australian Energy Regulator 2009, *ActewAGL access arrangement proposal for the ACT, Queanbeyan and Palerang gas distribution network 1 July 2010-30 June 2015: Draft Decision*, November, p34

of the South West Pipeline/Brooklyn Lara Pipeline and hence makes existing Iona plant capacity available to the Victorian and NSW gas markets.

The WORM does provide an immediate and substantial benefit to the existing customers, however, particularly the smaller retail and domestic customers through the year, if the major industrial customers (representing up to 400 TJ/d) are load-shed as expected during a major loss of supply incident. For customers on the system, the WORM achieves a payback over the 60 year pipeline life for any one event exceeding five days.

Figure 6.4 - Load Duration Curve – By Market Segment



<u>WORM Project details</u>

APA GasNet proposes to construct stages 2 and 3 the WORM in 2013 and 2014. The Project involves construction of a large diameter (500mm) interconnection to eliminate the constraining section around the Melbourne system, enabling gas to move between the supply corridors and consists of the following stages:

- Stage 1: 8.3 km x 500 mm Rockbank to Plumpton

  This project is discussed in relation to actual capital expenditure above, and is known as the Sunbury loop, and will be completed in 2012. The primary purpose for building the Sunbury loop was to remove an immediate capacity constraint on the Sunbury lateral at lower cost than the competing Brooklyn

Compressor Station project (installation of new compressors). The Sunbury loop, however, was 'upsized' to 500 mm in order to be extended to form part of the WORM.

- Stage 2 and 3: 49.3 km x 500 mm Wollert to Rockbank (via Kalkallo)

  The 49.3 km x 500 mm pipeline will complete the WORM Project. Included in these stages are:

  - Installation of additional compression (WCS6 – Centaur 50) at Wollert Compressor Station 'B' allowing compression from Pakenham to Wollert pipeline (existing connection) to the new WORM (new connection); and

  - A new interconnecting Pressure Reduction Station at Wollert, connecting the Brooklyn Lara Pipeline to the Pakenham-Wollert Pipeline.

Once the WORM project is complete, the operation of major supply (Pressure Reduction Stations (PRS)) stations at Dandenong, Brooklyn and Wollert would be set at fixed outlet pressure, including Brooklyn and Lara supplying the Geelong pipeline. Wollert becomes a hub managing transfers across the Pakenham-Wollert-Rockbank systems and balances linepack in the VTS.

The total cost of this project is forecast to be $110.4 million. Stage 1 of the WORM Project will be completed in the 2012 ($13.5 million for the Sunbury Loop), with the remainder, $97.4 million, to be expected in the forecast period (2013 and 2014).

In arriving at this solution, APA GasNet looked at a number of different options to address security of supply for Victorian customers. APA GasNet concluded that, while the primary risk to supply lay outside of the VTS (being loss of Longford plant or its supply chain), this risk could reasonably be expected to have already been reduced to the extent reasonably practicable by the operators of the Longford plant. Despite this, the residual risk of loss of the processing plant was still considered material (see discussion on the R2A report at Attachment C-5), and that the only reasonable option to address this risk was to facilitate additional cross system transfer capability within the VTS to provide for alternate sources of gas to supply Victorian customers.

APA GasNet has also assessed alternative 'within system' options to provide equivalent security of supply and has found that the WORM Project delivers lower cost security of supply than other options. This risk assessment can be found in the WORM Project business case at Attachment C-5 (confidential).

<u>Justification of project as conforming capital expenditure</u>

The decision to proceed and design of the WORM Project has been largely driven by security of supply concerns, and is therefore relevant to Rule 79(2)(c)(ii). It is important to recognise, however, that the WORM Project avoids significant 'stay-in-business' expenditure that would otherwise have been required at a number of sites. These avoided projects include an upgrade of the Brooklyn Compressor Station, works at Wollert and Iona Compressor Stations, and works to address the Sunbury constraint. This component of the WORM expenditure is justifiable under Rules 79(2)(c)(ii) and (iii) as necessary to comply with regulatory obligations or maintain the integrity of services.

APA GasNet also considers that the WORM Project satisfies Rule 79(1) by being capital expenditure that would incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services. The Project is prudent, efficient, and superior to project alternatives (lowest sustainable cost) as it:

- Delivers required security of supply at a lower cost than alternatives that deliver similar security of supply;
- Avoids significant stay in business capital expenditure, effectively reducing the cost of the security of supply option to one that is net of that avoided work;
- Simplifies operation of the VTS, lowering operating costs and reducing the risk of operator error;
- Supports gas competition by providing greater scope for gas injected from the west to compete with Longford gas;
- Is consistent with the long term investment strategy for the VTS, laying the foundation for growth as envisioned by VENCorp in its 2030 Vision document[54]; and
- Delivers the lowest long run costs of project alternatives assessed, while also providing a basis for meeting the longer term development needs of the system.

APA GasNet also considers that the project represents good gas industry practice as it has been conceived and designed within a broader strategic planning framework for the VTS. This planning framework has taken into account the likely needs of the system over a long term planning horizon, in particular the overwhelming need for flexibility in the face of changing gas and energy market dynamics. Other options (in particular compression options that the WORM replaces) do not deliver the same security of supply benefits to customers, or system flexibility as to future sources of supply and location of significant load (in particular gas powered generation).

Anglesea Pipeline Extension

The Geelong distribution system is supplied from the APA GasNet System from the Corio City Gate Station. This City Gate is the single supply point to the Greater City of Geelong system, Surf Coast Shire and Borough of Queenscliff. The City Gate supplies over 120,000 customers, including approximately 50 major Tariff-D customers.

[54] VENCorp 2009, Vision 2030: Vision for Victoria's Energy Transmission Networks, section 4.6

Being a single supply point to the network, there is very limited security of supply to the distribution network in the event of an outage occurring at the existing Corio City Gate Station or disruption to the major feeder main within the network from the Corio customer transfer meter.

The service provider of the downstream distribution network has requested APA GasNet to provide a supply point into its new feeder pipeline which would require APA GasNet to construct a transmission pipeline to the proposed new city gate. This would deliver a second supply point into the Geelong system.

This project is effectively part of a broader project driven by the distribution network service provider, whom APA GasNet understands has undertaken necessary assessment of this expenditure as part of their submission. APA GasNet understands that the additional capacity provided by the second supply point will cater for continuing growth and development of the Geelong and Coastal areas.

Construction of the new supply point is forecast to occur in 2014 and 2015, at a cost of $13.3 million.

Warragul Lateral

The Warragul lateral supplies a distribution network of residential and industrial customers. Based on an updated 10 year growth forecast for the Warragul City Gate provided to APA GasNet by the relevant distribution network service provider, APA GasNet has identified a need to augment the Warragul lateral by winter 2014 to meet forecast increases in industrial loads in the area. Without augmentation, the Warragul City Gate would breach the required minimum connection pressure of 1400 kPa at the custody transfer meter.

Options analysis for this augmentation involved assessment of both pipeline (looping) and compression options, and the looping option was determined to have lower long run cost for customers.

Looping of the Warragul Lateral is forecast for 2014, at a cost of $2.6 million.

Kalkallo Lateral

New housing and industrial development in and around the Kalkallo township have triggered the requirement for a new City Gate to supply the development. The location of the proposed Custody Transfer Meter (CTM) site requires mains extensions from the APA GasNet System. The closest gas offtake point would be from the Wollert to Euroa/Wodonga DN300 pipeline.

This project is impacted by the timing and location of the WORM Project. APA GasNet has scoped this project with the assumption that the WORM Project will proceed, so the length of the Lateral need only be 4.5 kilometres (200 mm pipe). Without the WORM, the lateral would require 9.5 kilometres of 200 mm pipe directly laid from the Wollert to Euroa/Wodonga pipeline at significantly greater expense.

Construction of a new supply point to Kalkallo is forecast for 2014, at a cost of $4.3 million.

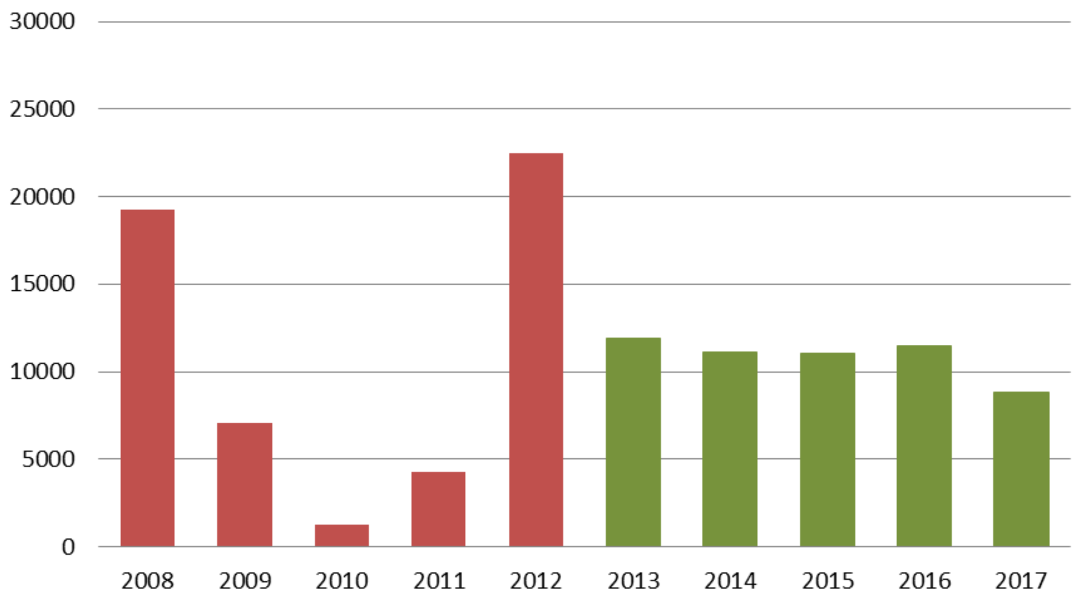
6.3.3. Refurbishment and upgrade capital expenditure

Refurbishment and upgrade of existing assets is essential to the safety of the VTS, and to meet the long term objectives of the VTS. The VTS is managed to ensure that it is maintained to its current condition and level of risk, whilst meeting stakeholder expectations through systematic management of all threats to the operation and expansion of the asset. APA GasNet seeks to achieve operational efficiency over the entire lifetime of the assets in line with:

- Legislative obligations;
- Effective risk management;
- Regulated financial parameters;
- Best asset management practice; and
- Extraction of maximum value from assets.

As noted in respect of capital expenditure in the earlier access arrangement period, a number of Refurbishment and upgrade projects scheduled for the earlier period (in particular 2009 and 2010) were deferred to late in that period or the forecast period due to uncertainty over the availability of funds during the GFC. This can be seen from Figure 6.5 below.

Figure 6.5 - Refurbishment and upgrade capital expenditure 2008-2017 ($'000)



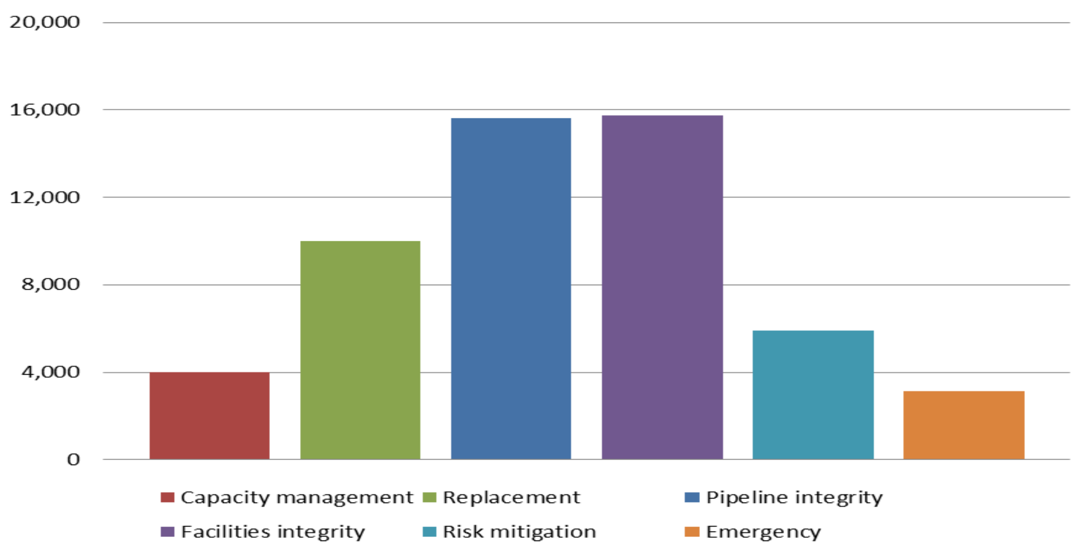
While APA GasNet has undertaken a degree of ‘catch-up’ expenditure in 2012, annual Refurbishment and upgrade capital expenditure will higher than it was for much of the earlier period throughout the forecast period. It is important to note, however, that total forecast Refurbishment and upgrade capital expenditure is essentially identical to that spent in the earlier period. One reason for this is the avoidance of a significant amount of Refurbishment and upgrade capital expenditure (in the order of $60 million (before labour escalation)) because of the WORM Project discussed in respect of forecast Augmentation capital expenditure above. If the WORM Project were not to proceed, these works would need to be undertaken during the period in this expenditure driver category. The relatively high forecast for Augmentation capital expenditure must therefore be viewed to some degree as offsetting a higher Refurbishment and upgrade capital expenditure forecast.

Refurbishment and upgrade capital expenditure has been grouped into the following project drivers:

- Capacity management;
- Replacement;
- Pipeline integrity;
- Facilities integrity;
- Risk mitigation; and
- Emergency.

The spread of forecast refurbishment and upgrade capital expenditure across these categories is shown in Figure 6.6 below. Key projects in each category have been described below, however further detail is provided in the Asset Management Plan and Business Cases (for projects over $500,000) provided with this submission.

Figure 6.6 - Refurbishment and Upgrade capital expenditure by project driver ($’000)



Capacity Management

This project driver covers all expenditure related to increasing flexibility or utilisation of existing assets to facilitate capacity management. These projects are intended to do one of the following:

- increase performance at an existing constraint;
- permit pressure bias;
- increase storage capability; or
- permit bidirectional flows.

Total forecast expenditure in this project driver category is $4 million.

The most significant project in this driver category is the Rockbank Pressure Reduction Station (forecast cost $2.2 million) to be built in 2014 to inject gas from the recently built Brooklyn Lara Pipeline, that operates at a higher pressure into the Ballarat Pipeline.

The Brooklyn Lara Pipeline has enhanced supply for the Western side of Melbourne providing 10,200 kPa pressures in the vicinity of a relatively poor supply area in the Ballarat/Sunbury area. The Western Outer Ring Main Project outlined above enables a Pressure Reduction Station (PRS) to be installed at Rockbank (close to Sunbury), with its inlet from the Brooklyn Lara Pipeline improving the peak day performance and reliability of the 7,390 kPa network. The solution would remove the requirement for a compressor at Brooklyn to support the pipeline during peak period of a 1:20 winter, hence avoid the need to replace compressors at Brooklyn.

Another significant project in this driver category is the Replacement of the Iona Compressor Station Control System at a forecast cost of $0.7 million in 2014.

The Iona compressor station is located within the Iona Storage Facility and has two reciprocating compressors with associated controls compressing gas from the South West Pipeline into Western Transmission System to Portland. The station was constructed prior to 2001 and is now not compliant with current Standards and has obsolete control systems. The station is also difficult to test due to increases in operating pressure on the Lara to Iona Pipeline that restrict operations. It is separately proposed to rectify that aspect in 2013 to allow full operation.

A third project in this category is the Springhurst Compressor Station Cooler Upgrade at a forecast cost of $0.9 million, scheduled for completion in 2015. This upgrade is needed to meet summer flows.

Replacement

This project driver covers all expenditure related to the replacement of equipment or components that have become obsolete due to their inability to be maintained, poor performance or that are no longer required.

Total forecast expenditure in the project driver category is $10 million.

Brooklyn Compressor Station Units 8, 9, 10 and 11

The most significant project in the driver category is the decommissioning of Brooklyn Compressor Station Units 8, 9, 10 and 11 in 2017 at a forecast cost of $2.7 million.

Brooklyn Compressor Station, located just west of metropolitan Melbourne, was built in 1972 to recompress natural gas to the regional towns of Geelong, Ballarat and Bendigo. The four compressors consist of two Solar Saturns (units 8 & 9) and two Solar Centaurs (units 10 & 11) all installed in the early 1980s and equipped with water-gas cooling systems. A number of specific issues, which would need to be addressed if the station is to meet current requirements, have been identified:

- Station facilities comprise a station water cooling tower and station emergency vent rather than separate unit facilities restricting flexibility;
- Station piping, much of which is buried or in trenches;
- Compressor air inlet is drawn from above ground process gas pipework;
- Unit logic is not fail-safe;
- Actuators located in the vicinity of the engine air inlet are operated using natural gas; and
- Condition of buried piping has not been formally assessed.

Maintaining the site would therefore entail significant expenditure.

The main role today for gas compression at the site is for peak compression to Ballarat, supply to North Laverton (Snowy Hydro Gas Powered Generation) and supply of Longford gas to western Victoria, underground storage and South Australia when Otway gas facilities are not injecting into the system.

The earlier access arrangement included the relocation of unit 11 into an adjacent compressor building and upgrade, however this relocation was subsequently identified as unnecessary (see details above in section 6.2.3). Assessment of future requirements for compression following installation of the Western Outer Ring Main and compression at Wollert and Stonehaven circa 2015 suggests that the existing Brooklyn 12 unit is adequate to support gas powered generation loads on the Geelong pipeline. Wollert would maintain western flows. A new facility, Rockbank Pressure Regulating Station (discussed above under the capacity management project driver), would maintain flows to Ballarat. At that time the four compressor units will no longer be required.

Wollert Compressor Station

Wollert Compressor Station, located just north of metropolitan Melbourne, was built in 1981 to recompress natural gas to northern Victoria including Albury/Wodonga.

Since that time the station has been extensively expanded and also serves as a hub linking supply to northern Melbourne from the Longford gas facilities.

The three compressors in Station 'A' consist of three Solar Saturns (units 1, 2 & 3) and are equipped with individual fin-fan oil coolers. The units use wet-seal Solar C160 compressors and are housed in a common acoustic building. Station 'A' pipework is rated to only 7,400 kPag, whereas the connected pipeline has been upgraded to 8,800 kPag.

During the earlier access arrangement period, APA GasNet commissioned Station 'B' compressors as part of the Northern Augmentation project. The main role today for gas compression using Station 'A' Saturn compressors is for back-up for the Station 'B' Centaur 50 compressors which are used most days for compression to Northern Victoria and gas transfers to NSW via Culcairn. However, the two stations may only be operated together if the pipeline pressure is below 7,400 kPag, which is inadequate for contracted peak gas demand.

An additional compressor at Station 'B' is proposed in the forecast period as part of the Western Outer Ring Main project. This project is discussed above, and removes the need for back-up compression from Station 'A'.

APA GasNet proposes to decommission Station 'A' in the forecast period. A number of specific issues, which would need to be addressed if the station is to meet current requirements, have been identified:

- Station piping, much of which is buried or in trenches;
- Compressor air inlet is drawn from above ground process gas pipework;
- Unit logic is not fail-safe;
- The inlet liquid separator is located very close to the station control building access door;
- Actuators located in the vicinity of the engine air inlet are operated using natural gas and are not fail-safe; and
- Condition of buried piping has not been formally assessed.

These issues would all necessitate future works for rectification, in addition to costs associated with the ongoing maintenance of the facility. Given the limited utilisation of the station, APA GasNet considers that it is prudent to decommission the site rather than keep it in operational mode.

Decommissioning station Wollert Compressor Station 'A' is forecast at $0.4 million in 2017.

<u>Upgrade of Type B appliances</u>

The Replacement project driver category also includes expenditure for the upgrade to AS3814 of Type B Appliances. APA GasNet has received instruction from the

Safety Case regulator (ESV) that gas-fired appliances such as gas turbine engines, gas engines (powering compressors such as Iona, and generators), and gas-fired water bath heaters, are required to comply with AS3814.[55] APA GasNet operates approximately 34 Type B appliances (compressors, heaters and generators) constructed from about 1977 and forecasts $0.9 million of expenditure in the forecast period to address the ESV's direction.

The ESV direction also drives replacement of the suction and discharge valves at Gooding units 1, 2, 3 and 4 in 2013 at a forecast cost of $0.9 million.

<u>Security upgrades</u>

APA GasNet was declared an operator of an Essential Service under the Terrorism (Community Protection) Act 2003. Under the Act, APA GasNet must prepare a risk management plan meeting the requirements set out in the Act. The confidential risk management plan has identified several high and moderate risk sites that require security upgrade.

Forecast costs for security upgrades at high and moderate sites are $2.5 million, over three years.

APA GasNet also forecast minor security upgrade works at a small number of sites during the period.

<u>Other projects</u>

The remaining projects in this category with expenditure greater than $500,000 are:

- Upgrade to ageing and obsolete Gas Engine Alternator at Brooklyn Compressor Station – forecast cost $0.3 million;
- Upgrade of Remote Terminal Unit equipment at 14 facility sites that have unacceptable failure rates – forecast cost $0.9 million.

Pipeline Integrity

High pressure gas pipelines are constructed with coated steel pipes welded together and buried. The pipelines are built with great care, however subsidence, deterioration and third party activities can result in loss of integrity due to damage or dents in the coating and/or the pipeline. Regardless of the cause, coating defects can be anticipated and so protective cathodic protection measures are applied to prevent and restrict corrosion of the pipe. Protecting large lengths of buried steel is difficult, however, due to the soil conditions, wet/dry cycles, electrolysis effects of other utility infrastructure and the potential for shielding of cathodic protection due to coating disbondment. Due to these factors, some isolated pipe wall corrosion can be expected.

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[55] Energy Safe Victoria, *Email correspondence regarding modification to type B appliances*, 20 February 2012

This project driver covers all expenditure related to ensuring pipeline integrity is maintained or improved. Activities such as rectification to permit Inline Inspection (ILI or pigging), cathodic protection and design life reviews are within this category.

Total forecast expenditure in this project driver category is $15.6 million.

In line inspection

High pressure pipelines could have dramatic failure modes if their integrity is not appropriately managed. Integrity inspections are therefore a key activity for pipelines and for most of the VTS pipelines pipe wall inspection using non-destructive in-line tools is possible. It is necessary to understand the condition of the asset to determine what mitigation is required, therefore inspections for dents and reduced wall thickness (from corrosion and gouging) is necessary.

The in-line inspection technique involves advanced Geometry and Magnetic Flux Leakage tools (pigs) being inserted into the pipeline and pushed along in the gas stream. As they travel the pigs generate a strong magnetic field and measure the resulting flux to determine the pipe wall thickness around 360 degrees for the total length.

APA Group has a Metal Loss Pigging Frequency Policy to determine the ideal re-inspection interval based upon calculation, although it has a default period of 10 years. The calculation is the preferred approach as it considers a number of factors including predicted corrosion growth rate and the pipe wall thickness based on previous inspection results.

In the earlier access arrangement period, APA GasNet included pigging in its operating expenditure budget. In line with the APA Group capitalisation policy, and recognising the nature of pigging and associated rectification work as providing an enduring benefit to the asset, APA GasNet proposes to capitalise ILI costs in the forecast period.

APA Group currently has a contract in place with for Metal Loss Pigging Frequency inspection and associated services. The contract resulted from tendering four major international ILI vendors and selecting the successful vendor based upon technical capability and price. The contract expires in 2012. Forecast ILI costs for forecast period have been determined on the basis of the current contract.

Total forecast ILI costs for the period are $2.8 million.

Works to allow pigging of currently unpiggable pipelines

As outlined above, inline inspection of pipelines is an integral part of pipeline integrity management, and Inline inspection of all pipelines which can be pigged is good industry practice.

Internal weld beads on the smaller pipelines are relatively large which can jam and damage inspection tools. Due to the high level of operational risk from pigging smaller diameter pipelines and the limited technology of the available tools, unless previously proven to be piggable, APA GasNet currently only inspects 150mm diameter and greater pipelines with this technique.

AS 2885.3, clause 5.3.1 states that “periodic inspections shall be carried out to identify actual and potential problems that could affect the integrity of the pipeline”, and “Where available intelligent pigging results should be considered when assessing pipeline integrity”. APA Group policy details intelligent Metal Loss Frequency pigging as a requirement for these pipelines.

APA GasNet is required by Energy Safe Victoria and AS2885 to operate high pressure pipelines in a safe and reliable manner. In-line inspection is one of the most important and conclusive activities in a series of integrity management processes that allows pipeline deterioration and damage to be identified and rectified prior to failure. Equipping the pipelines to make internal pig inspection possible is critical to a satisfactory integrity regime.

APA GasNet maintains the Victorian pipelines in accordance with a safety case approved by Energy Safe Victoria under the *Gas Safety (Safety Case) Regulations* 2008. The *Gas Safety Act 1997* section 44 requires “A gas company must comply with the accepted safety case for a facility in relation to the management and operation of the facility.”

In line with these requirements, APA GasNet has identified a number of pipelines that need to be specially equipped for the insertion and removal of ILI tools under operating conditions. This involves the installation of pig traps at each end of the pipeline sections for the following pipelines:

- PL 36 Princes Hwy To Regent St
- PL 67 Tyers To Maryvale
- PL 68 Pakenham
- PL 124 Newport
- PL 129 Dandenong to Princes Highway
- PL 162 Laverton Nth
- PL 238 Somerton

Total forecast costs for the installation of pig traps on these pipelines are $8.6 million. This work is expected to be undertaken over three years from 2015 to 2017.

<u>Exposed pipeline coating refurbishing</u>

Sections of pipework that require access for operation and maintenance are generally exposed and protected from corrosion by a protective coating system. The coating system creates a barrier between the steel pipework and the environment to prevent corrosion. This coating can be susceptible to damage and repeated physical contact.

AS2885.3 Section 5.3.6.1 states “Above-ground pipelines shall be inspected for evidence or corrosion or damage to or deterioration of any anti-corrosion coatings at intervals defined in the safety and operating plan, and the rate of corrosion shall be assessed. Where the rate of corrosion will reduce the design life, remedial action shall be taken.” Deterioration of coating protection can severely reduce the life of a pipeline. APA GasNet has responsibility to ensure that the pipelines remain continuously protected.

Typically coating will provide effective protection for ten years where chalking, cracking, crazing and excessive reduction in coating thickness become prevalent and rusting spots and areas may start to appear.

Refurnishing of protective coating on exposed pipework will provide more effective routine inspection of pipework where areas of corrosion spots are readily visible and treated before affecting of the pipework integrity due to metal loss.

Failure to maintain effective protective coating on pipework could allow metal-loss corrosion to occur potentially leading to a pipeline leak or rupture. Refurbishment of protective coating on exposed pipework will provide more effective routine inspection of pipework where areas of incipient corrosion are readily visible and then treated in timely manner.

APA GasNet proposes to repair above ground coating at 19 sites during the access arrangement period at a forecast cost of $2.4 million.

Cathodic protection

VTS pipelines are of steel construction protected from corrosion by a coating system and cathodic protection. The cathodic protection is designed to protect the pipeline from minor coating defects by applying an electrical potential to the buried pipe to counteract the corrosion process.

The applied pipeline voltage is achieved through either sacrificial anodes or more commonly electrical transformer rectifiers (TRs). The TRs also require large ground-beds to make the necessary electrical circuit through the surrounding earth.

AS2885.1 requires that “cathodic protection shall be applied to each section of a pipeline”. AS2885.3, clause 5.6.4 states “Where any inspection indicates that satisfactory performance is not fully achieved on the pipeline, timely and appropriate action shall be taken to restore full protection…..”. Loss of cathodic protection can severely reduce the life of a pipeline.

Typically ground-beds will operate for 20 to 30 years and the TRs for 15 years, therefore replacements will be required during the course of the access arrangement period. The VTS currently has 63 cathodic protection sites.

Monitoring of the systems will identify units that are nearing the end of their useful life or where additional cathodic protection is required, but is largely unpredictable even on a site by site basis. It is anticipated that two TRs and two ground-beds can be expected to require replacement annually. On this basis, APA GasNet has forecast $1.1 million over the access arrangement period for cathodic protection.

Liquids management

Minor works are also forecast in the period in relation to liquids management at four sites (Gooding Pakenham, Brooklyn and Longford). Each project totals less than $350,000.

Facilities Integrity

This project driver covers all expenditure related to ensuring facility (stations) integrity is maintained or raised by prevention of expected hazards.

Total forecast expenditure in the project driver category is $15.7 million.

Dandenong City Gate works

The most significant expenditure in this driver category involves upgrade of the Dandenong City Gate.

The Dandenong City Gate was first built in 1969 and had a major upgrade in 1979 to add additional regulator runs. In early the 1990s, three out of seven regulators runs were converted from solely self-pneumatic control to basic electro-pneumatic control setup to keep up with the changing gas market expectation demanding tighter pressure control performance. The Dandenong City Gate is a major gas supply gateway into Melbourne, suppling 60 to 70 per cent of natural gas to the Melbourne metropolitan areas. APA GasNet has determined that a fundamental redesign and construction of this facility is the only means of ensuring integrity in the short and long term.

APA GasNet will undertake a major upgrade of this facility in 2013, involving replacing the regulator runs and all equipment, but stopping short of replacing the entire station. APA GasNet proposes to reuse headers at Dandenong City Gate. Proposed expenditure on the upgrade is $5.6 million.

APA GasNet proposes a further project at Dandenong City Gate involving replacement of the Dandenong City Gate Heater. This project was previously forecast in the earlier access arrangement period, but was not undertaken due to other priority projects emerging during the period, in particular the Brooklyn City Gate heater upgrade, as well as deferral of some projects due to the GFC. Forecast expenditure on this project is $2.9 million.

Design life reviews

At construction, gas pipelines are designed with a particular design life nominated, generally 30 – 60 years. Site facilities may have been constructed significantly later than the pipelines they are attached to, and generally have different design lives.

APA GasNet has responsibility under AS2885 to ensure that pipelines and facilities do not continue to operate outside of their design lives. The VTS pipelines and facilities include some of the oldest in the country and some will approach their design lives during the forecast period.

As the approach of reviewing the technical life for facilities is a concept not clearly documented in AS2885.3, APA GasNet has implemented a process of prioritising the review of the most critical facility installations on the basis of age, location, and pressure (i.e. high consequence, high risk, older facilities first). the highest priority facilities will be reviewed in the forecast period, however this will be an ongoing program of works that is likely to span multiple access arrangement periods.

In the forecast period, APA GasNet will undertake design life reviews on ten facilities and three pipelines, comprising both above ground and belowground inspections. Forecast costs for this project are $1.2 million, spread across all years of the access arrangement period.

Hazardous Area review and rectification

VTS pipelines and facilities were constructed in accordance with the standards of the day and are now maintained in accordance with AS2885. Over the years codes and standards have been updated and modified and in some cases new Australian codes have been written. One such development is that all electrical equipment installed in hazardous area must be recorded in Hazardous Area Verification Dossier. It is a regulatory requirement of AS60079 to inspect and demonstrate the continued compliance and safety of electrical installations within hazardous areas.

Forecast costs involve the cost of inspection and then necessary rectification works. While it is difficult to forecast the scope of necessary works, costs have been estimated on the basis of two contractors working full time on assessment and rectification over two years. In order to bring these skills in-house, APA GasNet expects to work closely with contractors in this initial phase and then continue works using internal resources for the remainder of the period. Note that this project is separate from the maintenance of hazardous area dossiers that is identified as an operating expenditure step change in section 9.3 below.

Forecast costs associated with hazardous area rectification are $2.2 million, spread across each year of the access arrangement period. Costs involve a mix of internal and external labour, as well as materials associated with rectification works.

North Laverton City Gate heater upgrade

Forecast work on the North Laverton city gate heater was largely deferred from the earlier access arrangement period to coincide with pressure increases on the Geelong Pipeline expected to arise from the Wester Outer Ring Main project (discussed above in respect of forecast Augmentation expenditure).

Expenditure on this project is forecast for 2016 at a cost of $0.7 million.

Risk Mitigation

This project driver category is for projects designed to mitigate hazards to as low as reasonably practical (ALARP) or to increase the standard of protection against other risks.

Total forecast expenditure in the project driver category is $5.9 million.

Gooding Compressor Station anti surge and fast stop valve upgrade

The most significant project forecast in this driver category is the Gooding Compressor Station anti surge and fast stop valve upgrade.

The Gooding Compressor Station is located east of Melbourne and is used to move gas from Longford to the city and northern areas. The station compressors were replaced with dry seal compressors in 2009. At the time, the existing controls and anti-surge valves were retained, along with the “compressor loading valve”. The risk of surge was not addressed in 2009 due to the limitations of the software in service.

APA GasNet is upgrading the software in 2012. The new system provides for fast operating anti surge and fast stop valves to operate, and their installation is considered good practice in the industry.

The design of the ASV and FSV eliminate the risk of gas pressure surge which may cause damage to the compressor. This can occur if the compressor unit trips whilst in service. The station has a critical ongoing role in the Victorian transmission system and the station will continue to operate for the foreseeable future.

This project is forecast to 2013, at cost of $0.7 million.

Fire suppression systems

Fire Suppression Systems are designed to limit the potential impact of an uncontrolled fire thereby reduce the potential for consequence escalation.

A program to install Fire Suppression Systems to critical facilities is scheduled for implementation from 2011 through to 2014. Facilities identified as requiring the installation of Fire Suppression systems include:

- Gooding Compressor Station Control Room
- Gooding Compressor Units 1, 2, 3 and 4
- Brooklyn City Gate Control Hut
- Wollert City Gate Control Hut
- Wollert Compressor Station A Control Room (which includes controls for Station ‘B’)
- Iona Compressor Station

Total costs for these works amount to $1 million, with expenditure in all years except 2017.

Actuation of mainline valves

The Dandenong to West Melbourne Pipeline has 15 manually operated mainline valves, which are located under the carriageway of very busy roads in confined space pits. The pipeline is categorised as T1 in AS2885.1 as it is in a built up area and therefore involves higher risks.

The mainline valves are normally operated during maintenance activity, however they are primarily installed to allow isolation of parts of the pipeline in the event of an emergency. APA GasNet proposes to retrofit the current manually operated valves with automated valves to allow for faster and safer shut down of the system.

This project is expected to take three years (2014-2016), at a forecast cost of $4 million.

Emergency

The Emergency project driver category includes projects intended to insure the appropriate level of capability exists within APA GasNet to manage emergency risks. Total forecast expenditure in this category is $3.1 million.

One of the key elements of emergency management is recovery capability. Emergency pipe and fittings are held at the Dandenong facility in preparedness for use in major incidents to rectify the pipeline system. These fittings are purchased with long lead times and include stopple tees and other associated fittings to enable bypassing and emergency cut-outs and pipeline leak containment.

The inventory is stored at the Dandenong facility and is slow moving and up to 40 years old. Over the years, codes and standards associated with required material certificates have changed and much of the pipeline and fittings currently in APA GasNet's holdings have out of date certificates.

To enable the fittings currently in the emergency inventory to be utilised, they will require formal identification and supply of associated test certificates. Where this is not possible, chemical composition, mechanical properties and integrity tests will be required to establish their fitness-for-purpose. Metal filings will be collected from each fitting and sent to a nominated laboratory for testing. The tests will enable the Carbon Equivalent values of each item and their metallurgical properties. Once fully tested, the fittings can be approved for appropriate use.

The approach for emergency pipes is similar, however the main process for them involves hydro-test to confirm their suitability for installation at particular MAOPs. Where fittings or pipes can't be approved they must be scrapped and replaced.

Forecast costs for this project are $1.4 million, in 2013 and 2014.

In addition to having appropriate replacement inventory in place, APA GasNet has determined that it is prudent to have an in house inventory for management of emergencies. APA GasNet proposes to purchase a lighting tower, gas venting stack and air movers to ensure safety of workers and local community in the event of an emergency. A series of emergency response baskets are also proposed to be put together so that, in the event of an emergency, critical equipment is available and can be mobilised to site at short notice.

In the current situation, APA GasNet would rely on hire companies and contractors for this requirement. This is not considered appropriate into the future as this may lead to delays in emergency response and increase complexity in an emergency situation as this equipment must be procured. APA GasNet proposes to spend $0.5 million, spread across each year of the access arrangement period in securing these supplies.

Summary

All projects described above and others in this category meet Rule 79(2)(c) in that they are either required to comply with relevant regulatory obligations or standards, or are necessary to ensure the ongoing safety or integrity of the VTS (also related to regulatory obligations). For each project, APA GasNet has considered alternative options, including the 'do nothing' option, and concluded that the projects are consistent with the actions of a prudent service provider, acting efficiently and in accordance with good gas industry practice as required under Rule 79(1). Further details of this analysis are included in the project business cases provided with this submission they are also all part of APA GasNet broader five-year Asset Management Plan for the VTS.

In some cases projects or aspects of projects included in the capital expenditure forecast were also approved as part of the earlier access arrangement period. As discussed by APA GasNet above, this deferral was largely as a result of uncertainty over the availability of funds due to the GFC. Some of that forecast expenditure was 'caught up' in the later part of the earlier access arrangement period, however there still remains a significant carry-over to the forecast period. This carry over is effectively in addition to those works that would have normally been scheduled for the forecast period.

6.3.4. Non-system capital expenditure

The Non-system driver includes capital expenditure on buildings, information technology infrastructure and software, tools and workshop equipment.

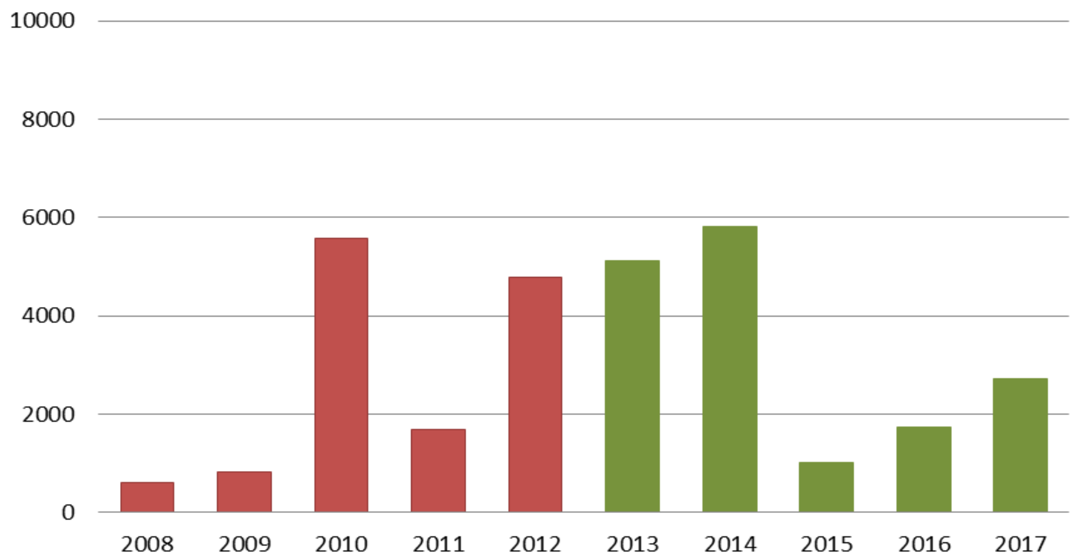
Historically this expenditure is low in comparison to other capital expenditure types. Largely, this is because of decisions made in categorisation to drivers – Non-system capital expenditure is driven by either augmentation or replacement and upgrade, and where it occurs as part of another project (for example the upgrade of a building as part of a facilities upgrade) it is often included with that project in the replacement and upgrade driver category.

To the extent possible, APA GasNet has sought to accurately categorise Non-system capital expenditure into this driver category, at the same time noting where this work is related to projects in one of the other categories.

Some aspects of Non-system capital expenditure relate directly to the regulated asset and haven been allocated accordingly. Other projects are shared between regulated and unregulated assets and an allocator has been derived based on the relative size of the regulated versus unregulated asset based for the forecast period (94.1 per cent). The same allocator has been used in relation to forecast operating expenditure for shared costs and is discussed further section 9.3.2 of this submission.

Figure 6.7 below shows the trend of Non-system capital expenditure across the earlier and forecast access arrangement periods. A key characteristic of non-system expenditure is that it is lumpy. This is largely because there are less Non-system assets than pipeline assets, and therefore scheduled works cannot be spread across the period to deliver an even expenditure profile. Total forecast Non-system capital expenditure for the access arrangement period is $16.4 million.

Figure 6.7 - Non-system capital expenditure 2008-2017 ($'000)



Dandenong office facility

The most significant project in this driver category is the redevelopment of the Dandenong office facility at a forecast cost allocated to the VTS of $9.2 million.

APA GasNet has its major operational base and significant gas transmission infrastructure at its 68 hectare Dandenong site. This site includes two office buildings (Administration Building and Operations Building) used to house 132 persons.

The Administration and Operations Buildings were constructed in 1980 and subsequently refurbished in the mid-1990s. The Administration Building was built as office accommodation. The Operations Building was originally a store and workshop and was converted to office accommodation in the refurbishment.

There are significant issues and shortcomings associated with the current building that make it prudent to redevelop the site by building new, purpose-built office accommodation at the Dandenong site and demolishing the existing buildings. These issues and shortcomings involve:

- lack of space in the existing buildings to house current staff, with current utilisation of an induction room, the lunch room and temporary offices as extra office space;

- lack of permanent lunch room for staff due to lack of space. Provision of a lunch room is required under Victorian Occupational Health and Safety legislation. APA GasNet has provided a temporary lunch room in portable facilities, however this situation is unacceptable in the longer term;

- inappropriate building materials used in each building, making longer term habitation undesirable. This includes (currently stable) asbestos cladding on the administration building, and polystyrene sandwich panelling in the operations building. There is a need to address these issues before they represent health risks to staff;

- ongoing repair and maintenance required of older buildings, including frequent works on plumbing, mechanical services and roofing for both buildings;

- inefficient office layout which is not in keeping with APA Group's standard open plan office design; and

- no scope for business growth, with insufficient space to house current staff, much less the growth needs of the business.

The cost of the Dandenong office redevelopment has been allocated to the VTS in proportion to its use of the building. Additional workspace is being provided in the building for Victorian-based Corporate staff, which has been allocated to the Corporate group. By including accommodation for additional Corporate staff in the Dandenong Building redevelopment, APA Group can take advantage of significant economies of scale in building design and provision of incremental floor space and reduce its overall corporate costs.

SCADA system upgrade

There are a number of upgrades planned for the forecast period for the Supervisory Control and Data Acquisition (SCADA) system.

The existing SCADA system is used to monitor, maintain assets and at times operate the VTS (where AEMO systems are down). This system is critical to being able to monitor the performance of assets and not operating undertake initial diagnostics of asset faults within the VTS.

APA Group's National SCADA Blueprint released in November 2009, recommended that all APA Group SCADA systems in operation across the country be migrated to ClearSCADA[56]. This gradual migration to a common SCADA platform would mean

[56] ClearSCADA is an integrated SCADA host platform that includes a polling engine, real-time database, historian, web server, alarm redirection for text messaging and email and a reporting package

that APA Group could access significant economies of scale in its SCADA operations and maintenance, and reduce key person and other risks associated with specialist SCADA knowledge requirements across the business. In particular, benefits were identified as arising from:

- A national scalable ClearSCADA licence and maintenance agreement for existing and future APA Group requirements;
- An APA SCADA Development Centre, with a goal of having 60 per cent of SCADA development across APA undertaken by in-house resources by 2012;
- National selection of a ClearSCADA vendor to provide external support and development;
- Associated development of an Enterprise Historian to capture all of APA Group's SCADA-related data and removal of all direct interfaces to SCADA (thereby improving SCADA security) – see APA GasNet's reported capital expenditure in the earlier access arrangement period for details of this part of the project; and
- A standard Disaster Recovery architecture.

The transition of APA GasNet's SCADA system to the ClearSCADA system is scheduled for the forecast period as the existing APA SCADA system is becoming more difficult to maintain, with technical expertise to undertake modifications to the system difficult to obtain. There is also limited support from the manufacturer for the product in Australia and development of internal expertise is made difficult as suitable training courses rely on the availability of international resources.

Forecast costs for the replacement of the current system are $3.8 million, scheduled for 2013.

Summary

Non-system capital expenditure is required to support the system and ensure that pipeline services can be provided to AEMO.

The projects described and others in this category above meet Rule 79(2)(c) in that they are either required to comply with relevant regulatory obligations or standards, or are necessary to ensure the ongoing safety or integrity of the VTS (also related to regulatory obligations). For each project, APA GasNet has considered alternative options, including the 'do nothing' option, and concluded that the projects are consistent with the actions of the prudent service provider acting efficiently and in accordance with good gas industry practice as required under Rule 79(1). Further details of this analysis in included in the project business cases provided with this submission.

6.3.5. Forecast capital expenditure by asset class

Table 6.6 shows forecast capital expenditure by asset class.

Table 6.6 - Forecast capital expenditure by asset class

$'000 (2012)	2013	2014	2015	2016	2017	Total
Pipelines	22,376	187,687	15,659	8,783	4,738	239,243
Compressors	14,830	48,807	1,722	237	3,151	68,748
City gates and field regulators	5,653	5,190	4,290	1,586	515	17,234
Odourant plants	-	-	-	-	-	-
Gas Quality	225	357	102	102	-	787
Other	1,526	719	1,774	2,327	3,079	9,424
Buildings	4,648	5,603	217	186	31	10,686
Land	-	-	259	-	-	259
Total	**49,257**	**248,364**	**24,023**	**13,222**	**11,514**	**346,380**

7 Capital base

7.1. Opening capital base for the access arrangement period

7.1.1. Opening capital base for the earlier access arrangement period

APA GasNet estimated capital expenditure for 2007 was $101.5 million ($2012), and this amount was rolled into the 2008 opening capital base.

In 2007, APA GasNet's actual expenditure was $82.2 million. Slower than expected progress on the Brooklyn Lara Pipeline works contributed $9.6 million of this shortfall. The remaining underspend related to various projects, in particular significant delays in undertaking works on gas heating facilities and city gates, as well as delays in work on the Wollert compressor station.

With the exception of two minor projects contributing in total less than $100,000 to the forecast amount for 2007, APA GasNet completed all projects it forecast to undertake in 2007 in the 2008-12 access arrangement period.

Taking account of this revised 2007 capital expenditure amount, the opening capital base for 2008 is $538.1 million ($nominal).

7.2. Roll forward methodology

7.2.1. Historical capital base rolled forward on 'as commissioned' basis

APA GasNet historically added capital expenditure to its asset base on an 'as commissioned' basis. This approach had been in place for a number of access arrangements and meant that APA GasNet may have incurred expenditures some time before the related assets were reflected in the capital base and earned a return.

To address the lag in earning a return on capital expended, in its 2008 decision the ACCC approved the capitalisation of interest during construction as part of APA GasNet's capital base.[57]

As discussed below, this access arrangement revision proposal moves to the AER's 'partial as-commissioned' approach, consistent with other businesses subject to the AER's regulatory purview.

[57] Decision in the ACCC draft decision and not revisited in the final decision, see Australian Competition and Consumer Commission 2007, *Revised access arrangement by GasNet Australia Ltd for the Principle Transmission System: Draft Decision*, 14 November, p 17

7.2.2. Treatment of capital expenditure incurred over two access arrangement periods

The ACCC's 2008 draft and final decisions noted restrictions under the National Gas Code meant that actual expenditure in one period could not be counted as forecast expenditure in the next.[58] This situation is likely to arise where capital projects span two access arrangement periods and capital is added to the capital base on an 'as commissioned' basis.

Two projects were forecast to span the period between the second and third access arrangement period (2007-2008): Brooklyn Lara Pipeline project (Corio loop) and the Gooding Compressor Station project. To address this issue, the ACCC required APA GasNet to split these projects and forecast expenditure to the end of 2007 (to be included in the opening capital base for the 2008-2012 access arrangement) and remaining expenditure (to be included as forecast capital expenditure for the 2008-12 access arrangement). Interest during construction was also split between the periods.[59]

Transitional arrangements for the National Gas Law and Rules effectively apply the former National Gas Code to decisions made under access arrangements approved under that Code.[60] This means that a similar approach should be applied for roll forward of the capital base for the commencement of the earlier access arrangement period.

Consistent with the approach under the National Gas Code (which is also reflected in the NGR) APA GasNet has rolled forward its capital base using actual expenditure in 2007 for projects that span two access arrangement periods. In practice this means that a number of projects (more than the two listed above) incurred costs in 2007, but were not commissioned until 2008. After roll in of 2007 actual capital expenditure, the remainder of expenditure associated with these projects is then included in capital expenditure in the earlier access arrangement period (from 2008).

APA GasNet notes that this approach is also consistent with the NGR (Rule 77(2)(b)) which requires the roll forward of the capital base to be on the basis of actual capital expenditure.

7.3. Conforming capital expenditure during the earlier access arrangement period

Conforming capital expenditure for the earlier access arrangement period is described in section 6.2 and is submitted in Table 6.1. As discussed in chapter 6, APA GasNet considers its capital expenditure in the earlier access arrangement period to be prudent and efficient.

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[58] ACCC 2008, *Final Decision*, p 15
[59] ACCC 2008, *Final Decision*, p 15
[60] NGL, Schedule 3, section 3

In summary, the amount of conforming capital expenditure for the earlier access arrangement period is as shown in Table 7.1.

Table 7.1 - Capital Expenditure over the earlier access arrangement period

$m (nominal)	2008	2009	2010	2011	2012	Total
Capital expenditure	34.7	9.5	10.5	48.7	50.6	154.0

7.4. Amounts added to the capital base under Rules 82, 84 and 86

Rule 82 addresses the treatment of capital contributions by users in capital expenditure. The effect of the rule is that capital expenditure, to the extent contributed by users, is not eligible for inclusion in the capital base unless a mechanism is proposed under sub-rule 82(3) to prevent the service provider from raising increased revenue as a result of the inclusion.

APA GasNet did not receive any capital contributions in respect of non-conforming capital expenditure in the period, and therefore there are no amounts to be added to the opening capital base under Rule 82.

Rule 84 relates to the formation of a speculative capital expenditure account, and how amounts included in a speculative capital expenditure account can be added to the capital base. APA GasNet does not currently have any expenditure in a speculative capital expenditure account, and did not roll any expenditure from a speculative capital expenditure account into the capital base during the earlier access arrangement period.

Further, APA GasNet did not undertake any non-conforming capital expenditure over the earlier access arrangement period that was recovered through a surcharge or that was added to a speculative capital expenditure account.

A redundant asset is an asset that ceases to contribute in any way to the delivery of pipeline services. APA GasNet has not identified any assets that became redundant during the earlier access arrangement period, and therefore has not identified any redundant assets that must be removed from the capital base.

Rule 86 relates to the re-use of redundant assets. APA GasNet did not re-use any assets during the earlier access arrangement period that it had previously identified as redundant, and therefore does not forecast any amounts to be added to the capital base under this Rule.

7.5. Disposals

APA GasNet had minor disposals in the earlier access arrangement period which are recorded in the financial model accompanying this submission.

7.6. Depreciation over the earlier access arrangement period

The capital base has been rolled forward using the depreciation allowed by the ACCC in its 25 June 2008 Final Decision, and as adjusted for outturn inflation, as shown in Table 7.2 and Table 7.3 below.

Table 7.2 - ACCC Forecast depreciation over the earlier access arrangement period[61]

$m (nominal)	2008	2009	2010	2011	2012
Pipelines	19.38	20.57	21.38	21.98	22.59
Compressors	4.94	7.14	8.95	9.40	9.94
City gates and field regulators	1.24	1.54	1.61	1.65	1.66
Odourant plants	0.01	0.01	0.01	0.02	0.02
Gas Quality	0.10	0.11	0.11	0.12	0.14
General Building	0.26	0.32	.032	0.35	.038
Total	**26.72**	**30.53**	**33.27**	**34.07**	**35.26**

Table 7.3 - Outturn depreciation and indexation over the earlier access arrangement period

$m (nominal)	2008	2009	2010	2011	2012
Depreciation	-27.0	-30.7	-33.4	-34.3	-35.5
Indexation	19.8	12.0	14.9	17.1	14.7
Net Regulatory Depreciation	**-7.2**	**-18.7**	**-18.5**	**-17.2**	**-20.8**

7.7. Indexation

As outlined above, the capital base has been indexed for outturn inflation, consistent with the AER's decision of 25 June 2008.

7.8. Capital base roll forward 2008-2012

The Capital Base has been rolled forward in accordance with the provisions of Rule 77(2). The opening capital base for the access arrangement period is shown in Table 7.4 below.

[61] GasNet 2008, *GasNet Access Arrangement Information*, Table 3-4.

Table 7.4 - Capital base roll forward 2008-2012

$m (nominal)	2008	2009	2010	2011	2012
Opening capital base	538.1	568.8	560.4	552.6	588.9
Plus conforming capex	37.8	10.2	10.7	53.6	52.5
Plus speculative capex					
Plus reused redundant assets					
Less depreciation	-27.0	-30.7	-33.4	-34.3	-35.5
Plus indexation	19.8	12.0	14.9	17.1	14.7
Less redundant assets					
Less disposals					
Closing capital base	**568.8**	**560.4**	**552.6**	**588.9**	**620.6**

7.9. Projected capital base for the access arrangement period

7.9.1. Opening capital base in 2013

Consistent with the provisions of Rule 77(2), the opening capital base as at 1 January 2013 is the same as the closing capital base as at 31 December 2012, which is calculated in Table 7.4 above.

7.9.2. Forecast capital

Forecast capital expenditure is addressed in section 6.3. In summary, forecast capital expenditure is shown in Table 7.5 below.

Table 7.5 - Forecast capital expenditure

$m (nominal)	2013	2014	2015	2016	2017	Total
Capital expenditure	50.5	260.9	25.9	14.6	13.0	364.9

7.9.3. Roll forward methodology

As discussed above, APA GasNet historically applied interest during construction to projects undertaken over more than a single year. Under this approach, capital investment would not enter the capital base until it was commissioned, at which time APA GasNet would commence earning a return on and return of the invested capital.

In this access arrangement, APA GasNet applies the AER's 'partial as-commissioned' approach to recording capital expenditure. Under this approach, capital expenditure enters the capital base and commences earning a return as it is invested; interest during construction is not added to the capital base. The asset does not commence depreciation until it is commissioned.

This is the AER's standard approach, applied to other assets under the AER's regulatory purview:

> The AER applies a partially as-incurred approach to the recognition of capex. Capex can be recognised as it is incurred (spent) or when the asset is commissioned (put into service). … the partially as-incurred approach provides for the return on capital to be calculated using a RAB determined on an as-incurred basis and the return of capital (regulatory depreciation) is calculated using a RAB determined on an as-commissioned basis.[62]

and

> The partially as-incurred approach for recognising capex means that the return on capital is calculated recognising capex on an as-incurred basis and the return of capital (regulatory depreciation) is calculated recognising capex on an as-commissioned basis.[63]

7.9.4. Non-conforming capital expenditure

Capital contributions

APA GasNet does not forecast any non-conforming capital expenditure to be recovered through a capital contribution during the access arrangement period.

Surcharges

APA GasNet does not forecast any non-conforming capital expenditure to be recovered through a surcharge during the access arrangement period.

Speculative capital expenditure

APA GasNet does not currently have any expenditure in a speculative capital expenditure account, and does not forecast any expenditure during the access arrangement period that it intends to add to speculative capital expenditure account.

Disposals

Disposals in the earlier access arrangement period were minor. APA GasNet does not forecast any disposals in the access arrangement period.

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[62] AER 2010, *Explanatory statement -Proposed amendment - Electricity transmission network service providers Roll forward model*, August, p 4

[63] AER 2010, *Final decision - Amendment - Electricity transmission network service providers Roll forward model*, December, p 8

7.9.5. Depreciation over the access arrangement period

APA GasNet has not changed the standard asset lives from those approved by the ACCC at the last review. The remaining asset lives, as at 01 January 2013, for forecast depreciation purposes are as shown in Table 7.6.

Table 7.6 - Remaining asset lives for depreciation purposes

Asset Class	Standard life (years)	Remaining life (years)
Pipelines	55	26.4
Compressors	30	21.5
City Gates & Field Regulators	30	23.8
Odourant Plants	30	23.6
Gas Quality	10	-
Other	5	4.1
General Buildings	60	33.5
General Land	n/a	n/a

7.9.6. Indexation of the capital base

The capital base is not adjusted for inflation beyond 31 December 2012.

The key difference between the nominal and real approach is that under the real approach, the capital base is indexed, but the return of capital component is reduced by the amount of the indexation (‘Regulatory Depreciation’). Under this approach, inflation is included in both the indexation of the capital base and in the nominal WACC, but then subtracted through the Regulatory Depreciation in calculating the revenue requirement.

In contrast, under the nominal approach, the capital base is not indexed for inflation, but the return of capital component is similarly not reduced. Inflation in this methodology is recognised only once, in the calculation of the nominal WACC.

In both cases, the effect of inflation has been included once only.

APA GasNet has accomplished this by rolling forward the 2012 closing capital base, as the opening capital base for 2013.

While the annual returns on and of capital in a particular year will differ between the two methodologies, the NPV of the returns, over the life of the asset, are the same under either approach, or on changing from one approach to the other.

APA GasNet demonstrates this with the following worked example. In this example, in which it is assumed that the nominal WACC is 10% and CPI is 2.5%, an asset costing $100, with a useful life of 25 years, is managed for 15 years under an indexation framework, and then changed to a nominal framework. In this example, the capital base is indexed for the first 15 years, and the depreciation component is reduced by the amount of the indexation. The closing capital base for Year 15 then becomes the opening capital base for Year 16. From Year 16 to the end of the asset's life, the capital base is not subject to inflation, and the depreciation component is not reduced for any indexation. The net present value of the cash flows is $100, precisely the same as the original cost of the asset.

Table 7.8 over page demonstrates that the NPV of returns (on and of capital) is neutral over the life of the asset

7.9.7. Projected capital base over the period

The projected capital base has been rolled forward in accordance with the provisions of Rule 78, as shown in Table 7.7 below.

Table 7.7 - Capital base roll forward 2013-2017

$m (nominal)	2013	2014	2015	2016	2017
Opening capital base	620.6	648.3	903.2	896.5	876.7
Plus conforming capex	54.4	282.2	27.8	15.7	14.0
Plus speculative capex					
Plus reused redundant assets					
Less depreciation	-26.7	-27.3	-34.5	-35.5	-33.5
Less redundant assets					
Less disposals					
Closing capital base	648.3	903.2	896.5	876.7	857.1

Table 7.8 – Demonstration of neutral NPV with change in indexation

Year	Opening real value	Straight line depreciation	Inflation	Regulatory depreciation	Closing real value	Real return (on + of) capital	Opening nominal value	Straight line depreciation	Closing nominal value	Nominal return (on + of) capital	Returns (on + of capital) with change from real to nominal after 15yrs
1	100	4	2.5	1.5	98.5	11.5					11.5
2	98.5	4.1	2.5	1.6	96.9	11.5					11.5
3	96.9	4.2	2.4	1.8	95.1	11.5					11.5
4	95.1	4.3	2.4	1.9	93.1	11.5					11.5
5	93.1	4.4	2.3	2.1	91.0	11.4					11.4
6	91.0	4.6	2.3	2.3	88.7	11.4					11.4
7	88.7	4.7	2.2	2.5	86.3	11.3					11.3
8	86.3	4.8	2.2	2.6	83.7	11.3					11.3
9	83.7	4.9	2.1	2.8	80.8	11.2					11.2
10	80.8	5.1	2.0	3.0	77.8	11.1					11.1
11	77.8	5.2	1.9	3.2	74.6	11.0					11.0
12	74.6	5.3	1.9	3.5	71.1	10.9					10.9
13	71.1	5.5	1.8	3.7	67.4	10.8					10.8
14	67.4	5.6	1.7	3.9	63.5	10.7					10.7
15	63.5	5.8	1.6	4.2	59.3	10.5					10.5
16							59.3	5.9	53.4	11.9	11.9
17							53.4	5.9	47.4	11.3	11.3
18							47.4	5.9	41.5	10.7	10.7
19							41.5	5.9	35.6	10.1	10.1
20							35.6	5.9	29.6	9.5	9.5
21							29.6	5.9	23.7	8.9	8.9
22							23.7	5.9	17.8	8.3	8.3
23							17.8	5.9	11.9	7.7	7.7
24							11.9	5.9	5.9	7.1	7.1
25							5.9	5.9	0.0	6.5	6.5
										NPV	**$100.00**

8 Return on capital

8.1. Introduction

This chapter sets out APA GasNet's estimate of the weighted average cost of capital (WACC) to apply to the VTS in the access arrangement period. Details of the individual WACC parameters and methodologies used to estimate these parameters are explained in the remainder of this section.

8.1.1. Legal requirements

The NGL and NGR govern all aspects pertaining to access to natural gas pipelines and, as such, regard to the relevant provisions of the legislation must be made when estimating the WACC for the VTS. In particular, it is essential that the estimated WACC is in accord with:

- the National Gas Objective as set out in the NGL:

  The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.[64]

- Rule 87 (Rate of Return) of the NGR:

  (1) The rate of return on capital is to be commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.

  (2) In determining a rate of return on capital:

  (a) it will be assumed that the service provider:

  (i) meets benchmark levels of efficiency; and

  (ii) uses a financing structure that meets benchmark standards as to gearing and other financial parameters for a going concern and reflects in other respects best practice; and

  (b) a well accepted approach that incorporates the cost of equity and debt, such as the Weighted Average Cost of Capital, is to be used; and a well accepted financial model, such as the Capital Asset Pricing Model, is to be used.

Rule 74(2), which states that a forecast or estimate must be arrived at on a reasonable basis and must represent the best forecast or estimate possible in the circumstances.

[64] National Gas Law, section 23

8.1.2. Proposed approach

APA GasNet proposes to estimate the rate of return on the VTS based on a nominal 'vanilla' post-tax WACC, which is defined by the following formula:

$$WACC = r_e \frac{E}{D+E} + r_d \frac{D}{D+E}$$

Where:

r_e is the nominal return on equity, determined by a domestic Sharpe-Lintner capital asset model (CAPM), ie:

$$r_e = r_f + \beta_e \times (r_m - r_f)$$

where

r_f is the domestic risk free rate;

β_e is the equity beta of a hypothetical gas pipeline service provider; and

$(r_m - r_f)$ is the domestic market risk premium;

r_d is the nominal cost of debt, as observed from observable domestic corporate bond performance, ie:

$$r_d = r_f + DM$$

where

DM is the nominal debt margin, ie, the difference between the risk free rate and the yield on appropriately rated corporate debt.

$\frac{D}{D+E}$ is the debt to value ratio of a benchmark efficient business; and

$\frac{E}{D+E}$ is the equity to value ratio of a benchmark efficient business.

The proposed values for each of the above WACC parameters are set out in the following sections of this chapter.

8.2. Risk free rate

The risk free rate is used in the calculation of both the nominal return on equity (r_e) and the nominal cost of debt (r_d), and is equivalent to the return an investor would require from a risk-free investment. However, the financial market does not contain an investment that is completely free from risk, resulting in the need to calculate a proxy. APA GasNet proposes to estimate this proxy to the risk free rate as per the standard AER practice, which involves the following steps:

1. based on the indicative mid rates for Commonwealth Government Securities (CGS) published by the Reserve Bank of Australia, identify the two CGSs whose expiry dates overlap the date which is 10 years from the end of the sample period;
2. calculate an indicative ten year CGS yield for this date by interpolating on a straight-line basis the yields associated with these two CGSs;
3. annualise the derived 10 year CGS yield;[65] and
4. calculate the arithmetic average of this annualised yield over the 20 trading days of the sampling period.

In order to ensure that the rate of return reflects the prevailing conditions in the market for funds at the start of the access arrangement period, the AER has established a standard practice to require the business to propose a sampling period close to the start of the access arrangement period. By letter dated 23 March 2012, the AER advised APA GasNet that it was considering changing the expected date for the final decision, and therefore the start of the access arrangement period, to a date in 2013.

At the timing of filing this revision proposal, the commencement date of the access arrangement is uncertain. It is therefore not possible for APA GasNet to nominate a particular averaging period with any certainty that it will be close to the commencement date.

Accordingly, APA GasNet has proposed a methodology in which the AER will notify APA GasNet of the expected date of the draft and final decisions, and APA GasNet will nominate an averaging period once those dates are known. APA GasNet's proposed methodology for establishing the sampling period is contained in confidential Attachment D-6. For the purpose of calculating an indicative WACC estimate, the risk free rate has been estimated using a sampling period starting 21 November 2011 and ending 16 December 2011. The resulting average was 3.99 per cent.

8.3. Gearing

Gearing is measured as the ratio of debt (D) to total value (D+E), and is used to weight the return on equity (r_e) and the cost of debt (r_d) in the calculation of the vanilla WACC. APA GasNet is assuming a gearing ratio of 60 per cent debt to value in the access arrangement period. Such a gearing ratio is in line with the AER's most recent review of the WACC parameters that are to apply to electricity transmission

[65] Since the reported yields are calculated as the sum of the semi-annual payments. See the Reserve Bank of Australia, Terms and Conditions of Issue – Treasury Bonds, 18 February 2002, pp 2 and 3

and distribution network service providers, in which the AER adopted a gearing ratio of 60 per cent.[66]

8.4. Debt risk premium

The cost of debt is the sum of the risk free rate and the debt risk premium (DRP). The purpose of the DRP is to compensate the additional cost of debt financing a benchmark regulated gas pipeline, above the yield on Australian government debt which is deemed to be risk free.

The estimation of the DRP has been a source of considerable dispute in recent gas and electricity regulatory proceedings. With the cessation of the publication of CBASpectrum's fair value estimates in 2010, Bloomberg is the only remaining recognised provider of fair value estimates. However, rather than relying upon Bloomberg's (extrapolated) estimates, the AER in its most recent draft decision has elected to calculate the DRP based on an arithmetic average yield of a sample of bonds that met all of the following conditions:[67]

- Australian domestic corporate issuances;
- received a rating of either BBB, BBB+ or A- by Standard and Poor's;
- have between 7 and 13 years remaining term to maturity; and
- for which yield data are available from Bloomberg or UBS.

The Victorian gas businesses have jointly commissioned the Consulting Economics Group[68] (CEG) and PwC[69] to advise them on the appropriate DRP. The CEG report (included as Attachment G-1 to this submission) and PwC report (included as Attachment G-2 to this submission) examine the implications of the most recent approach adopted by the AER to estimating the DRP.

Specifically, PwC and CEG find that the AER's new approach contains a number of serious flaws. Specifically, by setting aside the Bloomberg fair value curve the AER has ignored a respected source of market data that the Australian Competition Tribunal (the Tribunal) has consistently held to be an appropriate benchmark for

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[66] AER 2009, *Electricity transmission and distribution network service providers, Review of the weighted average cost of capital (WACC) parameters, Final decision*, May, p 126 (provided in the *cost of capital reference material at SG.1*)
Note that the AER conducts a review of the WACC parameters that are to apply to electricity transmission and distribution network service providers approximately once every five years.
[67] SG.2 – AER 2011, *Draft decision, Powerlink transmission determination, 2012-13 – 2016-17,* November, p 215; SG.3 – AER 2011, Dr*aft distribution Determination Aurora Energy Pty Ltd 2012-13 to 2016-17*, November, pp 216 -217
[68] CEG 2012, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March, pp 45-59.
[69] PwC 2012, *Estimating the benchmark debt risk premium – A report for SP AusNet, Multinet Gas and Envestra*, March 2012, pp 6- 9.

estimating the DRP. The Tribunal's reasoning on the use of Bloomberg curves was set out in the Envestra decision:

> The Tribunal, of course, accepts that in the first instance it is for the AER to determine whether to rely upon the Bloomberg curve, or to accept the extrapolation of that curve in the manner done in the past. It is not obliged to do so, although given the past regulatory decisions it may be expected to do so unless there were sound reasons to depart from that practice. For the future, that is a matter for the AER.[70]

The Tribunal also stated that yields by Bloomberg (and other service providers) should continue to be relied on:

> so long as the published curves are widely used and market respected.[71]

APA GasNet considers that the evidence presented by the AER does not provide sound reasons for departing from its past practice and fails to show that Bloomberg fair value curves are not widely used and market respected. To point, CEG notes that:

> the Bloomberg fair value curve is built for and commercially provided to debt market participants who pay to use it for commercial purposes. In deriving its fair value curves Bloomberg has a great deal of information available to it – including, but not limited to, estimates of market prices of many hundreds of bonds across a range of credit ratings and maturities (including but, again, not limited to the BBB to A- bonds charted in this report).

Furthermore, CEG provide a comprehensive rebuttal of the eight reasons given by the AER for rejecting the Bloomberg fair value curves and concludes that:

> I do not consider that any of these provide a reasonable basis upon which to conclude that Bloomberg's fair value estimates should not be relied upon once validated against the full range of available data.[72]

PwC and CEG also identified a number of methodological errors in the AER's approach specifically, the inclusion of bonds issued by:

- Coca Cola - where the yield on this bond is estimated by Bloomberg, not by direct observations in terms of bids, asks or executed transactions, but by reference to observed comparables, including:
  - the Queensland Treasury Corporation;
  - the New South Wales Treasury Corporation;

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70 SG.9 - Application by Envestra Limited (No 2)[2011] ACompT 4, paragraph 120

71 SG.4 - Application by Jemena Gas Networks (NSW) Ltd (No. 5) [2011] ACompT 10, paragraph 62; and SG.10 - Application by ActewAGL Distribution [2010] ACompT 4, paragraph 78

72 CEG 2012, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March, p 49

- the Treasury Corporation of Victoria;
- Eurofima - a AAA rated government owned business; and
- KFW - a AAA rated business owned by the German government;

- SPAusNet whose yields were lower due to implicit parental support of the issuer's owners (that is, the Government of Singapore).

The removal of these bond yields from the sample relied on by the AER would increase the DRP calculated for Powerlink and Aurora in their draft decisions from 3.14 to 3.50 per cent. This highlights that the AER's methodology of setting the DRP by reference to a few comparable bonds is very sensitive to the selection criteria adopted by the AER. APA GasNet considers that a robust methodology would not deliver a DRP that is highly variable to whether one or two bonds are included in the sample.

A further criticism is that the AER's new approach of using an arithmetic average bond yield is unnecessarily simplistic. The use of more sophisticated econometric techniques would allow the AER to have regard to a wider sample of bond yields. For example, PwC's analysis of direct market data has regard to the yield on 68 different bonds.

Furthermore, the AER's new approach implicitly assumes that the key relationships of term to maturity and credit rating are linear. For example, a simple average of a 9 and 11 year bond would only produce an unbiased estimate of a 10 year bond if there was a linear relationship between bond yields and terms. Similarly, a simple average of an A- and BBB rated bond would only provide an unbiased estimate of BBB+ bond yield if there was a linear relationship between bond yields and ratings. The AER provides no evidence of a linear relationship for either bond terms or yields, when in fact PwC finds that there is evidence that a nonlinear regression best fits the data during the 20 day period ending the 16 December 2011.

8.4.1. PwC estimate of the DRP

PwC estimated the 10 year BBB+ debt risk premium for a 20 day average period up to 16 December 2011, and recommends that the benchmark DRP be estimated by reference to the Bloomberg fair value curve extrapolated to 10 years.

The longest maturity BBB fair value curve published by Bloomberg is 7 years. PwC estimates that the spread of BBB debt to CGS yields increases by 7.6 basis points per year as the Bloomberg fair value curve is extended from 7 to 10 years. This estimate is based on an examination of the increase in spreads on matched pairs of bonds (from the same issuer) that have maturities comparable to 7 and 10 years.[73]

The matched pair bonds examined by PwC are set out below in Table 8.1.

[73] Noting slight variance for rounding

Table 8.1 - Average annual increment in the debt risk premium for paired bonds – 20 business days to 16 December 2011

	Short Maturity (years)	Long maturity (years)	DRP Bloomberg (bps)	DRP UBS (bps)	DRP increment (bps per annum)
Telstra	4.7	8.6	9.0	9.5	9.3
Stockland	4.6	9.0	7.1	4.8	5.9
Sydney Airport	4.0	10.0	n/a	7.7	7.7
Average increment			**7.1**	**7.3**	**7.6**

Table 3 of PwC, Estimating the benchmark debt risk premium – A report for SP AusNet, Multinet Gas, Envestra and APA Group, March 2012, page 22.

PwC has cross checked this Bloomberg extrapolation through a direct examination of market data estimates of the DRP using economic regressions with different functional forms. PwC tested a range of linear and non-linear functional forms and found that:

> …out of 411 regressions, the linear functional form had the lowest SIC [Schwatz Information Criterion] in 340 (82.7 per cent) cases, followed by the power functional form (superior 71 times). The remaining functional forms did not have the lowest SIC for any 20 day averaging period.[74]

Regressions using a linear and power functional form resulted in a DRP for a 10 year BBB+ bond of 398 and 385 basis points, respectively. PwC finds that its direct examination of market data estimates of the DRP was consistent with the DRP estimated from extrapolating the Bloomberg fair value curve.

8.4.2. CEG estimate of the DRP

CEG was instructed to test the accuracy of the Bloomberg fair value curve as extrapolated to 10 years by PwC, as set out above. CEG undertook a number of tests to ascertain whether the extrapolated Bloomberg fair value curve provides a robust fit to the data. CEG analysis compared the extrapolated Bloomberg fair value curve to:

- corporate bonds issued by Australian companies in Australian dollars;
- corporate bonds issued by Australian companies in a foreign currency once these are swapped into Australian dollars; and
- alternative fair value curves constructed by CEG.

[74] PwC 2012, *Estimating the benchmark debt risk premium – A report for SP AusNet, Multinet Gas, Envestra and APA Group*, March, p 26

Examination of Australian bond yields

CEG approached this task by first identifying a population of fixed and floating corporate bonds issued by Australian companies in Australian dollars rated between BBB to A- on issue during the period from 21 November 2011 to 16 December 2011. This population consists of 145 bonds with terms to maturity that range from one month to over 20 years. [75]

CEG first compares the extrapolated BBB Bloomberg fair value curve against those bonds that meet the criteria described above and are rated BBB+ only. CEG finds that the extrapolated Bloomberg BBB fair value curve provides a reasonable estimate for bonds rated BBB+.

CEG notes that the sample size of BBB+ bonds is small and therefore extends its analysis to include a selection of bonds to include fixed and floating corporate bonds issued in Australia in Australian dollars rated BBB to A-, with maturity greater than one year. CEG notes that:

> Including bonds rated BBB and A- expands the number of bonds materially. However, it does not provide a basis for altering the conclusion that the Bloomberg fair value curve is a good fit to the available data.[76]

Examination of foreign bond data

CEG then extended its analysis to consider a number of long dated BBB+ and similarly rated foreign currency bonds issued by Australian companies. CEG finds that yields on BBB+ foreign currency bonds issued by Australian companies and swapped back into Australian dollars provides a very good fit to the extrapolated Bloomberg fair value curve.[77]

CEG then extended its sample of foreign bonds to include A- to BBB rated bonds. CEG concluded that the expanded sample shows[78]:

- BBB+ bond yields (swapped into Australian dollar terms) sitting mostly on or very close to the extrapolated Australian Bloomberg BBB fair value curve (the curve);
- BBB bonds sitting mostly above, but sometimes below, the curve; and
- A- bonds sitting mostly below, but sometimes above, the curve.

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[75] CEG 2012, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March, p10

[76] CEG 2012, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March, p 13

[77] CEG 2012, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March, p 25

[78] CEG 2012, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March, p 26

Examination of alternative fair value curves

CEG also compared the extrapolated Bloomberg fair value yields against a number of fair value curves estimated by CEG. CEG fair value yields are estimated using a yield curve functional form based on the method introduced by Nelson and Siegel, to approximate yield curves for US Treasury bills.

CEG estimated a number of Nelson-Siegel yield curves, relying upon the following datasets:

- Australian issued Australian dollar bonds rated BBB+ only;
- Australian issued Australian dollar bonds rated BBB to A-;
- Australian issued bonds (foreign currency) rated BBB+ only;
- Australian issued bonds (foreign currency) rated BBB to A-;
- Australian issued bonds (both Australian dollar and foreign currency) rated BBB+ only; and
- Australian issued bonds (both Australian dollar and foreign currency) rated BBB to A-.

CEG concludes that:

> … the application of this methodology provides compelling evidence that the preponderance of bond yield data is supportive of a 10 year BBB+ Australian corporate bond DRP consistent with the extrapolated Bloomberg fair value curve figure of 3.92% per annum.[79]

APA proposed indicative DRP

Based on this analysis provided by PwC and CEG, APA GasNet proposes that a DRP be estimated by extrapolating the BBB Bloomberg fair value yield to 10 years using a paired bond methodology. This approach best satisfies the requirements of Rule 74(2) as the best estimate of the DRP possible in the circumstances. Over the indicative period of the 20 business days up to and including the 16 December 2011 this approach would result in a DRP of 3.92 per cent.

8.5. Market risk premium

The market risk premium (MRP) is the difference between the observed market rate of return and the risk free rate – ie, calculated as (r_m – r_f). The MRP is a forward looking parameter that is not able to be directly observed, and as such, it is necessary to estimate the MRP.

[79] CEG 2012, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March, p 29

In this section, APA GasNet:

- Examines the AER's methodology to estimating the DRP;
- Outlines the attached CEG expert report examining the relationship between the risk free rate and the market risk premium and the historical stability of the resultant cost of equity, and the resulting estimate of the MRP in prevailing market conditions;
- Provides an estimate of the MRP using a peer-reviewed regime-switching approach, prepared by NERA; and
- Presents three independent estimates of the MRP by CEG, NERA and Capital Research.

APA GasNet submits that the evidence clearly indicates that the MRP is in the order of 8.5 per cent based on the prevailing market conditions.

8.5.1. AER methodology

In its recent decisions, the AER has determined a 10 year forward looking MRP[80], by considering a number of estimation methods. Specifically these methods include[81]:

- historical excess returns – using long-term historical estimates of excess returns, both the arithmetic and geometric mean are calculated for a number of sampling periods. The AER considers that the MRP lies somewhere between the range of average estimates (ie, both a geometric and arithmetic mean are calculated for each sampling period, and these values then imply a possible range for the MRP);
- survey based estimates – surveys of both market practitioners and academics. The AER considers that such estimates are relevant when determining the MRP;
- current market conditions and economic outlook – this includes market commentary from economic organisations such as the Reserve Bank of Australia (RBA), the Organisation for Economic Cooperation and Development (OECD) and International Monetary Fund (IMF). The AER considers that this method is best suited to establishing whether there has been a structural break due to the GFC;
- dividend growth models – the MRP can be estimated by employing a revised version of the dividend growth model that uses market parameters as opposed to individual security parameters. The AER uses this model to provide a "general point of reference for assessing the reasonableness of the MRP"; and

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[80] SG.3 – AER 2011, *Draft Distribution Determination Aurora Energy Pty Ltd 2012-13 to 2016-17*, November, p 222

[81] SG.3 – AER 2011, *Draft Distribution Determination Aurora Energy Pty Ltd 2012-13 to 2016-17*, November, pp 214-216 and 230.

- implied volatility analysis – provides a short-term (up to a maximum of 12 months) estimate of the MRP. The AER places minimal weight on this estimate given that the MRP is based on a 10 year term.

The AER considers all of the above methods when determining the MRP, however the AER is of the view that the best estimate of the MRP can be determined based on the historical excess returns method.[82] That is, the MRP is predominately determined by the AER based on the arithmetic and geometric mean of historical excess returns, resulting in an MRP of 6 per cent.[83] The primacy of historical data was evident in the 2009 Statement of Regulatory Intent (SORI) where the AER stated:

> Following this approach leads the AER to place primary weight on long term historical estimates of the MRP, though also placing some weight on other measures such as cash flow based estimates and surveys.[84]

Note that during the early stages of the GFC, the AER increased the MRP from 6 to 6.5 per cent to allow for increased levels of uncertainty. However, the AER in its most recent decisions considers that current market conditions no longer justify the higher MRP value.[85]

8.5.2. Assessment of the AER's approach

APA GasNet has three significant concerns with the AER's current approach to setting the MRP:

- the almost exclusive reliance on estimates of the historical excess returns does not adequately consider the prevailing conditions in the market for funds;
- the adjustment made by the AER to raise the MRP to 6.5 per cent in its 2009 SORI[86] was an arbitrary adjustment and should not be considered a robust estimate of the prevailing MRP during the early stages of the GFC; and
- the adjustment made by the AER to reduce the MRP back to 6.0 per cent, effectively declaring the GFC to be over.

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[82] SG.3 – AER 2011, *Draft Distribution Determination Aurora Energy Pty Ltd 2012-13 to 2016-17*, November, p 229

[83] SG.3 – AER 2011, *Draft Distribution Determination Aurora Energy Pty Ltd 2012-13 to 2016-17*, November, p 229

[84] SG.1 – AER 2009, *Electricity transmission and distribution network service providers, Review of the weighted average cost of capital (WACC) parameters, Final decision*, May, p 236

[85] SG.3 – AER 2011, *Draft Distribution Determination Aurora Energy Pty Ltd 2012-13 to 2016-17*, November, pp 233-234

[86] SG.1 – AER 2009, *Electricity transmission and distribution network service providers, Review of the weighted average cost of capital (WACC) parameters, Final decision*, May, p 238

Reliance on historical excess returns

The Victorian gas businesses have jointly commissioned CEG[87] (included as Attachment G-3 to this submission) to evaluate the AER's current methodology used to estimate the MRP. CEG find evidence that:

- the MRP varies over time, and that variation tends to be in the opposite direction to movements in the CGS yield (ie, the MRP increases when the risk free rates are low); and
- the current conditions in the market are one of heightened risk premiums and scarcity premiums for CGS (ie, the risk free rate is below, and the MRP is above, their respective historical long term averages).

The implication of this evidence is that the AER's normal application of the Capital Asset Pricing Model (CAPM) is inappropriate. That is, combining a MRP measured by reference to historical excess returns on the market together with a current ('spot') measure of the risk free rate will result in a downward biased return on equity. CEG concludes that:

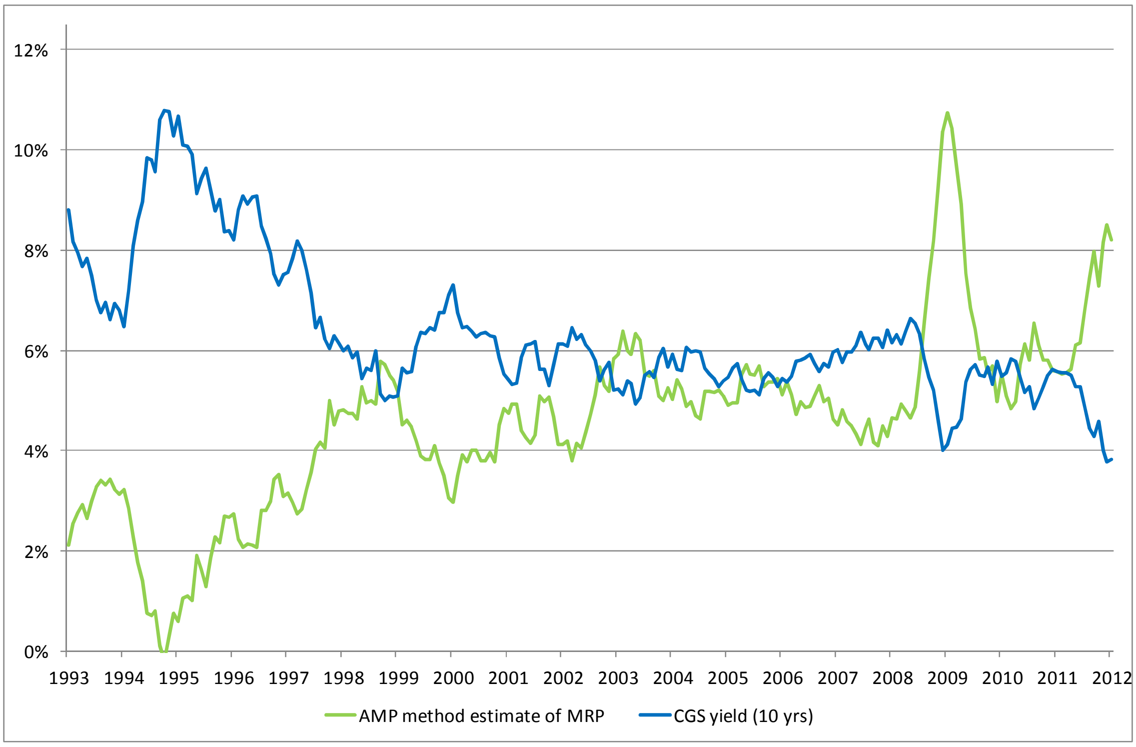
> the AER's methodology is not valid in current market conditions. Specifically, the assumption, implicit in the AER methodology, that the cost of equity has moved one-for-one with CGS yields and is currently at historically low levels is invalid.[88]

Note that this issue only becomes a material issue during unstable markets conditions such as we have recently experienced. The negative relationship between the MRP and the risk free rate was illustrated by CEG in Figure 11 of its report, which is reproduced in Figure 8.1 below. This figure shows the equity risk premium for Australian publically listed entities estimated using the AMP method against the yield on 10 year CGS.

[87] CEG 2012, In*ternal consistency of risk free rate and MRP in the CAPM - Prepared for Envestra, SP AusNet, Multinet and APA*, March

[88] CEG 2012, *Internal consistency of risk free rate and MRP in the CAPM - Prepared for Envestra, SP AusNet, Multinet and APA,* March, p vi

Figure 8.1 - Risk premiums on listed equities (AMP method) vs 10 year yields on CGS



Source: RBA, CEG analysis

CEG explains that the negative relationship between the MRP and the yields on CGS can be intuitively understood as follows:

> In periods of high investor risk aversion there is a flight from risky assets to safe assets. This tends to push up the price and push down the yields on safe assets. For this reason, falling risk free rates tend to be associated with rising investor risk premiums (and vice versa).[89]

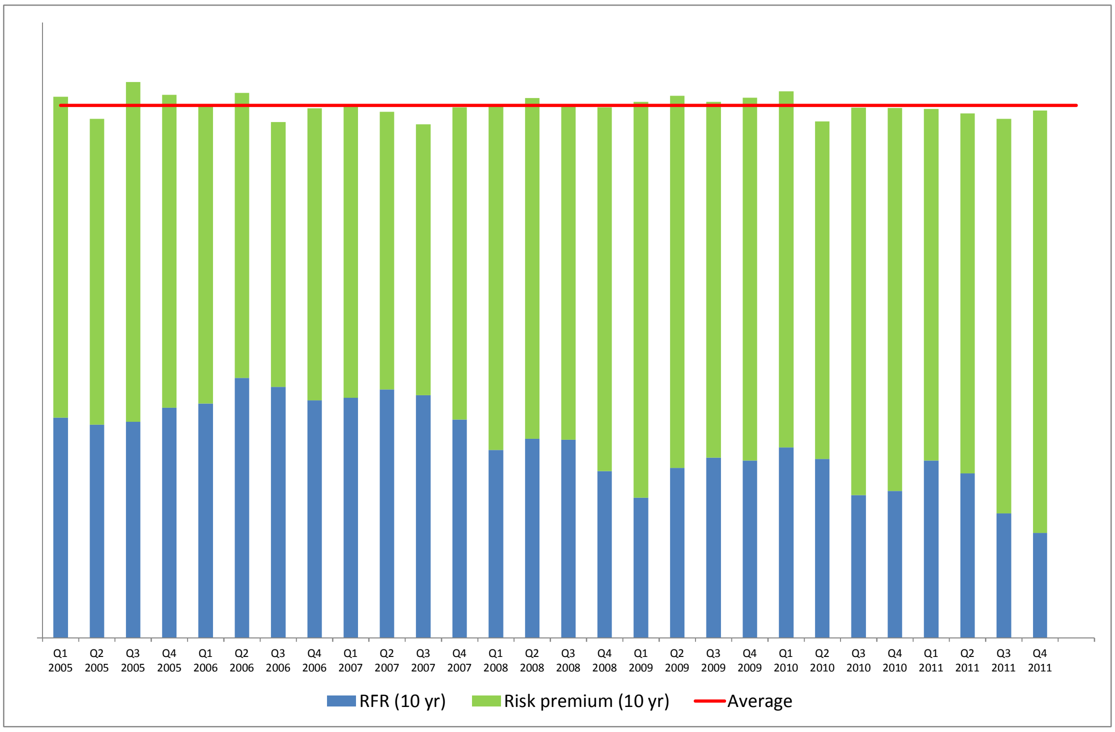
CEG also conclude that risk premiums have trended higher at times of lower CGS yields, such as those experienced in early 2009 and at the current time. This conclusion was reached following an examination of risk premiums for:

- low risk assets, such as State government debt and AAA fair value estimates;
- high risk bonds;
- equity markets, using information about dividend yields to approximate the forward looking MRP; and
- utility stocks, using a dividend growth model (DGM) to estimate the forward looking equity risk premium.

[89] CEG 2012, *Internal consistency of risk free rate and MRP in the CAPM - Prepared for Envestra, SP AusNet, Multinet and APA*, March, p iii

CEG also supports this inverse relationship by demonstrating that equity returns have remained relatively stable, although the risk free and risk premium components have varied over time:[90] This is shown in Figure 8.2 below.

Figure 8.2 - US regulatory decisions over time – broken into risk free rate and risk premium



APA GasNet finds this evidence compelling and believes that the AER's approach to estimating the cost of equity is not sustainable. The evidence is clear that, in order to derive a valid estimate the cost of equity, the AER must either:

- estimate the prevailing forward looking CAPM, ie, spot measures of the risk free rate together with forward looking indicators of the MRP; or
- estimate a long term CAPM, ie, a long term average risk free rate and MRP.

APA GasNet considers that the first approach better meets the requirements of Rule 87(1) that the return on capital is to be commensurate with prevailing conditions in the market for funds.

AER's previous adjustment to the MRP for the GFC

In the 2009 SORI the AER increased the MRP from 6.0 per cent to 6.5 per cent. In those decisions the AER's view was that a MRP of 6.5 per cent was appropriate to reflect market conditions mid-2009.

[90] CEG 2012, *Internal consistency of risk free rate and MRP in the CAPM - Prepared for Envestra, SP AusNet, Multinet and APA*, March, Figure 13, p 37

SFG Consulting was engaged by the Victorian gas businesses to consider a number of issues associated with the estimation of the MRP (this report is included as Attachment G-4 to this submission).[91]

SFG Consulting highlights that the AER's increase of the MRP to 6.5 per cent in mid-2009 was not based on any detailed calculation or modelling or analysis.[92] Rather, the AER selected an estimate of 6.5 per cent having regard to the desirability of regulatory certainty and stability.[93]

SFG concluded that:

> the 6.5% estimate should not be treated as any sort of theoretical or empirical maximum upper bound for MRP estimates.[94]

AER's conclusion that the GFC has ended

In four recent decisions the AER has decided to depart from the SORI value and adopt a MRP of 6.0 per cent. In those decisions the AER's view was that[95]:

- a MRP of 6.5 per cent was appropriate in mid-2009; and
- conditions in financial markets have since improved so that the long run average estimate of 6 per cent is now appropriate.

The AER reached this decision on the basis of the following analysis[96]:

- estimates by Value Advisor Associates (VAA) that showed the implied volatility in the Australian equity markets had reduced significantly since the height of the GFC; and
- statements by the RBA, the OECD and the IMF that Australia's economic conditions have normalised.

The analysis undertaken by the AER is incapable of reaching a conclusion whether or not the MRP has returned to its long term average. The statements by the RBA, OECD and the IMF are informed (and respected) opinions on the prospects of the

[91] SFG Consulting 2012, *Market Risk Premium: Response to selected issues arising out of the AER Final Decision for Envestra (South Australia*), 25 March

[92] SFG Consulting 2012, *Market Risk Premium: Response to selected issues arising out of the AER Final Decision for Envestra (South Australia),* 25 March, p 4

[93] SG.1 – AER 2009, *Electricity transmission and distribution network service providers, Review of the weighted average cost of capital (WACC) parameters, Final decision*, May, p 238

[94] SFG Consulting 2012, *Market Risk Premium: Response to selected issues arising out of the AER Final Decision for Envestra (South Australia),* 25 March, p 5

[95] SFG Consulting 2012, *Market Risk Premium: Response to selected issues arising out of the AER Final Decision for Envestra (South Australia),* 25 March, p 4

[96] SG.5 – AER 2011, *Envestra Access arrangement proposal for the QLD gas network 1 July 2011 – 30 June 2016*, June, pp 185-186

Australian economy, not informed commentary on the prevailing conditions in the Australian equities market. More relevant to the issue of whether the or not the MRP has return to its normal levels would be comments by these institutions on the prevailing appetite for risk.

To point APA GasNet notes that the RBA Governor, Glenn Stevens, in a recent speech expressed the view that:

> The shift in global portfolio allocation that seems to be associated with this is potentially very important. In a more risk adverse world, the supply of genuinely low-risk assets seems smaller. Countries that have offered a reasonably stable economic environment and relatively sound public finances – of which Australia is one – are attracting greater flows of official capital now than they did a decade ago. ….
>
> On the other hand, it amounts to a reduction in the cost of international capital for Australian borrowers, particularly government borrowers. At the margin, this has to make the task of ensuring fiscal soundness a little easier. Even for private borrowers the unusually low level of long-term rates for the official sector offsets a good deal of the ***widening in spreads due to perceptions of higher private credit risk*** (that being, of course, a global phenomenon).[97]

This statement by Glenn Stevens attests to the view that the MRP has not returned to 'normal' levels and remains at elevated levels. This illustrates the conclusion made by CEG that the fall in the risk free rate (due to the flight to low risk assets) during and after the GFC also corresponded to an increase in the MRP.

8.5.3. Estimates of the prevailing MRP

In order to derive a best possible estimate of the MRP, APA GasNet has had regard to the reports of NERA Economic Consulting (NERA) (this report is included as Attachment G-5 to this submission), the previously cited CEG report and Capital Research Pty Ltd (Capital Research) (this report is included as Attachment G.6 to this submission).[98]

NERA estimates the prevailing MRP using a regime-switching model.[99] The regime-switching model allows for the joint distribution of variables to differ between low-volatility regimes and high-volatility regimes (that is, the probability of the occurrence of certain events based on the variables are able to differ between regimes). Further, the probability of being in either a high-volatility regime or a low-volatility regime is governed by a Markov chain (that, the probability of being in either regime next year depends only upon which regime the process is in this year). Based on a 10 year

[97] Glenn Stevens 2012, Address to the Credit Suisse 15th Asian Investment Conference 2012, 19 March

[98] NERA Economic Consulting 2012, *Prevailing Conditions and the Market Risk Premium*, March 2012; CEG 2012, *Internal Consistency of Risk Free Rate and MRP in the CAPM*, March; and Capital Research 2012, *Forward Estimate of the Market Risk Premium: Update*, March

[99] NERA Economic Consulting 2012, Prevailing Conditions and the Market Risk Premium, March, pp 22-31

bond yield of 3.99 per cent per annum, this method results in an MRP estimate of 8.44 per cent. We note that the validity of NERA's regime-switching model has been independently peer reviewed by Professor Stephen Gray of SFG Consulting.[100]

In addition to the regime-switching model NERA Economic Consulting (NERA), CEG and Capital Research have independently estimated the current forward looking MRP used different DGMs:

- NERA's DGM takes a very conservative approach, using a combination of Bloomberg consensus forecasts, the long-run growth in dividends per share (DPS) and a 10 year bond yield of 3.99 per cent per annum which results in a MRP estimate of 7.69 per cent;
- CEG's DGM is based on the AMP method using the end of December 2011 dividend yields from the RBA, long run dividend growth of 6.6 per cent nominal, a risk free rate of 3.77 per cent[101] and an assumption that each dollar of dividend comes with 11.125 cents value of franking credits which results in a MRP estimate of 8.52 per cent; and
- Capital Research's DGM employed a price earning model, together with a risk free rate of 3.73 per cent and an assumption that each dollar of dividend comes with 11.125 cents value of franking credits which results in a MRP estimate of 9.56 per cent.[102]

8.5.4. Proposed approach

The current estimates of the prevailing forward looking estimates of the MRP include:

- the NERA regime-switching model that estimates that the current MRP is 8.44 per cent: and
- three MRP estimates derived using DGM models, ie:
  - NERA estimates the current MRP to be 7.69 per cent;
  - CEG estimates the current MRP to be 8.52 per cent; and
  - Capital Research estimates the current MRP to be 9.56 per cent.

Given the above estimates of the MRP, APA GasNet submits that a MRP of 8.5 per cent is consistent with the above evidence of the prevailing forward looking MRP.

[100] SG.8 – SFG Consulting, Review of NERA regime switching framework, March 2012.
[101] As at 31 December 2012.
[102] Capital Research, Forward Estimate of the Market Risk Premium: Update, March 2012, page 32.

8.6. Beta

The equity beta measures the contribution of an asset to the risk of the market portfolio, where risk is measured by the standard deviation of return. Assets with an equity beta of greater (less) than one means that adding a small position in that asset to the market portfolio will add (subtract) from the overall risk of the portfolio.

The AER in its most recent gas distribution decision adopted a beta estimate of 0.8.[103] In reaching this decision, the AER considered that the empirical evidence presented in the 2009 WACC review was:

> the best available estimate of the equity beta that would apply to a gas distribution network service provider, taking into account the need to reflect prevailing market conditions and the risks involved in providing reference services.[104]

In reaching this decision the AER rejected the substantial body of evidence provided by Envestra that the benchmark equity beta was at least 1.0.[105] A feature of the debate on the equity beta is the dearth of reliable data necessary to generate accurate and statistically reliable estimates of equity beta for the benchmark gas distribution business.

Notwithstanding the compelling evidence that the benchmark equity beta should be at least 1.0, APA GasNet proposes to adopt an equity beta of 0.8, consistent with the AER's recent gas distribution decisions and that for the Amadeus Gas Pipeline.

8.7. Gamma

The Australian tax system provides domestic security holders with franking credits for tax paid at the company level, which are used to offset the investors' personal tax liabilities. Franking credits can therefore be viewed as providing value to security holders and gamma is a measure of this value. The higher the value of gamma, the lower the rate of return the investor would require in the form of dividends and capital gains.

While gamma is not directly included in the nominal vanilla post-tax WACC formula, it is used to determine the proportion of company income tax that does not need to be included in a regulated firm's annual revenue requirement.

The value of gamma to be ascribed to an entity is estimated as the product of the following two parameters:

- the distribution ratio (*F*) – the proportion of total franking credits generated by the entity that are distributed to security holders; and

[103] SG.5 – AER 2011, *Envestra Access arrangement proposal for the QLD gas network 1 July 2011 – 30 June 2016,* June, p 44

[104] SG.5 – AER 2011*, Envestra Access arrangement proposal for the QLD gas network 1 July 2011 – 30 June 2016,* June 2011, p 44

[105] SG.6 – CEG 2011, *WACC Estimation: A report for Envestra*, March 2011

- the utilisation rate (θ) – the value of distributed franking credits as a proportion of their face value.

APA GasNet notes that the value of gamma has recently been the subject of an appeal to the Australian Competition Tribunal (the Tribunal) by ETSA Utilities, Ergon Energy and ENERGEX. On 13 May 2011, the Tribunal concluded that the best available estimate of gamma was 0.25, based on a distribution rate and utilisation rate of 0.70 and 0.35 respectively.[106] In light of the Tribunals' findings, APA GasNet proposes to adopt a gamma value of 0.25. The remainder of this section describes the values attributed to each of the individual components of gamma – ie, the distribution ratio and the utilisation rate.

8.7.1. Distribution ratio

The distribution ratio (F) is defined as the proportion of franking credits that are distributed to security holders. If a company were to distribute all of its profits and franking credits in a period, then the distribution ratio would be equal to one. However, it is common for companies not to distribute all of their profits and imputation credits, resulting in a distribution ratio of less than one.

The distribution ratio will differ between companies depending on their distribution policies, which suggests that the distribution ratio applied to each company in a regulatory setting will be unique to the firm. However, current regulatory practice indicates that a distribution ratio for an individual company should be calculated as the historical average of all Australian companies.

Hathaway and Officer (2004) estimate the historical market average distribution ratio to be 0.71.[107] The study was based on Australian Tax Office (ATO) statistics for the period 1988 to 2002, with $265 billion of net company tax collected and $77 billion in imputation credits retained by Australian firms over this period. As a result, $188 billion or 71 per cent of imputation credits created during this period were distributed.

A more recent study by NERA, also using ATO statistics, showed that 68 per cent of all credits created were distributed over the period 1996/97 to 2006/07.[108]

As stated above, the Tribunal determined that the best available estimate of the distribution ratio was 0.70 in its review of the AER's determinations for ENERGEX, Ergon Energy and ETSA Utilities.[109] Based on the Tribunal's findings – and the findings of Hathaway and Officer, and NERA – APA GasNet proposes to adopt a distribution ratio of 0.70.

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[106] SG.7 - Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9, paragraph 42
[107] Hathaway N. and Officer, B 2004, *The Value of Imputation Tax Credits*, Working Paper, 2 November, p 4
[108] NERA 2010, *Payout Ratio of Regulated Firms - A report for Gilbert + Tobin,* 5 January, p 6
[109] SG.7 - Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompT 9, paragraph 4

8.7.2. The utilisation rate

The utilisation rate (theta) measures the value of distributed franking credits as a proportion of their face value. Values of theta span zero and one (inclusive): where theta equals zero the market places no value on distributed franking credits; and a value of one would be consistent with the market placing the same value on franking credits as it would dividends or capital gains.

Theta can be determined by a number of methods, namely dividend drop-off and share futures. APA GasNet is of the opinion that the best evidence to the market value of distributed imputation credits is derived from dividend drop-off studies.

Dividend drop-off studies estimate theta by observing the price of a security immediately prior and just following the accrual of a dividend (ie, when a security goes ex-dividend). The most comprehensive and recent dividend drop-off study was produced by SFG Consulting in March 2011.[110] The Tribunal cited this study and concluded that:

> The Tribunal is satisfied that SFG's March 2011 report is the best dividend drop-off study currently available for the purpose of estimating gamma in terms of the Rules. Its estimate of a value of 0.35 for theta should be accepted as the best estimate using this approach. In particular, the Tribunal cannot accept the submission of the AER that either minor issues in the construction of the database or multicollinearity argue for giving the SFG study less weight and the Beggs and Skeels study some weight. The Beggs and Skeels study, despite not being subjected to anything like the same level scrutiny, is known to suffer by comparison with the SFG study on those and other grounds.
>
> Moreover, the fact that in its earlier reasons the Tribunal found no error in the AER having relied on the Beggs and Skeels study is not to the point. The proceedings since then have been largely designed to render that study, along with the earlier SFG study, obsolete for the purpose of setting a value for gamma – and have done so. [111]

Given the Tribunal's conclusion as to best available estimate of theta, APA GasNet proposes to adopt a value for theta of 0.35.

8.7.3. Proposed value of gamma

APA GasNet proposes a value of gamma of 0.25, this is calculated as the product of:

- a distribution ratio (F) of 0.70; and
- the market value of theta (θ) of 0.35.

[110] SG.11 – SFG 2011, *Dividend drop-off estimate of theta*, 21 March

[111] SG.7 - Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9, paragraphs 29 and 30

This is equivalent to the value of gamma adopted by the Australian Competition Tribunal in May 2011.[112]

8.8. Expected inflation

While not used explicitly in the estimation of a nominal WACC, it is necessary to determine the expected inflation to apply to the pricing adjustment mechanism (ie, the CPI-X price path) that adjusts prices annually for the change in headline CPI less the 'X' factor. To maintain compatibility with this pricing mechanism, APA GasNet proposes to use the latest RBA forecasts of CPI inflation (ie, headline CPI) as published in their Statement on Monetary Policy.

In line with regulatory precedent, inflation has been forecast over a ten year horizon so to match the term of the risk free rate. Given that these inflation forecasts are likely to change over time, we expect that the forecast inflation estimate would be updated at the time of the AER's final decision – in line with Australian regulatory practice.

For the purposes of this proposal APA GasNet has adopted an inflation forecast of 2.5 per cent, being the mid-point of the RBA inflation target.

8.9. WACC estimate

Based on the parameter estimates set out in this chapter, the resulting indicative estimate of the nominal post-tax WACC to apply to the VTS is summarised in Table 8.2 below.

Table 8.2 - Indicative WACC estimate

Parameter	Estimate
Nominal risk free rate	3.99%
Forecast inflation	2.50%
Real risk free rate	1.45%
Gearing (debt to value)	60%
Debt risk margin	3.92%
Nominal pre-tax cost of debt	**7.91%**
Market risk premium	8.50%
Equity beta	0.80
Nominal post-tax cost of equity	**10.79%**
Gamma	0.25
Nominal post-tax WACC	**9.06%**

[112] SG.7 - Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9, paragraph 42

8.9.1. Reasonableness of the resulting WACC

APA GasNet proposes that the indicative nominal post-tax WACC, for the 20 business days to 16 December 2011, is 9.07 per cent. This is the weighted average of a 7.91 per cent cost of debt and a 10.80 cost of equity and a gearing of 60 per cent debt and 40 per cent equity.

The indicative cost of debt has been calculated by adding the risk free rate and DRP during the indicative sampling period. As discussed at sections 8.2 and 8.4, both the risk free rate and the DRP represent the best estimate of the prevailing conditions in the markets for funds.

The cost of equity is intrinsically more difficult to measure because, in contrast to debt, equity involves no explicit promise to pay. Instead the cost of equity must be estimated using a financial model. Rule 87(2)(b) of the NGR provides guidance in that the financial model employed must be a well accepted financial model, such as the CAPM. Consistent with this guidance, APA GasNet is proposing to use the CAPM to estimate the cost of equity.

The three parameters of the CAPM have then been estimated using values that best reflect the prevailing conditions in the market, ie:

- a risk free rate of 3.99 per cent equal to the average yield of CGS with a term to maturity of 10 years over the 20 business days up to 16 December 2011;
- an equity beta of 0.8, consistent with the AER's decision in June 2011 for a Queensland gas network; and
- a MRP of 8.5 per cent, consistent with current estimates of the forward looking excess returns on the market.

This results in a nominal post-tax cost of equity of 10.80 per cent. We note that our indicative return on equity is consistent with the three approaches endorsed by CEG as being capable of arriving at an estimate of the cost of equity that would be consistent with the Rules.[113] The three methodologies outlined by CEG are:

- dividend growth models (DGM) of regulated Australian business, that produce a cost of equity of between 10.87 per cent and 14.59 per cent;
- DGM for the market combined with an beta of 0.8 and the prevailing risk free rate which produces a cost of equity of 10.58 per cent; and
- historical average risk free rate plus the historical average MRP together with an beta of 0.8 which produces a cost of equity of 10.78 per cent.

[113] CEG 2012, *Internal consistency of risk free rate and MRP in the CAPM - Prepared for Envestra, SP AusNet, Multinet and APA*, March, p 42

8.10. Rate of return on speculative capital expenditure

In accordance with Rule 84, APA GasNet's access arrangement includes provision for any non-conforming capital expenditure that is not recovered through a capital contribution or a surcharge to be included in a speculative capital expenditure account. Amounts included in a speculative capital expenditure account increase annually at a rate, and if at any time the type or volume of services changes so that capital expenditure that did not, when made, comply with Rule 79 later becomes compliant, the relevant portion of the speculative capital expenditure account (including the return referable to that portion of the account) is to be withdrawn from the account and rolled into the capital base as at the commencement of the next access arrangement period.

Rule 84 further provides that the rate to apply to a speculative capital expenditure account can be different to the rate of return implicit in the reference tariff.

One of the objectives of non-conforming capital expenditure allowance is to allow gas networks to make efficient investment decisions on the basis of either highly uncertain or long term demand forecasts. Non-conforming capital expenditure can be prudent for a gas network where the cost of investing in additional spare capacity is small. For example, oversizing a new pipeline adds significant additional capacity for little additional costs.

APA GasNet would have no incentive to take a risk on speculative capital if it did not earn a higher return by virtue of taking that risk, compared to lower risk regulated return options. Speculative investment, as it is not reflected in regulated tariffs, can also carry significant cash flow implications for the business. By contrast, conforming capital is justified by current forecast demand, and earns a return from the time it is made.

APA GasNet proposes that a different, higher, rate of return apply to any funds included in a speculative capital expenditure account. This is because, by its very nature, speculative capital expenditure carries a different risk profile to expenditure that it is included in regulated revenue. Speculative capital generally involves investment on the basis of potential future demand, and taking a risk on whether that demand eventuates.

Considering the risks borne by the pipeliner, it would be reasonable to expect that the rate of return earned on non-conforming capital expenditure before it enters the capital base should be greater than the regulated rate of return. The reasons that the rate of return provided for non-conforming capital expenditure must be greater than the regulated rate are:

- to compensate the additional risk to the gas network that the non-conforming investment may never result in any additional revenue; and
- to incentivise gas pipeliners to undertake prudent non-conforming investments.

As discussed above, APA GasNet submits that the beta applicable to its business should be 1.0. In order for the rate of return on speculative investment to reflect the greater risk relative to the core pipeline, it is necessary to adopt a beta value greater than 1.0. APA GasNet proposes that the rate of return on speculative investment should be based on a beta value of 1.2.

APA GasNet proposes that a reasonable approach so as to ensure that the rate of return on non-conforming capital expenditure is greater than the WACC on the regulated pipeline would be to:

- adopt all the regulated WACC parameters; except
- the equity beta where an additional margin of 0.4 would be added.

The indicative estimate of the nominal post-tax WACC to apply to con-conforming capital expenditure is summarised in Table 8.3 below.

Table 8.3 - Indicative rate of return on non-conforming capex

Parameter	Estimate
Risk free rate	3.99%
Forecast inflation	2.50%
Real risk free rate	1.45%
Gearing (debt to value)	60%
Debt risk margin	3.92%
Nominal pre-tax cost of debt	**7.91%**
Market risk premium	8.50%
Equity beta	1.20
Nominal post-tax cost of equity	**14.19%**
Gamma	0.25
Nominal post-tax WACC	**10.04%**

9 Operating expenditure

This chapter sets out operating expenditure undertaken in the earlier access arrangement period and forecast operating expenditure for the access arrangement period, and provides explanations for actual and forecast operating expenditure by reference to the Rules.

9.1. Operating expenditure categories

As defined under Rule 69, operating expenditure for the purposes of price and revenue regulation under the Rules means:

> … operating, maintenance and other costs and expenditure of a non-capital nature incurred in providing pipeline services and includes expenditure incurred in increasing long-term demand for pipeline services and otherwise developing the market for pipeline services.[114]

For the purposes of the access arrangement revision proposal, APA GasNet classifies its operating expenditure in the following categories:

- Labour, which is direct labour not otherwise capitalised to a particular capital expenditure project. This includes labour associated with operating and maintaining the VTS, engineering support, pipeline right of way, facilities, compressor stations, SCADA and communications systems, as well as non system labour such as local office support staff and local finance, compliance, and records management.

- Materials, which is expenditure on system consumables and/or spares replacement associated with pipeline operations and maintenance, as well as head office materials (stationery, etc).

- Outside Services, which is contracted services performing system and non-system specialist functions such as aerial patrols, management of dial before you dig services and maintenance of emergency response equipment.

- Fuel Gas, which is expenditure on gas used in operating facilities such as compressor stations.

- Other, which is expenditure that does not fit into one of the other categories, such as licence fees and charges, travel, property costs, communications, training, insurance, motor vehicles and consultants/legal.

[114] This definition differs in important respects from that in clause 8.36 of the former National Gas Code which defines non-capital costs as:
… the operating, maintenance and other costs incurred in the delivery of the Reference Service. Non Capital Costs may include, but are not limited to, costs incurred for generic market development activities aimed at increasing long-term demand for the delivery of the Reference Service.

- Corporate, which comprises head office charges for group services such as human resources, health, safety and environment, legal, finance, IT, accounting and the office of the chief executive.

These reporting categories are unchanged from the earlier period, with the exception of fuel gas, for which responsibility has moved to AEMO.

9.1.1. Changes in the allocation of costs

Forecasts for the earlier access arrangement period were largely prepared on the basis of APA GasNet as a stand-alone entity. While the acquisition of the GasNet business occurred over the period that GasNet was preparing and the ACCC was assessing the earlier access arrangement revision proposal, only minimal changes were made to that forecast to reflect changing roles and responsibilities expected to come about because of the acquisition. No costs were allocated to the corporate category – instead these costs were generally reflected in the labour category.

APA GasNet's reported operating costs include a corporate category as it is allocated corporate costs from APA Group. These are reported in actual expenditure in Table 9.2 below.

In general, APA GasNet has seen the transfer of some costs from the Labour category to the Corporate category. For example, HSE, procurement, finance and IT staff costs were previously reported in the Labour category, whereas now these functions are provided through the corporate business group and are reported under the Corporate category. Further details of these changes are discussed below in section 9.2.1 below.

9.2. Operating expenditure over the earlier access arrangement period

The operating expenditure allowed by the ACCC in the earlier access arrangement period is shown in Table 9.1 below (in $2012).

Table 9.1 - Approved operating expenditure in the earlier access arrangement period

$'000 (2012)	2008	2009	2010	2011	F2012
Labour	14,533	15,278	15,610	15,858	16,059
Materials	1,206	1,277	1,277	1,289	1,324
Outside services	3,843	4,080	4,115	4,174	4,269
Fuel Gas	3,276	3,252	3,418	3,583	3,772
Other	6,055	6,114	6,114	6,161	6,279
Corporate	-	-	-	-	-
Subtotal	28,913	30,001	30,533	31,065	31,704

Benefit Sharing Allowance	1,064	(816)	(1,880)	(1,005)	-
Reset Costs	1123	0	0	0	0
K factor carry over	840	0	0	0	0
Asymmetric risk	213	213	213	213	213
Equity raising costs	568	568	568	568	568
Other allowances	260	272	272	272	272
Subtotal	**4068**	**237**	**(828)**	**47**	**1052**
Total	**32,981**	**30,238**	**29,705**	**31,113**	**32,756**

The ACCC's 2008 Final Approval of APA GasNet's revised access arrangement approved operating expenditure as proposed by APA GasNet.[115] APA GasNet's final revised access arrangement incorporated required amendments from the AER included in the AER's Final Decision, which were confined to the removal of transaction costs of $8.84 million ($2006) associated with the purchase of GasNet by APA Group.[116]

Table 9.2 shows actual and forecast operating expenditure incurred over the earlier access arrangement period compared to that approved by the ACCC in its Final Decision in constant terms. Note that allowances for asymmetric risk, equity raising costs and other allowances are included in the operating expenditure variance (as costs against the Corporate category) as these allowances reflect costs expected to be borne by the business (for example equity raising costs in the corporate category).

Other components of ACCC approved operating costs such as carry over amounts and reset costs do not relate to operating expenditure in the earlier period, and have been excluded from the variance analysis. Similarly, fuel gas costs should be removed from the variance analysis as these costs were treated as a pass through in the early part of the period (2008 and 2009) and were removed from the forecast for the remainder of the period. This change is discussed further below in section 9.2.2. Variance results both with and without fuel gas are shown below.

Table 9.2 -Comparison of ACCC 2008 Final Decision and outturn operating expenditure over the earlier access arrangement period

$'000 (2012)	2008	2009	2010	2011	F2012	Total
ACCC 2008 Final Decision						
Labour	14,533	15,278	15,610	15,858	16,059	77,338
Materials	1,206	1,277	1,277	1,289	1,324	6,374
Outside services	3,843	4,080	4,115	4,174	4,269	20,482
Fuel Gas*	3,276	3,252	3,418	3,583	3,772	17,301

[115] ACCC 2008, *Final Approval*, p 9
[116] ACCC 2008, *Final Decision*, p 84

Other	6,055	6,114	6,114	6,161	6,279	30,722
Corporate	-	-	-	-	-	-
Asymmetric risk	213	213	213	213	213	1,064
Equity raising costs	568	568	568	568	568	2,838
Other allowances	260	272	272	272	272	1,348
Total comparison forecast	**29,954**	**31,054**	**31,586**	**32,118**	**32,756**	**157,467**
Actual and forecast operating and maintenance expenditure						
Labour	7,285	7,213	7,788	8,654	8,943	39883
Materials	577	603	373	543	485	2581
Outside services	1,890	1,294	1,626	2,330	3,350	10490
Fuel Gas*	1,802	651	-	-	-	2453
Other	6,783	5,885	5,126	5,928	5,784	29507
Corporate#	7,427	9,352	9,788	10,046	10,434	47,048
Total actual	**25,765**	**24,998**	**24,702**	**27,501**	**28,996**	**131,961**
Variance between ACCC 2008 Final decision and APA GasNet actual and forecast operating and maintenance expenditure^						
Labour	(7,248)	(8,066)	(7,821)	(7,204)	(7,116)	(37,455)
Materials	(629)	(674)	(904)	(746)	(840)	(3,793)
Outside services	(1,954)	(2,786)	(2,489)	(1,845)	(919)	(9,992)
Fuel Gas	(1,473)	(2,601)	(3,418)	(3,583)	(3,772)	(14,847)
Other	729	(228)	(988)	(233)	(495)	(1,216)
Corporate#	6,387	8,300	8,736	8,994	9,381	41,797
Total variance	**(4,189)**	**(6,056)**	**(6,884)**	**(4,616)**	**(3,761)**	**(25,506)**
Total variance – fuel gas impact removed	**(2,715)**	**(3,455)**	**(3,467)**	**1,033**	**(11)**	**(10,658)**

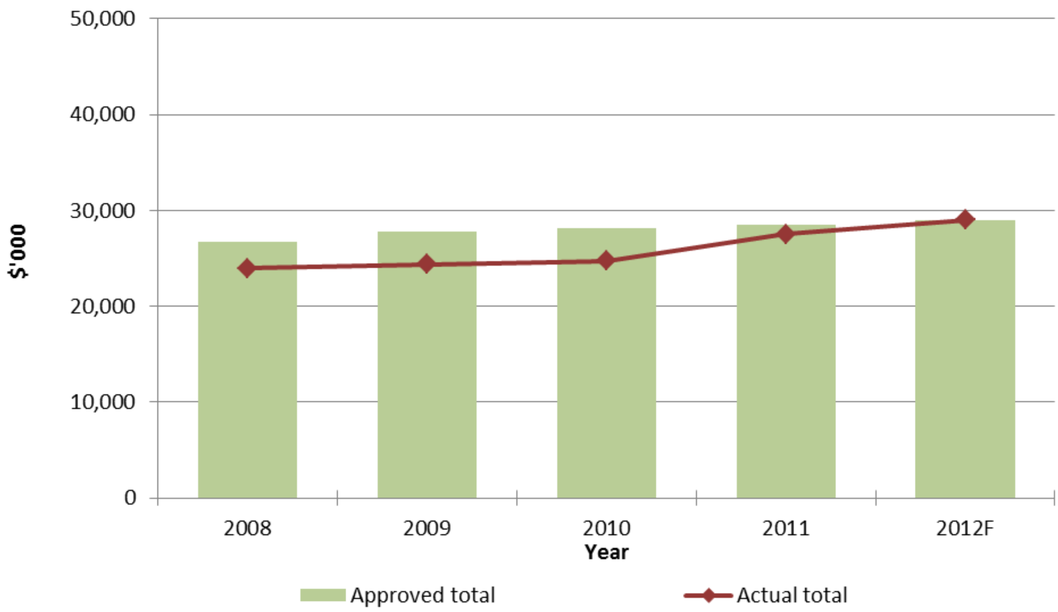
* APA GasNet's liability for fuel gas ended in 2009 – see discussion at section 9.2.2 below

\# Actual corporate costs are assumed to include any costs incurred in relation to asymmetric risks, equity raising and other allowances.

^ Bracketed numbers denote an underspend compared to the forecast

The comparison of costs (without fuel gas) is also shown graphically in Figure 9.1 below.

Figure 9.1 - Total operating and maintenance expenditure comparison to forecast over the earlier access arrangement period (excluding fuel gas)



The main drivers for deviations are discussed in the following sections.

9.2.1. APA GasNet restructure

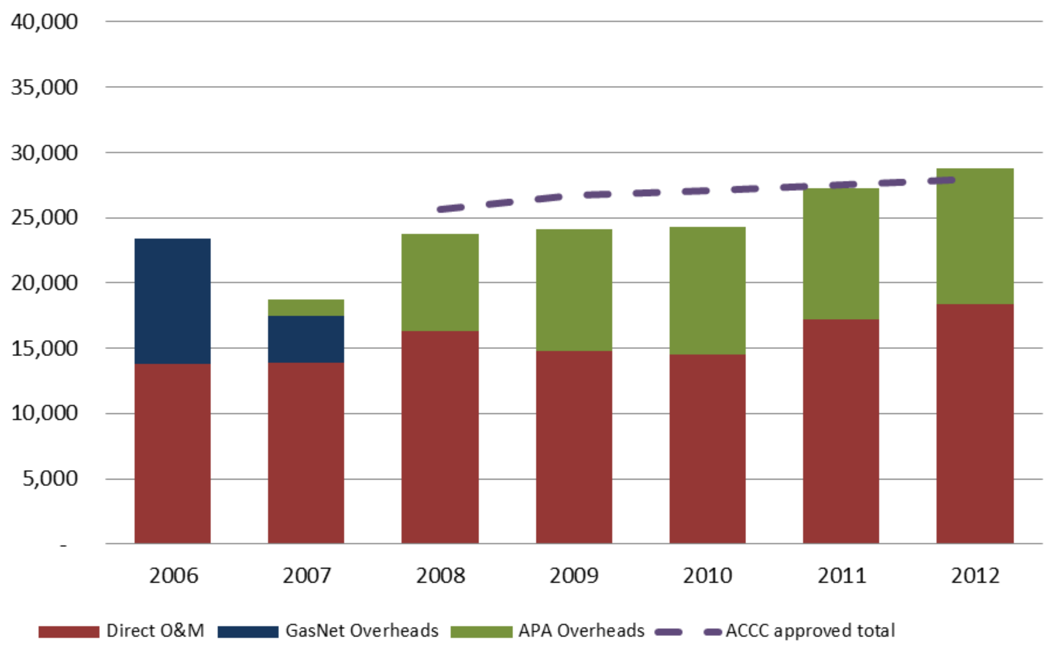
As noted above, forecasts for the earlier access arrangement period were largely prepared on the basis of APA GasNet as a stand-alone entity. Over the course of the earlier access arrangement period (in fact, starting from 2007), APA Group started integrating the APA GasNet business into the wider corporate structure.

Figure 9.2 below shows the transition of costs from GasNet as a stand-alone entity in 2006 to APA GasNet's costs as part of APA Group in the 2011 base year. Direct operating and maintenance costs incorporate APA GasNet's Labour, Materials, Outside Services and Other operating expenditure categories (removing odourant costs). These categories represent those that are likely to be impacted by efficiencies associated with moving from a stand-alone entity to a larger group.

Note that 2007 APA Group overheads costs do not represent a full allocation to the APA GasNet business as this was a year of acquisition and therefore APA GasNet did not receive a full corporate allocation in that year.

In 2006, GasNet was a stand-alone entity with its own Board, Chief Executive, and associated company obligations. GasNet also incorporated stand-alone IT, payroll, finance and legal functions.

Figure 9.2 - Impact of APA GasNet integration into APA Group on local and overhead costs ($'000 2012)



Some of the GasNet overhead costs ceased at the same time, or shortly after, the acquisition. Others were transferred to the APA Group Corporate category. The distribution of costs into these two groups is shown in Table 9.3 below.

Table 9.3 - Reallocation of GasNet corporate costs under APA Group structure

Cost area no longer incurred	Cost moved to APA Group with allocation to APA GasNet through corporate allocation
GasNet Board	Regulatory
GasNet Chief Executive Officer/ Chief Financial Officer	Audit Fees (External & Internal)
Company Secretary/Legal Counsel	Taxation Advice
Listed Company costs – Share Registry, ASIC, ASX, Rating Agencies, Annual Report	Treasury Consultant & Agency Fees
Management of GasNet debt portfolio including audit and advice, as well as agency fees	Insurance – ISR/Other
GasNet Internal audit	IT Support
	FSC – Accts Payable, Fixed Assets
	Payroll

It is important to note that the transfer from APA GasNet costs to APA Group corporate did not occur in a single year, but instead occurred progressively from 2008, as business areas were transferred to new management structures, with associated change management procedures and reorganisation of roles. After transfer, a proportion of corporate APA Group costs are allocated back to APA GasNet as per APA Group's Corporate allocation methodology (discussed further in Attachment H).

As expected in any acquisition of a stand-alone business by a larger corporate group, there were efficiencies achieved in respect of APA GasNet's costs over the earlier access arrangement period arising from the acquisition. This can be seen from 2008 to 2010 in Figure 9.2 as actual direct operating and maintenance costs declined, while at the same time the scope of the business increased through the addition of new pipelines[117], as well as there being additional (unforecast) corporate obligations imposed on APA Group impacting its costs (discussed further in section 9.2.3 below).

Total costs across these categories were also below forecast levels that were prepared based on the former GasNet structure and approved by the ACCC, showing significant efficiencies achieved in total costs (direct operating and maintenance plus corporate) compared to the forecast.

9.2.2. Change in regulatory approach for fuel gas

APA GasNet's forecast costs included in the 2008 proposal (and those approved by the ACCC) incorporate an allowance for fuel gas to run the various compressors and heaters on the VTS. The earlier access arrangement also included scope of tariff variation associated with any variance between forecast and actual fuel gas costs to be reflected in tariffs. This was largely because fuel gas usage is highly volatile and APA GasNet did not have operational control of compressors and heaters on the VTS to manage this cost risk.

This approach was changed from 1 January 2009, when AEMO took over supply of fuel gas from APA GasNet. This is reflected in APA GasNet's actual fuel gas costs in Table 9.2 above. At that time, APA GasNet applied for a tariff variation to remove fuel costs from its revenue allowance from 2009, and therefore APA GasNet has received no benefit from this change in approach.[118]

This change does mean, however, that a comparison between APA GasNet's actual costs to forecast should remove forecast fuel gas costs for a true comparison of performance. This comparison is reflected in Table 9.2 above.

[117] Costs associated with the increased scope of the business were approved by the ACCC as part of workload changes in the earlier access arrangement - see APA Group 2008, GasNet Australia Access Arrangement Information, Table 3.5

[118] APA GasNet 2008, APA GasNet Transmission System Year 2009 Tariff Reset, 17 November, explanatory notes

9.2.3. Drivers of increased Corporate costs over the period

APA Group is conscious that corporate costs, as an element of operating expenditure, have increased significantly over the access arrangement period. This phenomenon is not unique to APA Group; virtually all corporate entities are experiencing sharp increases in corporate costs driven by increasing regulatory and financial reporting demands, more rigorous governance requirements, changes in market conditions, etc.

To understand the drivers of these increases, APA Group asked KPMG to investigate and report on the significant policy and business environment changes that are impacting businesses generally, and being manifested as increases in corporate costs.

In summary, KPMG found that significant changes in obligations, resulting in increases in corporate costs, have been driven by federal and state government legislation, changes in taxation regimes and new regulatory conditions (for example the Carbon Tax and new national occupational health and safety laws), international regulatory or legislative changes (for example the introduction of new International Financial Reporting Standards) as well as changing market conditions such as the Global Financial Crisis.

This KPMG report is provided at Attachment I.

9.3. Forecast operating expenditure

9.3.1. Governing Provisions

National Gas Rules

Rule 91 specifies that operating expenditure

> … must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of operation.

The AER's discretion under this rule is limited such that the AER must not withhold its approval of proposed operating expenditure if it is satisfied that the proposal complies with the requirements of the law and is consistent with Rule 91. All forecasts and estimates must also comply with Rule 74.

Access arrangement fixed principle

The earlier access arrangement includes a fixed principle relating to the calculation of forecast operating expenditure in the access arrangement period. Clause 7.2(h) of the earlier access arrangement states:

> In calculating the allowable revenues for operations and maintenance expenditure for the Fourth Access Arrangement Period, the Regulator must:

(i) comply with the requirements of the Code;

(ii) take into account the actual operating costs in 2011, adjusted for the change in forecast operating costs between 2011 and 2012 and, to avoid doubt, not taking into account the efficiency gain (loss) made in 2012;

(iii) take into account forecast changes in workload, taxes, Regulatory Events, insurance premiums and other relevant costs between 2011 and each year of the Fourth Access Arrangement Period; and

(iv) take into account a percentage trend factor.

Transitional arrangements under the National Gas Rules provide that in deciding whether to approve an access arrangement revision proposal for a transmission access arrangement, the AER must take into account any provisions of the transitional access arrangement that were fixed principles under section 8.47 of the National Gas Code, for the period for which they were fixed.[119] This transitional provision is subject to Rule 99(4)(b), which states:

> If a Rule is inconsistent with a fixed principle, the rule operates to the exclusion of the fixed principle

APA GasNet has reviewed the former National Gas Code provisions relevant to the approval of forecast operating expenditure and considers that they are consistent with the Rules. In particular, the following provisions of the National Gas Code are also present in the Rules:

- section 8.49 of the Code – ability to infer through the operation of an incentive regime whether capital or operating expenditure is efficient and complies with other criteria prescribed by these rules (Rule 71); and
- section 8.37 of the Code – requirement for operating expenditure to be consistent with that which would be incurred by a prudent Service Provider, acting efficiently, in accordance with accepted and good industry practice, and to achieve the lowest sustainable cost of delivering the Reference Service (Rule 91).

This fixed principle limits the scope of APA GasNet's discretion in developing its operating expenditure forecast, and the AER's discretion in assessing APA GasNet's operating expenditure forecast.

APA GasNet has prepared its operating expenditure forecast in accordance with this fixed principle, as discussed in more detail below.

9.3.2. Operations and Maintenance expenditure

Operating and maintenance expenditure includes all operating expenditure with the exception of allowances such as benefit sharing allowance, reset costs and equity

[119] National Gas Rules, Schedule 1, Rule 5(1)(b)

raising costs. As such, it encompasses all local APA GasNet operating costs and APA Group corporate cost allocation to APA GasNet.

Forecast methodology

Consistent with the fixed principle, APA GasNet has used the base year methodology to derive its operating and maintenance expenditure forecast. To derive this forecast, APA GasNet has:

- used 2011 as the base year;
- adjusted the base year as necessary to reflect changes in policy or approach for operating expenditure;
- applied step and scope changes compared to the base year, including non-annual operating expenditure; and
- applied a percentage trend factor.

All adjustments and step changes made to the operations and maintenance base year are discussed below, meaning that the materiality threshold used to determine forecast operating expenditure in this category is zero.[120]

Use of 2011 operating and maintenance base year

APA GasNet submits that the use of 2011 as the base year for deriving forecast operating expenditure is appropriate not only because it is contemplated by clause 7.2(h) of the earlier access arrangement, but also because, in the context of an incentive-based regulatory regime, the latest actual cost must represent the best estimate of efficient costs going forward. This is supported by the following:

- the actual incurred costs in any particular year reveal APA GasNet's true efficient costs. Higher operating costs in any year come straight off the bottom line of APA GasNet's (and the wider APA Group's) financial performance. Accordingly, APA GasNet and the APA corporate group have a strong profit incentive to minimise costs to the most efficient level consistent with sustainable operations; and
- the benefit sharing allowance acts in such a way that it provides an equal incentive on APA GasNet to make efficiency gains in each year, and no incentive to back-end costs.

Calculation of base operating and maintenance costs

As contemplated by the Fixed Principle, APA GasNet considered any necessary adjustments to base operating costs for changes in forecast operating costs between 2011 and 2012.

[120] AER's RIN requires APA GasNet to specify the materiality threshold used to determine material forecast operating expenditure.

APA GasNet considers that some adjustments are necessary to reflect changes in costs between 2011 and 2012. The ESV levy change impacts 2012 costs and therefore should be reflected in the base year as per clause 7.2(h)(ii). This step change is discussed below.

APA GasNet also considers that it is appropriate to increase 2011 base year costs by the amount of cost escalation expected in 2012. These escalation rates are set out in the BIS Shrapnel cost escalator report at Attachment I. This is effectively an adjustment for a trend in costs.

While not specifically contemplated in the Fixed Principle, APA GasNet also considers that it is appropriate to make two other adjustments to the base year operating and maintenance costs before they can be considered to reflect anticipated future expenditure.

The first of these adjustments is to remove from base year costs all expenditure associated with in line inspection of the pipeline. Consistent with APA Group's approach to capitalisation across its other assets, in line inspection costs (and associated dig up and repair work) will be capitalised in the forecast period. This is appropriate as in line inspection and associated integrity works deliver an enduring benefit to the pipeline. Given the change in capitalisation, it is therefore not appropriate to have in line inspection costs included in the base year roll forward for operating expenditure.

APA GasNet has also reviewed base year expenditure for expenditure that would not be representative of the forecast period. APA GasNet has adjusted the base year to apply a stand-alone insurance estimate consistent with its other pipelines.

The second adjustment relates to the percentage allocation of shared costs between regulated and unregulated assets. In the earlier access arrangement period, shared costs were allocated to the regulated asset on the basis of share of overall asset value, leading to an 88.18 per cent allocation of shared costs to the regulated asset. The ACCC previously approved this allocation share (and method of calculation) as appropriate. APA GasNet considers that it is appropriate to apply an updated allocation percentage to forecast operating, reflecting proportionate asset values for the forecast period.

In line with the approach used to derive the earlier allocation percentage, APA GasNet has taken an average of the regulated versus unregulated asset base proportions over the forecast period to derive an allocation percentage of 94.1 per cent. This amount has been applied to the operating and maintenance expenditure base year used to derive the operating expenditure forecast.

The impact of each of these adjustments on base year operating and maintenance costs is shown in Table 9.4 below.

Table 9.4 - Adjustments to operating and maintenance base operating costs

Adjustments to base year operations and maintenance costs	Value $'000 ($2012)
Unadjusted operations and maintenance base year costs	27,501
Adjustment for costs associated with change in capitalisation policy	-1,159
Application of updated allocation percentage to regulated assets	304
2012 cost changes reflected in 2011 base year (ESV levy increase)	90
Adjustments to insurance costs	527
Expected escalation of base year costs in 2012	1,350
Base year after adjustments	**28,613**

*These adjustments relate to the Energy Safety Victoria Levy and carbon cost liability.

The resulting operating and maintenance base year costs used to derive forecast operating expenditure is $28.6 million ($2012).

Step changes

A step change in operations and maintenance expenditure typically results from the introduction or removal of an obligation, or changes in the operating environment that are otherwise not controllable by the regulated business.

Generally, a step change will result in a sustained departure from base year operations and maintenance expenditure, that is, a *step up* or *step down* in expenditure compared to the base year. In most cases, this is expected to be a permanent change and in some cases it occurs periodically, but not on an annual basis. These step changes arise because a new regulatory obligation or a new operating activity is required to operate the network prudently and efficiently.

Step changes to the 2011 operating and maintenance base year costs are discussed in the following sections.

Environmental net gain obligations

The *Planning and Environment Act (Vic) 1987* is the primary piece of legislation for the Victorian Planning Policy Framework and is administered by Department of Planning and Community Development. The Department of Sustainability and Environment has primary responsibility for matters relating to the environment and crown land and also has a significant role in planning.

The *Victorian Native Vegetation Management – A Framework for Action* (2002) fits under the planning policy framework. The Planning and Environment Act requires a Permit to be obtained for activities covered by the various frameworks except where there are specific exemptions. Clause 52.17 of the Local Government Provisions of the Planning Policy requires a Planning Permit before removal of remnant native vegetation. There are exemptions under the provisions, one being for Utility Installations. A Utility Installation (including utility easements) is exempt, provided certain conditions are met. One of these is: provided the removal is in accordance with a “code of practice” approved by Department of Sustainability and Environment.

Section 85 of the *Pipelines Act 2005* (the primary legislation for the regulation of pipelines) specifically exempts pipelines from the Planning and Environment Act. There is, however, a process under the Pipelines Act that places requirements on the licensee with regard to consultation, safety and environment. A Pipeline Licence under the Pipelines Act is essentially the equivalent of a Planning Permit.

The Department of Primary Industries is the regulatory body for pipelines however they rely on advice from two other Government Agencies and will not grant approval for a new licence or an alteration to a licence unless these agencies’ requirements are met. The Pipelines Act requires an approved Safety Management Plan and an approved Environment Management Plan. Energy Safe Victoria look after the safety (and technical) approvals while Department of Sustainability and Environment approve the environmental requirements. There is a memorandum of understanding between Department of Primary Industries and Energy Safe Victoria and also between Department of Primary Industries and Department of Sustainability and Environment.

A requirement of both the Department of Sustainability and Environment and the Department of Primary Industries is that, where remnant native vegetation is impacted by a pipeline ‘operation’, a Net Gain Offset Management Plan must be developed and approved before pipeline construction activities can commence. This effectively means that APA GasNet must offset any removal of native vegetation undertaken in its pipeline operations by sourcing and ‘protecting’ another piece of land to deliver a ‘net gain’ to protected native vegetation. This is generally achieved by purchasing or leasing land with native vegetation and ensuring that this land is protected by fences. This is despite the exemption under legislation described above.

The native vegetation requirements apply to both Greenfields pipeline routes and new pipelines within existing easements. It can also affect the operation of existing pipelines, should significant ground disturbance be required for a maintenance issue.

These obligations (and relatively complex arrangements) have developed over time, but all have developed after the commencement of the Pipelines Act in 2007 (after APA GasNet’s earlier access arrangement revision proposal was lodged and approved).

APA GasNet has current net gain obligations at Wollert, chiefly associated with rectification works. These costs are not included in 2011 base year expenditure. There are similar obligations expected for the forecast Anglesea Pipeline extension. Ongoing management of protected land also leads to costs not included in the base year.

Forecast costs associated with this step change are set out in Table 9.5 below.

Safety Management Studies – monitoring and rectification

AS2885.3 has been reviewed since the start of the earlier access arrangement period and now includes new obligations associated with undertaking Safety Management Studies (SMS) and integrity reviews.

Pipeline SMS outcomes recently carried out have identified the need for increased inspections and vegetation management that are not currently included in the base year. In addition, preparation of future surveys will require annual aerial surveys at additional cost to APA GasNet.

Aerial photography of APA GasNet's pipeline easements is needed to be conducted on a more frequent basis to ensure safety management reviews can be more effectively carried out. As development within the urban growth boundary is progressing quickly, and to meet obligations for SMS reviews, APA GasNet will need to purchase aerial photography for the affected pipelines every time a review takes place. APA GasNet will also require new aerial photography of the entire system every 10-15 years or every 2-3 SMS reviews to capture all changes to the easement and surrounding area for rural areas, VicMap property and planning datasets that are also used as a part of a SMS. This photography will show land developments within those areas in between system wide aerial photography purchases.

Facilities SMS outcomes recently carried out have identified the need to have up to date imagery of all facilities, a single additional aerial survey of all facilities will need to be taken at additional cost to APA GasNet prior to the SMS, along with an annual roadside photography survey.

Forecast costs associated with this step change are set out in Table 9.5 below.

Maintenance of Hazardous Area Dossiers

APA GasNet personnel work in hazardous areas where gas and air oxygen are present and have potential to mix and create hazardous flammable or explosive atmosphere. Eliminating the ignition sources in hazardous areas therefore is the control method to prevent fire and explosion hazards.

APA GasNet has responsibility to ensure all the electrical equipment installed in APA GasNet hazardous areas is in safe working condition and meets legal requirements to comply with all relevant standards. In particular, APA GasNet must demonstrate appropriate control measures are implemented and managed in accordance with AS60079 which is mandated through the Victoria Regulation 401 of the *Electrical Safety (Installation) Regulations 1999*.

To comply with requirements of AS60079 and AS2381, APA GasNet must have in place a Hazardous Area Verification Dossier which details the compliance and safety of the electrical equipment installed within the hazardous area.

A capital program has been proposed to undertake necessary site rectification work to achieve compliance with the first round of dossiers prepared. Following this work, ongoing management and updating of hazardous area dossiers, including site inspections, will become part of routine operating and maintenance activities.

The maintenance of hazardous area equipment demands ongoing inspection and rectification work. Hazardous area rated equipment must be inspected at least every four years, and each reported fault must be rectified or managed through engineering risk assessment methods. The inspection work is time consuming and also requires the technicians to be trained and competent in hazardous area work. APA GasNet proposes that two additional personnel will be required to carry out this function, the first appointed in 2012, and the second in 2013.

APA GasNet has reviewed alternative ways to comply with its hazardous area obligations and has found that relying on an external inspection service (as opposed to employing internal staff) is costly and inefficient:

- The external inspectors are not familiar with APA GasNet assets and operations; therefore, they are required to be accompanied by an APA GasNet Permit Issuing Officer, full time, to perform necessary electrical isolation, provide site induction and issuing permit to work.

- The external inspectors do not take on responsibility for preparatory work in finding and searching for drawings and documentation necessary for the inspection verification process. The information collation and searching work must be performed by APA GasNet personnel.

- The external inspectors are not familiar with APA GasNet assets and the necessary knowledge of the AS60079 requirements to maintain and update the site Hazardous Area Verification Dossiers. The updating and maintenance of Hazardous Area Verification Dossier will have to be performed by an APA GasNet personnel or another short term contractor.

On this basis APA GasNet has determined that the most efficient way to meet its regulatory obligations in respect of hazardous area assessments is to appoint two additional staff to carry out this ongoing function, the first in 2012 and the second in 2013.

In line with clause 7.2(h)(ii), 2012 costs have been added to the base year used for deriving forecast operating and maintenance expenditure, whilst 2013 costs have been added as a step change as shown in Table 9.5 below.

<u>Energy Safe Victoria Levies</u>

Energy Safe Victoria has notified APA GasNet that their levies will increase by 20 per cent each year from 2011 to 2013. The rationale for the increase is to recover the full costs of safety regulation from the regulated industry, such that the cost of safety regulation is ultimately borne by consumers.[121]

The first increase in levies applying to the 2011/12 financial year is partially reflected in the 2011 base year. The full increase for 2012 has been applied to the base year in accordance with clause 7.2(h)(ii) of the access arrangement. The remainder increase has been applied to 2013 (full year) and 2014 (half year levy increase).

[121] Energy Safe Victoria 2011, Letter to APA GasNet,15 June 2011

APA GasNet has assumed that after these rises, Energy Safe Victoria will revert to CPI increases and therefore has not forecast further escalation of levy costs after 2014.

Forecast costs associated with this step change are set out in Table 9.5 below.

<u>Electricity costs</u>

APA GasNet incurs considerable electricity costs in operating its assets, in particular maintaining constant temperatures through air conditioning at stations with electrical and measurement equipment.

Electricity costs are expected to rise in the forecast period in excess of CPI, both associated with increases in network and transmission charges, and also through the imposition of carbon pricing from July 2012.

APA GasNet has forecast its electricity cost increases based on movements in standing offer prices for Victorian customers over the past three years. On average, these movements have been greater than 10 per cent.[122] APA GasNet does not consider that there is any evidence that price rises of similar or even greater magnitude will not continue into the future, particularly after the start of carbon pricing. APA GasNet has therefore applied a 10 per cent annual price rise to its electricity costs for the forecast period.

Forecast costs associated with this step change are set out in Table 9.5 below.

<u>Direct carbon costs</u>

The Clean Energy Act 2011 received royal assent on 18 November 2011. The Act introduces a carbon trading scheme in Australia designed to impose a price on carbon emissions from 1 July 2012. Substantive provisions of this legislative package, particularly sections 3 to 303 of the Clean Energy Act 2011, take effect on 2 April 2012. The first three years of the carbon pricing scheme has a fixed price path after that the scheme moves to a floating price period. Under the floating price period the price path forecasted by the Australian Treasury is the price path required on the basis of Treasury to meet the emission reduction target of 5 per cent by 2020 on 2000 emission levels.

APA GasNet and AEMO have jointly sought a declaration from the Greenhouse Energy Data Officer as to which entity has operational control over the VTS and therefore liability under the carbon pricing scheme.[123] Further details of this process are discussed in confidential Attachment D-4.

Forecast costs associated with this step change (should the obligation apply to APA GasNet) are set out in Table 9.5 below. APA GasNet has also proposed a carbon cost pass through mechanism to allow the recovery or return to customers through

[122] Australian Energy Regulator 2011, *State of the Energy Market*, p 114

[123] APA Group and Australian Energy Market Operator 2009, Letter to Greenhouse Energy and Data Office, 24 September

tariffs of any differences between APA GasNet's future carbon cost liability and that forecast, to address uncertainty under the scheme.

Expanded Apprenticeship program

APA GasNet, like other pipeline companies, is facing a shortage of skilled labour and engineering support for its pipeline and facilities operations and maintenance works. This shortage exacerbates the problem of an ageing workforce, which requires careful and ongoing management by APA GasNet, particularly in:

- managing impacts on service provision, consequent to the retirement of skilled managers and field staff. Succession planning has not been a driver of activity in the pipeline industry over the past twenty years, with the focus instead on microeconomic reform and efficiency; and
- retaining, recruiting and training workers to replace those exiting the workforce.

APA continues to develop skilled personnel by offering apprenticeships to younger people within the gas industry to assist skills development.

APA GasNet currently has a number of apprentices working in particular areas of the business. These apprentices were employed during the earlier access arrangement period as a result of inclusion of a step change in forecast operating expenditure to initiate an apprenticeship program at APA GasNet. Currently, APA GasNet has engaged four apprentices in different forms. Two of these are hired on a full time basis through an apprentice training organisation called MEGT (Melbourne Eastern Group Training), these apprentices are both currently in their final year.

APA GasNet also has an adult apprentice who is also in his final year of an electrical apprenticeship. APA GasNet also has one mature electrical tradesman who has been indentured as an apprentice and is currently completing a Certificate 4 in Instrumentation. All of these apprentices are approaching the end of their training and are effectively integrated in labour staffing levels included in the base year.

Since the start of the earlier access arrangement period, problems with skills shortages and an ageing workforce have increased.

APA GasNet plans to continue its successful apprenticeship program and increase its intake to allow four full time apprentices, both in electrical and mechanical trade disciplines to join APA GasNet. It has proven difficult for apprentice training personnel, to source suitable experienced mechanical apprentices for the APA GasNet business. This will be pursued over the access arrangement period to have a mix of both trade disciplines (electrical and mechanical). All current apprentices will have completed their indenture period in the current access arrangement period.

Costs associated with these additional apprentices represent a step change on current labour costs as the current apprentices are already included in base year costs and are expected to remain with APA GasNet in the forecast period.

Forecast costs associated with this step change are set out in Table 9.5 below.

Western District Depot

A new depot is proposed to be set up in Warrnambool in Western Victoria to accommodate existing workers in the region.

Currently, Western District technicians operate from home offices. In this arrangement, APA GasNet reimburses technicians for phone line costs only. This arrangement, while suitable in the past, is no longer acceptable due to risks of injury and associated liabilities.

APA Group has experienced workplace injuries for workers based in their homes. APA GasNet has an obligation under the current Occupational Health and Safety Act to provide a safe workplace, and to ensure this obligation is satisfied, APA GasNet would need to conduct regular Health, Safety and Environment audits of technicians' homes to confirm safe working conditions. APA Group does not consider that this is an appropriate course of action, and instead considers it preferable to provide office accommodation for staff that can be readily monitored for safety.

APA GasNet now has three personnel based in the Warrnambool area working out of individual home offices. In place of this arrangement, APA GasNet will set up a Western Victoria regional base. This will allow for a small office area for technicians to work from, also allow for deliveries and storage of APA GasNet plant and equipment within the town rather than having deliveries being made to private homes.

Forecast costs associated with this step change are set out in Table 9.5 below.

Adjustments to reflect non-annual operating and maintenance expenditure

While the majority of operating expenditure is recurring in nature, there are some aspects of operating expenditure that are 'lumpy', in that they are significant and do not reoccur on an annual basis. It is not appropriate to include these types of expenditure in the operating and maintenance base year, and it is instead preferable to include this expenditure in the year that it will be incurred as an adjustment to the operating expenditure base year roll forward. APA GasNet has identified a number of further step changes that need to be applied to particular years in the access arrangement period as follows:

- New gas heating facilities inspections;
- Line valve actuator overhauls;
- Pressure vessel inspections;
- Restoring hardstanding at specific sites; and
- Reset costs for the next access arrangement period.

These projects are discussed below.

New gas heating facilities

During the earlier access arrangement period, APA GasNet installed new water bath heaters at Brooklyn City Gate (four heaters) and Wollert City Gate (one heater). Over the forecast period, these new heaters will all be due for first internal inspection as part of APA GasNet's regulatory obligations. These costs are therefore not included in the 2011 base year.

Process gas heaters heat high pressure gas prior to pressure reduction, thereby ensuring safe minimum operating temperatures. The devices are well maintained and routinely inspected in accordance with APA policy OPS 509 and the requirements of AS1210 where the heat exchanger tube bundles are removed and inspected, and if required, repairs undertaken. Scheduling of the device inspections is co-ordinated through Maintenance Connection and incorporated within the Major Maintenance Program.

Forecast costs associated with this step change are set out in Table 9.5 below, and have been developed based on the cost of undertaking necessary inspections for similar heaters in the VTS.

Line valve actuator overhauls

APA GasNet is required to overhaul line valve actuators on the following pipelines and facilities in the forecast period:

- Longford to Dandenong Pipeline;
- Pakenham to Wollert Pipeline and Wollert actuated station valves;
- Murray River to Culcairn Pipeline;
- Iona to Lara Pipeline

Valve actuators on these pipelines have gas over oil actuators; gas pressure pushes down and forces oil through motors to drive the valve position. They have soft seated components on the interface between the driving mediums which occasionally require dismantling and a replacement of many of these components, then rebuilding the actuators to ensure they are reliable when called upon to operate.

While this work is essentiality maintenance work, it is also a major rebuild, and typically occurs every 20 years.

Forecast costs associated with this non-annual adjustment are set out in Table 9.5 below.

Pressure vessel inspections

Registered pressure vessels are required to be inspected on a routine basis to ensure they are fit for purpose. This inspection is typically carried out by an independent party to ensure compliance with the applicable code. Inspections check for corrosion, appropriately rated components attached to the vessels, if appropriate checking for cracking within the material.

Forecast costs associated with this non-annual adjustment are set out in Table 9.5 below.

<u>Restoring hard standing at specific sites</u>

Hard standing is the crushed rock surface used at stations and facilities. Over the years, activities at sites (maintenance, vehicle access, dig-ups) lead to the hard standing being disturbed, worn thin by heavy transport activity, or broken down by vegetation growth.

APA GasNet has identified the need to reinstate the hard standing at a number of sites during the access arrangement period to ensure that they are suitable for the longer term. Low spots, typically due to subsidence or heavy vehicle traffic, are proposed to be filled in and repaired. Identified sites are as follows:

- Brooklyn Compressor Station;
- Gooding Compressor Station; and
- About 20 smaller Facility sites

These major site maintenance activities occur very infrequently, and are therefore suitable as one off adjustments to forecast operating expenditure in the years they are expected to be incurred.

Forecast costs associated with this non-annual adjustment are set out in Table 9.5 below.

<u>Reset costs</u>

Established regulatory practice (applied in all access arrangements preceding the earlier access arrangement) has been to 'carry forward' costs associated with the preparation of each access arrangement revision proposal as an adjustment to forecast operating expenditure.[124]

APA GasNet does not consider that maintaining this approach is appropriate for the next revision proposal, expected to start on 1 January 2018, as it is not consistent with the general principle under the NGR that costs recovered in the period relate to those incurred in the period. APA GasNet has therefore included forecast costs for preparing its next access arrangement revision proposal in 2016 and 2017 as adjustments to the base year, as shown in Table 9.5. These costs have been derived from budgeted access arrangement revisions costs and experience associated with costs incurred in relation to preparing the access arrangement for the earlier period.

[124] See for example Table 9.1 in APA GasNet's May 2007 submission proposal, p 64

Scope changes

A scope change in operations and maintenance expenditure typically results from the addition or removal of assets to the regulated capital base.

Scope changes to the 2011 operating and maintenance base year costs are discussed in the following sections.

New compressor stations

Operating expenditure associated with three new compressor stations commissioned after the 2011 base year must be added to the operating and maintenance base year.

The Euroa Compressor Station is expected to be commissioned in 2012. In the forecast period, an additional compressor at Wollert is expected to be commissioned in 2014, as part of the Western Outer Ring Main Project, and the Stonehaven Compressor Station is expected to be commissioned in 2014.

Incremental non-labour costs associated with these new compressor stations relate to annual inspection, servicing, maintenance and electricity running costs. Incremental labour required for the two sites is equivalent to an additional field worker. Forecast costs associated with this scope change are set out in Table 9.5 below.

New pipelines

Operating expenditure associated with pipelines commissioned after the base year must be added to the operating and maintenance base year.

The following pipelines are forecast to be commissioned after 2011:

- Sunbury loop (Rockbank to Plumpton) – 2012;
- Remainder Western Outer Ring Main – 2015;
- Kalkallo lateral from the Western Outer Ring Main – 2015;
- Warragul looping – 2015;
- Northern looping – 2015; and
- Anglesea Pipeline extension – 2016.

Initial incremental costs relating to restoration for new pipelines, including restoration of easement subsidence or defects associated with weeds and fencing are usually capitalised with construction costs. After this initial phase (2-3 years after construction) easement management costs are transferred to routine Operating and Maintenance. This means that pipelines commissioned in the earlier access arrangement period may give rise to operating and maintenance scope changes in the forecast period. On this basis, APA GasNet also includes incremental costs associated with the Brooklyn Lara Pipeline in its forecast operating and maintenance expenditure step changes.

The majority of the Western Outer Ring Main Project is proposed to be built within the urban growth boundary. The proposed route currently has 100 property parcels. Due to the rate of development that is expected to occur prior to actual construction, the number of property parcels is expected to increase to 200 properties by the time the WORM is constructed. This will increase APA GasNet labour costs.

APA GasNet estimates that additional labour for maintaining the physical assets on the new pipeline is equivalent to an additional field worker.

Forecast costs associated with this scope change are set out in Table 9.5 below.

Summary step and scope changes

A summary of costs forecast under each step and scope change is set out in Table 9.5 below.

Table 9.5 - Summary of Operating and Maintenance base year step and scope changes

Step/Scope change	$'000 per annum ($2012)				
	2013	2014	2015	2016	2017
Step changes					
Environmental net gain obligations	120	200	220	220	220
Safety Management Studies	180	180	180	180	180
Maintenance of Hazardous Area Dossiers	250	250	250	250	250
Energy Safe Victoria levy rises	28	61	61	61	61
Increases in electricity costs	30	62	98	137	181
Carbon costs	2,154	2,285	2,470	2,704	2,823
Expanded apprenticeship program	160	240	240	240	240
Western District Depot	80	80	80	80	80
Heating facilities	200	200	100	-	-
Line valve actuator overhauls	-	145	95	40	20
Pressure vessel inspections	50	25	40	-	20
Restore hard standing	40	80	80	80	80
Reset costs*	-	-	-	660	440
Total step changes	**3,290**	**3,806**	**3,914**	**4,652**	**4,595**
Scope changes					

Compressor Stations	453	752	1051	1051	1051
Pipelines	191	225	722	764	764
Total scope changes	**644**	**977**	**1,773**	**1,815**	**1,815**
Real Cost Escalation	-2	78	177	280	251
Total step and scope changes	**3,933**	**4,862**	**5,864**	**6,747**	**6,661**

* These only relate to reset costs for the next access arrangement period. Reset costs associated with the current access arrangement revision proposal are discussed below in relation to allowances.

Percentage Trend Factor

Clause 7.2(h)(iv) of the earlier access arrangement contemplates that in forecasting its operating costs for the access arrangement period, APA GasNet will take into account a percentage trend factor.

APA GasNet has reviewed operating costs in the earlier access arrangement period and notes that costs have been reasonably stable, however underlying labour costs (encompassed in the labour, outside services and corporate subcategories) has been trending upwards. This is hardly surprising given the labour pressures currently facing the energy industry, in particular competition with the resources sector for skilled labour.

To address this trend in the base year, APA GasNet has applied a labour escalation factor to the base year from 2011, as per the discussion below.

Real cost escalation

For the purpose of calculating the forecast operating costs over the access arrangement period, actual costs for the base year were escalated annually using productivity-adjusted real Average Weekly Ordinary Time Earnings (AWOTE) escalators. Relevant escalators applied to the following labour groups:

- Electricity, Gas and Water (EGW); Gas Network Related, Real Adjusted Productivity Weighted EGW AWOTE – Victoria; and
- General Labour (made up of administrative and professional services): Real Adjusted Productivity Weighted Index AWOTE – Victoria.

The methodology for forecasting escalators is set out in the BIS Shrapnel Real Cost Escalation Report provided at Attachment I. APA GasNet intends provide an update of forecast escalators presented in that report in response to the AER's Draft Decision to ensure that the most recent available figures are used.

Application of labour escalators

The EGW labour cost escalator has been applied to the associated labour costs of APA Group staff that work directly and/or indirectly on the construction, maintenance, design and operation of the pipeline.[125]

General labour is a weighted labour cost escalator capturing corporate-type functions. This group is made up of a mix of administrative support services staff and professional staff such as accountants, lawyers and IT professionals. APA Group has calculated that 10 per cent of corporate staff are in administrative support type roles, while the remainder are professional staff. BIS Shrapnel has applied this weighting to derive the General Labour escalator.[126] The remaining labour costs have been escalated using this index.

Further confidential information relevant to APA Group's current Enterprise Bargaining Agreement negotiations are provided at Attachment D-3. This information is relevant to the EGW and General Labour categories.

Use of AWOTE measure

APA GasNet considers that use of the AWOTE measure is a more appropriate measure to capture labour costs than using the AER-preferred measure being the Labour Price Index (LPI). As described in more detail in the BIS Shrapnel Real Cost Escalation Report provided at Attachment I, the LPI is a measure of underlying wage inflation in the economy or in a specific industry, as the LPI measures changes in the price of labour, or wage rates, for specific occupations or job classifications, which are then aggregated into a measure of the collective variations in wage rates made to the current occupants of the same set of specific jobs. The LPI, therefore, reflects pure price changes, but does not measure variations in the quality or quantity of work performed.

The LPI does not reliably measure the changes in total labour costs which a particular enterprise or organisation incurs, because the LPI does not reflect the changes in the skill levels of employees within an enterprise or industry. As skills are acquired, employees will be promoted to a higher grade or job classification, and with this promotion will move onto a higher base pay. This type of change in the cost of labour is particularly expected by APA GasNet as staff progress through salary increases by gaining competencies through training. Using the LPI figure in respect of APA GasNet's labour prices will not capture this important change in the composition of APA GasNet's workforce that influences actual labour costs.

The AWOTE captures both base pay rates and changes in base pay level, while the LPI only captures the first element. Basically, promoting employees to a higher occupation or competency level does not necessarily show up in the LPI, but the employer's total wages bill (and average unit labour costs) is higher, as is AWOTE.

[125] BIS Shrapnel 2012, Real Cost Escalation Forecast to 2017 – Australia and Victoria, March, Table 1b

[126] BIS Shrapnel 2012, Real Cost Escalation Forecast to 2017 – Australia and Victoria, March, Table 1b

The AWOTE measure also includes bonuses, incentives, penalty rates and other allowances, which are also part of an enterprise's total wage bill.

Given the limited application of the LPI measure, APA GasNet does not consider that its use would be consistent with the revenue and pricing principles which provide that the service provider must be given reasonable opportunity to recover at least its efficient costs is providing reference services. As the LPI does not capture compositional changes that contribute to labour costs, as a measure it cannot be expected to provide reasonable opportunity for a service provider to recover efficient costs where these compositional effects are expected to influence labour costs.

Should the AER persist in its position that the LPI is its preferred measure of labour cost changes, then APA GasNet submits that it should use the relevant LPI measure set out in the BIS Shrapnel report at Attachment I. APA GasNet considers that BIS Shrapnel has applied a methodology in developing its forecasts (for both AWOTE and LPI) that is consistent with the NGR and that the resultant escalators constitute the best forecast or estimate possible in the circumstances.

Productivity Adjustments

Both the EGW and general labour cost indices used in forecasting labour costs incorporate productivity adjustments.[127] APA GasNet notes that this incorporates into the forecast an upfront productivity adjustment before productivity gains are realised.

While APA GasNet considers that this approach is not necessarily consistent with the operation of incentive regimes that allow service providers to keep for a period the efficiency and productivity gains made, APA GasNet also acknowledges that forecast costs must also reflect the costs incurred by a prudent service provider acting efficiently. On balance with these conflicting drivers, APA GasNet has determined to adopt productivity adjusted escalators in its forecast.

Summary operating and maintenance costs

Forecast operating and maintenance expenditure by category is set out in Table 9.6 below.

Table 9.6 - Forecast operating and maintenance expenditure by category

$'000 (2012)	2013	2014	2015	2016	2017
Labour	10,527	11,704	12,789	13,648	13,420
Materials	446	446	446	446	446
Outside services	4,734	5,320	6,010	6,296	6,457
Fuel Gas	-	-	-	-	-
Other	6,824	6,872	6,792	6,702	6,700

[127] BIS Shrapnel 2012, Real Cost Escalation Forecast to 2017 – Australia and Victoria, March, pp 44-50

Corporate	10,046	10,812	11,353	11,470	11,541
Total	**32,577**	**35,154**	**37,390**	**38,562**	**38,564**

APA GasNet considers that its forecast operating expenditure satisfies Rule 91 as it is consistent with what would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

APA GasNet has prepared its forecast operating and maintenance expenditure using the base year methodology, as required under clause 7.2(h) of the earlier access arrangement. The base year (2011) represents the most recent full year of actual cost data, and is subject to a benefit sharing scheme that provides APA GasNet with equal incentive to pursue efficiencies in each year of the access arrangement. As described above, the base year has been adjusted for changes in the capitalisation policy and to remove costs that are not indicative of future costs. The incentives on the base year and adjustments made make it an efficient base on which to derive forecast operating expenditure.

All step and scope changes added to the base year represent incremental cost imposts on the business that are not compensated in the base year. Adjustments for step and scope changes are also consistent with clause 7.2(h) of the earlier access arrangement.

Labour components of the forecast have been escalated using labour price indices prepared by BIS Shrapnel. The methodology used to forecast those escalators are set out in the BIS Shrapnel report at Attachment I.

9.3.3. Allowances

Forecast operating and maintenance expenditure is supplemented by a number of other allowances to make up the total forecast operating expenditure allowance as described below.

Efficiency Benefit Sharing Allowance

APA GasNet's earlier access arrangement includes Efficiency Benefit Sharing Scheme (EBSS) with a methodology for calculating the efficiency benefit sharing allowance to apply in the forecast period.[128]

Under the EBSS, APA GasNet retains any benefits (or penalties) for a period of 5 years after the year in which it was realised. This means that the benefits carry over into the following access arrangement period. The EBSS only applies to the first four years of an access arrangement period as the final year has not been completed when the calculation is made.

[128] APA GasNet 2008-12 Access Arrangement clause 7.2

The calculation of the efficiency benefit for each year is cumulative, ie, benefits in a year accrue only to the extent that the savings in that year are greater than those already identified in prior years. This means that, especially in the later years of an access arrangement period, a saving from the originally approved operating and maintenance forecast can still generate a negative efficiency benefit.

For APA GasNet, the efficiencies compared to the forecast for each year of the current access arrangement period are shown Table 9.7 below.

Despite significant savings being realised in each year of the earlier access arrangement period compared to forecast, the calculation under the existing EBSS applies a penalty to APA GasNet, as shown in Table 9.8 below.

Table 9.7 - Incremental EBSS savings

$2012 ’000	2008	2009	2010	2011	Total
Annual Efficiency	-2,715	-3,455	-3,467	1,033	-10,647

Table 9.8 - Efficiency carry over

$’000	2013	2014	2015	2016	Total
$2006	1,724	328	-1,888	-2,798	-2,634
$ of day	2,089	407	-2,404	-3,652	-3,559

Reset costs

As discussed above, established regulatory practice (applied in all access arrangements preceding the earlier access arrangement) has been to ‘carry forward’ costs associated with the preparation of each access arrangement revision proposal as an adjustment to forecast operating expenditure.[129]

In line with this approach, the earlier access arrangement did not include a forecast for preparing this access arrangement revision proposal (though did include costs for preparing the previous access arrangement proposal (see Table 9.1 above).

Transitional provisions associated with the introduction of the NGL provide that the NGL does not “affect the previous operation of the provision or anything suffered, done or begun under the provision”.[130] APA GasNet considers that the established treatment of reset costs in the earlier access arrangement is relevant to this provision, as reset costs were not included in 2011 or 2012 forecast operating expenditure on the basis that they would be recovered in the first year of the next access arrangement.

In accordance with this approach, APA GasNet has included an estimate of its costs in preparing this access arrangement revision proposal in 2013.

[129] See for example Table 9.1 in APA GasNet’s May 2007 submission proposal, p 64
[130] National Gas Law, schedule 3, clause 43(1)(b)

As described above, reset costs associated with the next access arrangement period are forecast as a step change and set out in Table 9.5 above.

Other allowances

APA GasNet maintains two types of inventories related to the VTS. These are passive linepack and spare pipes, valves and fittings required for maintenance and emergency use.

APA GasNet is responsible for the provision of the original gas inventory in its pipeline system. This gas is purchased from the Victorian wholesale gas market whenever a new pipeline is commissioned. A base volume of gas is required in the pipeline system to enable the system to operate. This gas remains the property of APA GasNet.

The provision of this passive linepack gas is part of the investment in a new pipeline but it is not a depreciable asset and is, theoretically, recoverable (at least in part) when a pipeline is eventually decommissioned.

This linepack is calculated and valued at the price of gas in the Victorian wholesale gas market when it is purchased. It is then valued, in line with previous practice, at that original purchase price as escalated at CPI.

APA GasNet maintains sets of pipe sections, valves and fittings for use in maintenance and emergency situations. This is required as, even where items may be standard, the time for procurement and delivery is often too long to allow this to be the norm especially in an emergency situation. These inventories need to cover all of the various sizes and types found in APA GasNet's pipeline system.

Due to the large number of individual items within this inventory, APA GasNet does not have a detailed valuation, however, the total value of the inventory amounts to approximately 0.1 per cent of the VTS regulatory asset base. These items are not depreciated until installed.

As both of these inventories represent an investment by APA GasNet in the pipeline system a return on these assets is included in the allowed revenue. APA GasNet proposes to retain the methodology used in preceding access arrangement periods to calculate this allowance. There is no depreciation allowance for inventories.

Self-insurance

APA GasNet's earlier access arrangement included an operating expenditure allowance for asymmetric risk (self-insurance).

APA GasNet's proposed self-insurance allowance was approved by the ACCC in its draft decision, and related to the following identified risks:

- Insurer credit risk;
- Extortion and bomb threats;

- Employment practices;
- Uplift liability;
- Key person risk; and
- Fraud risk.

With the exception of fraud risk, all of these self-insurance categories were also approved in relation to the second access arrangement period. Fraud risk was not proposed in the second access arrangement period.

Since the preparation of the earlier access arrangement proposal, APA GasNet has undergone changes in respect of insurance arrangements, in particular in becoming part of the wider APA Group.

APA GasNet's earlier access arrangement included self-insurance allowances for employment practices, fraud and uplift liability risk, amounting to $149,000 per year of a total allowance for self-insurance of $189,500 ($2006). APA Group holds near equivalent external insurance for these risks, meaning that APA GasNet no longer faces material cost risks in relation to these areas, above the insurance deductable.

The costs of these insurances (known as Employment Practice Liability Insurance (employment practices risk) and Industrial Special Risks Insurance (fraud and part of uplift liability risk) are lower than the self-insurance allowances otherwise calculable for these risks, and are included in the APA Group insurance charges to APA GasNet. Combined General and Products Liability insurance also provides coverage for part of APA GasNet's uplift liability risk, along with other areas of insurance.

APA GasNet considers that the external insurance is more efficient than continuing to self-insure these risks, and therefore has not included a self-insurance premium for employment practices, fraud and uplift liability risk in its access arrangement proposal.

The earlier access arrangement included self-insurance allowances for extortion and bomb threat and insurer credit risk. The allowance for these two risks amounted to $3000 per year.

Recent regulatory practice in respect of cost pass through events has meant that risks such as extortion and bomb threat and insurer credit risk have been included as allowable pass through events in preference to self-insurance allowances.[131] In line with this approach, APA GasNet has replaced these self-insurance allowances with equivalent cost pass through event definitions, namely a terrorism event and an insurance credit risk event. Cost pass through events are discussed in more detail in section 11.9.2 of this submission.

[131] AER 2011, *Access Arrangement for the Amadeus Gas Pipeline 01 August 2011 to 30 June 2016*, clause 4.7.3

APA GasNet has re-evaluated the degree of key person risk that it faces compared to the start of the earlier access arrangement period. As part of its incorporation into the APA Group structure, many functions that were carried out by the stand-alone business were transferred to Corporate functions, while others came under a broader management structure that also encompassed other assets. This restructuring means that APA GasNet has access to more resources from across the business in areas such as engineering, regulatory compliance and commercial management.

This access and dissemination of information and skills has alleviated the degree of key person risk faced by APA GasNet to what it considers to be a normal commercial level. APA GasNet therefore does not consider that it carries material key person risk sufficient to justify a self-insurance allowance in this category.

APA GasNet has not identified any additional areas of asymmetric risk where a self-insurance allowance may be appropriate. Given this, APA GasNet does not propose to include a self-insurance allowance in its forecast operating expenditure.

Debt raising costs

Debt raising costs are transaction costs – such as legal fees, underwriting fees or credit rating fees – incurred by the business to hold, raise or refinance debt. Debt raising costs can either be incorporated in the regulatory framework in calculating the appropriate cost of capital, or can be included in the allowance made for operating costs. APA GasNet has included debt raising costs in its operating expenditure projection, in line with the AER's approach for NT Gas. APA GasNet has not made any allowance for debt raising costs in deriving the WACC to be applied to the VTS for the access arrangement period.

In calculating debt raising costs, APA GasNet has applied the same method and estimates as used by the AER, in its recently published decision for NT Gas.[132]

Based on the VTS opening capital base of $620.6 million and applying a 60 per cent debt gearing ratio, total regulatory debt will be approximately $372.4 million at the start of the regulatory period. The forecast increase in the capital base over the access arrangement period implies that total debt will also gradually increase, to reach $526.0 million at 1 January 2017. The AER's table for estimating debt raising costs has an indicative allowance of two bond issues for all debt levels between $250 million and $500 million.[133] The AER's most recent estimate of the debt raising costs associated with two debt issues is 9.9 basis points per dollar of debt per annum.[134] Debt raising costs have been calculated by the financial model accompanying this submission.

[132] AER 2011, *NT Gas, Access arrangement proposal for the Amadeus Gas Pipeline – 1 July 2011 – 30 June 2016*, *Final decision* June, p 95

[133] AER 2011, *NT Gas, Access arrangement proposal for the Amadeus Gas Pipeline – 1 July 2011 – 30 June 2016*, Draft decision April, p 219

[134] AER 2011, *NT Gas, Access arrangement proposal for the Amadeus Gas Pipeline – 1 July 2011 – 30 June 2016*, Draft decision April, p 219

9.3.4. Summary operating expenditure

Components making up APA GasNet's forecast operating expenditure are set out in Table 9.9 below.

Table 9.9 - Components of forecast operating expenditure

$'000 (2012)	2013	2014	2015	2016	2017
Operating and maintenance	32,577	35,154	37,390	38,562	38,564
Efficiency Benefit Sharing Scheme allowance	2,039	388	-2,232	-3,308	-
Reset costs	1,100	-	-	-	-
Debt raising costs	392	400	543	526	502
Revenue cap allowance*					
Other allowances	227	227	238	238	238
Total	**35,234**	**36,168**	**35,938**	**36,017**	**39,302**

* These values will not be available until the later in 2012 and 2013

10 Total revenue

Rule 76 requires the total revenue to be derived according to a building block approach:

> 76 Total revenue
>
> Total revenue is to be determined for each regulatory year of the access arrangement period using the building block approach in which the building blocks are:
>
> (a) a return on the projected capital base for the year (See Divisions 4 and 5); and
>
> (b) depreciation on the projected capital base for the year (See Division 6);
>
> and
>
> (c) if applicable – the estimated cost of corporate income tax for the year;
>
> and
>
> (d) increments or decrements for the year resulting from the operation of an incentive mechanism to encourage gains in efficiency (See Division 9);
>
> and
>
> (e) a forecast of operating expenditure for the year (See Division 7).

The considerations relevant to each of the building blocks are discussed in the relevant sections above. This section summarises those building blocks to present the total revenue requirement.

10.1. Return on capital

The return on the projected capital base is calculated as the regulatory asset base multiplied by the weighted average cost of capital, as shown in Table 10.1.

Table 10.1 - Return on capital

$m (nominal)	2013	2014	2015	2016	2017
Regulatory Asset Base	620.6	648.3	903.2	896.5	876.7
WACC	9.06%	9.06%	9.06%	9.06%	9.06%
Return on Capital	56.2	58.7	81.8	81.2	79.4

10.2. Corporate income tax

Corporate income tax is calculated in the financial model accompanying this submission. This calculation reflects tax depreciation of the tax asset base, as discussed below.

10.2.1. Tax asset base

In its 2008 determination, the ACCC calculated a tax asset base (TAB) for the VTS. APA GasNet has rolled forward that TAB for actual capital expenditure and tax depreciation, as shown in Table 10.2.

Table 10.2 - Historical Tax Asset Base Roll Forward – capital expenditure as commissioned

$m (nominal)	2008	2009	2010	2011	2012
Opening value	187.2	209.7	202.6	195.5	230.9
Capital expenditure	37.8	10.2	10.7	53.6	52.5
Tax depreciation	-15.4	-17.3	-17.8	-18.2	-20.5
Closing TAB	**209.7**	**202.6**	**195.5**	**230.9**	**262.9**

It should be noted that there is no indexation of the Tax Asset Base, consistent with the Australian tax laws.

The closing TAB as at 31 December 2012 becomes the opening TAB as at 01 January 2013, and is rolled forward with forecast capital expenditure and tax depreciation as shown in Table 10.3.

Table 10.3 - Forecast Tax Asset Base Roll Forward – capital expenditure as commissioned

$m (nominal)	2013	2014	2015	2016	2017
Opening value	262.9	252.5	544.8	537.3	513.9
Capital expenditure	9.2	312.6	28.1	13.8	14.8
Tax depreciation	-19.7	-20.2	-35.6	-37.1	-37.9
Closing TAB	**252.5**	**544.8**	**537.3**	**513.9**	**490.8**

10.2.2. Tax losses

APA GasNet confirms that there are no tax losses to be carried forward, impacting the corporate tax calculation.

10.2.3. Allowance for corporate income tax

The allowance for corporate incomes tax is calculated in the financial model accompanying this submission, as shown in Table 10.4.

Table 10.4 - Forecast corporate tax allowance

$m (nominal)	2013	2014	2015	2016	2017
Corporate tax allowance	9.8	10.2	11.0	10.8	9.7

10.3. Operating expenditure

Forecast operating expenditure is discussed in 9.3. Table 10.5 below includes the effect of the Efficiency Benefit Sharing Scheme as discussed in section 9.3.3.

Table 10.5 - Operating expenditure

$m (nominal)	2013	2014	2015	2016	2017
Operating costs	35.2	37.6	41.1	43.4	44.5

10.4. Revenue requirement

In summary, these components derive the total revenue requirement, as shown in Table 10.6.

Table 10.6 - Total Revenue Requirement

$m (nominal)	2013	2014	2015	2016	2017
Return on capital	56.2	58.7	81.8	81.2	79.4
Regulatory depreciation	26.7	27.3	34.5	35.5	33.5
Corporate tax allowance	9.8	10.2	11.0	10.8	9.7
Incentive mechanisms	2.1	0.4	-2.4	-3.7	-
Operating costs	35.2	37.6	41.1	43.4	44.5
Total revenue requirement	130.0	134.2	166.0	167.2	167.1
Smoothed revenue requirement	129.0	136.1	156.0	167.0	178.0

The present value of the total revenue requirement stream, discounted at the WACC of 9.06 per cent, is $586 million.

The present value of the smoothed revenue requirement stream, discounted at the WACC of 9.06 per cent, is $586 million.

11 Tariffs

This chapter explains the basis and derivation of pipeline tariffs, including the allocation of total revenue and costs to pipeline services and the reference tariff variation mechanism.

11.1. Tariff design and principles

11.1.1. Background

The Service Envelope Agreement currently between APA GasNet and AEMO delegates to APA GasNet the responsibility to design and administer the transmission tariff. Also, in accordance with Rule 327(1), APA GasNet has in place a use of system agreement "that provides for the payment of transmission charges to the declared Transmission Service Provider." APA GasNet and AEMO will continue with this arrangement for the access arrangement period.

APA GasNet has also reviewed the existing tariff in the light of practical experience. In summary, APA GasNet has not made significant modifications to the current tariff design.

11.1.2. Victorian market carriage model

APA GasNet operates under the unique market carriage model. All other transmission pipelines in Australia operate under a contract carriage model. This has a number of important implications as follows:

- APA GasNet cannot secure its revenues under take-or-pay contracts. Therefore, tariffs must be levied on actual flows on the system;
- The setting of the tariffs must be based on a forecast of the gas flow paths. However, since APA GasNet operates under an incentive-based regulatory model the tariffs, once set, cannot be altered to suit changed circumstances; and
- To the extent that the actual flow paths differ from the forecast, the cost allocation outcomes to customers will not be as was intended. In contrast, under a contract carriage model, the user contracts for capacity in a pipeline over a given flow path, and its charge are always related to that pre-specified path.

The last point above suggests that it is inappropriate to require too rigid an application of cost-reflective tariff principles to the Reference tariff. A cost allocation process done in hindsight after actual flows are known would differ from that which is forecast. This further suggests that athe tariff design for the VTS can only be a compromise between a range of conflicting principles.

Another implication of the cost-reflective zonal tariff structure described in more detail below is a degree of volatility in tariffs, such that expenditure on the system and changes in volumes can have significant implications for individual zones.

11.1.3. Tariff design criteria

Rules 91-93, 95-97 form the framework for setting transmission tariffs for the VTS. APA GasNet has adopted the following tariff design criteria, which incorporate the Rule requirements for tariffs and the revenue and pricing principles.

A key driver of tariff design is efficiency, in terms of the promotion of efficiency in:

- Customers' usage of the pipeline system - transmission prices should, where possible, signal to system users the economic costs of use of the system, and promote maximum utilisation of the system;
- The operation and maintenance of the pipeline system - transmission prices should be consistent with the efficient operation and maintenance of the pipeline system and minimise the costs of the service requested by users;
- Investment in system augmentation - transmission prices should signal efficient new investment in the pipeline system;
- Simplicity and predictability – enabling users to identify the cost impact of their usage decisions, and ensuring administration costs are not excessive and barriers to entry are minimised;
- Robustness, in light of possible changes to the future development of the pipeline system, and changes in demand and supply patterns;
- Price stability - avoiding unnecessarily large price shocks at subsequent reviews; and
- Consistency with full retail competition - ensuring that transmission tariffs do not artificially impede customer churn.

Some of these criteria are necessarily conflicting, for example the relationship between cost reflectivity in tariffs relating to a complex system, and simplicity and price stability. Principles of cost reflectivity can at time come at the expense of price stability, and vice versa.

11.1.4. Tariff Design Principles

The tariff design for the access arrangement period is structured along the following principles, which are unchanged from the existing design except where noted:

- The system is divided into withdrawal zones, where a charge is levied on the withdrawing user, and injection zones, where the charge is levied on the injector. In respect of the charges to be levied on users, there is no assumed relationship between injections and withdrawals, except in certain zones where matched rebates are offered. This corresponds to the market carriage structure, where users can inject and withdraw as they please, with any differences taken to be purchases (or sales) on the spot market.

- The injection zone charge recovers the cost of the injection pipeline. The withdrawal charge recovers the cost of transmission from the injection pipeline to the user.
- The cost of transmission through the withdrawal zones is based on a forecast of physical flows. Gas is assumed to have followed the forecast physical path even if it was injected at a different injection point.
- Costs are allocated to 1 in 2 winter peak flows and annual flows in the ratio of 60 per cent to peak and 40 per cent to annual. The allocation percentages have been adjusted slightly from those in the earlier access arrangement period reflecting changes in the system. The cost allocation procedure is described in detail in the next section.
- Withdrawals are charged within 25 withdrawal zones unchanged from the earlier access arrangement period.
- Within each withdrawal zone there are up to three tariff classes. These tariff classes are Tariff-D and Tariff-V which are supplemented in some circumstances by a cross system tariff. There are two specific withdrawal zones servicing storage facilities which have only one tariff class being the refill tariff.
- Injection tariffs are charged at each of the injection zones.
- The injection charge is levied on the ten peak injection days over the winter at each injection zone.
- The withdrawal charge is levied on the actual flows each month (an 'anytime' charge). A different withdrawal charge applies to each tariff class.
- To provide a smoother payment schedule for users, injection charges are forecast annually for each injector and levied monthly on a sculpted profile. An injection charge wash-up is performed after September each year when the actual peak days are known.

11.2. Derivation of tariffs

In broad terms, the tariff is calculated using the following procedure.

- The peak and annual flows at each off-take are forecast for the access arrangement period. The forecasting procedure is described in detail in Chapter 5 of this submission.

- Costs are allocated to each off-take using the procedures described in section 11.3. The allocation is to each tariff class at each off-take. The tariff classes are defined below in section 11.5 of this submission.

- The costs at each off-take are aggregated into the 25 withdrawal tariff zones and the 3 injection pipelines.

- The parameters for charging tariffs on the injection pipelines and within the withdrawal zones are defined in section 11.4 of this submission.

- The tariff is the result of dividing the charging parameters into the allocated costs for each injection pipeline and withdrawal zone. These tariffs are levelised over the access arrangement period using the post tax nominal WACC and the selected X-factors. The selected X-Factors are described in section 11.9.1 of this submission.

11.3. Cost allocation procedures

This section describes how costs are allocated to specific off-takes and tariff classes.

Cost are grouped into the following categories, and allocated as shown in the following Table 11.1.

Table 11.1 - Cost allocation method by cost category

Cost Category	Allocation Method
System Assets (return on and of capital) (excluding the rolled out SWP and Interconnect Assets)	Physical path
Direct Operating Costs	Physical path
SWP Residual Costs	Direct to zone
Costs rolled-in under the System-Wide Benefits Test (Interconnect Assets)	Postage Stamp
Interconnect Zone Residual Costs	Direct to zone
Non-System Assets (return on and of capital)	Postage Stamp
General & Administrative Operating Costs	Postage Stamp
Return on Working Capital	Postage Stamp
Benefit Sharing Allowance and FCA	Postage stamp
Asymmetric risk	Postage stamp
Capital raising costs	Postage stamp

The zonal tariff structure and cost allocation procedures reflect previous ACCC decisions and requirements with respect to cost reflectivity under the National Gas Code. As a consequence of the tariff structure and allocation procedures discussed below, tariffs can vary quite significantly in response to investments in capacity and changes in flows.

APA GasNet notes that under a postage stamp tariffing model (which it tried to institute for Tariff-V customers in the earlier access arrangement) these movements in tariffs for individual customers would not occur.

11.3.1. Physical path cost allocation

The aim of this cost allocation procedure is to allocate costs to each user in proportion to that user's use of the transmission system assets. Therefore, a user who uses a short section of the system will, in general, pay a lower cost than a user who uses a longer section of the system.

The specific assets that are used by a user are determined by the physical path taken by the gas flow from the relevant injection zone to the user's off-take. The relevant injection zone for each off-take is determined by a process of allocating the forecast injection volumes from each injection point to the off-takes based on the physical flow dynamics of the system, until the injection volumes have been exhausted. The majority of the system is assumed to be supplied from Longford, since this is where the greatest volumes are injected. To the extent that the injection volume forecast is changed, the physical paths will also change.

The transmission system has been divided into 29 pipeline segments, determined by the points at which pipeline diameter changes. Certain pipeline segments are associated with compressors and in-line system regulators. The cost that is associated with each asset segment is determined by a procedure that avoids vintage effects, as follows:

- The total return on and return of assets is determined for all of the pipeline, regulator and compressor assets separately.
- This cost is allocated amongst the pipeline segments and compressors according to the Optimised Replacement Cost (ORC) of each asset within its asset class.
- The direct pipeline operating costs are allocated to each pipeline segment according to the pipeline length. Compressor and regulator operating costs are allocated to each unit directly.
- This procedure effectively disregards the vintage of each asset. It also means that refurbishments of the system, such as, for example, the Gooding Compressor Station and Lurgi pipeline refurbishments, are allocated across the entire system rather than to specific zones (however, capacity augmentations are allocated to the associated pipeline segment). This procedure is intended to reflect the principle that the tariff for a segment of pipeline should be related to its service potential, and not to its age.

11.3.2. Allocations to peak and annual flows

The physical path allocation procedure described above allocates the cost of each pipeline segment to users according to the use made of that pipeline segment. Therefore it is necessary to define what is meant by ‘use’ of the pipeline segment.

The aim of allocating costs on the use of the pipeline is to send an appropriate price signal to each user, to enable that user to respond to the correct economic signal, and to ensure that each user is paying its share of the opportunity cost of each asset.

It is common practice to consider the peak flow through a pipeline as the relevant cost driver, on the basis that the pipeline is constructed to carry the peak flow. However, this is not a forward-looking concept as required by economic theory. The appropriate long-run price signal is the cost of augmenting the capacity of the pipeline (in the short run it is mainly the cost of additional compressor fuel required to increase the flow in an existing unconstrained pipeline).

The augmentation cost is related to the incremental capacity required to carry growth in the peak, but this is generally less than the unit cost of the existing pipeline, given the economies of scale in pipeline construction and augmentation. For example, it is relatively inexpensive to augment an uncompressed pipeline, whilst the cost to augment a fully compressed pipeline could exceed the unit cost of the original pipeline. However, while these arguments are relevant for a contract carriage pipeline, where capacity is the charging basis, they do not hold for a market carriage pipeline where charging is based on flows. Thus, while it is true that unit cost of increasing pipeline capacity is often lower than the average cost, when the tariff must reflect the lower annual usage of the incremental capacity, at least initially, the flow based tariff will usually be higher than the average, often significantly.

This discussion is relevant to gas transmission from a single injection point to a single withdrawal point. However, another relevant consideration is the flow dynamics on the pipeline network. The VTS is characterised by five gas sources injecting into a central hub, with a number of low volume laterals off the hub. Gas flow within the hub is not at present constrained and there are a number of null points which move around according to the relative injection volumes from day to day. In this part of the system it is not appropriate to consider price signals based on peak flows.

In a practical sense, the VTS should be analysed in terms of:

- injection pipelines, which could become constrained if volumes grow (and where the peak flow is the indicator of possible constraint);
- system security in the event of supply disruption at one or more injection zones;
- the hub, which will, for the foreseeable future, be unconstrained; and
- low volume laterals off the hub.

The VTS laterals exhibit a range of capacity utilisation levels, from the low utilisation on the Murray Valley pipeline, to almost full utilisation of the Western Transmission System (WTS). This would suggest that it might be appropriate to vary the allocation rule from one lateral to the other. AEMO has previously published an estimate of spare capacity on VTS laterals and it is apparent that, with the exception of the WTS, there is reasonable spare capacity on each lateral provided gas is sourced from the nearest injection point. However, the WTS is also subject to a bypass risk, and hence a special tariff design is required in this instance (as discussed below).

The original tariff design allocated 65 per cent of costs to the peak flows, and the remainder to annual flows. Compared to the prior forecasts from 1998-2012, the forecast flows over 2013-2017 continue to show an increase in non- Longford injections, which has the effect of reducing the constraints within the hub. In light of this trend, APA GasNet has decided to further reduce the peak allocation ratio from 55.55 per cent in the earlier access arrangement period to 52.5 per cent. There are reasonable arguments to reduce this ratio even further given the unconstrained nature of most VTS pipelines, but this would have the effect of making significant changes in the tariff relativities between high and low load factor customers.

As noted above, APA GasNet has allocated costs on the injection pipeline based on the peak flows and allocated costs on the remainder of the system in the ratio of 47.5 per cent to annual flows and 52.5 per cent to peak flows (generating an average peak allocation of approximately 60 per cent).

11.3.3. Cost allocation to off-takes within pipeline segments

Within individual pipeline segments, direct costs are allocated to off-takes on the basis of the volumes and distances (TJ-km) within the zone for outflows at each off-take and for flows through the zone. This allocation is done for both peak and annual flows in the ratios discussed above.

The costs are then allocated to each tariff class within a zone in the following way.

- A rate ($/TJ/km) is derived for both peak and annual supply at each off-take based on the TJ-km for both peak and annual flows within the zone to each off-take and through the zone.

- A forecast is made of the Tariff-V and Tariff-D loads at each off-take, and the separate components of peak and annual flows within each tariff class.

- The peak and annual rates are applied to the associated components of the Tariff-D and Tariff-V loads at each off-take, to derive the costs to be allocated to these tariff classes at each off-take.

- The costs within withdrawal zones are aggregated for each tariff class to the zonal level. The total costs within the injection pipelines are aggregated to generate the total injection pipeline cost.

11.3.4. South West Pipeline

A separate regime applies to the South West Pipeline (SWP). The cost allocation for the SWP was approved by the ACCC for the second access arrangement period. The ACCC acknowledged that the SWP provided both direct benefits of connecting a new gas source (both WUGS and new production) to the VTS and system wide benefits of inter basin competition in the wholesale gas market and enhanced system security in the event of supply disruption. The ACCC approved a cost allocation for the SWP consisting of a 50 per cent allocation directly to the injection pipeline and 50 per cent to be allocated to the VTS as a whole on a postage stamp basis. This cost allocation has been maintained since then and will be so for the forecast access arrangement period.

In the light of significant changes to the gas flows on the VTS, APA GasNet proposes to change this allocation from 50 per cent allocated to the SWP to 75 per cent. This adjusted allocation reflects the fact that the increased usage of the SWP means that it can support a greater proportion of its cost recovery from those flows. This change in allocation also allows APA GasNet to maintain the relativity between the injection tariffs for Longford and Port Campbell. It was a significant factor in the original decision in 2002 that these injection tariffs should be approximately equal in order not to provide a barrier to basin on basin gas competition. This relativity was maintained in the 2008 decision.

The SWP project includes the following assets:

- the Iona-Lara pipeline;
- the Iona-North Paaratte pipeline;
- the Iona, Lara and Brooklyn regulators;
- the Iona compressor; and
- the proposed Stonehaven compressor station.

In addition, the following pipelines and facilities for part of the broader system of gas supply from Part Campbell to the Hub and beyond to Northern Victoria:

- the Brooklyn –Lara pipeline;
- the regulators and heaters at Brooklyn and Lara;
- the Western Outer Ring Main (WORM); and
- compressor unit 6 at Wollert

The Wollert-Wodonga Pipeline supplies the South and North Hume zones, a large part of the Calder zone, the Murray Valley Pipeline, the Echuca zone, Wodonga and transfers to NSW. This pipeline also enables transfers of gas from Culcairn to the northern zones.

APA GasNet is offering source-based tariffs in the North Hume, Wodonga and Murray Valley zones. That is, there is a relatively high tariff for supply from the south, and a separate discounted tariff for supply from Culcairn, which reflects the significantly shorter transportation distance from Culcairn compared to transportation from the south.

APA GasNet has calculated the tariffs in these zones as follows. Firstly, the tariffs for supply from the south have been calculated from the recovery of the revenue requirement for each asset group assuming complete supply to these zones from the south (that is, ignoring the fact that actual northerly flows are reduced by flows from Culcairn). This tariff methodology is consistent with the methodology used on the rest of the system, assuming that gas actually flows to these zones from the south.

Tariffs from Culcairn are evaluated based on the forecast flows and the same pipeline unit transportation costs as determined by the southerly supply scenario. However, because the actual forecast revenues are a combination of Longford supplied revenues and discounted revenues from Culcairn sourced gas deliveries, the total revenue recovery is insufficient. Hence the path-based tariffs on the rest of the system have been marginally increased by approximately \$0.02/GJ to recover the shortfall.

APA GasNet believes that this procedure is cost-reflective and appropriate. The tariffs will fall between the long-run marginal cost and the stand-alone rates and hence are efficient. Higher tariffs will send an inappropriate price signal to the extent they exceed the marginal cost, and discourage otherwise viable gas consumption. Furthermore, the negative effects of higher tariffs in the Northern zones will discourage flows to a greater extent than a marginally higher tariff in the Metro zone. This is because the delivered gas costs in the Northern zones are approaching the cost of alternative fuels, and hence an increase in tariffs could lead to a significant reduction in growth. On the other hand, the gas tariffs in Metro are low relative to alternatives, and an increase of \$0.02/GJ is not likely to have any impact.

11.3.5. Culcairn Withdrawal Tariffs

APA GasNet is forecasting significant increases in gas flows between the VTS and the NSW transmission system over the forecast access arrangement period. Further investment in the VTS will be required to support these gas flows. This investment will also support the Northern zones of the VTS.

The Culcairn withdrawal tariff will be calculated as part of the Wollert – Wodonga process described above.

11.3.6. Indirect Cost Allocation (postage stamp)

The indirect costs are the costs associated with the non-system assets (return on and of capital), the return on Working Capital, and the General & Administrative operating costs. In line with the existing tariff model, these costs will be allocated to all withdrawals on a per GJ basis.

This approach is consistent with Rule 95(3)(b) that requires costs that are not directly attributable to a particular user or class of user to be allocated on a basis that is consistent with the revenue and pricing principles. APA GasNet considers that using the postage stamp approach for these costs is consistent with the revenue and pricing principles as it provides for the recovery of efficient costs incurred in providing the reference service, and is non-discriminatory. APA GasNet also notes that the approach has been accepted in the current price control model, and is widely used.

Where a prudent discount is required, APA GasNet has only allocated indirect costs to the extent that the tariff is competitive with the bypass option. In addition, where tariff changes from the current tariffs arising from the changes in system gas flows compared with those in the earlier access arrangement period would be excessive APA GasNet has adjusted indirect cost allocation to dampen those effects.

11.3.7. Interconnect and Springhurst Compressor

The Interconnect Assets were approved by the ACCC in April 2000 to be rolled-in to the VTS Capital Base under the test in section 8.16(b)(ii) of the Code (often called the system-wide benefits test). The relevant assets are:

- the bulk of the Interconnect Pipeline (93 per cent);
- the Springhurst Compressor; and
- the regulators at Wandong, Barnawartha, Wollert and Ballan.
- The remaining 7 per cent of the cost of the Interconnect Pipeline is treated as a direct asset recovery for the Culcairn injection tariff.

The ACCC's approval permitted APA GasNet to charge for the 97 per cent of these assets under a postage-stamp tariff on all withdrawals from the system, with the exception of the Western Transmission System.

APA GasNet proposes to continue with this allocation procedure but due to the significant increase in chargeable injection volumes at Culcairn the allocation to direct asset recovery from the Culcairn injection tariff has been adjusted to 25 per cent.

11.3.8. Benefits Sharing Allowance and First Carry Over Amount

The Benefit Sharing Allowance and First Carry Over Amount (FCA) carry-over are costs which are associated with activities during the earlier access arrangement period, but which can be carried forward into the forecast access arrangement period.

The FCA is associated with the difference between the forecast revenue for the last year of the earlier access arrangement period and the estimate of that revenue available at the time of submission of the review and, possibly, limitations on the ability to increase tariffs each year in order to recover the target NPV for the earlier access arrangement period.

The Benefit Sharing Allowance is a recognition of savings in operating costs made during the earlier access arrangement period which are shared with users in the following period.

The NGR do not specifically include an allocation process for these costs. APA GasNet has allocated these costs to withdrawals on a postage stamp basis, in line with other indirect costs.

11.3.9. Cross system flows

APA GasNet has adopted a policy of no backhaul charges for flows against the predominant (forecast) flows on injection pipelines. However, without some specific tariff mechanism, a flow from Longford to Iona would only attract the Longford injection charge plus the local withdrawal charge on the Southwest Pipeline. Similarly, a flow from Iona to Longford would only attract the Port Campbell injection charge plus the local withdrawal charges off the Longford pipeline.

APA GasNet proposes to continue to levy an additional charge for carriage through the Metro zone, for withdrawals off the injection pipelines which are linked to injections at an unrelated injection point. This charge will be the Metro zone tariff discounted for the indirect cost allocations (which are already recovered from the withdrawal zones).

11.4. Charging parameters

11.4.1. Background

As the VTS operates under a market carriage system, there is no concept of buying the capacity of a pipeline as occurs in a contract carriage regime. In addition, under the Victorian wholesale gas market which operates in conjunction with market carriage, there is no concept of point to point carriage of gas. Rather, all gas injected into the system is pooled and then delivered from that pool. A consequence of this combination is that Shippers of gas on the VTS do not need to be in balance over any time period. In fact there are (or have been) Market Participants who solely inject gas into the system and others who solely withdraw gas from the system.

The tariff design is built upon the concept that gas is supplied from injection pipelines into a hub, from where it is distributed to users within withdrawal zones. The injection charges are not linked to the withdrawal charges (except where a matched rebate is offered). The transmission tariffs are calculated on the assumption that gas will flow along the forecast physical paths into that pool and then from the pool to the withdrawal zones.

11.4.2. Withdrawal zones

The charging parameters for withdrawals under the current tariff are set out Table 11.2 below.

The result of the Victorian market structure is that APA GasNet has little choice but to charge for use of the VTS through charging for actual gas flows. Thus, APA GasNet charges on the basis of measured withdrawals. For simplicity, to reduce the complexity of the tariffs, the VTS is divided into a number of withdrawal zones.

Because of the significantly different load factors of large industrial customers compared with smaller industrial, commercial and domestic customers, the VTS load is divided into two tariff classes, Tariff-D for industrial customers with annual loads in excess of 10TJ and Tariff-V for all others. As noted elsewhere, there are also specific tariff classes for cross system flows and for refill of storage facilities.

Table 11.2 - Charging parameters for withdrawals

Withdrawal zone tariff	Charging parameter
Tariff - D	Daily flows from the zone for each GJ.
Tariff - V	Daily flows from the zone for each GJ.
Cross System	Daily flows from the relevant zones sourced from injection zones across the DTS for each GJ.
Refill	Daily flows from the relevant zones for each GJ.

11.4.3. Injection pipelines

The current charging parameters for use of the injection pipelines under the current tariff are set out Table 11.3 below.

Table 11.3 - Charging parameters for injections

Tariff	Charging parameter
Longford Injection Zone	Ten day peak injections over winter. Matched rebate at Latrobe, Maryvale, West Gippsland, Tyers and Lurgi zones.
Pakenham Injection Zone	Ten day peak injections over winter.
Pt Campbell Injection Zone	Ten day peak injections over winter. Matched rebate at SWP and WTS zones.
Culcairn Injection Zone	Ten day peak injections over winter Matched rebate at Interconnect zone.

The injection charges are calculated to recover the cost of the injection pipeline from the peak flows carried through the pipeline. To the extent that injections are not carried the whole length of the pipeline, a matched rebate is offered.

Under the current design, the Longford charge applies only to flows in the "predominant" flow direction, as forecast at the commencement of the first access arrangement period. A similar methodology is applied to the South West Pipeline.

APA GasNet is not aware of any major concerns in the market with the injection charging methodology currently in place. APA GasNet intends to maintain the same design for the injection pipelines, based on:

- peak flow charges,
- charges initially set based on forecast flows; and
- matched rebates where the injection pipeline is only partially utilised.

The injection charges for each injection pipeline for the access arrangement period are described in the following sections.

Longford injection charging parameter

The Longford injection charge will be levied on the ten peak day injections into the pipeline over the winter period (June-September, inclusive).

Withdrawals made in the Latrobe, Maryvale, Tyers or Lurgi zones which are matched to Longford injections will receive a matched rebate based on the shorter transmission distance on the injection pipeline.

Port Campbell injection charging parameter

The Port Campbell injection charge will be levied on the ten peak day flows through the Iona-Lara pipeline over the winter period (June-September, inclusive). These flows will be calculated from the total injections made within the Port Campbell surrounds, less the withdrawals from the WTS or other off-takes at or in the vicinity of Port Campbell.

The charge will not be levied on injections in the Port Campbell Zone which are matched to withdrawals taken from the Western Zone or from the vicinity of Iona.

A rebate will be given on the injection charge for withdrawals from the South West withdrawal zone where the withdrawal can be matched to an injection at Port Campbell.

Culcairn injection charging parameter

The Culcairn injection charge will be levied on the ten peak day injections into the pipeline over the winter period (June-September, inclusive).

Off-takes on the Interconnect Pipeline will receive a rebate on the injection charge.

In addition, a matched rebate will be offered on the withdrawal zone tariffs for withdrawals in the Wodonga, North Hume, and Murray Valley zones, where these withdrawals are matched to injections at Culcairn. This rebate reflects the lower cost of transportation to these zones from Culcairn via Barnawartha.

11.5. Tariff classes

APA GasNet will charge a differential withdrawal tariff in relation to Tariff-V and Tariff-D customers to reflect the significantly different load factors for these customer classes.

11.5.1. Storage refill

Gas is generally withdrawn from storage at high rates during the peak periods when alternative supplies are inadequate, and refilled at a slow rate during off-peak or non-congested periods. There is an argument that storage is simply an interim holding point between the supply point and the final customer, rather than a delivery location in its own right. Storage refill is, by its very nature, unlikely to impose congestion on a pipeline. Furthermore storage provides a benefit since it provides a competitive source of peak gas supply and additional security for the system. The requirement for storage refill is also dependent on the amount of supply required from storage to meet peak demand. This is, in turn, dependent on winter weather extremes. These dependencies make forecasting of refill demand extremely uncertain.

Previously, APA GasNet developed an incremental cost recovery tariff for refill and excluded any allowance for the cost of providing refill from its recoverable cost base. Thus APA GasNet would recover the costs of refill if supplied but not otherwise. However, in 2009 the responsibility for the supply (and thus the cost) of system use gas was transferred from APA GasNet to AEMO, as operator of the VTS. System use gas (in the form of compressor fuel) made up almost all of the incremental cost of providing the refill service so the earlier access arrangement was varied in 2009 to change the basis of the refill tariffs from incremental cost to a nominal charge. The refill tariff was set to 5 cents/GJ for both storage facilities escalated at CPI – X. Refill tariffs remain outside the price control mechanism. APA GasNet proposes to maintain the nominal refill tariff and reset the tariff to 5 cents/GJ for 2013.

11.5.2. South West Pipeline – incremental pricing

Proposal

As discussed in section 11.3.4 above, the South West Pipeline will be allocated 75 per cent of the full direct costs of the South West Pipeline assets (return on and of capital) and all of the incremental operating costs.

The South West Pipeline is expected to carry significant volumes from Iona to Melbourne. APA GasNet will tariff the South West Pipeline as an injection pipeline and apply an injection charge in a similar manner to the injection charge applied to the Longford pipeline (based on the ten peak day flows at the injection point).

Injections into the South West Pipeline are made at the Western Underground Storage facility at Iona, which has sufficient installed compressor power to inject gas at the maximum allowable operating pressure of the Iona-Lara pipeline of 10 MPa, and the SEAGas and Otway Gas project injection points. These connection points access gas from the new fields developed offshore from Port Campbell as well as the underground storage facility.

APA GasNet will levy the injection tariff on any injections made in the Port Campbell Injection Zone, where the gas is directed along the South West Pipeline towards Lara and Brooklyn.

Where the gas is directed to the Western Transmission System, (that is, where the injections are matched to withdrawals in the Western system) or off-takes adjacent to Port Campbell, no injection charge will be levied.

Port Campbell injection tariff

The injection tariff is derived by applying a CPI-X tariff path to the charging parameter for the Port Campbell injection zone. The initial tariff is set so that the NPV of the tariff revenues equates to the NPV of the levelised revenue requirement for the South West Pipeline.

As noted previously, increased flows forecast for the SWP would cause the Port Campbell injection tariff to fall in the access arrangement period compared with that in the earlier access arrangement period. This would cause the Port Campbell injection tariff to fall well below the Longford injection tariff which would violate the requirement established in previous access arrangement decisions for those two injection tariffs to remain close to parity. APA GasNet therefore will increase the proportion of SWP costs recovered by the Injection tariff from 50 per cent to 75 per cent in order to reinstate that tariff parity.

An allowance is made for revenues from Colac on the Iona-Lara pipeline, which will receive a matched rebate owing to its location on the pipeline.

As described above in section 11.4, a matched rebate will be offered for injections which do not flow along the Iona-Lara pipeline, that is, gas that is delivered to the Western zone.

11.5.3. Interconnect pipeline – incremental pricing

Revenue requirement

The Interconnect Pipeline carries gas from the Culcairn injection point to Barnawartha, where it joins the North Hume and Wodonga zones.

The Interconnect Pipeline has previously been allocated 7 per cent of the direct cost of the Interconnect Assets. The remaining 93 per cent and the operating costs recovered under a postage stamp tariff as approved by the ACCC in 2000. Due to the significant increase in chargeable injection volumes at Culcairnforecast for the access arrangementperiod, the allocation to direct asset recovery from the Culcairn injection tariff has been adjusted to 25 per cent.

Culcairn injection zone

The allocated costs of the Interconnect Pipeline are recovered entirely from the Culcairn Injection Tariff. The injection tariff path is derived by applying a CPI-X tariff to the charging parameter for the Culcairn Injection Point. The initial tariff is set so that the NPV of the tariff revenues equates to the NPV of the residual Interconnect revenue requirement.

Matched rebates

Off-takes on the Interconnect Pipeline are given a rebate on the injection charge if the injections are matched to the withdrawals.

11.6. Tariff zones

11.6.1. Retain existing zones

Withdrawal tariff zones are defined in order to simplify the implementation and administration of the transmission tariff. APA GasNet is not aware of any concerns in the market about the current extent and coverage of the existing tariff zones, including the prudent discounts applied to certain bypass opportunities in the vicinity of injection points.

In the interests of consistency and stability across Access Arrangement periods, APA GasNet proposes to maintain the current tariff zones.

11.6.2. Metro South East zone

Gas from the Yolla field is processed at the Lang Lang Plant of Bass Gas and injected into the VTS at the Pakenham injection zone

APA GasNet previously acknowledged that proponents of this project would have the opportunity to bypass the main VTS pipeline between Pakenham and Dandenong, and connect directly to the large distribution off-takes at Dandenong (thereby avoiding both the VTS and the AEMO spot market).

Therefore, APA GasNet offered a prudent discount by defining a new zone at Dandenong (Metro SE) where a bypass tariff would apply to matched injections at Pakenham. The Pakenham injection tariff is set at a discount on the Longford injection tariff commensurate with the distance between Pakenham and Dandenong. This tariff structure for Pakenham injections was previously approved by the Commission to take effect when the Bass Gas project commenced injections into the VTS.

11.6.3. West Gippsland zone

Currently there are no off-takes on the main pipeline between the Latrobe and Metro zones. However, in the event that a connection is made in the future, a published tariff will be defined for this zone. This tariff has been set as the average of the LaTrobe and Lurgi Zone tariffs reflecting the zone's position within the VTS.

11.6.4. Warnambool and Koroit

The Western Transmission System was covered by a separate access arrangement until 2003. From 2003 the separate access arrangement was merged with the VTS access arrangement and the Western Transmission Systems is designated the 'Western zone'. The Western zone serves five towns along the length of the pipeline, and carries a volume of approximately 5PJ/year.

With the construction of the SEA Gas pipeline which is installed within the same easement as the Western Transmission System for part of its length passing the towns of Warrnambool and Koroit currently served by the Western zone a bypass opportunity was available at these towns. APA GasNet offered a prudent discount from 2004 as described below. APA GasNet has defined new zones for the two at-risk towns excised from the Western zone.

There has been no change in circumstances for supply to these towns since approval of the earlier access arrangement period. The general increases in the level of AEMO tariffs and AEMO's plan to merge their Tariff D and V rates means that the level of tariff available to APA GasNet to meet the bypass tariff is now quite low but still generally at or above the short run marginal cost of supply. Despite this development, t would appear that there is little appetite for a bypass project at the current tariff level for these towns so APA GasNet proposes that the current tariffs continue to apply subject to ongoing escalation.

11.6.5. Zone definition

A withdrawal zone is defined by reference to the transmission pipelines and the associated connection points that constitute the zone. The gas that flows from the off-takes on those pipelines is charged at the published zonal tariff. If a new withdrawal connection point is made within one of these zones, then withdrawals at that off-take will also be charged that zonal tariff.

The connection points that constitute each zone are described in Schedule C of the access arrangement included with this access arrangement revision proposal.

The current withdrawal zones are built around a large central hub (the Metro zone) which contains approximately 83 per cent of the total load. The remaining zones are laterals and injection pipelines. APA GasNet has considered the advantages and disadvantages of breaking up the Metro zone as set out in Table 11.4.

Table 11.4 - Analysis of advantages and disadvantages of splitting the Metro zone

Advantages	Disadvantages
A more cost-reflective tariff (possibly).	Complexity for Retailers
	A barrier to customer churn under full retail contestability
	An increased risk of bypass pipelines across zone boundaries

APA GasNet considers that, in the case of the Metro zone, the potential advantage of cost-reflectivity is outweighed by the commercial and technical difficulties of any break-up. The reality is that the Metro zone is only one component of a more complex distribution network within Melbourne. In some cases the segregation between transmission pipelines and distribution pipelines is blurred. Hence it is inappropriate to tariff the transmission pipelines on a distance-based tariff whilst the distribution network is tariffed on a postage- stamp basis.

For example, the Inner Ring Main was transferred to a Distributor when the transmission and distribution networks were disaggregated, whereas APA GasNet was allocated the Outer Ring Main. The Inner Ring Main supplies gas from the VTS at Dandenong to a large part of eastern Melbourne. However, an adjacent region in the east is supplied from the north via the Outer Ring Main (93km) and the Keon Park lateral (all APA GasNet assets). In these circumstances it is not cost-reflective to track gas flows through VTS pipelines, but accept a postage-stamp distribution tariff. The preferred solution is to acknowledge that supply to the metropolitan area has evolved to service the needs of all metropolitan customers, and that a postage-stamp tariff is appropriate throughout the region.

Furthermore, it should be recognised that a cost-reflective Metro zone tariff will be based on a forecast of gas flows through the region. These flows consist of gas supplies from multiple injection points, and it is reasonable to expect that the actual flows will differ from the forecast in ways that could see flow reversals within the region against the original forecast. Therefore, it is somewhat illusory to believe that tariffs can be made cost-reflective, on what is essentially a distribution network.

While tariffs for all of the Metro zone are the same, the development of the Bass Gas project meant that a bypass opportunity occurred for gas supply to the South Eastern portion of the Metro Zone. Therefore APA GasNet developed and had approved a Prudent Discount tariff for gas injected at Pakenham withdrawn from that portion of the Metro Zone (see above).

11.7. Prudent discounts

11.7.1. Methodology

Rule 96 specifies the conditions under which a prudent discount may be offered to users or classes of users. While prudent discounts can be proposed and approved at any time (they are not related to the access arrangement period), the AER has sought information on existing and proposed prudent discounts and their justification as part of the RIN issued on APA GasNet as part of this access arrangement revision process.

Rule 96 contemplates a situation where a user can obtain a lower cost service from a bypass pipeline than from the reference tariff on the regulated pipeline system. In these circumstances it may be appropriate to offer a discount to the user in order to retain their (albeit reduced) contribution to revenue on the regulated pipeline. A discount is deemed to be prudent if, in the situation where the at-risk user is retained at a discounted tariff, the reference tariff calculated for all other users is lower than the reference tariff calculated without the at-risk user's contribution. In other words, a discount is prudent if other users are better off with the at-risk user on the system rather than off the system, even though the at-risk user pays a discounted tariff.

This test is necessarily open to some conjecture as it requires speculation as to how reference tariff would be calculated under various circumstances. Reference tariffs are considered to be efficient if the reference tariff is above the marginal cost of supply and below the cost of a bypass pipeline. This means that if a customer is to be retained on a pipeline, they must pay at least the marginal cost of supply. However the fixed costs (eg overheads) which are not recovered from the customer must be allocated to other users on the system. Provided the allocation of fixed costs to other users does not cause any tariff to exceed the stand-alone rate, the reference tariff is efficient.

In summary, APA GasNet interprets the principle underlying the prudent discount test to be that a user should pay at least the marginal cost of supply. Any contribution made by a user above the marginal cost of supply will be a net benefit to other users on the system (by defraying overheads, for example).

This leads to a further question as to whether the relevant cost is the short-run marginal cost (which ignores asset costs) or the long-run marginal cost (which includes the cost of augmenting the assets). If the short-run marginal cost is used, then the prudent discount need only make a contribution to the incremental operating costs. If the long-run marginal cost is used, then the prudent discount must make a contribution to the asset costs as well as the incremental operating costs. The short-run marginal cost test is the least stringent, since it implies that if a customer is lost from the system, then all fixed costs, including asset costs, will be re-allocated to other users. In many circumstances, this will be the acceptable procedure.

However, in the first instance, when assessing a prudent discount, APA GasNet will calculate the more stringent test that the prudent discount must exceed the long-run marginal cost. As an approximation to this cost, APA GasNet will use the cost allocation of assets under the physical path model discussed above, plus an estimate of the incremental operating costs.

An important consideration in discussing prudent discounts is the additional charge levied by AEMO on all withdrawals. A bypass pipeline from a new injection point will avoid the AEMO gas market, and hence the AEMO fees and charges. In addition, the customer will not pay uplift charges and linepack account costs. Furthermore, the supply could be firm, and would not be subject to the risk of curtailment under the Rules if an emergency or constraint arose on the APA GasNet system. For these reasons a user might perceive a lower risk and more certain costs by constructing a bypass pipeline. This would increase the attractiveness of the bypass beyond the “vanilla” transmission costs and AEMO charges.

In its latest budget submission for the financial year 2012-13, AEMO has enunciated a new policy with regard to its tariffs for managing the gas market and operating the VTS. Under this new policy AEMO proposes, over time, to merge the tariff rates for Tariff-V and Tariff-D customers into a single rate and, at the same time remove its fixed metering fees. Combined with a significant increase in the AEMO budget for Victorian gas, this results in markedly higher AEMO tariffs for Tariff-D gas. This has an effect on the net tariffs APA GasNet can charge in response to a bypass risk. For this reason APA GasNet has invoked the less stringent short run marginal cost as the test for prudency of a discounted tariff.

11.7.2. Maryvale zone discount

The Maryvale Zone services the Paperlinx plant. There is only one offtake in the zone. The only physical VTS asset within the withdrawal zone is the short lateral to the Maryvale plant.

This customer must pay the Longford injection charge (discounted to reflect the lower transportation distance) plus a withdrawal charge that recovers the cost of the zonal assets and a contribution to overheads.

It is relatively straight-forward to construct a bypass pipeline from Longford to Maryvale. APA GasNet has designed and costed such a bypass pipeline, and calculated an estimate of the bypass tariff.

Based on this analysis, APA GasNet proposed a discounted tariff (including both injection and withdrawal charges) for the earlier access arrangement period which was approved by the ACCC. The circumstances have not changed, except for the increase in the AEMO tariff noted above. APA GasNet proposes to continue the discounted tariff at the same rate.

11.7.3. Western zone discount

The bypass risk in the Western zone arises from the SEA Gas Pipeline which parallels the VTS between the towns of Warrnambool and Koroit. Calculations were made in respect of the earlier access arrangement revision process confirmed that discounted tariffs at both Warrnambool and Koroit were required to offset the risk of connection of those systems to the SEA Gas pipeline. These calculations showed that the required discounts were prudent. These calculations have been updated for this review.

The significant increase in AEMO charges compared with those at the earlier review has resulted in bypass tariffs that are below the long term but above the short term costs. Nevertheless, APA GasNet proposes to retain discounted tariffs at both Allansford (Warrnambool offtake) and Koroit that are slightly higher than those in the earlier access arrangement period rather than further discount the tariffs in these zones.

11.7.4. Dandenong bypass tariff

In the submission for the second access arrangement period, APA GasNet argued that a bypass risk existed between the Dandenong offtake of the VTS and Pakenham, where gas was to be injected into the VTS from the Bass Gas production facility.

This facility was expected to inject approximately 20 PJ/annum at a high load factor. In the event that a bypass was constructed, this gas could be used to displace gas supply from Longford through the VTS.

The bypass tariff is implemented as an Injection Tariff at Pakenham and a discounted Withdrawal Tariff in the Metro south east zone.

The Injection Tariff is determined as a proportion of the Longford Injection Tariff, pro-rated by distance from Pakenham to Dandenong.

The calculation of the prudent discount for Pakenham injections has been updated. The discounted Metro South East zone Withdrawal Tariff is determined to be $0.1723/GJ (in $2013) for Tariff-D. The Tariff V tariff is based on the Tariff D tariff scaled as per the full rate Metro South East tariff.

APA GasNet proposes to continue these tariffs.

11.8. Tariff path – revenue control

11.8.1. Previous revenue control model

APA GasNet operated under an Average Revenue Yield Control model for each the first and second access arrangement periods.

Under an Average Revenue Yield control, APA GasNet forecasts an Average Transmission Tariff (ATT) for each year of the relevant access arrangement period, and is permitted to earn the product of the ATT and the actual delivered gas volume in any given year. To the extent that actual revenues in any year differ from the permitted amount, a correction is made to subsequent tariffs to keep APA GasNet to the permitted amount, with appropriate adjustments for the time value of money (the K-Factor).

Therefore, APA GasNet only earned the forecast building blocks revenue requirement if actual delivered volumes equated to the original forecast of delivered gas volumes. Any deviations between actual volumes and the original forecast volumes was a risk that was borne by APA GasNet.

As noted below, APA GasNet‘s experience in the first and access arrangement periods was that there were significant shortfalls in revenue recovery. As a result, APA GasNet made adjustments to the revenue control method for the third access arrangement period (the earlier access arrangement period), while still retaining an Average Revenue Yield methodology. Two modifications were made to the model:

- Removal of exposure to weather risk; and
- Retention of exposure to economy risks on volumes, but the associated revenue risk was bounded.

The mechanism by which annual tariffs are rebalanced under the approved revenue control for the access arrangement period are set out in Schedule 4 of the Access Arrangement.

11.8.2. Proposed revenue control model

APA GasNet regards the price control methodology as implemented in the earlier access arrangement period as an improvement on the previous methodology as it more directly addresses the factors that affect APA GasNet’s revenue outcomes and reflects the level of APA GasNet’s control over those factors.

However, APA GasNet proposes to remove the +/-5.5 per cent limit on revenue fluctuations (after adjustment for weather variations). APA GasNet will thus be returned to a position where it accepts volume risk due to economic factors as was the case in the first two access arrangement periods. The adjustment for weather variations is detailed below.

The mechanism by which annual tariffs will be rebalanced under the proposed revenue control is set out in Schedule D of the revised access arrangement.

11.8.3. Removal of limit on revenue variation

A revenue cap mechanism adjusts prices to sterilise changes in revenues occurring in light of non-weather related changes in demand or utilisation. In circumstances where demand and investment are both stable, a revenue cap can be a suitable framework to provide revenue certainty for the business.

However, where demand and investment are not stable, a revenue cap can deliver perverse outcomes. For example, where demand increases beyond forecast, the revenue cap will act to reduce prices. However, where unforseen capital investment is required to meet that increased demand, the revenue cap mechanism does not compensate for the return required on that capital investment. The revenue cap mechanism would then act to maintain the revenues of the system when indeed the costs of the system have increased.

There is sound precedent for removing a revenue cap approach when demand uncertainty exists. The NSW electricity distribution businesses were subject to a price cap regime in the 1999-2004 regulatory period. This period was characterised by significant penetration of air conditioning load, which caused the load to increase significantly, but caused peak demand to increase dramatically. The revenue cap mechanism, responding to the increased throughput on the network, reduced EnergyAustralia's prices by 34 per cent; however, the increases in peak demand required $480 million of capital expenditure, the return on which was not reflected in the price cap mechanism.[135] IPART moved to a Weighted Average Price Cap form of regulatory control in in the 2004-2009 regulatory period.[136]

APA GasNet's circumstances are remarkably similar. Should uncertain increases in demand crystallise, such as a new gas-fired power station located in the Latrobe Valley, the system throughput would increase, which would drive a reduction in tariffs. However, an increase in demand of this magnitude would certainly require significant capital expenditure, which would not be compensated under the revenue cap mechanism. It is for this reason that APA GasNet submits that the current "cap and collar" mechanism should be removed.

APA GasNet recognises that this places APA GasNet at risk for declines in gas volumes; this is consistent with the price cap mechanism inherent in the National Gas Rules. However, removal of the cap and collar mechanism allows for investment to be undertaken to meet increases in demand within the incentive framework inherent in the National Gas Rules.

APA GasNet submits that the National Gas Rules include disciplines on capital investment that will provide consistent signals for prices and investment. In particular, Rule 79 specifies the criteria against which any unforecast capital expenditure will be assessed before it can be rolled into the capital base at the next regulatory review. The price cap mechanism is therefore not required to protect shippers from price increases driven by unforecast investment.

11.8.4. Weather risk

APA GasNet proposes to adjust the actual delivered gas volumes to reflect the volumes that would be expected in a standard winter. The standard winter is defined by the number of effective degree days (EDD) as published in the AEMO annual planning report, which is the basis for the volume forecast proposed by APA GasNet over the access arrangement period.

The weather adjustment is effected by:

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[135] EnergyAustralia, *Submission to IPART 2004 Electricity Distribution Price Review*, 10 April 2003. Submission S5226 and presentation 11 April 2003.

[136] IPART, *NSW Electricity Distribution Pricing 2004/05 to 2008/09, Determination No 2, 2004*, June 2004, Section 5.

Weather-Adjusted Actual Volume = Actual Volume + (Standard EDD – Actual EDD) * Temperature Sensitivity

The Actual EDD for any given year is the value determined by AEMO.

The temperature sensitivity (TJ/EDD) is forecast by AEMO and is used to derive the APA GasNet volume forecast.

Therefore the revenue permitted to be recovered by APA GasNet in each forecast year becomes:

Forecast Target Revenue / Forecast Volume * Weather-Adjusted Actual Volume

11.9. Reference tariff variation

APA GasNet proposes to revise its reference tariff adjustment mechanism included in the previous access arrangement. The need to do this arises largely due to changes in relevant provisions in the NGR compared to the former National Gas Code.

Rule 97 provides that the reference tariff may vary during the access arrangement period pursuant to a number of methods as set out in that Rule. APA GasNet has included two reference tariff adjustment mechanisms in its access arrangement:

- An annual reference tariff adjustment formula mechanism – to apply on 1 January 2014 and on each subsequent 1 January which adjusts the reference tariff for CPI and an X-factor; and

- A cost pass-through reference tariff adjustment mechanism – under which APA GasNet may seek to vary the reference tariff as a result of a cost pass-through event.

These mechanisms are similar to the earlier access arrangement where the reference tariff was adjusted via a price control formula and by defined pass through events.

In deciding whether a particular reference tariff adjustment mechanism is appropriate, the AER must have regard to:[137]

- the need for efficient tariff structures;

- the possible effects of the tariff variation mechanism on administrative costs of the AER, the service provider, and users and potential users;

- the regulatory arrangements applicable in the earlier access arrangement; and

- the desirability of consistency between regulatory arrangements for similar services, both within and beyond the relevant jurisdiction.

[137] Rule 97(3)

APT GasNet has modelled its Reference Tariff Adjustment Mechanism on that recently approved by the AER for the AGP. Variations from the mechanism approved by the AER are noted in the discussion below.

APA GasNet submits that its proposed reference tariff variation mechanism is consistent with the requirements of Rule 97.

11.9.1. Annual reference tariff adjustment formula mechanism

First year tariffs are included in Schedule A of the access arrangement making up part of this access arrangement revision proposal.

The annual tariff adjustment formula operates to annually adjust the tariffs for the remainder of the access arrangement period such that the combination of actual and forecast tariffs when applied to the actual and forecast gas volumes will generate the adjusted target revenue stream with the same NPV as the original revenue requirement. The original revenue requirement is itself adjusted for changes in circumstances through the course of the access arrangement period including any carry over, or amounts passed through under the cost pass through tariff adjustment mechanism approved for inclusion in the adjusted target revenue.

The formula firstly adjusts the achieved volume of gas flows in each year to remove the effects of variations in that year's weather from the standard assumed in forecasts. This is done by scaling the achieved volume as detailed in 11.8.4 above.

The achieved revenue is then restated in $2012. The achieved revenue is the actual/adjusted forecast volume multiplied by the actual/adjusted forecast tariffs.

Next the original target revenue ($2012) is adjusted for the volume difference between the original volume forecast and the weather-adjusted volume. This is a straight scaling by the ratio of the volumes. This Volume Adjusted Target Revenue is then further adjusted by the inclusion of any Carry Over or Pass-through Amounts.

The final step is to set the NPV of the Achieved Revenue equal to the NPV of the Adjusted Target Revenue. This is done by adjusting the tariffs for any or all of the remaining years of the access arrangement period subject only to the limitation that the adjustment of any individual tariff cannot increase that tariff by more than 2 per cent more than the standard CPI-X price path.

APA GasNet tariffs will be designed to follow a CPI-X price path. This means that the tariffs will be escalated annually by the actual CPI inflator, less a prescribed X-Factor. APA GasNet uses the full year CPI when tariffs are escalated which involves a forecast the CPI inflation rate for the final quarter of each year. This forecast is then replaced by the Actual CPI for that quarter in the following year's tariff adjustment.

Each year the tariffs will be escalated by the factor: (1 + CPI) * (1 – X). The X-Factor is derived as follows:

- An initial estimate of the X-Factor is postulated.

- Starting values for 2013 injection and withdrawal tariffs are postulated for each zone.
- The tariffs are escalated at (1+CPI)*(1-X) for five years, and applied to the forecast volumes to generate the anticipated revenue from each zone.
- The starting tariff values are adjusted so that the NPV of the costs allocated to each zone over the five year period is equal to the NPV of the anticipated revenues within each zone.
- The X-Factor is consistent across all tariff components, but a zero value is used in some zones where special outcomes are sought.
- If the starting tariffs are considered to have shifted too far from 2012 levels, then a revised X-Factor is chosen, and the process is repeated. Consideration is also given to the longer-term trends in tariffs, with a view to avoiding tariff shocks at the next tariff revision.

APA GasNet has decided to use a zero X-Factor for the Murray Valley zone in order to encourage connections to natural gas. A zero X-Factor is also applied at Wodonga and the Western Zone towns of Warrnambool and Koroit, where a prudent discount has been applied.

With these exceptions, APA GasNet has calculated an X-Factor of -3 per cent for all remaining tariffs. This factor provides a reasonably smooth price path between the earlier access arrangement period and the forecast period.

11.9.2. Cost pass-through reference tariff adjustment mechanism

Rule 97(1)(c) specifically allows a service provider to include in its access arrangement a reference tariff adjustment mechanism that allows the reference tariff to vary as a result of a cost pass-through for a defined event. APA GasNet proposes to include a cost pass-through reference tariff adjustment mechanism in the access arrangement to ensure APA GasNet can reflect incremental costs resulting from unforeseen or uncontrollable events in the reference tariff. APA GasNet considers that this is consistent with Rule 97(3)(a) in that it ensures efficient tariff structures that reflect efficient costs incurred by the service provider, even where these costs cannot be reasonably forecast.

APA GasNet's earlier access arrangement included cost pass-through event definitions, and largely relied on the process for approving events set out in the National Gas Code. The transfer to the Rules means that this mechanism must be set out in the access arrangement in more detail. APA GasNet has also revised and updated event definitions included in the access arrangement to align more closely with recent regulatory decisions. APA GasNet has accordingly based its cost pass-through reference tariff adjustment mechanism in large part on that approved by the AER for the AGP.

Cost pass through event mechanism considerations

Rule 97(3)(d) requires the AER to have regard to the desirability of consistency between regulatory arrangements for similar services (both within and beyond the relevant jurisdiction). APA Group manages a number of regulated assets, each of which is covered by an access arrangement containing provisions for the pass through of costs with varying degrees of detail and consistency. APA GasNet is currently seeking to achieve a reasonable level of consistency across its access arrangements. This consistency is likely to deliver benefits to APA Group through a greater understanding across the business of the scope of cost pass-through provisions, and to the AER through consistent assessment of pass through claims, thereby delivering lower administrative costs for both parties (see Rule 97(3)(b)).

In light of this aim, APA GasNet has reviewed the cost pass-through events and associated definitions with a view to achieving consistency across its assets. APA GasNet has therefore adopted consistent events and definitions to those approved by the AER in respect of the AGP. APA GasNet considers that this approach delivers greater benefits to the consumers of gas then retaining consistency with past arrangements in respect of this pipeline, which is also a relevant consideration under Rule 97(3)(c).

Cost pass through event definitions

Table 11.5 below provides a comparison of cost pass-through events and definitions included in the earlier access arrangement, compared with those in the revised access arrangement.

As can be seen from the table, there is considerable similarity in areas covered under the cost pass-through event definitions, however recent regulatory practice suggests that some definitions may no longer be appropriate, or may require revision to align with other access arrangements in place.

APA GasNet proposes to replace the current definition for a change in taxes event with that approved by the AER in respect of the AGP access arrangement. APA GasNet does not consider that this revision materiality changes the scope of the cost pass-through event, while at the same time delivering consistency across APA Group access arrangements.

Table 11.5 - Comparison of cost pass-through event definitions in earlier and revised access arrangements

Earlier access arrangement definitions		**Revised access arrangement definitions**	
Name	Definition	Name	Definition
Change in Taxes Event	Means: (a) a change in the way or rate at which a Relevant Tax is calculated (including a change in the application or official interpretation of Relevant Tax); or (b) the removal or imposition of a Relevant Tax, to the extent that the change, removal or imposition results in a change in the amount GasNet is required to pay or is taken to pay (whether directly or under any contract) by way of Relevant Taxes.	Tax change event	Occurs if any of the following occurs during the course of the Access Arrangement period for Service Provider: (a) a change in a Relevant Tax, in the application or official interpretation of a Relevant Tax, in the rate of a Relevant Tax, or in the way a Relevant Tax is calculated; (b) the removal of a Relevant Tax; (c) imposition of a Relevant Tax; and in consequence, the costs to Service Provider of providing the Reference Service are materially increased or decreased.
Regulatory Event	Means a decision made by the Regulator or any other Authority or any amendment to an Applicable Law that has the effect of: (a) imposing minimum standards (including safety or technical standards) on GasNet relating to the Tariffed Transmission Service that are different from the set of minimum standards imposed on GasNet associated with the Tariffed Transmission Service; (b) altering the nature or scope of the services that comprise the Tariffed Transmission Service; (c) substantially varying the manner in which GasNet is required to undertake any activity forming part of the Tariffed Transmission Service from the Commencement Date; or (d) substantially varying the manner in which GasNet is able to recover costs from the Commencement Date,	Regulatory change event	Means an imposition of, a change in, or the removal of a regulatory obligation or requirement that: (a) falls within no other category of Cost Pass-through Event; and (b) occurs during the course of the Access Arrangement Period; and (c) affects the manner in which Service Provider provides the Reference Service (as the case requires); and (d) materially increases or materially decreases the costs of providing the Reference Service.

	as a result of which GasNet incurs materially higher or lower costs associated with the Tariffed Transmission Service than it would have incurred but for that event.	Service standard event	Means a legislative or administrative act or decision that: (a) has the effect of: (i) varying, during the course of the Access Arrangement Period, the manner in which Service Provider is required to provide the Reference Service; or (ii) imposing, removing or varying, during the course of an Access Arrangement Period, minimum service standards applicable to the Reference Service; or (iii) altering, during the course of an Access Arrangement Period, the nature or scope of the Reference Service, provided by Service Provider; and (b) materially increases or materially decreases the costs to Service Provider of providing the Reference Service.
Insurance Event	Means circumstances in which GasNet is required to pay a deductible in connection with a claim under an insurance policy.	No equivalent	No equivalent
		Insurance cap event	Means an event that would be covered by an insurance policy but for the amount that materially exceeds the policy limit, and as a result Service Provider must bear the amount of that excess loss and bearing that loss would materially increase the costs to Service Provider of providing the Reference Service. For the purposes of this Cost Pass-through Event, the relevant policy limit is the greater of the actual limit from time to time and the limit under Service Provider's insurance cover at the time of making this Access Arrangement. This event excludes all costs incurred beyond an insurance cap that are due to Service Provider's Gross Negligence/Wilful Misconduct. This also excludes all liability arising from the Service Provider's unlawful conduct.
		Insurer credit	Means an event where the insolvency of the insurers of Service

		risk event	Provider occurs, as a result of which Service Provider: (a) incurs materially higher or materially lower costs for insurance premiums than those allowed for in the Access Arrangement; or (b) in respect of a claim for a risk that would have been insured by Service Provider's insurers, is subject to a materially higher or lower claim limit or a materially higher or lower deductible than would have applied under that policy; or (c) incurs additional costs associated with self funding an insurance claim, which, would have otherwise been covered by the insolvent insurer, and in consequence, the costs to Service Provider of providing the Reference Service are materially increased or decreased.
Counterparty Default Event	Means the default by a Shipper in respect of an amount or amounts payable by the Shipper to GasNet under the relevant agreement for payment of the Transmission Tariffs.	No equivalent	
Terrorism Event	Means an act, including but not limited to the use of force or violence and/or the threat thereof, of any person or group(s) of persons, whether acting alone or on behalf of or in connection with any organisation(s) or government(s), which from its nature or context is done for, or in connection with, political, religious, ideological, ethnic or similar purposes or reasons, including the intention to influence any government and/or to put the public, or any section of the public, in fear.	Terrorism event	Means an act (including, but not limited to, the use of force or violence or the threat of force or violence) of any person or group of persons (whether acting alone or on behalf of in connection with any organisation or government), which from its nature or context is done for, or in connection with, political, religious, ideological, ethnic or similar purposes or reasons (including the intention to influence or intimidate any government and/or put the public, or any section of the public, in fear) and which materially increases the costs to Service Provider of providing a Reference Service.
Fuel Gas Event	Means a variation to GasNet's actual fuel gas costs for a year from the forecast gas fuel costs for that year in Table 3.6 of GasNet's Access Arrangement Information.	No equivalent	
		Natural disaster event	Means any major fire, flood, earthquake, or other natural disaster beyond the control of Service Provider (but excluding those events for

			which external insurance or self insurance has been included within Service Provider's forecast operating expenditure) that occurs during the Access Arrangement Period and materially increases the costs to Service Provider of providing the Reference Service.
		Carbon cost event	An event that occurs if, at the end of a Regulatory Year of the Fourth Access Arrangement Period, the total carbon cost incurred (part of which may be an estimate) by Service Provider in complying with the carbon pricing mechanism established under the Clean Energy Act 2011 (Cth) and associated legislation relating to the management of greenhouse gas for that Regulatory Year is higher or lower than the forecast amount for that Regulatory Year set out in Table 10.3 of Service Provider's Access Arrangement Information. A portion of the "total carbon cost" incurred by Service Provider in a Regulatory Year may be an estimate, and the difference between the actual amount and the estimate for that portion of the total carbon cost that has been estimated will be the subject of an adjustment pursuant to clause **Error! Reference source not found.**.

Taxation is a relevant building block in determining total revenue for a service provider. The imposition or removal of a tax is not within the control of the service provider. This pass-through event is not intended to (and would not apply to) changes in taxes that are already included forecast expenditure as part of the building blocks, and these risks are not compensated for in the WACC.

The current regulatory event definition covers both changes in regulatory obligations and changes in service standards. APA GasNet proposes to replace this definition with separate definitions for a regulatory change event and a service standard event. APA GasNet does not consider that this revision materiality alters the scope of possible pass-through events compared to the earlier access arrangement, while at the same time reflecting recent regulatory practice under the NGR to separately define these types of events.[138]

Regulatory and service obligations are relevant justifications for conforming capital expenditure under Rule 79(2)(c)(ii) and (iii). Similarly, compliance with regulatory and service obligations is an essential component of prudent service delivery and good gas industry practice, as required for both capital and operating expenditure under Rules 79(1)(a) and 91(1) respectively. The costs incurred under this event are therefore relevant to building block components under Rule 76.

The imposition or removal of a regulatory obligation or service standard is not within the control of the service provider. This pass-through event is not intended to (and would not apply to) changes in regulatory obligations or service standards that are already included forecast expenditure as part of the building blocks, and these risks are not compensated for in the WACC.

The proposed definitions for the regulatory change event and a service standard event are identical to those approved by the AER in respect of the AGP access arrangement.[139]

The earlier access arrangement included an insurance event related to the payment of a deductible. APA GasNet has determined not to retain this cost pass-through event in its proposed access arrangement. Payments below a deductable are unlikely to meet the materiality threshold for pass through.

The same arguments do not apply in respect of APA GasNet's proposed insurance cap event. Upper policy limits are set according to a trade-off between insurance cost and risk, however it could not be considered prudent for a service provider to carry insurance cover to the full possible extent of its exposure – the cost of such insurance will inevitably exceed (at some point) the measure of prudent and efficient expenditure. This however, does not mean that the service provider should bear this cost risk. The potential scope of these costs can be considerable – sufficient to undermine the service provider's financial viability.

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[138] For example, see cost pass-through events approved by the AER in respect of the AGP access arrangement at Australian Energy Regulator 2011, *Access Arrangement for the Amadeus Gas Pipeline 01 August 2011 to 30 June 2016*, clause 4.7.3

[139] AER 2011, *Access Arrangement for the Amadeus Gas Pipeline 01 August 2011 to 30 June 2016*, clause 4.7.3

Where the insurance liability is not the result of the service provider's wilful misconduct or gross negligence, it is not acceptable for the service provider to bear these costs. Instead, the costs should be shared with users of the pipeline, who, in aggregate, are better placed to bear this risk (and where each individual's eventual share of the cost of the risk is likely to be marginal).

Insurance is a recognised cost category under operating expenditure, and therefore is relevant to a building block component in Rule 76. As APA GasNet's insurance cap event definition excludes liability arising from gross negligence and wilful misconduct, the scope of costs cannot be considered to be within the control of the service provider. As this cost pass through event effectively compensates for asymmetric risk, it is not compensated for under the WACC. Similarly, there is no revenue allocated for this risk in the proposed total revenue.

APA GasNet's proposed insurance cap event is similar to that approved by the AER in respect of the AGP access arrangement. The only variations proposed by APA GasNet to the definition approved by the AER is to include reference to the materiality threshold, and refine the exclusions to the service provider's wilful misconduct and gross negligence, with a definition for provider's wilful misconduct and gross negligence included in the access arrangement. This approach limits uncertainty as these terms are defined in the access arrangement, and creates consistency between cost pass-through event definitions for the VTS access arrangement and that recently proposed by APA Group for the Roma to Brisbane Pipeline.[140] The reference to wilful misconduct eliminates the need to refer to liability and damages arising from actions or conduct expected or intended by the service provider.

For similar reasons to those in respect of an insurance cap event, APA GasNet has included an insurer credit risk event in its revised access arrangement. The definition for this event is identical to that approved by the AER in respect of the AGP access arrangement.[141]

As noted above, insurance is a recognised cost category under operating expenditure, and therefore is relevant to a building block component in Rule 76. As this event addresses the possibility of insurer default, it is not within the control of the service provider and it represents an asymmetric risk not compensated for under the WACC. Similarly, there is no revenue allocated for this risk in the proposed total revenue.

APA GasNet has not retained the counterparty default event in its revised access arrangement. APA GasNet considers that its revised prudential requirements in the access arrangement terms and conditions are sufficient to address this risk.

APA GasNet has retained a terrorism cost pass through event in its access arrangement. While substantially similar to that included in the earlier access

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[140] APT Petroleum Pipelines Limited 2011, *Access Arrangement, effective 12 April 2012 – 30 June 2017*, October 2011, clause 4.5.2

[141] AER 2011, *Access Arrangement for the Amadeus Gas Pipeline 01 August 2011 to 30 June 2016*, clause 4.7.3

arrangement, APA GasNet has adopted revised drafting of this event to maintain consistency with its other access arrangements.

Costs arising from a terrorist event, should they occur immediately before an access arrangement revision proposal, would be included in actual and forecast capital expenditure. Both capital and operating expenditure are building block components in Rule 76. The residual threat of terrorism, despite efforts by the service provider to secure assets, is not within the control of the service provider and represents an asymmetric risk not compensated for under the WACC. Similarly, there is no revenue allocated for this risk in the proposed total revenue.

The fuel gas event is not required as APA GasNet no longer carries forecasting risk for fuel gas, which is now provided by AEMO.

While the fuel gas event is no longer required, a 'carbon cost event' is required in respect of the carbon costs that may be incurred in connection with the consumption of fuel gas and fugitive emissions. To operate the pipeline, gas is used by AEMO, the operator, to power the compressors and heater operations. The consumption of this gas will attract a carbon cost.

While APA GasNet does not directly incur costs associated with fuel gas (these costs are incurred by AEMO, the operator of the pipeline, and recovered directly from shippers), there is currently a significant degree of uncertainty as to whether it will incur a carbon liability associated with fuel gas consumption.

APA GasNet considers that it would be appropriate to provide for a cost pass-through event that will permit differences between the forecast of total carbon costs and the actual total carbon costs incurred by APA GasNet in each year of the access arrangement period to be passed through. The carbon cost event seeks to deal with two uncertainties: (a) the volume of the gas to which the carbon cost will attach; and (b) the carbon price itself, which is fixed for the first three years of the scheme, and after this period is set by the market.[142]

APA GasNet submits that treating this difference as a cost pass-through is particularly appropriate in circumstances where APA GasNet has little (no) control over fuel gas usage and fugitive emissions. That APA GasNet does not have control over fuel gas usage has been recognised by the AER's predecessor, the ACCC.[143] Further, the volume of gas consumed in any one year is volatile, which makes it difficult to accurately forecast the actual total carbon costs. As APA GasNet does not have control over fuel gas usage and because the volume consumed in any year is volatile, it would not make sense to attempt to provide APA GasNet with any incentive in respect of these costs by not permitting APA GasNet to pass-through the differences between forecast and actual total carbon costs. APA GasNet obviously

[142] *Clean Energy Act 2011* (Cth), section 100.

[143] Australian Competition and Consumer Commission *Revised Access Arrangement by GasNet Australia Ltd for the Principal Transmission System: Draft Decision*, 14 November 2007, p 114. See also expert report commissioned by the ACCC: Ross Calvert Consulting Pty Ltd, *GasNet Revised Access Arrangement – Assessment of Proposed Operating Expenditure Scope and Workload Changes*, September 2007, pp 12 – 13.

also does not have any control over the carbon price itself. As noted above, although the price is fixed for three years, after this fixed period it will be set by the market.

APA GasNet does not propose that a materiality threshold would attach to the carbon cost event. The relevant costs to be passed through will be verifiable and the administrative costs associated with the assessment of the pass-through amount should be minor. This approach is consistent with that taken by the AER in similar circumstances, including the ETSA Utilities 'feed-in tariff event' pass through and a number of pass through events in the Jemena Gas Networks access arrangement.[144]

In the ETSA Utilities distribution determination, the AER noted that in some circumstances it may be appropriate to avoid the potentially significant forecast errors in relation to some events that are anticipated during a regulatory period. These circumstances arise for events that are subject to significant uncertainty and therefore potential forecast error, where the consequence of including these costs in the capital or operating expenditure forecast could be to the disadvantage of customers where, for example, those costs do not materialise. Similarly, the AER recognised that the service provider would be disadvantaged if the actual costs were higher than those forecast. The AER stated that in these circumstances a pass through of costs with a notional (in that case, administrative cost) is in the interests of customers.[145]

APA GasNet submits that the total carbon cost arising from the consumption of fuel gas is a particular circumstance that supports the inclusion of a pass-through event where the forecast costs differs from actual costs. As some component of the difference between the forecast costs and the actual costs will be an estimate, there would be a further adjustment or 'true up' in the following year when the actual cost for the full regulatory year is known.

Considerations when assessing cost pass through events

The revised cost pass-through event mechanism included in the access arrangement also includes considerations for the AER in assessing cost pass through claims. These considerations are similar to those approved by the AER in respect of the AGP access arrangement.

APA GasNet has removed references to the materiality threshold from this section of the access arrangement, as the materiality threshold is incorporated in each of the event definitions, and reflects the approach on the carbon cost event, as per the excerpt from the proposed access arrangement below:

> Subject to the approval of the AER under the National Gas Rules, Reference Tariffs may be adjusted after one or more Cost Pass-through Event/s occurs. Any such adjustment will take effect from the next 1 January.

[144] AER, *South Australia Distribution Determination 2010-11 to 2014-15 Final Decision*, May 2010, pp 231 – 242; AER, *Jemena Gas Networks: Access Arrangement Proposal for the NSW Gas Networks 1 July 2010 – 30 June 2015 - Final Decision*, June 2010, pp 363 – 392.

[145] AER, *South Australia Distribution Determination 2010-11 to 2014-15 Final Decision*, May 2010, pp 234 – 235.

Further, APA GasNet has included considerations in section 4.7.2 of the access arrangement that better reflect the intent of the cost pass through mechanism to allow the pass through of unexpected incremental or new costs, and costs that are expected to be incurred.

APA GasNet considers that inclusion of scope for the AER to approve reasonably expected future costs better meets the requirements of Rule 97(3)(a) as it provides for more efficient tariff structures in some specific instances. This is also consistent with the provisions in the earlier access arrangement, which allowed for the pass-through of forecast costs.[146]

APA GasNet also notes that this approach is consistent with the notification process included in the AGP access arrangement and reproduced in the APA GasNet access arrangement, which provides for notification of the costs of a cost pass-through event when those costs are known, or able to be estimated to a reasonable extent. This drafting suggests that cost pass through events may relate to future costs.

In respect of the materiality threshold to apply to cost pass-through events, APA GasNet proposes the same materiality threshold approved by the AER in respect of the AGP access arrangement (one per cent of the smoothed forecast revenue in the relevant year), but has also specific that this threshold does not apply to the carbon costs event, in accordance with the discussion above.

APA GasNet submits that its proposed cost pass-through reference tariff adjustment mechanism is consistent with Rule 97(3) as it:

- Ensures that the tariff reflects the efficient costs of providing the reference service by providing a mechanism to allow unforeseen and uncontrollable costs to be reflected in the reference tariff[147];
- Is simple to understand and not burdened by legal jargon making it easy to comprehend and apply, thereby reducing compliance costs[148];
- Is consistent with the earlier access arrangement, in providing for the pass through of costs associated with new obligations[149]; and
- Is consistent with recent AER decisions for similar services, for example in relation to the AGP[150].

Notification and approval of cost pass through events

APA GasNet has adopted the process for notification and approval of cost pass-through events approved by the AER in respect of the AGP without change.

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[146] See GasNet *2008-12 Access Arrangement*, clauses 6.1 and 6.4
[147] Rule 97(3)(a)
[148] Rule 97(3)(b)
[149] Rule 97(3)(c)
[150] Rule 97(3)(d)

This process requires APA GasNet to notify the AER of a cost pass-through event within 90 business days of the cost pass-through event occurring, whether the cost pass-through event would lead to an increase or decrease in reference tariffs. When the costs associated with an event are known, or able to be estimated to a reasonable extent, those costs must be notified to the AER. The AER must advise of its decision in respect of a cost pass-through event within 90 days, with scope for extension of this time. Approved cost pass-through amounts are then reflected in the tariff adjustment notice in respect of the following 1 January.

APA GasNet considers that this process, along with the provisions in clause 4.7.5 of the access arrangement, gives the AER adequate oversight over variation of the reference tariff, as previously assessed by the AER under Rule 97(4).

11.9.3. Annual Reference Tariff Adjustment Process

A key change in APA GasNet's access arrangement is in the tariff adjustment process. The former National Gas Code included a process for assessing tariff adjustments that is not reproduced in the Rules.[151] It is therefore necessary to include a tariff adjustment process in the APA GasNet access arrangement.

APA GasNet has in large part adopted the tariff adjustment process approved by the AER in respect of the AGP access arrangement. The tariff adjustment process provides for annual adjustment of tariffs each 1 January in respect of the annual reference tariff adjustment formula mechanism and the cost pass-through reference tariff adjustment mechanism.

A key variation to the process to that approved for the AGP relates to the timing of the tariff notification. The AER required NT Gas to provide the AER with a tariff notification 50 business days before 1 July. This was required even though necessary CPI information to perform the tariff calculation would not be available at that time.

APA GasNet has not adopted this approach and has instead retained the timing in the earlier access arrangement 30 business days before 1 January.[152]

APA GasNet's annual tariff variation process must incorporate detailed demand information provided by AEMO. This information substantially impacts the tariff calculations (for instance, in relation to injection charges and AEMO supplied forecasts), and therefore submission of preliminary information to the AER prior to the incorporation of demand information into the model would be pointless and involve significant additional administrative burden on APA GasNet, without commensurate gain for consumers from early tariff signalling. This is because any tariffs contained in a preliminary notice provided before demand information is available are unlikely to be indicative of future tariffs. APA GasNet therefore does not consider that the earlier notification of tariffs is in the long term interests of consumers (as required under the NGL Objective) and imposes undue administrative

[151] National Gas Code sections 8.3 -8.3H

[152] GasNet 2008-12 Access Arrangement Schedule 3

costs on APA GasNet. Administrative costs are a relevant consideration for the AER under Rule 97(3)(b).

The only other variation to the process previously approved by the AER relates to the treatment of material errors or deficiencies in past tariff variations. APA GasNet considers that any error in a past tariff variation must be verified – it is insufficient for a change to be only apparent. APA GasNet has therefore clarified the AER's powers to take account of a past error to actual errors.

APA GasNet submits that its proposed tariff adjustment process is consistent with Rules 97(3) and (4) as it:

- Ensures that the tariff reflects the efficient costs of providing the reference service by providing a mechanism to allow tariffs to be varied in accordance with the Reference Tariff Adjustment Mechanism[153];
- Limits the administrative costs of the APA GasNet, the AER and users by provided for annual tariff variations[154];
- Is consistent with recent AER decisions for similar services, for example in relation to the AGP[155];and
- Provides the AER with adequate oversight and powers of approval over the variation of reference tariffs[156].

11.9.4. Subsequent treatment of pass through amounts that incorporate a forecast

Identical to arrangements the earlier access arrangement, the revised access arrangement provides for forecast costs to be updated with actual costs in respect of the benefit sharing allowance and the price control formula.

The circumstances of the VTS which operates under a market carriage regime means that a significant portion of the annual volume data is not available within a time frame that allows application of the price control formula until at least a month after year end. It is not possible to delay the price control process beyond late November if the AER is to have time to review and approve the tariffs by the beginning of a year. By incorporating estimates into the price control formula and formalising a process whereby these estimates are updated to actuals at the next review, the requirements for timely tariff adjustment and accurate data are combined.

[153] Rule 97(3)(a)
[154] Rule 97(3)(b)
[155] Rule 97(3)(d)
[156] Rule 97(4)

Attachment A - Information required by the National Gas Rules and AER Regulatory Information Notice

Index of Information

This index of information provides cross-references to the documents that make up APA GasNet's revised access arrangement proposal, providing the location of information submitted in compliance with the National Gas Rules or the AER Regulatory Information Notice.

Table A.1 – Index of information

Source	Requirement	AA reference	AAI reference	Submission	Template
RIN 1.1(a)	Provide all information required by each Regulatory Template in accordance with the instructions therein				Attachment B
RIN 1.1(b)	Provide all consultant's reports commissioned and relied upon in whole or in part, including terms of reference, for the purposes of the preparation of GasNet's Access Arrangement Proposal			Attachment C, G, H, I, J and Resource Document Pack	
RIN 1.1(c)	Provide reasons explaining, for each instance where the information required by a Regulatory Template cannot be provided, why the information cannot be provided				NA
NGR 73	The basis on which financial information is provided must be stated and must use a recognised basis for dealing with inflation. All financial information must be provided on a basis that is consistent throughout the submission.			1.3.3	
RIN 1.1(d)	Provide the basis on which information is provided. Financial information provided by GasNet must set out: (i) whether the information is actual, estimate or forecast. Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate; (ii) the units of measure for parameters or values used to derive or infer values; (iii) whether the information is			Throughout submission	Throughout template

Source	Requirement	AA reference	AAI reference	Submission	Template
	expressed in nominal, real or other basis and including base year of information where relevant				
RIN 1.1(e)	Provide all financial models used in the preparation of GasNet's Access Arrangement Proposal including, but not limited to tariff, revenue, cost allocation and demand forecasts			Attachment B	
RIN 1.1(f)	Provide user manuals that underlie and support GasNet's Access Arrangement Proposal			Attachment B	
RIN 1.1(g)	Provide a description of the processes, procedures, measurement systems, information systems and quality control systems applied in providing the information required by all Regulatory Templates			4.5	
RIN 1.2	Where GasNet has provided information required by Schedule 1 of this Notice as part of GasNet's Access Arrangement Proposal, identify in response to this Notice where that information is located in GasNet's Access Arrangement Proposal.			Attachment A	
RIN 1.3	Where GasNet has provided information required by the Regulatory Templates as part of GasNet's Access Arrangement Proposal, and that information is in the same form as that required in the Regulatory Template, identify in response to the Regulatory Templates where that information is located in GasNet's Access Arrangement Proposal.				
RIN 2.1	Provide details of any local agent(s) of GasNet			1.5.2	
NGR 48(1)(a)	Identity of the pipeline to which the access arrangement relates and a reference to a website at which a description of the pipeline can be inspected	1.3	1	1.5	
RIN 3.1(a)	Provide for the Current Access Arrangement Period the annual volume			2.2	

Source	Requirement	AA reference	AAI reference	Submission	Template
	demand in GJ for each pipeline service provided by way of the VTS that is not specified as a reference service in GasNet's Access Arrangement Proposal				
RIN 3.1(b)	Provide for the Current Access Arrangement Period the numbers of users that sought each pipeline service provided by way of the VTS that is not specified as a reference service in GasNet's Access Arrangement Proposal			2.2	
NGR 48(1)(b)	Description of the pipeline services the service provider proposes to offer to provide by means of the pipeline	2	10.1	2.2 and Resource Document Pack	
NGR 48(1)(c)	Specification of the reference services	2	10.1	2.2	
NGR 48(1)(d)(i)	The reference tariff for each reference service	4 and Schedule A		Attachment B	
NGR 48(1)(d)(ii)	The other terms and conditions on which each reference service will be provided	2.3 and Schedule F		2.3.4 and Attachment E	
NGR 72(1)(a)(iii)(A)	Usage of the pipeline over the earlier access arrangement period, including minimum and maximum demand for each receipt or delivery point		2.3	5.1.1	Template 16
RIN 3.2(a)	Provide in Regulatory Template 16, minimum, maximum and average demand and forecast minimum, maximum and average demand for each year specified in Regulatory Template 16 for each receipt or delivery point				Template 16
NGR 72(1)(a)(iii)(B)	Usage of the pipeline over the earlier access arrangement period, including user numbers for each receipt or delivery point		2.3	5.1.2	Template 15
RIN 3.2(b)	Provide in Regulatory Template 15, actual and estimated user numbers and forecast user numbers for each year specified in Regulatory Template 15 for				Template 15

Source	Requirement	AA reference	AAI reference	Submission	Template
	each receipt or delivery point.				
RIN 3.3(a)	Provide details of the key drivers behind the demand forecasts provided in response to paragraph 3.2			5.2.1	
RIN 3.3(b)	Provide the methodology and models that have been used to develop the demand forecasts			Attachment B	
RIN 3.3(c)	Provide the key assumptions and inputs that have been used and how demand for pipeline services is differentiated			5.2.1	
RIN 3.3(d)	Provide an explanation of how the demand forecasts have been used to develop GasNet's capital expenditure and operating expenditure forecasts			6.3.1	
RIN 3.3(e)	Provide an explanation of any trends of demand and volumes over the Previous, Current Access Arrangement Period and the Next Access Arrangement Period.			5.2.1	
NGR 72(1)(d)	A forecast of pipeline capacity and utilisation over the access arrangement period and the basis on which the forecast has been derived		4	5.2.1	
RIN 3.4(a)	Provide in Regulatory Template 17, actual or estimated capacity and utilisation of capacity of the VTS by injection regions as specified by the Australian Energy Market Operator for the years specified in Regulatory Template 17				Template 17
RIN 3.4(b)	Provide in Regulatory Template 17, forecasts of capacity and utilisation of capacity of the VTS by injection regions as specified by the Australian Energy Market Operator for the years specified in Regulatory Template 17				Template 17
RIN 3.4(c)	Provide the basis on which the forecasts have been derived			5.2.1	
RIN 3.4(d)	Provide details of the key drivers behind the forecasts			5.2.1	
RIN 3.4(e)	Provide the methodology that has been used to prepare the forecasts, including			5.2.1	Template

Source	Requirement	AA reference	AAI reference	Submission	Template
	the key assumptions and inputs that have been used				16
RIN 3.4(f)	Provide an explanation of how the forecasts have been used to develop the capital expenditure and operating expenditure forecasts for GasNet's Access Arrangement Proposal			5.2.1	
RIN 3.4(g)	Provide an explanation for any trends of capacity and utilisation of capacity of the VTS over the Previous and Current Access Arrangement Period and the Next Access Arrangement period.			5.2	
RIN 4.1(a)	Provide in Regulatory Template 1, the opening capital base by asset class for each year specified in Regulatory Template 1				Template 1
RIN 4.1(b)	Provide in Regulatory Template 1, the opening capital base approved by the jurisdictional regulator for each year specified in Regulatory Template 1				Template 1
RIN 4.1(c)	Provide in Regulatory Template 8, the standard asset lives and remaining asset lives that reflect the capital base as at 31 December 2012				Template 8
NGR 72(1)(a)(i)	Capital expenditure by asset class over the earlier access arrangement period		2.1	6.2.5	Template 3
NGR 72(1)(b)	Derivation of the capital base and a demonstration of the increase or diminution over the previous access arrangement period		3	7	
RIN 4.1(d)	Provide a reconciliation of the opening capital base provided in response to paragraphs 4.1(a) and 4.1(b), including: (i) adjustments for any difference in estimated and actual capital expenditure; (ii) other adjustments made to the opening capital base as at 1 January 2008; and (iii) an explanation for these variations; and (iv) a reconciliation of any changes in			7 and 7.2	Template 3

Source	Requirement	AA reference	AAI reference	Submission	Template
	asset classes between the Previous and Current Access Arrangement Period and the Next Access Arrangement Period.				
RIN 4.2(a)	Explain any significant variations (i.e. a difference of more than 10 per cent) between capital expenditure approved by the jurisdictional regulator and the actual and/or estimated capital expenditure for the Current Access Arrangement Period			6.2	
RIN 4.2(b)	Explain whether and how GasNet considers that conforming capital expenditure added to the capital base in the Current Access Arrangement Period meets the requirements of rule 79 of the NGR.			6.2	
RIN 4.3(a)	By capital expenditure driver, as specified in Regulatory Template 2, for each year of the Current Access Arrangement Period, explain amounts added to the opening capital base for conforming capital expenditure			6.2	Template 2
RIN 4.3(b)	By capital expenditure driver, as specified in Regulatory Template 2, for each year of the Current Access Arrangement Period, explain amounts for non conforming capital expenditure identified as: (i) recovered by surcharge; (ii) added to a speculative capital expenditure account (under the Code a speculative investment fund); and (iii) other amounts of non conforming capital expenditure.			7.3	Template 2
RIN 4.4(a)	Provide an explanation for whether and how GasNet considers amounts added to the opening capital base from the speculative capital expenditure account (under the Code, a speculative investment fund) meet the requirements of rule 79 of the NGR			7.4	
RIN 4.4(b)	Provide an explanation for whether and			Attachment	

Source	Requirement	AA reference	AAI reference	Submission	Template
	how GasNet considers amounts added to the opening capital base for the reuse of redundant assets meet the requirements of rule 79 of the NGR.			D	
RIN 4.5(a)	Provide details about whether assets which comprise the opening capital base are or have been subject to compensation claims through, legal or court action, insurance or other processes, including details about the particular assets subject to such claims			Attachment D	
RIN 4.5(b)	Provide details about whether assets which comprise the opening capital base are or have been subject to compensation claims through, legal or court action, insurance or other processes, including time period of such claims			Attachment D	
RIN 4.5(c)	Provide details about whether assets which comprise the opening capital base are or have been subject to compensation claims through, legal or court action, insurance or other processes, including the relevant class of assets to which these assets belong.			Attachment D	
RIN 4.6(a)	In Regulatory Template 1, provide by asset class for each year specified in Regulatory Template 1 amounts added to the opening capital base for capital contributions				Template 1
RIN 4.6(b)	In Regulatory Template 1, provide by asset class for each year specified in Regulatory Template 1 amounts added to the opening capital base from the speculative capital expenditure account (under the Code a speculative investment fund)				Template 1
RIN 4.6(c)	In Regulatory Template 1, provide by asset class for each year specified in Regulatory Template 1 amounts added to the opening capital base for the reuse of redundant assets				Template 1
RIN 4.6(d)	In Regulatory Template 1, provide by asset class for each year specified in				Template 1

Source	Requirement	AA reference	AAI reference	Submission	Template
	Regulatory Template 1 amounts deducted from the opening capital base for redundant assets				
RIN 4.6(e)	In Regulatory Template 1, provide by asset class for each year specified in Regulatory Template 1 for disposals.				Template 1
RIN 4.7(a)	In Regulatory Template 8, for each year specified in Regulatory Template 8, provide for each asset, class amounts deducted from the opening capital base for depreciation including amounts of depreciation for changes to the capital base for each year specified in Regulatory Template 8. Distinguish depreciation referable to the opening capital base and amounts added to, or deducted from, the opening capital base for: (i) re-used redundant assets, redundant assets; (ii) disposals; (iii) conforming capital expenditure; (iv) capital contributions included in the capital base; and (v) amounts from the speculative capital expenditure account (under the Code a speculative investment fund); and				Template 8
RIN 4.7(b)	In Regulatory Template 8, for each year specified in Regulatory Template 8, provide asset lives of each asset class.				Template 8
RIN 4.8(a)	Provide in Regulatory Template 7, the actual or estimated rates of inflation used to adjust the capital base for inflation for each year specified in Regulatory Template 8				Template 7
RIN 4.8(b)	Provide in Regulatory Template 1, the adjustments to the capital base for inflation for each year specified in Regulatory Template 1.				Template 1
RIN 4.9	Provide, in Regulatory Template 1, the capital base by asset class for each year specified in Regulatory Template 1.				Template 1

Source	Requirement	AA reference	AAI reference	Submission	Template
NGR 72(1)(c)(i)	The projected capital base over the access arrangement period including a forecast of conforming capital expenditure for the period and the basis for the forecast		3.2	6.3 and 7.3	Template 3
RIN 4.10(a)	Provide in Regulatory Template 1, amounts by asset class for each year specified in Regulatory Template 1 for forecast conforming capital expenditure				Template 1
RIN 4.10(b)	Provide in Regulatory Template 7, the escalation rates, where applicable, used in deriving forecast conforming capital expenditure.			6.3.1 Attachment D Attachment J	Template 7
RIN 4.11(a)	Provide the following information about forecast conforming capital expenditure: a definition and explanation of any materiality threshold test that GasNet intends to apply to categorise forecast conforming capital expenditure projects			6.3.1	
RIN 4.11(b)	Provide the following information about forecast conforming capital expenditure: the nature of forecast conforming capital expenditure projects or programmes material to an asset class, including a brief description of the capital expenditure and, where relevant, the location of the expenditure on the VTS			6.3 Attachment C	
RIN 4.11(c)	Provide the following information about forecast conforming capital expenditure: any assumptions used in deriving the forecast conforming capital expenditure (see Rule 75), including: (i) in Regulatory Template 7, the specific escalation rate used in each year specified in Regulatory Template 7; (ii) whether the rate is in real or nominal terms; and (iii) how the derivation has been developed (including source material			6.3	Template 7

Source	Requirement	AA reference	AAI reference	Submission	Template
	and any escalation used)				
RIN 4.11(d)	Provide the following information about forecast conforming capital expenditure: any relevant internal decision making documents relating to approval of the forecast capital expenditure and any other internal or external documentation or models that justify the forecast conforming capital expenditure, including but not limited to: (i) business cases; (ii) feasibility studies; (iii) forecast demand studies and internal reports; and (iv) the date of any relevant internal decision making body/management decisions			6.3 and Resource Document Pack	
RIN 4.11(e)	Provide the following information about forecast conforming capital expenditure: details as to whether the forecast conforming capital expenditure is to be funded by parties other than GasNet			6.3 and 7.9.4	
RIN 4.11(f)	Provide the following information about forecast conforming capital expenditure: details of contractual agreements with parties where capital contributions are made by users to new capital expenditure (see Rule 82)			6.3	
RIN 4.11(g)	Provide the following information about forecast conforming capital expenditure: an explanation of whether and how GasNet considers that the forecast capital expenditure conforms with the criteria listed in Rule 79(1)			6.3	
RIN 4.11(h)	Provide the following information about forecast conforming capital expenditure: whether and how GasNet considers that the forecast capital expenditure is justifiable under Rule 79(2) including any sub rule in 79(2) is relied on.			6.3	
RIN 4.12(a)	If Rule 79(2)(a) is relied on to justify new capital expenditure, provide the calculations of the economic value of			6.3 and Attachment B	

Source	Requirement	AA reference	AAI reference	Submission	Template
	the capital expenditure that directly accrues to the service provider, gas producers, users and end users				
RIN 4.12(b)	If Rule 79(2)(a) is relied on to justify new capital expenditure, provide an explanation of the nature and quantification of the economic value that directly accrues to the service provider, gas producer, users and end users (see Rule 79(3)).			6.3, Attachment C and Resource Document Pack	
RIN 4.13(a)	If Rule 79(2)(b) is relied on to justify new capital expenditure, provide the information GasNet relied on to determine the expected incremental revenue to be generated as a result of the new capital expenditure;			6.3, Attachment C and Resource Document Pack	
RIN 4.13(b)	If Rule 79(2)(b) is relied on to justify new capital expenditure, provide a description of the incremental service or services (see Rule 79(4)(a))			6.3, Attachment C and Resource Document Pack	
RIN 4.13(c)	If Rule 79(2)(b) is relied on to justify new capital expenditure, provide the incremental revenue (see Rule 79(4)(b))			6.3, Attachment C and Resource Document Pack	
RIN 4.13(d)	If Rule 79(2)(b) is relied on to justify new capital expenditure, provide the incremental expenditure (see Rule 79(4)(b))			6.3, Attachment C and Resource Document Pack	
RIN 4.13(e)	If Rule 79(2)(b) is relied on to justify new capital expenditure, provide the discount rates that GasNet used to determine present value of incremental revenue.			6.3, Attachment C and Resource Document Pack	
RIN 4.14(a)	If Rule 79(2)(c)(i), (ii) or (iii) is relied on to justify new capital expenditure, provide an explanation of what item in			6.3, Attachment C and Resource	

Source	Requirement	AA reference	AAI reference	Submission	Template
	Rule 79(2)(c)(i), (ii) or (iii) is relied on			Document Pack	
RIN 4.14(b)	If Rule 79(2)(c)(i), (ii) or (iii) is relied on to justify new capital expenditure, provide the relevant regulatory obligation or requirement (if any) and the relevant authority or body enforcing it			6.3, Attachment C and Resource Document Pack	
RIN 4.14(c)	If Rule 79(2)(c)(i), (ii) or (iii) is relied on to justify new capital expenditure, provide an explanation of whether and how GasNet considers that the forecast capital expenditure satisfies the item in Rule 79(2)(c)(i), (ii) or (iii) being relied on			6.3, Attachment C and Resource Document Pack	
RIN 4.14(d)	If Rule 79(2)(c)(i), (ii) or (iii) is relied on to justify new capital expenditure, provide supporting technical or other external or internal reports about whether and how GasNet considers that the forecast capital expenditure addresses the relevant item in Rule 79(2)(c)(i), (ii) or (iii).			6.3, Attachment C and Resource Document Pack	
RIN 4.15(a)	If Rule 79(2)(c)(iv) is relied on to justify new capital expenditure in GasNet's Access Arrangement Proposal, provide an explanation of the change in demand for existing services necessitating the new capital expenditure, including a measure of the change in demand			5.2, 6.3, Attachment C and Resource Document Pack	
RIN 4.15(b)	If Rule 79(2)(c)(iv) is relied on to justify new capital expenditure in GasNet's Access Arrangement Proposal, provide reports or other information and documentation that supports whether and how GasNet considers that the forecast capital expenditure will meet the increase in demand for existing services.			5.2, 6.3, Attachment C and Resource Document Pack	
RIN 4.16(a)	Provide in Regulatory Template 1, the amount by asset class for each year specified in Regulatory Template 1 for forecast non conforming capital expenditure classified into:				Template 1

Source	Requirement	AA reference	AAI reference	Submission	Template
	(i) non conforming capital expenditure forecast to be recovered through surcharges; (ii) non conforming capital expenditure forecast to be added to the speculative capital expenditure account; and (iii) other non conforming capital expenditure				
RIN 4.16(b)	Provide in Regulatory Template 1, details of the forecast speculative capital expenditure account by asset class for each year specified in Regulatory Template 1				Template 1
RIN 4.16(c)	Provide a justification for the different rate of return, if the balance of the speculative capital expenditure account increases at a rate different to the rate of return implicit in a reference tariff (see Rule 84(2))			8.10	
RIN 4.16(d)	Provide in Regulatory Template 1, the amount of forecast capital contributions by asset class for each year specified in Regulatory Template 1				Template 1
RIN 4.16(e)	Provide in Regulatory Template 1, the amount of capital contributions by asset class for each year specified in Regulatory Template 1 proposed to be rolled into the capital base under Rule 82(3)				Template 1
RIN 4.16(f)	Provide in Regulatory Template 7, (where relevant) the escalation rates used in deriving forecasts for capital expenditure other than conforming capital expenditure, if different from escalation rates provided in response to paragraph 4.10(b) of this Notice				Template 7
RIN 4.16(g)	Provide details of the mechanism to prevent GasNet from benefiting, through increased revenue, from the capital contributions by a user in the Next Access Arrangement Period (see Rule 82(3)).	3.2	3.2	7.4	
NGR 85	Capital redundancy mechanism	3.5		2.3.8	

Source	Requirement	AA reference	AAI reference	Submission	Template
NGR 85(3)	Policies for other mechanisms (cost sharing if demand falls)			2.3.8	
RIN 4.17(a)	If relevant, provide an explanation of the proposed mechanism to remove redundant assets from the capital base including: (i) when the mechanism will take effect; and (ii) whether the mechanism includes a proposal for cost sharing between the service provider and users associated with a decline in demand for pipeline services			2.3.8	
RIN 4.17(b)	If relevant, provide a justification for the mechanism			2.3.8	
RIN 4.17(c)	If relevant, provide an explanation of what uncertainty the mechanism may cause			2.3.8	
RIN 4.17(d)	If relevant, provide the effect of this uncertainty on the service provider.			2.3.8	
RIN 4.18	Provide in Regulatory Template 1, amounts by asset class for each year specified in Regulatory Template 1 for forecast disposals.				Template 1
RIN 4.19(a)	Provide in Regulatory Template 1, the adjustment to the capital base to take account of the effects of inflation for each year specified in Regulatory Template 1			8	Template 1
RIN 4.19(b)	Provide in Regulatory Template 7, the rates of inflation used to adjust the capital base for each year specified in Regulatory Template 7.				Template 7
RIN 4.20	Provide in Regulatory Template 1, the capital base by asset class for each year specified in Regulatory Template 1.				
NGR 72(1)(g)	The proposed rate of return, the assumptions on which it was calculated and a demonstration of how it was calculated		7	8 and Attachment G	

Source	Requirement	AA reference	AAI reference	Submission	Template
RIN 5.1(a)	If GasNet intends to use the weighted average cost of capital (WACC) methodology and capital asset pricing model (CAPM) methodology, provide in Regulatory Template 6, the values of each of the parameters that comprise the WACC methodology and capital asset pricing model methodology		7	8	Template 6
RIN 5.1(b)	If GasNet intends to use the weighted average cost of capital (WACC) methodology and capital asset pricing model (CAPM) methodology, provide an explanation of how the values of each of the parameters used in the WACC were derived.		7	8	
RIN 5.2(a)	If GasNet does not intend to use the WACC methodology and/or CAPM methodology, in GasNet's Access Arrangement Proposal, provide an explanation of the proposed methodology for the rate of return				
RIN 5.2(b)	If GasNet does not intend to use the WACC methodology and/or CAPM methodology, in GasNet's Access Arrangement Proposal, provide a quantification of the rate of return using this methodology including any justification for the use of parameters in this methodology.				
NGR 72(1)(c)(ii)	The projected capital base over the access arrangement period including a forecast of depreciation for the period including a demonstration of how the forecast is derived on the basis of the proposed depreciation method		3.2	7.6	
RIN 6.1(a)	In Regulatory Template 8, provide amounts for forecast depreciation disaggregated for components by asset class for each year specified in Regulatory Template 8, including accounting for and identifying depreciation referable to: (i) the opening capital base; (ii) forecast conforming capital				Template 8

Source	Requirement	AA reference	AAI reference	Submission	Template
	expenditure; (iii) other capital expenditure; (iv) forecast disposals; and (v) other amounts that may be added or deducted to the projected capital base under the NGR				
RIN 6.1(b)	In Regulatory Template 8, provide details of the asset lives for each asset.				Template 8
RIN 6.2	Identify each instance where GasNet proposes to defer a substantial proportion of depreciation and explain why GasNet proposes to defer the depreciation		6.2	None	
NGR 72(1)(h)	The proposed method of dealing with taxation, and a demonstration of how the taxation allowance is calculated		8	10.2	
RIN 7.1(a)	If applicable, provide in Regulatory Template 9, an estimate of the cost of corporate income tax for each year specified in Regulatory Template 9				Template 9
RIN 7.1(b)	If applicable, provide details of how the estimated cost of corporate income tax is calculated.		8	10.2	
NGR 72(1)(l)	The service provider's rationale for any proposed incentive mechanism		11	2.3.9	
NGR 72(1)(i)	The proposed carry-over of increments from any incentive mechanism that operated in the earlier access arrangement period		11	9.3.3	
RIN 8.1(a)	If the Current Access Arrangement contains incentive mechanisms, provide, in Regulatory Template 14, for each incentive mechanism: (i) the increments for efficiency gains and decrements for efficiency losses that have occurred for each year specified in Regulatory Template 14; and (ii) the revenue referable to increments for efficiency gains or decrements for efficiency losses from the Current Access Arrangement Period that is to				Template 14

Source	Requirement	AA reference	AAI reference	Submission	Template
	be carried over (from the Current Access Arrangement Period) into the Next Access Arrangement Period for existing incentive mechanisms				
RIN 8.1(b)	If the Current Access Arrangement contains incentive mechanisms, provide, for each incentive mechanism: (i) an explanation of the incentive mechanism and its operation for the Current Access Arrangement Period; (ii) an explanation of the increments for efficiency gains and decrements for efficiency losses that have occurred in the Current Access Arrangement Period and the relevant carryover amounts for the Next Access Arrangement Period; and (iii) all relevant analyses or reports that support the operation of the existing incentive mechanism.	8	9	9.3.3	
RIN 8.2(a)	Provide, for each proposed incentive mechanism an explanation of the operation of the proposed incentive mechanism	8	9	2.3.9	
RIN 8.2(b)	Provide, for each proposed incentive mechanism an explanation of the rationale for the proposed incentive mechanisms	8	9	2.3.9	
RIN 8.2(c)	Provide, for each proposed incentive mechanism any relevant analyses or reports that support the proposed incentive mechanism.				
NGR 72(1)(a)(ii)	Operating expenditure by category over the earlier access arrangement period		2.2	9.2	
NGR 72(1)(e)	A forecast of operating expenditure over the access arrangement period and the basis on which the forecast has been derived		5	9.3	
RIN 9.1	Provide, in Regulatory Template 10, actual and estimated operating expenditure by category for each year specified in Regulatory Template 10.			9.2	

Source	Requirement	AA reference	AAI reference	Submission	Template
RIN 9.2	Provide, in Regulatory Template 10, operating expenditure forecasts by category for each year specified in Regulatory Template 10.			9.2, 9.3	Template 10
RIN 9.3(a)	Provide a description and explanation of the change in operating expenditure categories between the Current Access Arrangement Period and the Next Access Arrangement Period			9.1.1 and 9.2.1	
RIN 9.3(a)	Provide a description and explanation of the nature of material forecast operating expenditure in an operating expenditure category including: (i) a definition of the materiality threshold used; and (ii) whether there have been changes to the operations of the VTS from the Current Access Arrangement Period that have resulted in material changes to operating expenditure categories and total operating expenditure in the Next Access Arrangement Period; and (iii) any assumptions used in deriving the forecast operating expenditure.			9.3	
RIN 9.4(a)	Where relevant, provide in Regulatory Template 7 the specific escalation rate used in deriving operating expenditure forecasts for each year specified in Regulatory Template 7			9.3.2, Attachment D and Attachment J	Template 7
RIN 9.4(b)	Where relevant, provide whether the rate is in real or nominal terms			9.3.2, Attachment D and Attachment J	
RIN 9.4(c)	Where relevant, provide how the derivation or escalation rates used have been developed (including source material).			9.3.2, Attachment D and Attachment J	
RIN 9.5	For each self insurance event provide, in Regulatory Template 10, the forecast annual insurance premiums for each			NA	NA

Source	Requirement	AA reference	AAI reference	Submission	Template
	year specified in Regulatory Template 10.				
RIN 9.6(a)	Provide, the following information for each self insurance event the name and a description of the event				
RIN 9.6(b)	Provide, the following information for each self insurance event whether the event is in relation to a particular asset or class of assets and, if so, identify those assets or classes				
RIN 9.6(c)	Provide, the following information for each self insurance event reasons for self insuring the event				
RIN 9.6(d)	Provide, the following information for each self insurance event if the event has not previously been self insured, reasons why it is now being proposed to be self insured and how the risk of the event was treated in the Current Access Arrangement				
RIN 9.6(e)	Provide, the following information for each self insurance event if a proposed self insurance event was previously insured externally, details of existing or previous insurance policies and reasons why external insurance is not being proposed for the Next Access Arrangement Period				
RIN 9.6(f)	Provide, the following information for each self insurance event any quotes obtained from external insurers				
RIN 9.6(g)	Provide, the following information for each self insurance event full details of how the premiums were calculated, including any underlying assumptions used to derive the premiums				
RIN 9.6(h)	Provide, the following information for each self insurance event any consultant's report relied on by GasNet in deriving the estimates				
RIN 9.6(i)	Provide, the following information for each self insurance event: a copy of GasNet's decision making body's				

Source	Requirement	AA reference	AAI reference	Submission	Template
	resolution (including the date of the resolution) to self insure the event(s)				
RIN 9.6(j)	Provide, the following information for each self insurance event details of the Procedures, Policies and Strategies that: (i) explain how the self insurance risk is to be reported (if required under relevant accounting standards) in GasNet's audited financial statements; and (ii) explain the procedure for notification, and information that will be provided, to the AER if a self insurance event occurs.				
RIN 10.1(a)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide define the materiality threshold used and provide an explanation for why it was chosen			Attachment F and Resource Document Pack	
RIN 10.1(b)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide the name of the party(ies) and the contract			Attachment F and Resource Document Pack	
RIN 10.1(c)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide a description of the tendering process used to procure the service, and supporting tendering documentation (including but			Attachment F and Resource Document Pack	

Source	Requirement	AA reference	AAI reference	Submission	Template
	not limited to requests for tender, tender submissions, internal committee papers evaluating the tenders, contracts between GasNet and relevant providers)				
RIN 10.1(d)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide the commencement date and term of the arrangement or contract			Attachment F and Resource Document Pack	
RIN 10.1(e)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide a copy of the arrangement or contract which sets out the obligations of both the external party and GasNet			Attachment F and Resource Document Pack	
RIN 10.1(f)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide a breakdown of all services provided as part of the arrangement or contract			Attachment F and Resource Document Pack	
RIN 10.1(g)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide details of the financial terms, including fees and			Attachment F and Resource Document Pack	

Source	Requirement	AA reference	AAI reference	Submission	Template
	charges, in the contract and a description of the goods or services provided				
RIN 10.1(h)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide reasons why the functions were outsourced			Attachment F and Resource Document Pack	
RIN 10.1(i)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide if any of the services, or any component thereof, were further outsourced to another provider, details regarding such outsourcing			Attachment F and Resource Document Pack	
RIN 10.1(j)	For operating expenditure that is material to an operating expenditure category and capital expenditure that is material to an asset class, and is forecast to be incurred in the Next Access Arrangement Period but provided by a party other than GasNet (i.e. outsourced), provide details of the relationships with the party or parties named in response to paragraph 10.1(b) including if a party to the contract is an associate of GasNet.			Attachment F and Resource Document Pack	
NGR 72(1)(h)	The proposed method of dealing with taxation, and a demonstration of how the taxation allowance is calculated		8	10	
RIN 11.1(a)	Regardless of the methodology GasNet adopts for taxation, provide, in Regulatory Template 9, the following information forecast as at 1 January 2013 tax standard life for each asset				Template 9

Source	Requirement	AA reference	AAI reference	Submission	Template
	class				
RIN 11.1(b)	Regardless of the methodology GasNet adopts for taxation, provide, in Regulatory Template 9, the following information forecast as at 1 January 2013 remaining tax life for each asset class				Template 9
RIN 11.1(c)	Regardless of the methodology GasNet adopts for taxation, provide, in Regulatory Template 9, the following information forecast as at 1 January 2013 tax asset base or remaining tax asset value for each asset class				Template 9
RIN 11.1(d)	Regardless of the methodology GasNet adopts for taxation, provide, in Regulatory Template 9, the following information forecast as at 1 January 2013 an estimate of the carry forward tax loss.				Template 9
RIN 12.1	Provide, in Regulatory Template 12, details demonstrating that the net present value of the proposed revenue stream is equal to the net revenue stream generated from the building block approach for each reference service.				Template 12
NGR 72(1)(j)	The proposed approach to price-setting including:				
NGR 72(1)(j)(i)	the suggested basis of reference tariffs (including the method used to allocate costs and a demonstration of the relationship between costs and prices) and	4	10.2	11.1	
NGR 72(1)(j)(ii)	a description of any pricing principles employed but not otherwise disclosed under this rule.	4	10.2	11.1	
RIN 12.2(a)	Provide, in Regulatory Template 13, the allocation of costs to services, including identify and quantify cost pools according to relevant asset classes and operating cost categories for: (i) the direct costs of reference services; (ii) the direct cost of pipeline services				Template 13

Source	Requirement	AA reference	AAI reference	Submission	Template
	other than reference services; and (iii) other costs from building block revenue and rebateable services; and (iv) reconcile total revenue for pipeline services allocated to reference services and other services.				
RIN 12.3(a)	Provide an explanation, including any relevant calculations, of the methods or principles used to allocate cost pools identified in response to paragraph 12.2	4	10.3	11.3	
RIN 12.3(b)	Provide for rebateable services, a description of the mechanism that GasNet will use to apply an appropriate portion of the revenue generated from the sale of rebateable services to price rebates (or refunds) to users of reference services (see Rule 93).			None	
RIN 12.4(a)	If relevant, provide, in Regulatory Template 13, for each year specified in Regulatory Template 13 the costs directly attributable to each reference service				Template 13
RIN 12.4(b)	If relevant, provide, in Regulatory Template 13, for each year specified in Regulatory Template 13 other costs attributable to each reference service				Template 13
RIN 12.4(c)	If relevant, provide, in Regulatory Template 13, for each year specified in Regulatory Template 13 the costs directly attributable to supplying each reference service to a particular user or class of users and where relevant other users or classes of users				Template 13
RIN 12.4(d)	If relevant, provide, in Regulatory Template 13, for each year specified in Regulatory Template 13 other costs attributable to supplying each reference service to a particular user or class of users and where relevant other users or classes of users.				Template 13
RIN 12.5(a)	Provide costs directly attributable to each reference service		10.2	11.3	

Source	Requirement	AA reference	AAI reference	Submission	Template
RIN 12.5(b)	Provide other costs that are attributable to reference services		10.2		
RIN 12.5(c)	Provide where relevant, explain the nature of costs directly attributable and other costs attributable for the: (i) user or class of users; and (ii) other users or classes of users		10.2	11.5 and 11.6	
RIN 12.5(d)	Provide an explanation of the methodology used to allocate costs for the information provided in response to paragraph 12.4.		10.2	11.3	
RIN 12.6(a)	Identify all prudent discounts that GasNet proposes for the Next Access Arrangement Period and the users to whom they will apply and explain how each prudent discount is necessary to respond to competition or maintain efficient use of the VTS			11.7	Template 10
RIN 12.6(b)	Identify all prudent discounts that GasNet proposes for the Next Access Arrangement Period and the users to whom they will apply and explain whether, including relevant calculations, reference tariffs would be higher without the prudent discount than what they would be with the prudent discount.			11.7	
NGR 72(1)(k)	The service provider's rationale for any proposed reference tariff variation mechanism		10.3	11.9	
RIN 13.1(a)	Provide an explanation of the proposed reference tariff variation mechanism and the basis for any parameters used in the mechanism	4.7	10.3	11.9	
RIN 13.1(b)	Provide an explanation of the administrative arrangements for periodic reviews of tariffs including the timing of notifications to the AER.	4.7	10.3	11.9	
RIN 13.2(a)	Identify the possible effects of the proposed reference tariff variation mechanism on GasNet's administrative costs and, if known, the administrative costs of users or potential users			11.9	

Source	Requirement	AA reference	AAI reference	Submission	Template
RIN 13.2(b)	Identify all relevant regulatory arrangements GasNet considers applicable to the relevant reference services before the commencement of the proposed reference tariff variation mechanism.	4.7		11.9	
RIN 13.1(a)	Provide a definition and description of each cost pass through event	4.7	10.3	11.9	
RIN 13.1(b)	Provide an explanation of how each cost pass through event is uncontrollable	4.7		11.9	
RIN 13.1(c)	Provide an explanation of whether the costs of the cost pass through event are already provided for through the operating expenditure or capital expenditure forecasts, the WACC (events which affect the market generally and not just the provider are systemic risk and already compensated through the WACC), or any other mechanism or allowance			11.9	
RIN 13.1(d)	Provide an explanation of the administrative arrangements for cost pass through events and their relationship to other periodic reviews for other tariff variation mechanisms including the timing of notifications to the AER.	4.7	10.3	11.9	
RIN 13.4(a)	Identify the materiality threshold GasNet proposes for cost pass through events	4.7	10.3	11.9	
RIN 13.4(b)	Identify the possible effects of the proposed cost pass through mechanism on GasNet's administrative costs and, if known, the administrative costs of users or potential users			11.9	
RIN 13.4(c)	Identify all relevant regulatory arrangements GasNet considers applicable to the relevant reference services prior to the commencement of the proposed cost pass through mechanism.			11.9	
RIN 14.1(a)	Provide details of any amendments to the non-tariff terms and conditions of			2.3.4 Attachment	

Source	Requirement	AA reference	AAI reference	Submission	Template
	the access arrangement that GasNet proposes for the Next Access Arrangement Period			E	
RIN 14.1(b)	Provide for each amendment identified in response to paragraph 14.1(a), explain the reasons for the proposed amendment.			2.3.4 Attachment E	
NGR 48(1)(e)	Queuing requirements	6		2.3.1	
RIN 14.2	Provide details of the process or mechanism for order of priority for spare or developable capacity, (for example, whether it is to be as a first-come-first-served basis or by auction).	6		2.3.1	
NGR 48(1)(f)	Capacity trading requirements	5		2.3.1	
RIN 14.3	Identify the rules or procedures GasNet must accord with under Rule 105	5		2.3.1	
NGR 48(1)(g)	Extension and expansion requirements	7		2.3.7	
RIN 14.4(a)	Provide details of any extension and expansion requirements where that extension or expansion requirement states that the access arrangement will apply to incremental services to be provided as a result of the extension or expansion	7		2.3.7	
RIN 14.4(b)	Provide details of the effect of those extension or expansion requires identified in response to paragraph 14.1(a) on tariffs	7		2.3.7	
NGR 48(1)(h)	Changing receipt and delivery points	5		2.3.1	
RIN 14.5(a)	Explain how users may obtain consent, including identifying any relevant conditions, to change receipt or delivery points as contemplated under Rule 106	5		2.3.1	
RIN 14.5(b)	Explain, where relevant the technical or commercial considerations and other relevant conditions in the event GasNet intends to withhold consent to a change				

Source	Requirement	AA reference	AAI reference	Submission	Template
	of a receipt or delivery point				
NGR 48(1)(i)	Review submission and revision commencement dates	1.5		2.3.6	
NGR 48(1)(j)	Review expiry date (if relevant)				
NGR 51	Trigger events (if relevant)				
NGR 99	Fixed principles	8		2.3.12	
NGR 72(1)(f)	Key performance indicators used to support expenditure incurred over the access arrangement period		6		
RIN 15.1(a)	List and provide a brief description of key internal plans, policies, procedures or strategies that are used to plan and conduct GasNet's day to day operations and that have been relied upon in the development of GasNet's Access Arrangement Proposal. This includes plans, policies, procedures or strategies applicable to the management, maintenance, and planning of networks, for example - augmentation and planning, cost estimation, asset management, condition monitoring and replacement, operations and maintenance, and demand, energy supply and customer growth forecasting			3, 4 and Resource Document Pack	
RIN 15.1(b)	List and provide a brief description of key internal plans, policies, procedures or strategies that are used to plan and conduct GasNet's day to day operations and that have been relied upon in the development of GasNet's Access Arrangement Proposal. This includes plans, policies, procedures or strategies applicable to investment decision making and the allocation of costs, for example - risk assessment and management, investment evaluation, prioritisation and options analysis, corporate governance and investment approval, procurement, project management, and cost allocation			3, 4 and Resource Document Pack	
RIN 15.2	Identify any internal plans, policies,			4.6	

Source	Requirement	AA reference	AAI reference	Submission	Template
	procedures and strategies that have changed in the Current Access Arrangement Period or that will change before the Next Access Arrangement Period where the change has had a material impact on forecast expenditures for the Next Access Arrangement Period.				

Attachment B – RIN Templates and Models

B-1 Completed RIN Templates – confidential

B-2 Revenue model – confidential

B-3 Roll Forward Model – confidential

B-4 Net Present Value Calculations – confidential

B-5 Tariff model – confidential

B-6 R2A Due Diligence model - WORM – confidential

B-7 Price Control Model – confidential

B-8 Prudent Discount calculations – confidential

Provided as separate files

Attachment C – Key Asset Management and Planning Documents

C-1 JP Kenny review of capital and operating expenditure - confidential

C-2 APA GasNet Asset Management Plan - confidential

C-3 APA GasNet Compressor Strategy - confidential

C-4 Capital Program Business Cases - confidential

C-5 R2A Due Diligence Report - Effectiveness of the Western Outer Ring Main (WORM) Project on Security of Supply of the Victorian Transmission System (VTS)

These documents are supplemented by the Resource documents pack provided with the submission.

All provided as separate documents

Attachment D – Additional submission information - confidential

Confidential Information included in this attachment supplements that in the submission.

Attachment E - Description of changes to the Access Arrangement

Clause	Provision	Reason for provision/variation
General	Clause cross references and capitalisation of defined terms	Update of appropriate clause cross references for internal document consistency, as well as capitalisation of defined terms. These changes are not tracked.
General	References to GasNet in access arrangement replaced with references to Service Provider	Alignment with standard form for APA Group access arrangements
General	References to VenCorp, MSO Rules, and PTS replaced with current names	Reflect move to AEMO, incorporation of MSO Rules into the National Gas Rules and update references to the regulated system
Details	Details moved to Schedule 1	Alignment with standard form for APA Group access arrangements
1	Various changes	Update text to reflect new governing rules, alignment of structure to standard form for APA Group access arrangements, update description of the pipeline, inclusion of revisions submission and commencement dates
2	Various changes	Update text to reflect new governing rules (including SEA), alignment of structure to standard form for APA Group access arrangements
3	Various changes	Update text to reflect new governing rules, removal of self-insurance section (no self-insurance allowance in forecast expenditure)
3.5	Capital redundancy mechanism	Changes to capital redundancy mechanism described in section 0 of the submission
3.9	Depreciation to be used for opening capital base for next access arrangement period	Include clause setting out approach to depreciation to be used in established the opening capital base for the next access arrangement period as required under Rule 90. Depreciation to be based on forecast capital expenditure.
4	Reference tariffs	Update text to reflect new governing rules
4.2, 4.3, 4.4, 4.5	Details on applicable tariffs and assignment of zones	Moving detail on applicable tariffs and assignment of zones from access arrangement schedules to the body of the document to improve transparency and understanding tariff structure. No material changes were made to these arrangements compared to the earlier access arrangement. The approach improves alignment with standard form for

		APA Group access arrangements
4.7	Reference Tariff Adjustment Mechanism	Update text to reflect new governing rules – more detail in section 11.9 of the submission. Details moved from schedule to body of the document.
5	Capacity trading	Update text to reflect new governing rules – more detail in section 2.3.1 of the submission.
6	Queuing	Update text to reflect new governing rules – more detail in section 2.3.1 of the submission.
7	Extensions and expansions	Alignment with other APA Group access arrangements and to address issues specific to the Victorian wholesale gas market – more detail in section 2.3.7 of the submission.
-	Pass Through Events	Section of pass through events moved to section 4.7 and substantially revised as discussed in section 2.3.1 of the submission.
8	Fixed Principles	Update to reflect new provisions in the access arrangement – more detail in 2.3.12 of the submission.
A	Details	Alignment with other APA Group access arrangements, revised tariffs to reflect forecast revenue requirement, revisions to billing parameters – more detail in chapter 11 of the submission.
B	Definitions and Interpretation	Update text to reflect new governing rules – inclusion of new definitions incorporated into access arrangement
C	Injection and withdrawal zones	No changes
D	Price control formula	Removal of the non-weather related revenue cap – more detail in section 11.8
E	Description of the VTS	Update description of the pipeline
F	Transmission Payment deed terms	Revisions to former Payment deed terms to align (where relevant) with standard form for APA Group access arrangements
F.1	Term	Revisions to reflect that for Transmission Payment Deeds signed from 1 January 2013, the provisions in those deeds will revise with revisions to the access arrangement
F.2	Billing and Payment	No material changes to payment dates. Additional detail provided on interest charges payable in the event of late payment and treatment of disputed amounts as per standard form for APA Group access arrangements.
F.3	Adjustment to rates and charges	Provides that Reference Tariffs vary as per the Reference Tariff Adjustment Mechanism
F.4	Prudential requirements	Clause sets out prudential requirements for the provision of the Reference Service, including conditions under which

		Service Provider can seek financial security, and circumstances where Service Provider can refuse to provide or suspend the provision of the Reference Service. Provisions mirror those approved by the AER in respect to the Amadeus Gas Pipeline access arrangement.
F.5	Dispute resolution	These clauses set out arrangements for the resolution of disputes between the parties to Transmission Payment Deed, including scope to refer certain issues to an independent expert for resolution
F.6	Information Interface	This section relates to the Shipper's use of an Information Interface provided by Service Provider
F.7	Limitation of Liability and Indemnity	These clauses set out liability arrangements under the Transmission Payment Deed, as per the Service Envelope Agreement. No material changes from earlier access arrangement in relation to the scope of liability and indemnity.
F.8	Termination	These clauses set out the arrangements in respect of Default by a shipper to the Transmission Payment Deed
F.9	No right to title for facilities	Clarifies shipper rights and title
F.11	Assignment	Assignment clause provides for reciprocal assignment restrictions
F.12	Confidentiality	These clauses set out arrangements for using and disclosing Confidential Information

Attachment F – Outsourced capital and operating expenditure – confidential

Note on confidentiality: This information includes details of supplier contractual terms. Public release of this information may prejudice future negotiations with suppliers.

Attachment G – Cost of Capital expert reports

G-1 CEG Estimating the regulatory debt premium for Victorian gas businesses

G-2 PwC Debt Risk Premium Report

G-3 CEG Risk Free Rate and Market Risk Premium

G-4 SFG Market Risk Premium: an Updated Assessment of the Conditional and Unconditional Estimates

G-5 NERA – Prevailing Conditions and the Market Risk Premium

G-6 Capital Research Forward Estimate of the MRP- Update

Attachment H – APA Group Corporate Costs

APA Group Corporate functions

As part of a larger corporate group, certain corporate functions are provided for APA GasNet through a centralised corporate body. The functions performed by this centralised group include:

- Chief Executive Officer function;
- Company Secretary function – including annual reporting, general meetings, risk management, compliance management, audit costs, directors costs and general administrative costs;
- Corporate Finance function – including, treasury, tax, investor relations, budgeting, general financial accounting, general management accounting, performance reporting and financial services such general accounts payable and receivable;
- Corporate Commercial function – including general commercial functions;
- Human Resources function – including training, health safety and environment, employee communications, payroll and recruiting;
- IT and Transformation function – including APA GasNet specific IT costs;
- Legal and Regulatory function – while general legal and regulatory costs are allocated among the corporate group using the general process, legal and regulatory matters related to a particular legal action or regulatory process are directly assigned to the particular asset; and
- Projects and Other – including ongoing business improvement projects.

Applicability of corporate costs to APA GasNet

Any Service Provider, including APA GasNet, needs these functions to be performed in order to meet the following activities and obligations;[157]

- Statutory obligations such as lodging accounts, auditing accounts, reporting to shareholders, maintaining shareholder registries, holding annual general meetings, paying tax, maintaining environmental, safety and regulatory compliance;
- General prudent capital raising activities such as managing investor relations, raising equity via ASX listing and raising debt via debt market activity;

[157] This listing is not an exhaustive listing of the requirements and obligations which the corporate functions undertake.

- General prudent human resource management activities such as efficiently recruiting, retaining, training, compensating and managing employees;

- General prudent financial management activities such as operating appropriate internal cost monitoring systems and performance reporting systems and operating invoice payment systems;

- General prudent risk management activities such as insuring assets and operating appropriate internal risk management and reporting systems;

- General prudent IT management activities such as implementing, maintaining and operating company wide compatible IT systems and ensuring IT security is maintained; and

- Ongoing business improvement activities. APA GasNet believes that ongoing business improvement activity is implicit in the Rule 91 benchmark of a prudent Service Provider, acting efficiently, in accordance with accepted and good industry practice.

APA GasNet submits that the costs associated with these functions would be incurred by a prudent service provider, acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services, and that they are necessarily incurred for APA GasNet to provide pipeline services.

It should be recognised that other regulators, notably the ACCC, have previously approved APA Group general corporate costs such as corporate employee salaries, director's fees, rent, office costs, IT costs, communications costs, costs associated with stock exchange listing (eg share registry fees, annual report preparation) and other costs incurred in the operation of a listed business.

Moreover, the AER has accepted this approach in its recent decisions on the APT Allgas AA[158] and that for the NT Gas Amadeus Pipeline:[159]

> The AER accepts NT Gas's forecast corporate overhead costs and considers that they are costs which would be incurred by a prudent service provider acting efficiently as required by r. 91 of the NGR. The AER also considers that the level of corporate overhead expenditure proposed by NT Gas represents the best estimate possible in the circumstances as required by r. 74(2)(b) of the NGR.

Consistent with the above, the corporate costs put forward by APA GasNet include costs for senior management and board, company secretary functions including shareholder management and listing, finance including tax, treasury and statutory reporting, information technology, commercial, legal, regulatory, operations management including procurement, asset management and engineering.

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[158] AER 2011, Final Decision APT Allgas - Access arrangement proposal for the Qld gas network, 1 July 2011 – 30 June 2016, June, section 7.4 p 53 and Table 7.1.

[159] AER 2011, Final decision - N.T. Gas, Access arrangement proposal for the Amadeus Gas Pipeline 1 August 2011 – 30 June 2016, July, section 7.4 and Table 7.2.

Approach

APA GasNet is conscious that the AER is concerned about the level and nature of costs allocated to a regulated entity from related companies. APA GasNet has taken the following approach to demonstrate that the level of corporate costs allocated to it is reasonable and consistent with the requirements of Rule 91:

- Demonstrate that the aggregate corporate costs were prudently incurred

  The purpose of this stage of the approach is twofold: First, to demonstrate that these costs have been incurred within a corporate governance process that is subject to market disciplines. Second, that these costs were incurred within the spirit of the regulatory "revealed cost approach", in which the incentive of a regulated business (and indeed an unregulated business) is to reduce operating costs to the lowest sustainable level.
- Demonstrate that corporate costs were allocated on a reasonable basis and in a manner consistent with prior years

  The purpose of this stage is to demonstrate that the corporate group does not allocate costs among the operating businesses opportunistically to take advantage of particular price review processes.
- Demonstrate that the amount of costs allocated to APA GasNet is not more than would be incurred by a benchmark stand-alone firm

  Directly to meet the requirements of Rule 91, APA GasNet has commissioned a benchmarking study to demonstrate that the level of corporate costs allocated to APA GasNet is not greater than the amount that would be incurred by APA GasNet were it a stand-alone business.

Aggregate corporate costs prudently incurred

In preparing its regulatory accounts, APA Group must reconcile to its audited statutory accounts. The audit assurance provided on the corporate accounts demonstrates that the amount of reported corporate costs is as reported.

Inherent in that reported amount is the corporate governance process on the incurrence of those costs. The activities behind these costs are subject to a rigorous budgeting process which ensures that the activities are necessary to operate the business to provide pipeline services, and that the costs of performing these costs are not more than the lowest sustainable cost.

This is consistent with the Australian regulatory "revealed cost" methodology for determining a reasonable basis of non-capital cost forecasts. It is in the interest of any organisation, regulated or otherwise, to reduce its non-capital costs to the lowest sustainable level. This is consistent with the pricing principles encapsulated in Section 24(b)(3) of the National Gas Law.

APA GasNet considers that the starting point of this analysis, the audited corporate financial statements, provides evidence that the corporate costs were actually incurred, and that, in conjunction with the corporate governance process, that these costs are at the lowest sustainable level required to provide the pipeline services.

Corporate governance and Board budgeting process

Being incurred at the corporate level, the corporate costs are subject to a rigorous Board review and budget approval process. Some noteworthy points of this process include:

- The corporate costs are from a Board approved budget. This budget is not derived for any regulatory purpose and is independent of any regulatory process. The costs in the budget are based on internal business forecasts and represent a reasonable estimate of future costs. The costs are within the market guidance provided in accordance with ASX listing rules;

- In setting the budget costs the Board is required to act in the interests of APA Group shareholders; it is not in the interests of APA Group shareholders to have excessive costs. As such there are strong corporate governance reasons to assume these costs are prudent and efficient; and

- The incentive to reduce costs is further reinforced by APA Group management incentive schemes. These incentive schemes are driven by a formula, the most readily controlled component of which is costs. This provides APA management with a major incentive to ensure costs are kept at an efficient level as significant personal rewards are directly linked to achieving financial targets.

The actual 2010/11 APA Group corporate costs were **c-in-c** million.

These costs are then allocated to APA GasNet via the allocation process described below.

Consistent allocation methodology

In the context of currently approved APA Group access arrangements (such as the access arrangements for the APT Allgas network, the Amadeus Gas Pipeline etc) it is in APA Group's interest to reduce operating costs, including corporate costs, wherever possible. APA Group has no incentive to increase corporate costs, as to do so would increase costs to other APA Group regulated assets without the ability to reflect those costs in applicable reference tariffs, resulting in a consequent reduction in margins. This causal nexus would not exist if different regulators used different allocation methodologies. The use of different allocation methodologies would reduce incentives to reduce corporate costs.

So long as the allocation methodology is consistent over time and across assets, the incentive mechanism is exerting a discipline on the amount of corporate costs incurred.

Furthermore, given the company-wide nature of the APA Group corporate costs and the asset footprint of the APA Group these costs are scrutinised, and will be scrutinised, by regulators other than the AER, notably the Economic Regulation Authority of Western Australia, and will be scrutinised at each such regulatory reset.[160]

Consistency with APA Accounting Practice and Internal Cost Allocation Methodology

The allocation methodology now being put forward by APA GasNet is the same methodology as used internally in APA Group in deriving budgets and internal accounts. This has been confirmed by Deloitte, the auditor. The audit report and supporting working papers demonstrate that APA Group's corporate costs are being recovered from the operating assets only once.

APA Group has consistently applied a revenue based cost allocation methodology, and this approach continues to be used to derive regulatory accounts required by relevant national gas and electricity laws. In some instances these regulatory accounts were or are provided to regulators.[161]

If different cost allocation methodologies were to be used on different assets in the future due to jurisdictional regulatory decisions this creates the potential for inadvertent under recovery or over recovery of these corporate costs across the whole APA Group.

Consistency with Allocation Methodology accepted by the AER and ACCC for the APA Group

It is noteworthy that consistency across the corporate group effectively requires the entire group to ultimately adhere to the most restrictive regulatory requirements among the group.

As APA Group owns electricity transmission assets, the cost allocation methodology must meet the most prescriptive requirements - those applicable to electricity transmission assets.

The revenue based methodology has been accepted by the AER and ACCC in relation to both electricity and gas assets owned, wholly or partially, by the APA Group. For example the revenue based methodology was put forward by APA Group in the Murraylink and Directlink cost allocation manuals, which are required by regulation, when these assets were wholly owned by APA Group. For example, the Directlink Manual[162] states:

[160] APA currently has Access Arrangements on eight heavy regulation gas assets, including APT Allgas and the Amadeus Gas Pipeline, where such costs have been scrutinised at resets.
[161] Murraylink and Directlink regulatory accounts using this allocation methodology have all been submitted to the relevant state or Commonwealth regulators in 2006, 2007 and 2008.
[162] 2008, APA Group, *Directlink Manual* page 10.
http://www.aer.gov.au/content/index.phtml/itemId/718224

> An annual cost allocation is undertaken for all shared costs arising from the provision of the above services by the APA Group. The allocation of these shared costs is made on the basis of revenue. As shown in Table 1 [of the Directlink manual], each business unit is allocated corporate overhead costs in proportion to their contribution to the APA Group's Total Revenue.
>
> Based on historical performance, Directlink believes revenue is an appropriate driver for allocating 'Corporate Overhead Costs' as corporate overheads are a necessary cost for the generation of revenue. Furthermore, a causal relationship exists between revenue generation and corporate overheads. Revenue is therefore considered an appropriate driver for the allocation of 'Corporate Overhead Costs' to each of the APA Group's assets. It should be noted that in previous gas infrastructure regulatory decisions relating to APA gas assets the ACCC has accepted revenue as an appropriate allocator for corporate costs.

The AER approved these manuals.[163] The AER's consultant in this process noted[164] that the corporate cost allocation approach was consistent with National Electricity Rules cost allocation principles.

The revenue based allocation methodology is also the same corporate cost allocation methodology used by APA Group in regulatory decisions for such assets as the Moomba Sydney Pipeline and historically (and proposed) on the VTS. For example, the ACCC 2007 Draft Decision on the GasNet Access Arrangement states[165]:

> The APA Group's current approach is to allocate its corporate overheads on the basis of an asset's contribution to the APA Group's Total Revenue. In relation to its proposed revisions to the AA for the Roma to Brisbane pipeline (VTS) in 2006, the APA Group allocated 14 per cent of its indirect corporate costs to the VTS on the basis that the VTS contributed 14 per cent of the APA Group's revenue (in 2005). A similar approach was adopted by the APA Group for the Moomba to Sydney pipeline (MSP).

And further supports this by noting[166]

> The APA Group's annual ring fencing reports confirm that revenue shares are used as the basis for allocating corporate overheads.

The ACCC 2008 Final Decision on the GasNet Access Arrangement[167] states GasNet has made further confidential submissions on the issue of corporate costs. These submissions allocated corporate costs on the basis of revenue attributable to

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[163] AER, 2008, *Final Decision Electricity Transmission Network Service Providers Cost Allocation Methodologies* August 2008 p10. http://www.aer.gov.au/content/index.phtml/itemId/718224

[164] 2008, McGrathNicol, *Review of Cost Allocation Methodology* Directlink 30 July 2008 page 11. http://www.aer.gov.au/content/index.phtml/itemId/718224

[165] ACCC, 2007, *Draft Decision, Revised Access Arrangement by GasNet Australia Ltd for the Principal Transmission System*, p116

[166] ACCC, 2007, Draft Decision, *Revised Access Arrangement by GasNet Australia Ltd for the Principal Transmission System*, 2007, p116

[167] ACCC, 2008, Final Decision, *Revised Access Arrangement by GasNet Australia Ltd for the Principal Transmission System*, 2008, P80

particular assets. In responding to these submissions in the Final Decision the ACCC did not raise any issues or concerns with the corporate cost allocation methodology.

This same revenue based cost allocation methodology has been applied in determining the share of corporate costs allocated to APA GasNet for the purposes of this access arrangement.

Based on the revenue allocation methodology outlined above, the corporate costs allocated to APA GasNet are summarised below.

The allocated corporate costs are based on 2011 actual corporate costs, adjusted by removing costs which are not related to functions provided to APA GasNet. This includes costs associated with;

- Insurance, which is recovered separately;
- Corporate development including any future mergers, acquisitions, divestments or similar corporate projects;
- Other commercial services attributed to a specific business unit; and
- APA GasNet IT costs – which are added in as a separate item.

The revenue allocator used is the budgeted revenue of APA GasNet as a percentage of total APA revenue. For 2011, this allocator is **c-in-c**.

The actual APA Group corporate costs allocated to APA GasNet for 11 using this methodology are $10.0 million. As a reasonableness check, APA GasNet notes that direct application of the revenue allocator to all APA Group corporate overhead costs would have resulted in an allocated amount of $13.4 million.

Corporate cost benchmarking

APA GasNet benefits from the centralisation of these functions - the cost to APA GasNet would be much greater if it had to source each of these functions for its exclusive use.

In order to confirm and quantify the benefits of using a centralised corporate function instead of duplicating these functions as stand-alone functions for each of APA Group's assets, APA Group has commissioned a report from KPMG which examines this issue and estimates the reasonable level of non-capital corporate costs for an asset with the characteristics of APA GasNet.

This KPMG report is attached at Attachment I. This report effectively derives a corporate cost benchmark as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

The KPMG report undertakes cost modelling of the non capital corporate costs for an asset with the characteristics of the VTS. This modelling identifies corporate functions that would be required by an asset with the characteristics of the VTS and then models costs for these corporate functions. This modelling is based on a series of empirical cost benchmarks. The cost modelling is explicitly undertaken to meet the requirements of Rule 91.

The KPMG report concludes that an expected range of Non Capital corporate costs (in $2011) for an asset with the characteristics of the VTS is in the order of $11.8 million per annum.[168] APA GasNet submits that this midpoint demonstrates that its submitted corporate cost of $10.0 million ($2012) for 2011 demonstrates significant synergies associated with the centralisation of corporate functions. APA GasNet submits that the KPMG report strongly supports APA GasNet's position that its forecast corporate costs meet the requirements of Rule 91.

In considering the KPMG report the AER should recognise that the cost categorisations used by APA GasNet and KPMG may differ due to APA internal cost centre definitions and KPMG cost benchmarks not being aligned. However the fact that the total amount of corporate costs is materially below KPMG's benchmark indicates that the APA GasNet corporate costs are reasonable costs when compared with a benchmark prudent service provider, acting efficiently, in accordance with accepted and good industry practice.

APA GasNet submits that the full range of corporate overhead costs submitted by APA GasNet in its forecast of Non Capital Costs for the access arrangement period meet the prudent service provider test under Rule 91. That is, these costs are such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

Consistency with the National Gas Objective and the Legitimate Interests of Service Providers

APA GasNet believes that ensuring that corporate costs are recovered once, but only once, is in the interests of both the Service provider and the Users. To recommend a cost allocation methodology that increases the potential for the over-recovery or under-recovery of costs is not in the interests of either the Service Provider or the Users, and as such is not consistent with the national gas objective.

Furthermore Section 24(2)(a) of the National Gas Law requires that a service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in providing reference services. To recommend a cost allocation methodology that increases the potential for the under-recovery of costs is not consistent with the recovery of efficient costs.

Similarly, recommending a cost allocation methodology which differs to that used in other regulatory proceedings has the potential to distort investment decisions. Such an approach may create inappropriate incentives to invest in some infrastructure assets in preference to others, depending on the treatment of costs in the relevant regulatory decisions.

[168] KPMG, 2012, Corporate Cost Benchmarking , page 1. Attachment H.

Overall, the APA Group seeks to consistently apply a single cost allocation methodology across all of its operating businesses and Access Arrangements. To the extent that this consistent application is not approved across the range of regulatory processes, this raises the potential for either inadvertent under-recovery or over-recovery of corporate costs. APA Group has consistently used the revenue based allocation internally and in submissions to the ACCC, AER and Economic Regulation Authority.

Attachment I – Drivers and benchmarking of corporate costs

I-1 KPMG report – Changes to Corporate business costs since 2006

I-2 KPMG report – VTS Corporate Cost Benchmarking

Attachment J – Real cost escalation forecasts to 2017 – Australia and Victoria

Confidential attachment