



9

# GAS TRANSMISSION



Nicholas White (supplied by KT Pty Ltd)

Transmission pipelines transport natural gas from production fields to major demand centres. The pipelines typically have wide diameters and operate under high pressure to optimise shipping capacity. They are mainly placed underground, which helps to minimise damage that could pose safety issues and interrupt gas services. In total, Australia's transmission pipeline network covers about 25 000 kilometres.

# 9 GAS TRANSMISSION

This chapter considers:

- > Australia's gas transmission sector
- > the structure of the sector, including industry participants and ownership changes over time
- > the economic regulation of the gas transmission sector
- > new investment in transmission pipelines
- > pipeline access and tariffs
- > financial indicators for the transmission pipeline sector.

## 9.1 Australia's gas transmission pipelines

Until the 1990s natural gas was supplied under separate state-based regimes. In all states and territories, a single transmission pipeline shipped gas to major demand centres from a single gas basin. Since the late 1990s, rising demand and regulatory reform have led to a significant rise in exploration and development activity, and rising gas production. In turn, this has stimulated investment in new gas transmission pipelines and the expansion of existing pipelines.

Australia's gas transmission pipeline network has almost trebled in length since the early 1990s. Around \$3.8 billion has been invested in new gas transmission pipelines and expansions since 2000.<sup>1</sup> Much of this investment is in long-haul interstate pipelines that have introduced new supply sources and improved the security of gas supplies into markets in south-eastern Australia. The new cross-border infrastructure includes the 795 kilometre Eastern Gas Pipeline (Longford to Sydney, completed in 2000), the 732 kilometre Tasmanian Gas Pipeline (Longford to Hobart, 2002) and the 660 kilometre South East Australia (SEA)

<sup>1</sup> This Australian Energy Regulator estimate is derived from regulatory determinations and other public sources. The estimate comprises around \$2.1 billion investment in new pipelines and \$1.7 billion capital expenditure to expand existing networks. See figure 9.5 and table 9.3.

Gas Pipeline (Port Campbell to Adelaide, 2003). The VicHub in eastern Victoria was constructed in 2002 to physically interconnect three major pipeline systems: the Victorian Transmission System, the Tasmanian Gas Pipeline and the Eastern Gas Pipeline.

New investment in the past decade has created an interconnected pipeline network covering New South Wales, Victoria, South Australia, Tasmania and the Australian Capital Territory (ACT). While Queensland is not yet interconnected with the southern jurisdictions, Epic Energy is constructing a new pipeline (the QSN Link) to achieve this.<sup>2</sup> The QSN Link, which is scheduled for completion by early 2009, will interconnect the Queensland transmission network with major pipelines in South Australia and New South Wales.

The interconnection of the eastern jurisdictions creates wider options to source gas from alternative gas basins. For example, a customer in Sydney can potentially source natural gas from the Cooper Basin or Sydney Basin (using the Moomba to Sydney pipeline) or Bass Strait (using the Eastern Gas Pipeline). The QSN Link will also provide Sydney customers with access to coal seam gas from Queensland. These developments promote a more competitive environment among gas producers, pipeline operators and gas retailers.

Transmission pipelines in Western Australia and the Northern Territory are not interconnected with other jurisdictions. The populated south-west of Western Australia is serviced by three main pipelines. The Dampier to Bunbury Pipeline and the Goldfields Pipeline deliver gas from the Carnarvon Basin, and the Parmelia Pipeline transports gas from both the Carnarvon and Perth basins. There has been substantial investment in Western Australian pipelines in the current decade, including an expansion of the Dampier to Bunbury Pipeline and new pipelines to supply gas to the mining and resources sector. In the Northern

Territory, the Amadeus Basin to Darwin Pipeline transports gas from the Mereenie and Palm Valley gas fields.

Table 9.1 sets out summary details of Australia's major transmission pipelines. Figure 9.1 illustrates pipeline routes.

## 9.2 Ownership of transmission pipelines

Government reforms to the gas sector in the 1990s led to structural reform and significant ownership changes. In particular, vertically integrated gas utilities were disaggregated and most government-owned transmission pipelines were privatised. Figure 9.2 sets out changes in the ownership of major transmission pipelines since 1994.

Privatisation led to the entry of a number of US-based energy utilities. In the 1990s, PG&E, GPU GasNet, Tenneco and Epic Energy acquired major pipelines in Victoria, South Australia, Queensland and Western Australia, while Duke Energy—another US utility—constructed major new pipelines in eastern Australia. The principal domestic player was the New South Wales energy utility AGL, which owned or acquired major transmission assets in New South Wales and Queensland. In 2000, AGL's gas transmission assets were transferred to the Australian Pipeline Trust, which is now part of the APA Group.<sup>3</sup>

Over time, the US-based utilities exited the Australian market, selling their transmission assets to new entrants such as Alinta and existing players such as the APA Group. The transmission pipeline landscape experienced a major shift in 2007 with the sale of Alinta to Singapore Power International and the Babcock & Brown group. Origin Energy and the CLP Group also withdrew from the gas pipeline sector, with the sale of their network assets to the APA Group and Retail Employees Superannuation Trust respectively.<sup>4</sup>

<sup>2</sup> At present, only a raw gas pipeline from Ballera to Moomba connects the Queensland and South Australian pipeline systems.

<sup>3</sup> In 2006, the Australian Pipeline Trust began trading as part of the APA Group, which comprises Australian Pipeline Ltd, the Australian Pipeline Trust and the APT Investment Trust.

<sup>4</sup> The AER *State of the energy market 2007* report provides a more detailed account of historical changes in the ownership of gas transmission infrastructure. See section 9.3. The report is available on the AER website.

**Table 9.1 Major transmission pipelines**

PIPELINE	LOCATION	LENGTH (KM)	YEAR CONSTRUCTED	COVERED? <sup>1</sup>	VALUATION <sup>2</sup> (\$ MILLION)	CURRENT ACCESS ARRANGEMENT	OWNER	OPERATOR
<b>NEW SOUTH WALES AND ACT</b>								
Moomba to Sydney Pipeline	SA–NSW	2029	1974–1993	Partial	835 (2003)	2004–2009	APA Group	APA Group
Eastern Gas Pipeline (Longford to Sydney)	Vic–NSW	795	2000	No	450 (2000)	n/a	Jemena (Singapore Power International (Australia))	Jemena (Singapore Power International (Australia))
Central West (Marsden to Dubbo) Pipeline	NSW	255	1998	Yes	28 (1999)	2000–2010	APA Group	APA Group
Central Ranges (Dubbo to Tamworth) Pipeline	NSW	300	2006	Yes	53 (2003)	2005–2019	APA Group	Country Energy (NSW Govt)
<b>VICTORIA</b>								
Victorian Transmission System (GasNet)	Vic	2035	1969–2008	Yes	524 (2007)	2008–2012	APA Group	APA Group/VENCorp
VicHub	Vic	n/a	2003	No	n/a	n/a	Jemena (Singapore Power International (Australia))	Jemena (Singapore Power International (Australia))
<b>SOUTH AUSTRALIA</b>								
SEA Gas Pipeline (Port Campbell to Adelaide)	Vic–SA	680	2003	No	500 (2003)	n/a	International Power, APA Group, and REST (equal shares)	APA Group
Moomba to Adelaide Pipeline	SA	1185	1969	No	370 (2001)	n/a	Epic Energy (Hastings)	Epic Energy
<b>TASMANIA</b>								
Tasmanian Gas Pipeline (Longford to Hobart)	Vic–Tas	734	2002	No	440 (2005)	n/a	Babcock & Brown Infrastructure	Babcock & Brown Infrastructure
<b>QUEENSLAND</b>								
GSN Link (Ballera to Moomba interconnect)	Qld–SA (and NSW)	180	2009	No	140 (2007)	n/a	Epic Energy (Hastings)	Epic Energy
South West Queensland Pipeline (Ballera to Wallumbilla)	Qld	756	1996	No	n/a	n/a	Epic Energy (Hastings)	Epic Energy
Roma (Wallumbilla) to Brisbane	Qld	440	1969	Yes	296 (2006)	2007–2011	APA Group	APA Group
Queensland Gas Pipeline (Wallumbilla to Gladstone and Rockhampton)	Qld	629	1989–1991	No	n/a	n/a	Jemena (Singapore Power International (Australia))	Jemena (Singapore Power International (Australia))
Carpentaria Pipeline (Ballera to Mount Isa)	Qld	840	1998	Yes (light regulation)	n/a	n/a	APA Group	APA Group
North Queensland Gas Pipeline	Qld	391	2004	No	160 (2005)	n/a	Victorian Funds Management Corporation	AGL Energy, Arrow Energy
Dawson Valley Pipeline	Qld	47	1996	Yes	8 (2007)	2007–2016	Anglo Coal (51%), Mitsui (49%)	Anglo Coal

PIPELINE	LOCATION	LENGTH (KM)	YEAR CONSTRUCTED	COVERED? <sup>1</sup>	VALUATION <sup>2</sup> (\$ MILLION)	CURRENT ACCESS ARRANGEMENT	OWNER	OPERATOR
WESTERN AUSTRALIA								
Dampier to Bunbury Pipeline	WA	1854	1984	Yes	1618 (2004)	2005–2010	DUET Group (60%), Alcoa (20%), Babcock & Brown Infrastructure (20%)	WestNet Energy (owned by Babcock & Brown Infrastructure)
Goldfields Gas Pipeline	WA	1427	1996	Yes	514 (1999)	2000–2009	APA Group (88.2%), Babcock & Brown Power (11.8%)	APA Group
Parmelia Pipeline	WA	445	1971	No	n/a	n/a	APA Group	APA Group
Telfer Pipeline (Port Hedland to Telfer)	WA	443	2004	No	114 (2004)	n/a	APA Group	APA Group
Midwest Pipeline	WA	353	1999	No	n/a	n/a	APA Group (50%), Horizon Power (WA Govt) [50%]	APA Group
Kambalda to Esperance Pipeline	WA	350	2004	No	45 (2004)	n/a	WorleyParsons (50%), ANZ Infrastructure Services [50%]	WorleyParsons Asset Management
Pilbara Energy Pipeline	WA	219	1995	No	n/a	n/a	Epic Energy (Hastings)	Epic Energy
Kalgoorlie to Kambalda Pipeline	WA	44	n/a	Yes	n/a	n/a	APA Group	APA Group
NORTHERN TERRITORY								
Bonaparte	NT	285	2009	No	150 (2007)	n/a	APA Group	APA Group
Amadeus Basin to Darwin Pipeline	NT	1512	1987	Yes	229 (2001)	2001–2011	Amadeus Pipeline Trust (96% APA Group)	NT Gas (APA Group)
Palm Valley to Alice Springs Pipeline	NT	140	1983	No	n/a	n/a	Envestra (APA Group 17%, CKI 17%)	APA Group
Daly Waters to McArthur River	NT	330	1994	No	n/a	n/a	APA Group, Power and Water	NT Gas (APA Group)

n/a, not available; CKI, Cheung Kong Infrastructure; REST, Retail Employees Superannuation Trust.

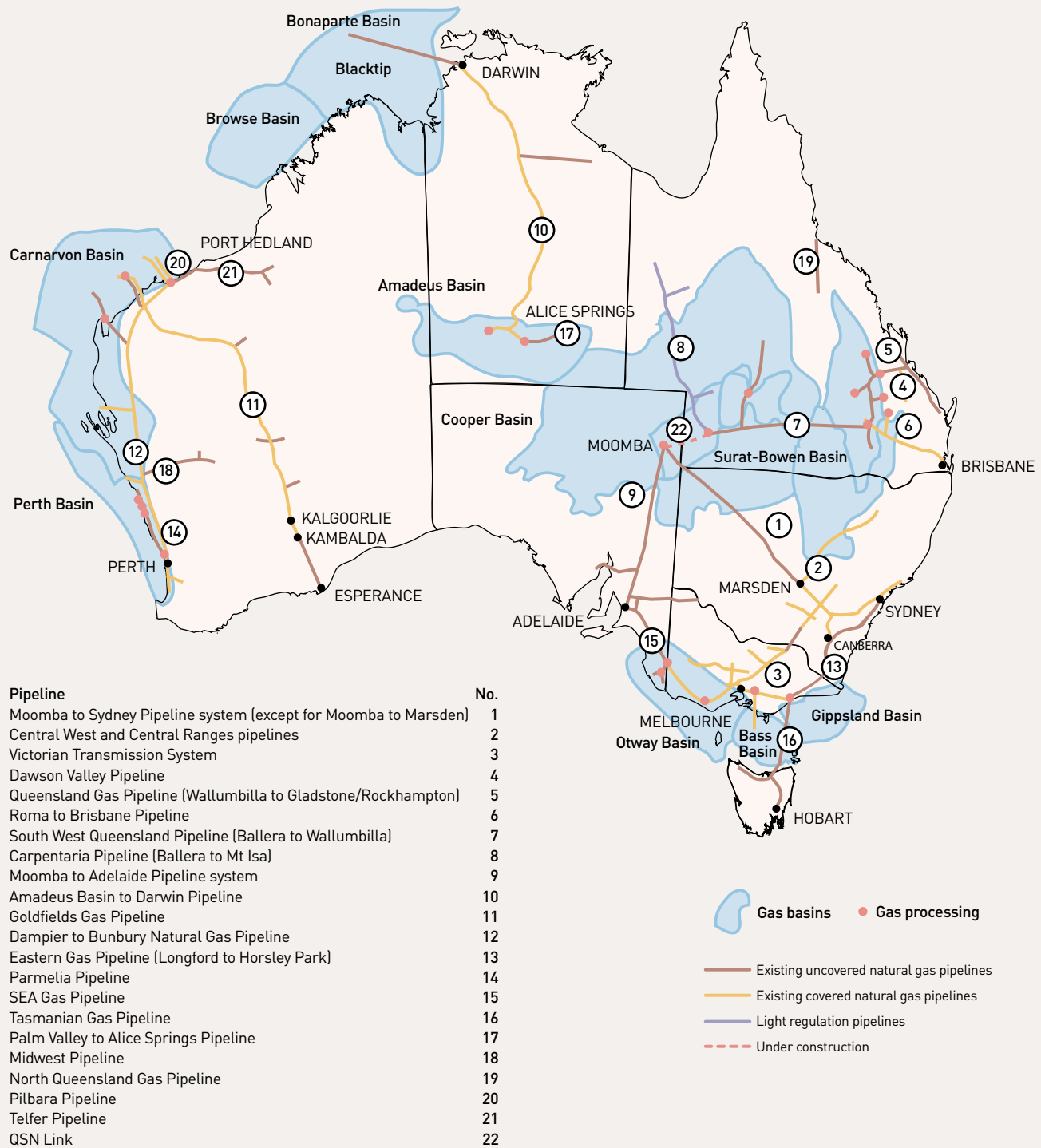
Notes:

1. Covered pipelines are subject to regulatory arrangements set out in the National Gas Law and National Gas Rules.
2. For covered pipelines, valuation refers to the opening regulated asset base (RAB) for the current regulatory period. The RAB is as determined by the regulator, except for the Moomba to Sydney Pipeline, for which the RAB was determined by the Australian Competition Tribunal. For non-covered pipelines, valuation is the estimated construction cost, where data is available.

Regulatory arrangements—the Australian Energy Regulator regulates all covered pipelines outside Western Australia. In Western Australia, the Economic Regulation Authority (ERA) is the transmission regulator.

Principal sources: Access arrangements for covered pipelines; EnergyQuest, *Energy Quarterly Report, May 2008, 2008*; ABARE, *Energy in Australia 2008, 2008*; National Gas Market Bulletin Board, see <http://www.gasbb.com.au> (accessed 7 July 2008).

**Figure 9.1**  
Major gas transmission pipelines



Principal sources: ABARE, *Energy in Australia 2008*, Canberra, 2007; EnergyQuest, *Energy Quarterly Report, February 2008*, 2008; NERA, *The Gas Supply Chain in Eastern Australia—A report to Australian Energy Market Commission*, 2007.

**Figure 9.2**  
**Transmission pipeline ownership**

		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	
South-east Australia	Moomba–Sydney	Govt	AGL 51%, Gasinvest 49%					APA Group									
	Eastern Gas Pipeline								Duke Energy			Alinta		Singapore Power			
	Victorian Transmission System	Govt					GasNet						APA Group				
	SEA Gas Pipeline												Origin, IP, CLP 33.3% each		APA, IP, CLP 33.3% each		
	Moomba–Adelaide	Govt	Ten-neco	Epic Energy									Epic Energy (Hastings)				
	Tasmanian Gas Pipeline									Duke Energy		Alinta		BBI			
Queensland	Wallumbilla–Gladstone	Govt						Duke Energy			Alinta		Singapore Power				
	Gladstone–Rockhampton	Govt	PG&E	Duke Energy						Alinta		Singapore Power					
	Roma–Brisbane	AGL						APT				APA Group					
	Carpentaria Gas Pipeline					AGL		APT						APA Group			
	Ballera–Wallumbilla				Epic Energy									Epic Energy (Hastings)			
Western Australia	Dampier–Bunbury	Govt				Epic Energy						Alinta 20%, DUET 60%, Alcoa 20%		BBI 20%, DUET 60%, Alcoa 20%			
	Goldfields Gas Pipeline	GGT JV WMC 63%				Southern Cross Pipelines Australia 88%						APA Group 88.2%, Alinta 11.8%		APA Group 88%, BBP 12%			
	Parmelia Pipeline	WAPET joint venture			CMS Gas Transmission						APA Group						
NT	Amadeus Basin–Darwin	Amadeus Gas Trust			AGL 96%		APA Group 96%										
	Palm Valley–Alice Springs	NT Gas & Holyman						Envestra (CKI 17%, Origin 17%, other 66%)									

APT, Australian Pipeline Trust (assets now part of the APA Group); BBI, Babcock & Brown Infrastructure; BBP, Babcock & Brown Power; CKI, Cheung Kong Infrastructure; GGT JV, Goldfields Gas Pipeline Joint Venture; IP, International Power; WMC, Western Mining Company. PG&E, Pacific Gas and Electric; WAPET, West Australian Petroleum Pty Limited joint venture (Chevron, Texaco and Shell with a two-seventh interest each, and Ampolex with a one-seventh interest).

Notes:

1. Some corporate names have been abbreviated or shortened.
2. Changes in ownership are shown in the year they occurred.
3. From 1996–2003, Epic Energy was owned by El Paso Energy (30%), CNG International (30%), Allgas Energy (10%), AMP Investments (10%), Axiom Funds Management (10%) and Hastings (10%).
4. The CLP Group sold its share in the SEA Gas Pipeline to Retail Employees Superannuation Trust in September 2008.

Principal sources: Australian Gas Association, *Gas Statistics Australia* (various years); and company websites.

A significant feature of the past few years has been the emergence of Singapore Power International and the APA Group as major owners and operators of transmission pipelines. Investment trusts such as Babcock & Brown Infrastructure, Hastings (trading as Epic Energy) and DUET Group have also acquired significant ownership profiles.<sup>5</sup>

In recent years, there was a tendency to separate the ownership and operation (management control) of gas transmission pipelines, but this pattern has reversed since the sale of Alinta in 2007. In particular, the APA Group, Singapore Power International and Babcock & Brown Infrastructure have moved to an integrated

<sup>5</sup> DUET Group comprises a number of trusts, the responsible entities for which are jointly owned by Macquarie Bank (50%) and AMP Capital Holdings (50%). Hastings Diversified Utilities Fund is managed by a fund acquired by Westpac in 2005.





Babcock & Brown Infrastructure

model, in which a group entity operates and manages all pipeline assets in the group.

In the past year, the APA Group has brought its management in-house by terminating its management contract with Agility. It now operates its transmission pipeline assets internally in the group through a single management company. In August 2008, the former Alinta assets now owned by Singapore Power International were rebranded as Jemena. The new name applies to both the asset ownership and asset management entities. The Epic Energy (Hasting) pipelines continue to be operated by group management companies.

By 2008, ownership consolidation had reduced the number of principal players in the gas transmission sector to four:

- > The APA Group owns the Moomba to Sydney and Central West pipelines in New South Wales; the Victorian Transmission System; two major Queensland pipelines (Carpentaria and Roma to Brisbane); four major Western Australian pipelines (Goldfields Gas, Parmelia, Telfer and Midwest); and the principal pipeline (Amadeus Basin to Darwin) in the Northern Territory. It is also a part owner of the SEA Gas Pipeline and two other Northern Territory pipelines.
- > Singapore Power International acquired a portfolio of gas transmission assets from Alinta in 2007. It now owns the Eastern Gas Pipeline, VicHub, and the Queensland Gas Pipeline. In August 2008, Singapore Power International rebranded its ownership and asset management entities in the energy sector as Jemena.
- > Babcock & Brown Infrastructure acquired a 20 per cent interest in the Dampier to Bunbury Pipeline from Alinta in 2007. It now operates the pipeline through its management services business WestNet Energy. It also owns the Tasmanian Gas Pipeline and has a minority interest in Western Australia's Goldfields Gas Pipeline.
- > The investment fund Hastings acquired Epic Energy's gas transmission assets in 2000, including the Moomba to Adelaide Pipeline (South Australia), the Pilbara Energy Pipeline (Western Australia)

and the South West Queensland Pipeline. In 2008, Epic Energy is constructing the QSN Link from Queensland to South Australia and New South Wales.

Other players include:

- > DUET Group, the majority owner (60 per cent) of the Dampier to Bunbury Pipeline
- > International Power and Retail Employees Superannuation Trust, which each have ownership interests in the SEA Gas Pipeline
- > Cheung Kong Infrastructure, which part owns a Northern Territory pipeline via its interest in Envestra
- > Anglo Coal/Mitsui has ownership interests in Queensland pipelines (see table 9.1).

### 9.3 Economic regulation of gas transmission pipelines

Gas pipelines are capital intensive and incur relatively low operating costs. This gives rise to economies of scale that make it cheaper to use a single pipeline than to construct multiple pipelines between a particular gas basin and a major load (demand) centre. Rising demand can usually be accommodated more cheaply by adding compressors or looping (duplicating part or all of) an existing pipeline than by constructing a second pipeline.

If a major load centre is served by only one gas basin, the transmission pipeline is likely to have significant market power, and may charge prices above underlying costs. As noted, all Australian load centres historically relied on a single gas basin and transmission pipeline to supply gas. Australian governments have tended to apply price regulation in these circumstances to address the risk of market power.

The National Gas Law and National Gas Rules (Gas Rules), which took effect on 1 July 2008, provide the overarching regulatory framework for the gas transmission sector. The law and rules replace the Gas Pipeline Access Law and National Gas Code (Gas Code), which provided the regulatory framework from 1997 to 30 June 2008.

The Gas Code initially applied to most Australian transmission pipelines, but this position has changed over the past decade. Significant new investment in gas pipelines has led to improved interconnection between gas basins and retail markets in the south-eastern states. This has improved supply options and, in some instances, may limit the ability of pipeline operators to exercise market power.

The Gas Rules (previously the Gas Code) anticipate the potential for market conditions to evolve over time, and include a coverage test to allow for an independent review of whether there is a need to regulate a particular pipeline. The National Competition Council is the coverage review body, but the final decision on coverage is made by government. Decisions are open to review by the Australian Competition Tribunal. In 2001, the tribunal reversed a ministerial decision to cover the Eastern Gas Pipeline.

The coverage process has led to the lifting of economic regulation—in whole or part—from several major pipelines, including the Eastern Gas Pipeline,<sup>6</sup> Western Australia's Parmelia Pipeline and a significant portion of the Moomba to Sydney pipeline. The South Australian Minister for Energy revoked coverage of the Moomba to Adelaide pipeline in 2007. The Queensland Government passed legislation in 2008 that terminated the coverage of two major Queensland pipelines—the South West Queensland and Queensland Gas pipelines.<sup>7</sup>

The Gas Rules include a process to cover newly constructed pipelines. Only one pipeline constructed during the current decade (the Central Ranges Pipeline in New South Wales) is currently covered. Other major pipelines—including the SEA Gas and Tasmanian Gas pipelines and several new pipelines in Western Australia—are not covered. As of July 2008, no transmission pipeline into Adelaide or Hobart was subject to economic regulation.

The service provider<sup>8</sup> of a covered pipeline must comply with the provisions of the National Gas Law and Gas Rules. Typically this requires submitting an access arrangement—including pipeline tariffs—to the regulator for approval. The legislation also allows for light regulation in some circumstances, in which the service provider is obliged only to publish terms and conditions of access on its website.<sup>9</sup>

Pipelines that are not covered are subject only to the general anti-competitive provisions of the *Trade Practices Act 1974*. Access to non-covered pipelines is a matter for the access provider and an access seeker to negotiate, without regulatory assistance.

### 9.3.1 Regulation of covered pipelines

As of 1 July 2008, 11 gas transmission pipelines were regulated under the Gas Rules (see table 9.2). In the southern and eastern jurisdictions, the Australian Energy Regulator (AER) replaced the Australian Competition and Consumer Commission (ACCC) as the regulator on 1 July 2008.

The Economic Regulation Authority (ERA) of Western Australia is the regulator of covered pipelines in that state, in recognition that there is no pipeline interconnection with other jurisdictions. Western Australia will implement legislation equivalent to the National Gas Law, and will review its institutional arrangements for gas within five years—or earlier, in the event of pipeline interconnection with another jurisdiction.

6 The Eastern Gas Pipeline was covered by a Ministerial decision on 16 October 2000. The Australian Competition Tribunal reversed this decision on 4 May 2001.

7 Any party may apply to the National Competition Council to consider whether a previously covered pipeline should be covered once again. The Dawson Valley Pipeline was revoked from coverage in 2000, but a later application reversed this decision in 2006. See table 9.2. The National Gas (Queensland) Regulation 2008 provides that no person may apply to reactivate coverage of the South West Queensland Pipeline for a period of one year, or the Queensland Gas Pipeline for a period of two years.

8 In accordance with the National Gas Law, the service provider may be the owner or operator of the whole pipeline or any part of the pipeline.

9 The Second Reading Speech for the National Gas (South Australian) Bill 2008 at p. 15 indicates that light regulation may be relevant for point-to-point transmission pipelines with a small number of users that each have countervailing market power.

Table 9.2 Covered transmission pipelines at 1 March 2008

JURISDICTION AND PIPELINE	COMMENTS
NEW SOUTH WALES	
Moomba to Sydney Pipeline	Partially covered <sup>1</sup>
Central West (Marsden to Dubbo)	Covered since 1998 <sup>2</sup>
Central Ranges Pipeline	Covered in May 2004
VICTORIA	
Victorian Transmission System	Covered since 1997
QUEENSLAND	
Roma (Wallumbilla) to Brisbane Pipeline	Covered since 1997; derogations expired in 2006, enabling the regulator to set tariffs for the first time
Dawson Valley Pipeline	Coverage revoked in 2000 but reinstated in 2006
Carpentaria Pipeline (Ballera to Mt Isa)	Covered since 1997; light regulation only <sup>3</sup>
WESTERN AUSTRALIA <sup>4</sup>	
Dampier to Bunbury Pipeline	Covered since 1999
Goldfields Gas Pipeline	Covered since 1999
Kalgoorlie to Kambalda Pipeline <sup>5</sup>	Covered since 1999
NORTHERN TERRITORY	
Amadeus Basin to Darwin Pipeline	Covered since 1997

## Notes:

1. Coverage of the Moomba to Sydney Pipeline was partially revoked in 2003. The revoked portion runs from Moomba to the offtake point of the Central West Pipeline at Marsden. See figure 9.1.
2. Under the National Gas Law, the Central Ranges Pipeline will cease to be covered once the current access arrangement expires.
3. The service provider of a light regulation pipeline must publish the terms and conditions of access, including tariffs, on its website. There is no requirement to submit an access arrangement to the regulator for approval.
4. The Gas Code commenced in Western Australia in 1999.
5. The regulator has not approved an access arrangement for this pipeline.

### 9.3.2 Regulatory framework

In Australia, the providers of most transmission pipelines offer gas transportation services to third parties via access contracts. Typically, a party negotiates a long-term bilateral contract with the operator, which sets out the conditions of use. A contract typically features a maximum daily quantity allocation and sets a capacity charge, which must be paid regardless of the amount of gas a customer transports on the pipeline.

In Victoria, an independent operator (VENCorp) manages the Victorian Transmission System, and users are not required to enter into contracts. Instead a party's daily gas flow is determined by its bids into the wholesale gas market. The bids enter a market clearing engine where the lowest priced supply offers are dispatched to meet demand. Pipeline charges are based on actual gas flows following this dispatch selection process.

10 In Western Australia a separate arbitrator hears access disputes.

To assist pipeline customers, the Gas Rules require pipeline operators to develop access arrangements that set out terms and conditions of access. These typically include reference tariffs for the pipeline. Most access arrangements apply for a fixed term, after which they are subject to review.

An access arrangement must comply with the provisions of the Gas Rules and underpinning legislation, including pricing principles, ring-fencing requirements and rules for associate contracts. The regulator may require a pipeline operator to amend an access arrangement that fails to meet the code's provisions. Once approved, an access arrangement is enforceable. In particular, an access seeker may request the regulator to arbitrate a dispute and enforce the provisions of an access arrangement.<sup>10</sup>

The regulatory approach in gas is broadly similar to that applied to electricity networks. In particular, the regulator aims to determine revenue outcomes that cover efficient costs, including asset depreciation and a proxy for a commercial return on capital. As in electricity, the Gas Rules provide for incentive mechanisms to reward efficient operating practices.

A point of difference is that while electricity transmission regulation is based around the setting of revenue caps, the approach in the Gas Rules is to set reference (benchmark) tariffs for reference services that are commonly sought by customers. The reference tariff is intended to form a basis for negotiation between the pipeline owner and customers, but is enforceable if a party notifies the regulator of a dispute. The negotiation of tariffs may be complex if a pipeline is operating at capacity and requires an expansion to make access possible.

Typically, reference tariffs apply to firm haulage services, the most commonly sought service on most pipelines.<sup>11</sup> Gas users seeking short-term or interruptible supplies can try to negotiate those services with the pipeline operator or other gas shippers directly. The regulated tariffs for reference services may be of assistance in these negotiations.

The Gas Rules allow a number of options for determining regulated revenue. The two methods currently in use are the cost of service method and the net present value method:

- > The cost of service method is a building block approach in which revenue is set to recover efficient costs, including operating and maintenance expenses, asset depreciation costs and a return on capital. This method, which is similar to that applied in electricity transmission, is used to set benchmark total revenues for most transmission pipelines. For example, it was recently used to set revenues for the Victorian Transmission System.
- > The net present value method applies a discount rate to forecast costs and sales to set revenues that will deliver a

net present value for the pipeline equal to zero. Central West is the only transmission pipeline that applies this method to set benchmark total revenue.<sup>12</sup>

Figures 9.3 and 9.4 show the revenue components under the access arrangements for the Victorian Transmission System for the period 2008–2012 and the Roma to Brisbane Pipeline for the period 2007–2011. The charts provide a guide to the typical composition of the revenue components in a determination. In these decisions, returns on capital and depreciation account for almost three-quarters of regulated revenue. Operating and maintenance costs account for most of the balance.

### 9.3.3 New regulatory framework—2008

The regulatory framework for the gas transmission sector underwent significant change in 2008, including the transfer of regulatory functions to new bodies. In 2004, the Productivity Commission completed a review of the Gas Code, which proposed several changes to address industry concerns that the regime was deterring investment. This led to the development of a new National Gas Law and Gas Rules, with new provisions to enhance regulatory certainty for investment.

The new framework commenced on 1 July 2008. While the framework mirrors its predecessor in many respects, there are a number of changes to the regulation of transmission pipelines, including the following:

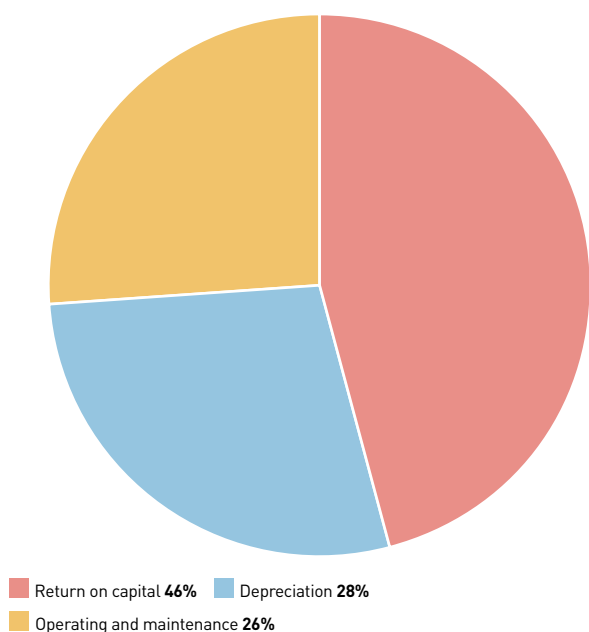
- > The AER replaces the ACCC as the transmission regulator, except in Western Australia.
- > For certain pipelines, ‘light’ regulation without upfront price and revenue regulation may apply. The National Competition Council has the role of determining whether a pipeline is subject to light regulation. The policy intent is that this form of regulation is suited to some transmission pipelines.<sup>13</sup> Where light regulation applies, the pipeline provider must publish access prices and other terms and conditions on its website. In the event of a dispute, an access seeker may request the regulator to arbitrate.

11 Firm forward-haulage services enable the customer to reserve capacity on a pipeline and receive a high priority service. Interruptible services are sold on an ‘as available’ basis and may be interrupted or delayed, especially if a pipeline has capacity constraints.

12 The Gas Rules also allow for an internal rate of return approach, in which total revenues are set to provide a rate of return for the pipeline on the basis of forecast demand and costs.

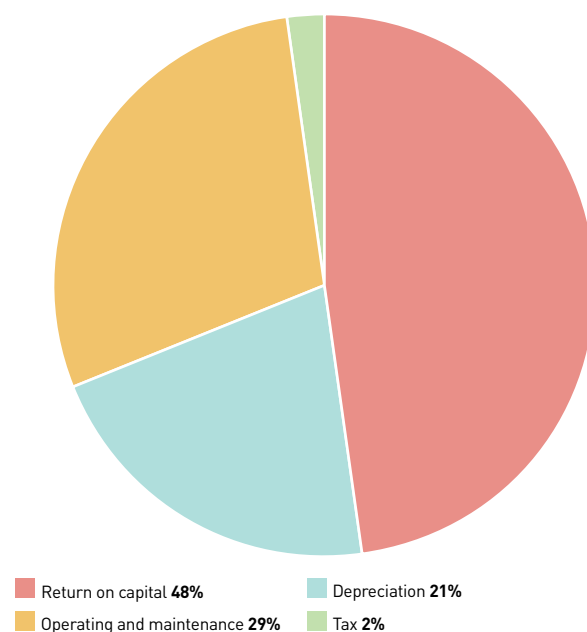
13 The Second Reading Speech for the National Gas (South Australian) Bill 2008 at p. 15 indicates that light regulation may be relevant for point-to-point transmission pipelines with a small number of users that each have countervailing market power.

**Figure 9.3**  
Revenue composition for the Victorian Transmission System (2008–12)



Source: ACCC, *Revised Access Arrangement by GasNet Australia Ltd for the Principal Transmission System*, Final Decision, 30 April 2008.

**Figure 9.4**  
Revenue composition for Roma to Brisbane pipeline (2007–11)



Source: ACCC, *Revised Access Arrangement by APT Petroleum Pipelines Ltd for the Roma to Brisbane Pipeline*, Final Decision, 20 December 2006.

- > Stronger incentives apply for investment in greenfields pipelines and international pipelines to Australia. Pipeline owners can apply for a determination that provides a 15-year exemption from coverage for greenfields pipelines and a 15-year exemption from price regulation for international pipelines.
- > New information-gathering powers apply in different circumstances and for different regulatory purposes and functions.
- > Mandated decision-making processes and timeframes for key regulatory decisions apply.
- > A new investment test that takes a cost-benefit analysis approach to assessing whether new facilities investment in existing pipelines may be rolled into the regulated asset base. The test aims to promote efficient investment in existing pipelines to meet rising demand for natural gas.<sup>14</sup>

14 The test allows for capital expenditure to be rolled into the regulated asset base if (1) the overall economic value is positive; or (2) the present value of incremental revenue is greater than the present value of the capital expenditure; or (3) the expenditure is necessary to maintain and improve safety of services, or maintain integrity of services or maintain a service provider's capacity to meet levels of demand for existing services.

In determining the overall economic value, only the economic value directly accruing to the service provider, gas producers, users and end users is to be considered. There are additional criteria for capital expenditure for Western Australian transmission pipelines that reflect the value that may accrue directly to electricity market participants from additional gas-fired generation capacity.

According to the Second Reading Speech, National Gas (South Australian) Bill 2008, the test is 'designed to capture net increases in producer and consumer surpluses in upstream and downstream gas markets, while also capturing the system security and reliability benefits that were considered by regulators to constitute system wide benefits. The test ... unambiguously includes benefits that accrue to users and end users of gas when they are able to purchase additional quantities of gas, or to gas producers when they are able to sell additional quantities of gas' (p. 18).

## 9.4 Investment in transmission pipelines

Investment in the transmission sector typically involves large and lumpy capital projects to expand existing pipelines (through compression, looping and extensions) or construct new pipelines.<sup>15</sup> Around \$3.8 billion has been invested in new transmission pipelines and expansions since 2000.<sup>16</sup> This represents a combination of substantial real investment in new infrastructure as well as rising resource costs in the construction sector.<sup>17</sup>

Figure 9.5 shows the underlying asset base and forecast investment over the current access arrangement period for a selection of pipelines where data is available.<sup>18</sup> The data for covered pipelines (shown as blue and pink bars in figure 9.5) is derived from regulatory determinations.

The estimates for non-covered pipelines (shown as green bars in figure 9.5) reflect initial construction costs derived from information in pipeline websites, corporate annual reports, prospectuses and media releases. While the owners of non-covered pipelines are not required to report publicly on investment data, the estimates indicate the scale of some recent investments in unregulated infrastructure.<sup>19</sup>

Figure 9.5 illustrates that the initial construction costs of transmission pipelines are substantial. Subsequent capital costs are relatively modest, except in the case of major capacity expansions (through the addition of compressors or duplication of sections of the pipeline through looping).

Figure 9.5 reflects significant expansion programs for the Victorian Transmission System and the Dampier to Bunbury Pipeline in Western Australia. There is little projected recurring investment for the Moomba to Sydney or Roma to Brisbane pipelines in their respective current regulatory periods. It should be noted that a major expansion may undergo a separate regulatory approval process, and may not be reflected in projected investment data.<sup>20</sup>

### 9.4.1 New pipelines and major expansions

Table 9.3 provides details of major investments since 2000, including those currently under construction.

Recently completed projects include:

- > the \$500 million SEA Gas Pipeline from Port Campbell (Victoria) to Adelaide, completed in 2003
- > the \$160 million North Queensland Gas Pipeline from Moranbah to Townsville, completed in 2004
- > the \$430 million stage 4 expansion of the Dampier to Bunbury Pipeline (Western Australia), completed in December 2006, and the \$660 million Stage 5A expansion, completed in April 2008
- > the \$114 million Telfer Pipeline, from Port Hedland to the Telfer Goldmine (Western Australia), completed in 2004
- > the \$70 million Corio Loop (Brooklyn to Lara) on the Victorian Transmission System, completed in 2008. The loop facilitates gas flow from Port Campbell (Otway Basin) to Melbourne.

15 Pipeline capacity can be increased by adding compressor stations to raise the pressure under which gas flows and by looping (duplicating) sections of the pipeline. Extending the length of the pipeline can increase line-pack (storage) capacity.

16 AER estimate derived from regulatory determinations and other public sources. The estimate comprises \$2.1 billion of investment in new pipelines and \$1.7 billion of capital expenditure to expand existing networks. See figure 9.5 and table 9.3.

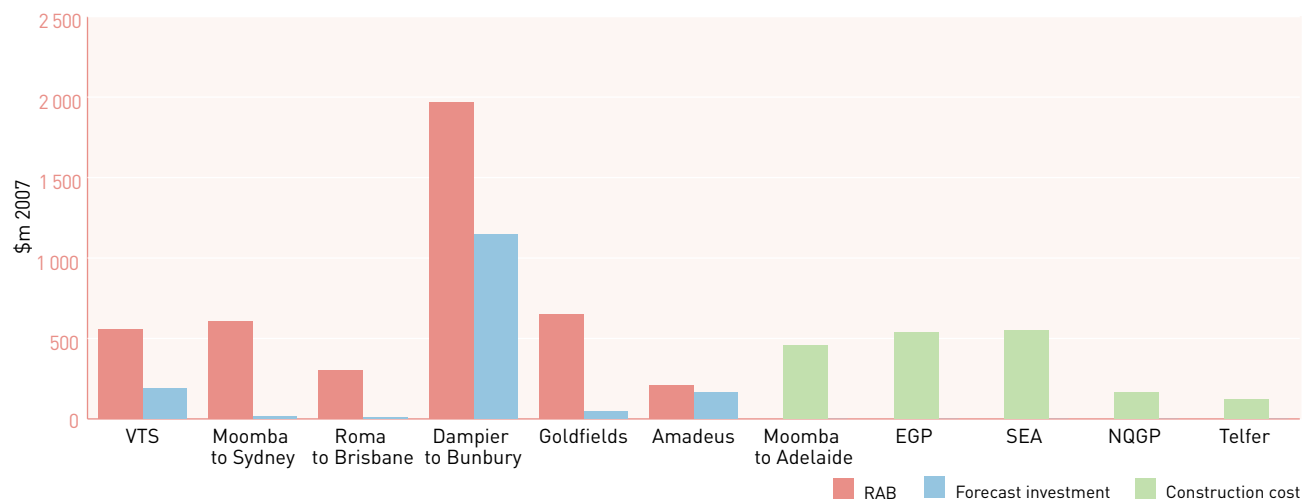
17 Some resource costs in the energy construction sector are rising faster than general inflation, as measured by the Consumer Price Index. Chapter 4 provides data on rising costs. See section 4.4, including figures 4.7 and 4.8.

18 The data is not available for several Queensland pipelines due to historical derogations that constrained the role of the regulator in revenue determination.

19 The National Gas Law established a National Gas Market Bulletin Board on 1 July 2008. The bulletin board provides system and market information on gas transmission pipelines, including non-covered pipelines, in southern and eastern Australia. Over time this may improve public information about the non-covered pipeline sector. Chapter 8 includes background information on the bulletin board.

20 An extension or expansion that is not approved in the access arrangement cannot be rolled into the asset base until the following access arrangement review.

Figure 9.5  
Transmission pipeline assets and investment (real)



VTS, Victorian Transmission System; EGP, Eastern Gas Pipeline; SEA, SEA Gas Pipeline; NQGP, North Queensland Gas Pipeline; RAB, regulated asset base.

Notes:

1. For covered pipelines, asset values are regulated asset bases as at the start of the current regulatory period. Investment is total forecast investment over the current regulatory period.
2. For non-covered pipelines, assets values are estimated construction costs.
3. All estimates are converted to June 2007 dollars.

Sources: Access arrangements for covered pipelines; company websites; press releases.

Current and planned activity suggests that the pipeline network will continue to expand at a rapid rate. The following major projects are currently under construction or advanced planning:

- > Stage 1 (\$140 million) of the QSN Link from Queensland to South Australia, scheduled for completion by early 2009. Epic Energy has committed to a \$64 million stage 2 expansion by 2013.
- > The continuing expansion of the Dampier to Bunbury Pipeline in Western Australia. The \$690 million Stage 5B expansion was announced in April 2008 (subject to finance).
- > A compressor to expand the capacity of the Eastern Gas Pipeline by more than 25 per cent by late 2008.
- > A two-staged expansion of the South West Queensland Pipeline, announced in 2007. Stage 1 (170 terajoules a day) is to be completed by 2009 and stage 2 (220 terajoules a day) is to be completed by 2013.
- > A progressive 20 per cent expansion of the Moomba to Sydney Pipeline to support the construction of the Uranquinty Power Station in New South Wales, commencing in 2008.
- > The \$170 million Bonaparte gas pipeline to connect the Blacktip gas field with the Amadeus Basin to Darwin Pipeline. The APA Group expects to complete the pipeline by early 2009.
- > A \$70 million pipeline from Berwyndale to Wallumbilla, to be operational by 2009. AGL Energy and Queensland Gas Company have agreed to develop the pipeline.<sup>21</sup>

21 ABARE *Energy in Australia 2008*, 2008; EnergyQuest, *Energy Quarterly Report*, November 2007 and February 2008.



**Table 9.3 Major gas pipeline investment since 2000**

PIPELINE	LOCATION	OWNER/PROPONENT	LENGTH (KM)	COST (\$ MILLION)	PROJECT COMPLETION
<b>COMPLETED</b>					
Eastern Gas Pipeline (Longford to Sydney)	Vic–NSW	Singapore Power International	795	450	2000
VicHub	Vic	Singapore Power International	n/a	n/a	2003
SEA Gas Pipeline (Port Campbell to Adelaide)	Vic–SA	International Power, APA Group, Retail Employees Superannuation Trust	680	500	2003
Kambalda to Esperance Pipeline	WA	WorleyParsons, ANZ Infrastructure Services	350	45	2004
Telfer Pipeline (Port Hedland to Telfer Goldmine)	WA	APA Group	443	114	2004
Tasmanian Gas Pipeline (Longford to Hobart)	Vic–Tas	Babcock & Brown Infrastructure	734	440	2002–05
North Queensland Gas Pipeline (Moranbah to Townsville)	Qld	AGL Energy/Arrow	391	160	2005
Dampier to Bunbury Stage 4 expansion	WA	DUET Group (60%), Alcoa (20%), Babcock & Brown Infrastructure (20%)	200	430	2006
Dampier to Bunbury Stage 5A expansion	WA	DUET Group (60%), Alcoa (20%), Babcock & Brown Infrastructure (20%)	570	660	2008
Corio Loop (expansion of Victorian Transmission System)	Vic	APA Group	57	70	2008
<b>UNDER CONSTRUCTION</b>					
QSN Link—Stage 1	Qld–SA and NSW	Epic Energy	180	140	2009
Eastern Gas Pipeline (addition of compressor)	Vic–NSW	Singapore Power International	Compressor [25% expansion]	n/a	2008
Bonaparte Gas Pipeline	NT	APA Group	285	170	2009
<b>COMMITTED</b>					
Berwyndale to Wallumbilla Pipeline	Qld	AGL Energy and Queensland Gas Company	115	70	2009
Dampier to Bunbury Stage 5B expansion	WA	DUET Group (60%), Alcoa (20%), Babcock & Brown Infrastructure (20%)	440	690	2010
South West Queensland Pipeline—Stage 1	Qld	Epic Energy	Compressor [expansion to 170 terajoules a day]	n/a	2009
South West Queensland Pipeline—Stage 2	Qld	Epic Energy	Compressor [expansion to 220 terajoules a day]	64	2013
Queensland Gas Pipeline expansion	Qld	Singapore Power International	25 petajoules	n/a	2010
QSN link—Stage 2 expansion	Qld–SA and NSW	Epic Energy	Compressors	64	2013
Moomba to Sydney Pipeline capacity expansion	NSW	APA Group	20% capacity expansion	100	progressive from 2008

n/a, not available.

Principal sources: ABARE, *Energy in Australia 2008*, 2008; EnergyQuest, *Energy Quarterly Report*, August 2008; company websites and press releases.

### 9.4.2 Effects on competition

Investment over the past decade has led to the development of an interconnected gas pipeline system covering New South Wales, Victoria, Queensland, South Australia, Tasmania and the ACT. New discoveries of coal seam gas in Queensland (see chapter 8) and rising gas demand in New South Wales led to Epic Energy's decision to construct the QSN Link, which, from 2009, will connect the Queensland network via Moomba with South Australia and New South Wales. Within Queensland, customers will continue to have choice between gas from the Cooper Basin and coal seam gas from southern Queensland.

While gas tends to be purchased from the closest possible source to minimise transportation costs, the expansion of the pipeline network provides energy customers with greater choice and enhances the competitive environment. Table 9.4 lists the pipelines and gas basins serving each major Australian market. The construction of new pipelines has opened the Cooper, Sydney, Gippsland, Otway and Bass basins to increased interbasin competition in south-eastern Australia. In some cases, it may only be possible to source gas from a particular basin using backhaul or swap arrangements (for example, such arrangements have been used to supply Sydney Basin gas into Victoria).<sup>22</sup>

While Santos, Origin Energy and BHP Billiton have production interests in several gas basins, the expansion of the pipeline network has provided new markets for smaller producers such as Beach Petroleum and Queensland Gas Company. The expansion of the pipeline network may also bring benefits in the wider energy sector. In particular, it may enhance competition in electricity markets by creating opportunities for further investment in gas-fired generators.

The extent to which new investment delivers competition benefits to customers depends on a range of factors, including the availability of natural gas and pipeline access from alternative sources. In particular, capacity constraints may limit access on

some pipelines. For example, the SEA Gas and Roma to Brisbane pipelines have tended to operate at or near capacity in recent years. It is up to access seekers to try to negotiate an expansion of capacity. For a covered pipeline, the regulator (or in Western Australia, a separate arbitrator) may be asked to arbitrate a dispute in relation to capacity expansions.

### 9.5 Pipeline tariffs

The National Gas Law requires that for covered pipelines, service providers must publish reference tariffs (prices) and other conditions of access. This information must be maintained on the service provider's website—either within its approved access arrangement or separately. There is no requirement for service providers to disclose tariffs for non-covered pipelines, or negotiated tariffs for covered pipelines agreed outside the reference tariffs. Some operators publish these tariffs on a website or make them available on request to access seekers.

Figure 9.6 estimates indicative tariffs for pipeline services on a selection of routes between gas basins and Australian capital cities and gas hubs (pipeline interconnection points). The tariffs are based on rates for firm forward-haulage services, and assume a 100 per cent swing factor.<sup>23</sup> The tariffs are enforceable for spare capacity in covered pipelines, but are only indicative for non-covered pipelines.

Figure 9.6 allows for some comparison of transmission pipeline costs from alternative gas basins into major centres. It should be noted that while some tariffs in figure 9.6 represent alternative routes to a particular market (for example, SEA Gas and Moomba to Adelaide provide alternative services to Adelaide), others do not (for example, gas sourced from the Cooper Basin into Brisbane must travel via *both* the Ballera to Wallumbilla and the Roma to Brisbane pipelines).

<sup>22</sup> Backhaul and swap arrangements are discussed in chapter 8, section 8.5.

<sup>23</sup> NERA, *The Gas Supply Chain in Eastern Australia*, June 2007. In gas contracts the swing factor (or 'load factor') measures a buyer's flexibility to vary the daily quantity shipped up to a predetermined maximum. A 100 per cent swing factor means that the average daily quantity shipped equals the maximum daily quantity.

**Table 9.4 Pipeline links between major gas sources and markets**

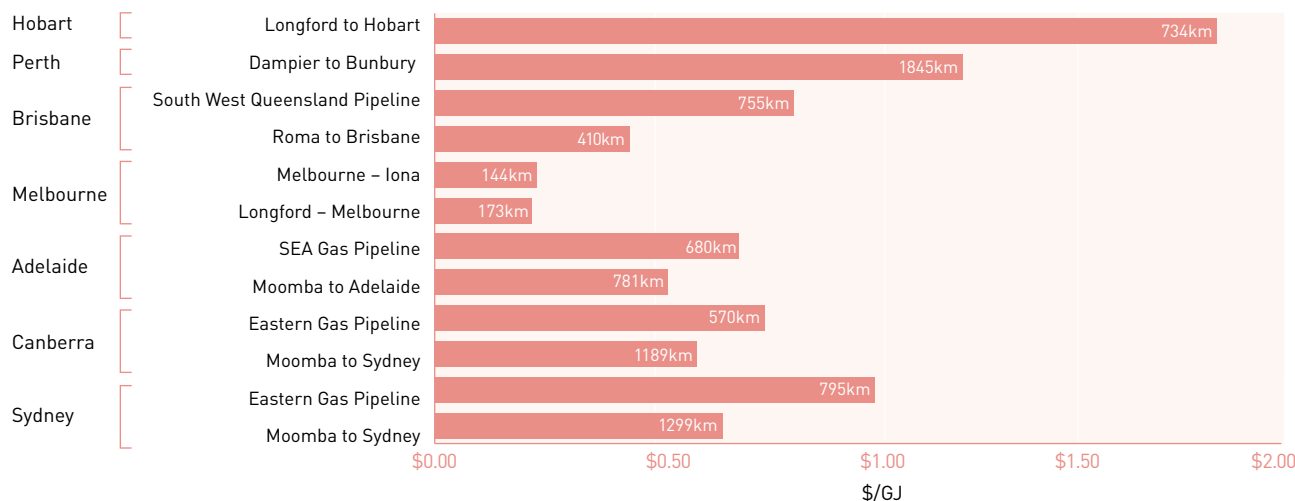
PIPELINE (OWNER)	GAS BASIN	PRODUCERS
<b>SYDNEY AND CANBERRA</b>		
Moomba to Sydney Pipeline (APA Group)	Cooper	Santos, Beach Petroleum, Origin Energy
	Sydney	AGL Energy, Sydney Gas
Eastern Gas Pipeline (Singapore Power International) NSW–Vic Interconnect (APA Group)	Gippsland, Otway, Bass	BHPB, ExxonMobil, Origin Energy, Santos AWE, Beach Petroleum, Mitwell
QSN Link (under construction) (Hastings)	Surat–Bowen	Mosaic, Origin Energy, Santos, Sunshine Gas, Arrow Energy, Mitsui, Molopo, Queensland Gas Company
<b>MELBOURNE</b>		
NSW–Vic Interconnect (APA Group)	Cooper (via MSP)	Santos, Beach Petroleum, Origin Energy
	Sydney	AGL Energy, Sydney Gas
Victorian transmission system (APA Group)	Gippsland, Bass, Otway	BHPB, ExxonMobil, Origin Energy, Santos AWE, Beach Petroleum, Mitwell
<b>TASMANIA</b>		
Tasmanian Gas Pipeline (Babcock & Brown Infrastructure)	Cooper (via MSP and NSW–Vic Interconnect), Gippsland, Otway, Bass	Santos, Beach Petroleum, Origin Energy
<b>BRISBANE</b>		
South West Queensland Pipeline (Epic Energy)	Cooper	Santos, Beach Petroleum, Origin Energy
Roma to Brisbane pipeline (APA Group)	Surat–Bowen	Mosaic, Origin Energy, Santos, Sunshine Gas, Arrow Energy, Mitsui, Molopo, Queensland Gas Company
<b>ADELAIDE</b>		
Moomba to Adelaide Pipeline (Epic Energy)	Cooper	Santos, Beach Petroleum, Origin Energy
SEA Gas Pipeline (APA Group, International Power, Retail Employees Superannuation Trust)	Otway and Gippsland	BHPB, ExxonMobil, Origin Energy, Santos AWE, Beach Petroleum, Mitwell
QSN Link (under construction) (Epic Energy)	Surat–Bowen	Mosaic, Origin Energy, Santos, Sunshine Gas, Arrow Energy, Mitsui, Molopo, Queensland Gas Company
<b>DARWIN</b>		
Amadeus Basin to Darwin (96% APA Group)	Amadeus	Magellan, Santos
<b>PERTH</b>		
Dampier to Bunbury Natural Gas Pipeline (DUET (60%), Alcoa (20%), Babcock & Brown Infrastructure (20%))	Carnarvon	Apache Energy, BHPB, BP, Chevron, ExxonMobil, Inpex, Kufpec, Santos, Shell, Tap Oil, Woodside Petroleum
	Perth	ARC Energy, Origin Energy
Parmelia Pipeline (APA Group)	Perth	ARC Energy, Origin Energy

Notes:

1. In some cases, it may only be possible to source gas from a particular basin using backhaul and swap arrangements. See chapter 8.
2. Some corporate names have been abbreviated or shortened.

Principal source: EnergyQuest, *Energy Quarterly Report*, August 2008.

**Figure 9.6**  
**Indicative pipeline tariffs to major centres**



Notes:

1. Tariffs are based on rates for firm forward-haulage services, and assume a 100 per cent swing factor.
2. Gas sourced from the Cooper Basin for Brisbane customers must travel via both the South West Queensland and the Roma to Brisbane pipelines.
3. Distances are indicative.

Sources: EnergyQuest, *Energy Quarterly Report*, February 2008 (Dampier to Bunbury Pipeline); NERA, *The Gas Supply Chain in Eastern Australia*, March 2008, p. 51 (other pipelines).

The significant differences between pipeline charges reflect various factors, including differences in transportation distances; differences in underlying capital costs; the age and extent of depreciation on the pipeline; technological and geographical differences; and the availability of spare pipeline capacity. In general, it is cheaper to transport gas into Sydney, Canberra and Adelaide from the Cooper Basin than it is from the Victorian coastal basins.

In practice, pipeline charges may vary considerably from the indicative rates set out in figure 9.6. In all cases it is open to an access seeker to try to negotiate discounts against published rates, including for non-standard requirements such as interruptible services.<sup>24</sup>

Conversely, some tariffs may be considerably higher than those set out in figure 9.6, especially if a pipeline is capacity-constrained and requires an expansion to make access possible. For example:

- > limited capacity on the Eastern Gas Pipeline led to tariffs of up to \$7.35 per gigajoule in 2008

- > capacity issues on the SEA Gas Pipeline led to a withdrawal of all offers to sell capacity to third parties in 2008.

Tariffs for interruptible services are typically 30 per cent higher than they are for firm transportation charges, but are paid on the actual quantities shipped rather than on reserved capacity.<sup>25</sup>

It should be noted that the relevant consideration for customers is the cost of delivered gas—the bundled cost of gas and transportation services—from alternative sources. The lead essay of this report (*Australia's natural gas markets: The emergence of competition?*) provides ACIL Tasman estimates of the composition of delivered gas prices in mainland state capital cities. Retail prices range from around \$15.50 per gigajoule in Melbourne to almost \$28 per gigajoule in Brisbane. Transportation through the high pressure transmission system is the smallest contributor to delivered costs for residential consumers in the capital cities. Transmission charges range from around 2 per cent of delivered gas

<sup>24</sup> Interruptible services are provided intermittently, depending on available pipeline capacity.

<sup>25</sup> NERA, *The Gas Supply Chain in Eastern Australia*, June 2007, p. 42 and p. 52. Backhaul arrangements are discussed in chapter 8 of this report.

prices in Adelaide and Melbourne to 7 per cent in Perth. For larger industrial users, this proportion rises steadily with scale as the fixed costs associated with downstream services are spread across much larger gas supply volumes.

## 9.6 Financial indicators

There is limited performance data for the gas transmission sector. Historically, performance reports have not been published for covered pipelines, although the National Gas Law enables the AER to publish such reports in the future. Regulatory determinations include some historical performance data, as well as forward projections.

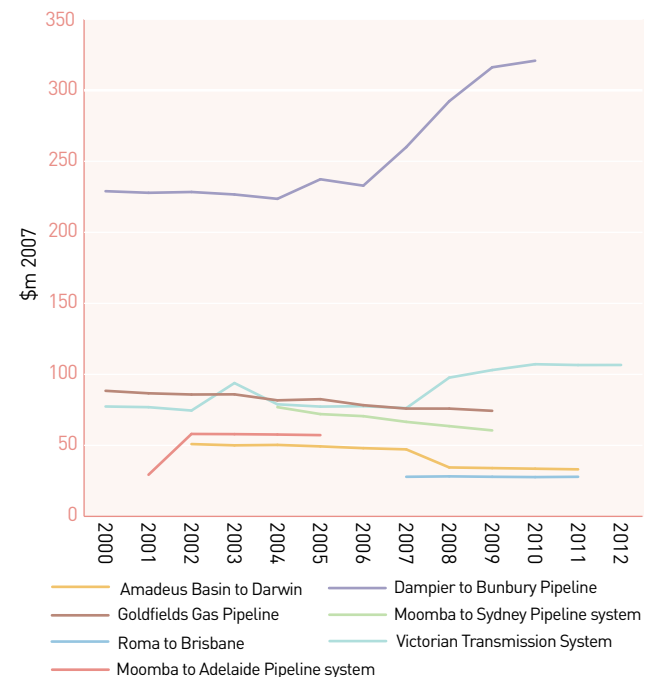
As noted, the owners of non-covered pipelines are not required to report publicly on historical performance or projected outcomes. The gas market bulletin board, which commenced in July 2008, will increase the availability of information about transmission pipelines—including capacity and supply information. The bulletin board covers most transmission pipelines in southern and eastern Australia, including non-covered pipelines.<sup>26</sup>

The limited financial data currently available mainly comprises financial forecasts in regulatory determinations for covered pipelines. There has been little historical reporting of service quality outcomes. The following sections set out summary data on forecast revenues and operating expenditure for covered pipelines.

### 9.6.1 Regulated revenues

Figure 9.7 charts annual revenues for a selection of transmission pipelines, based on forecasts in regulatory decisions. The variation in forecast revenues across pipelines reflects a range of factors, including differences in demand, age, capacity and length of the pipelines. The data indicates stable or modest revenue growth over time, consistent with rising demand and capital expenditure requirements. The data for the Dampier to Bunbury Pipeline reflects the impact of capital-related cost increases associated with the looping and extension of the pipeline.

**Figure 9.7**  
Regulated revenue forecasts for transmission pipelines



Notes:

1. All data is converted to June 2007 dollars.
2. The data for the Moomba to Adelaide Pipeline terminates after 2004 due to a revocation of coverage.

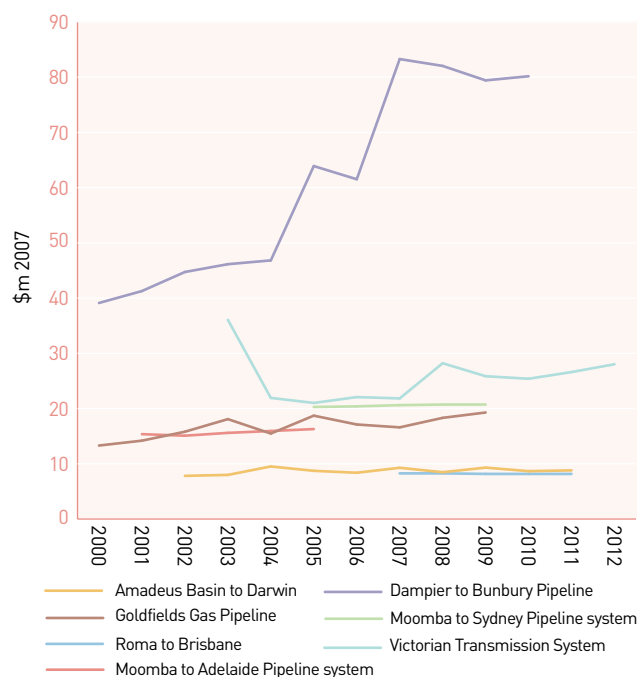
Sources: Approved access arrangement for each pipeline.

26 See chapter 8, section 8.7.

## 9.6.2 Operating expenses

Figure 9.8 charts the forecast operating and maintenance expenditure approved in access arrangements for major covered transmission pipelines. Consistent with the front-loaded nature of pipeline investment, the data suggests that transmission pipelines incur relatively stable and modest operating costs. The upward trend in operating expenses for the Dampier to Bunbury Pipeline reflects both the impact of a major capacity expansion (including the costs of operating new compressors) and rising resource costs in the energy construction sector.

**Figure 9.8**  
Forecast operating and maintenance expenditure for major pipelines



Notes:

1. All data is converted to June 2007 dollars.
2. The data for the Moomba to Adelaide Pipeline terminates after 2004, due to a revocation of coverage.

Sources: Approved access arrangement for each pipeline.