Draft Decision

Access Arrangement by AGL Pipelines (NSW) Pty Ltd for the Central West Pipeline

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Commissioners:
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Contents

Abbreviations and glossary of terms

access arrangement	arrangement for access to a pipeline provided by a pipeline owner/operator that has been approved by the regulator
AGLGN	AGL Gas Networks Limited
AGLP	AGL Pipelines (NSW) Pty Limited
CAPM	capital asset pricing model
the Code	National Third Party Access Code for Natural Gas Pipeline Systems
Commission	Australian Competition and Consumer Commission
covered pipeline	pipeline to which the provisions of the Code apply
CPI	Consumer Price Index
CRP	Central Ranges Pipeline
CWP	Central West Pipeline
DCC	Dubbo City Council
DOE	Department of Energy, NSW
DORC	depreciated optimised replacement cost
EAPL	East Australian Pipeline Ltd
EAPO	EAP Operations Pty Ltd
Forcenergy	Forcenergy Australia Pty Ltd
GJ	gigajoule
GPAL	Gas Pipelines Access Law
IPART	Independent Pricing and Regulatory Tribunal
KPI	key performance indicator
MDQ	maximum daily quantity
MRBEC	Mudgee Region Business Enterprise Centre
MSP	Moomba to Sydney Pipeline system

NPV	net present value
ORDO	Orana Regional Economic Development Organisation
ORG	Office of the Regulator-General, Victoria
PJ	petajoule (equal to 1 000 000 GJ)
TJ	terajoule (equal to 1 000 GJ)
TPA	Transmission Pipelines Australia Pty Ltd
WACC	weighted average cost of capital

Executive summary

On 31 December 1998 AGL Pipelines (NSW) Pty Limited (AGLP) submitted a proposed access arrangement and access arrangement information for the Central West Pipeline (CWP) to the Australian Competition and Consumer Commission (the Commission) for approval under the *National Third Party Access Code for Natural Gas Pipelines Systems* (the Code).

The CWP extends from Marsden to Dubbo in NSW and links part of AGL Gas Networks Limited's (AGLGN) NSW gas distribution network to the Moomba to Sydney Pipeline system (MSP). The CWP, which is owned by AGLP, became operational in 1998.

The access arrangement and access arrangement information describe the terms and conditions on which the company will make access to its pipeline available to third parties. The Commission's assessment of the proposed access arrangement is being conducted through a process of public consultation, and is based on information provided by AGLP and interested parties.

Central issues for any access arrangement are likely to be the expected or target revenues accruing to the service provider under the regulatory regime and any incentive mechanisms that may encourage the service provider to achieve a higher performance than expected. As transmission pipelines are capital intensive businesses, the determination of regulatory revenues (and hence tariffs) largely rests on the valuation of the regulatory asset base and the allowed rate of return.

The initial capital base

The CWP is still at the beginning of its useful life as it has only recently been commissioned. Consequently crucial issues for an established pipeline, such as to the previous history of charges levied, are of little importance here, and a range of valuation methodologies recognised under the Code produces quite similar values for the initial capital base.

The Commission proposes to accept AGLP's valuation approach, which results in a valuation of the initial capital base of $28.43 million (after adjustments are made to reflect amendments proposed in this *Draft Decision*). The methodology is based on the optimised construction cost of the CWP, then adjusted to allow for the one year period between construction and the establishment of the initial capital base.

Under AGLP's price path net present value (NPV) methodology, expected early under-recovery of costs may be recouped later in the life of the pipeline by means of a mechanism that incorporates economic depreciation in the regulatory asset base. The regulatory asset base grows from an adjusted capital cost of $25.93 million (30 June 1998) to the initial capital base valuation of $28.43 million (30 June 1999), and subsequently to a residual value of $38.63 million (30 June 2004). The same outcome would have resulted if the initial capital base had been established a year earlier. Notionally, the value of the initial capital base has been determined by carrying over the residual value at the end of the first year of the CWP's operations.

Regulatory framework

A major issue for the Commission in assessing the proposed access arrangement has been the status of the CWP which was recently constructed as a greenfields project without significant foundation contracts.

The Commission acknowledges the uncertainty that can arise in the early phase of such a project, in particular if take-up targets are not achieved. It is for this reason that it proposes to accept AGLP's NPV approach incorporating economic depreciation which is designed to protect AGLP from early under-performance by providing it with the opportunity, if necessary, to recoup those costs later in the life of the CWP.

While the potential profitability of the CWP will largely hinge on the throughput volumes AGLP achieves over time, the regulated revenue is dependent on a recovery mechanism which is based on forecast costs and revenues during the initial access arrangement period. Although the Commission is concerned that any excess caution by AGLP when developing its demand projections might lead to windfall gains to AGLP and excessive prices to users, it proposes to accept these forecasts for the initial access arrangement period subject to the access arrangement being amended to require AGLP to submit revisions to the reference tariffs in the event that forecasts are exceeded by a specified margin. To the extent that these forecasts are likely to be conservative, the risk to AGLP is reduced.

The Commission has taken the current immaturity and low contracted capacity of the CWP into consideration when assessing the elements of the proposed access arrangement. Incentive mechanisms and AGLP's proposed fixed principle are discussed later.

For the initial access arrangement period, the Commission proposes to accept, in addition to the recovery mechanism, a range of mechanisms and other proposals put forward by AGLP which are expected to act to its advantage. First, while the basis for single zone pricing is examined in the body of this *Draft Decision*, a major outcome is that it will allow AGLP to charge what it considers the market will bear throughout the regions served by the CWP. Second, no efficiency improvement has been factored into costs over time. Third, the Tamworth extension, if it eventuates, would not affect existing tariffs, and so reduce possible uncertainty about tariffs towards the end of the initial access arrangement period.

The rate of return

The Commission has followed essentially the same methodology in determining the weighted average cost of capital (WACC) as it developed through an extensive consultative process as part of the Victorian Decisions. Allowances have been made as appropriate to accommodate factors such as differences in the prevailing conditions in the market for funds and the risk involved in delivering the reference service.

The Commission has considered in particular the appropriateness of applying additional allowances to the capital asset pricing model (CAPM) framework because of the perceived riskiness of the CWP as a newly constructed project with few major foundation customers. AGLP has proposed that the pre-tax real WACC should be set at 10.0 per cent.

The Commission considers that the mechanisms described above will substantially act to reduce any special risks related to the CWP's recent greenfields status and that it is inappropriate to apply additional factors to the CAPM framework and approve the WACC, or close to the WACC, proposed by AGLP. The CAPM parameter values used in this *Draft*

Decision are those considered most appropriate for the CWP as a stand-alone business. These generally fall near the middle of a narrow range based on the information available, however a few, such as the equity beta and the margin on debt, have been chosen to give AGLP the benefit of associated uncertainty. The Commission has concluded that the pre-tax real WACC should be set at 7.5 per cent. The corresponding post-tax nominal cost of equity and post-tax nominal WACC are 14.0 per cent and 7.0 per cent respectively.

Tariff levels

Under the AGLP proposal, tariffs would rise in real terms in each year of the first access arrangement period. AGLP has advised that tariffs for the years up to the year ending 30 June 2001 have already been committed to by AGLP and communicated to the market.

Based on the pre-tax real WACC proposed by AGLP of 10.0 per cent and the other assumptions underpinning the access arrangement, tariffs would then be expected to increase at an overall rate that is consistent with CPI + 1.36 per cent. Tariffs would rise substantially faster than inflation over the rest of the life of the pipeline.

Considerably lower tariffs are consistent with the rate of return proposed by the Commission. The Commission proposes to accept the tariffs posited by AGLP for the years up to the year ending 30 June 2001. The tariffs would then remain, in real terms, at this level for the remainder of the first access arrangement period.

Based on AGLP's assumptions, but with a pre-tax real WACC of 7.5 per cent, tariffs would be expected to remain in real terms at approximately their 2000/2001 levels for the rest of the life of the pipeline. It should be noted, however, that tariffs in future access arrangement periods will depend on information available at the time of reviews. If AGLP's projections prove to be conservative, lower future tariffs may be justified. Conversely, if AGLP does not achieve these projections, higher future tariffs may be justified.

Non-capital costs

AGLP has contracted EAP Operations Pty Ltd (EAPO), which carries out operations and maintenance activities on the MSP, to undertake these activities on the CWP. Corporate services are provided by other companies in the AGL Group to AGLP, which does not have any direct employees. AGLP contends that these arrangements allow it to achieve significantly lower costs than would be possible if it operated the CWP on a stand-alone basis.

Data on expenditure on operations and maintenance and corporate services over the access arrangement period are based on forecasts and other assumptions as the CWP as yet has little operational history. The Commission has assessed these costs against a limited range of comparators and concluded that they are reasonable over the long term and can be considered to reflect costs that would be incurred by a prudent service provider acting efficiently under the framework proposed by AGLP. Nonetheless, the Commission is concerned that AGLP's contracting out of non-capital expenditure activities to EAPO and other businesses within the AGL Group has the effect of reducing the transparency of these operations.

Tariff structure

AGLP has proposed a single pricing zone for the CWP which it stated is necessary in order to encourage sufficient demand in Forbes, Parkes, Narromine and Dubbo to justify the total investment. AGLP states that this approach reflects a regional infrastructure development objective of ensuring that no local community will be at a price disadvantage to any other.

The Commission has derived alternative tariffs for the CWP using distance-based and stand-alone methodologies, under a range of plausible assumptions. The assessment confirms AGLP's contention that alternative tariff methodologies would be likely to result in a delivered price for gas that is uncompetitive with alternative fuels. The Commission considers it unlikely that the pipeline would have been extended to Dubbo and some of the towns under these tariff structures, and that without the combined volumes of the four centres the pipeline would not be viable. The Commission proposes to accept the proposed single pricing zone for the CWP during the initial access arrangement period.

AGLP has proposed a one-part commodity tariff for the initial access arrangement period. While more complex structures that incorporate capacity charges would normally be expected to be more efficient, capacity constraints are unlikely to occur on the CWP during the initial access arrangement period. AGLP considers that a simple tariff structure based on throughput will encourage new gas users, which will help raise demand. AGLP states that it expects that the pattern of demand will be reasonably established by the time of the scheduled review, and that it expects to introduce capacity charges in the second access arrangement period. The Commission proposes to accept the throughput tariff for the initial access arrangement period.

Underlying forecasts

AGLP's regulated revenues are based on a range of assumptions. Apart from capital costs incurred in construction of the CWP, projections of future costs and revenues for the CWP are based on a short operational history and are generally of unknown reliability. The Commission is concerned that any significant inaccuracy in the demand projections underpinning the revenues and reference tariffs would mean that those revenues and reference tariffs would have been set at an inappropriate level.

As AGLP's costs are almost exclusively fixed, its financial performance will be very sensitive to any disparities between the throughput projections approved by the Commission in the access arrangement and the throughput that AGLP achieves.

The Commission's concern was noted earlier that any conservatism in AGLP's demand projections is likely to lead to excessive prices to users and windfall gains to AGLP. However, the Commission is currently unconvinced that there is sufficient information available to support a substantial revision to the throughput projections. While the Commission proposes to accept these forecasts for the initial access arrangement period, it has specified a mechanism to require AGLP to submit revisions to the reference tariffs in the event that these forecasts prove to be substantially lower than the volumes shipped on the CWP.

Incentive mechanisms and AGLP's proposed fixed principle

AGLP has nominated two incentive mechanisms: the price path approach whereby tariffs set in the access arrangement apply regardless of whether underlying estimates are realised; and

the level of the reference tariff, which it considers enables it to develop the market for reference and other services.

In addition, AGLP has proposed that, as a fixed principle, reference tariffs would be determined on the basis of NPV methodology incorporating economic depreciation with a residual value at 30 June 2004 be $45.12 million (in dollars of that day). Consequently, tariffs in future access arrangement periods, which would be based on this value, would provide the opportunity to recover costs that have not been recovered by tariffs in the initial access arrangement period.

The Commission considers that incentive mechanisms can have an important role in encouraging a service provider to achieve high performance and to develop the market. Under the price path approach, if AGLP earns greater revenue during the access arrangement period than projected, or incurs lower costs, the benefit flows entirely to AGLP. Conversely, AGLP bears the risk of any under performance.

As shown in the table below, AGLP's proposed price path commences with comparatively low tariffs, a structure that AGLP contends is designed to encourage early connection by prospective users. While the Commission had some initial concerns about potential competition, efficiency and equity issues arising from early tariffs that would be substantially less in real terms than the average tariff charged over time on the CWP, the lower revenue requirement that would result from amendments proposed in this *Draft Decision* allows a significant reduction in tariffs towards the end of the access arrangement period. As noted earlier, the Commission proposes to accept AGLP's proposed tariffs for the years up to 30 June 2001. The tariffs in subsequent years would remain approximately constant in real terms.

Proposed nominal tariffs in $/GJ of throughput for years ending 30 June

	1999	**2000**	**2001**	**2002**	**2003**	**2004**
AGLP proposal	$1.78	$1.98	$2.17	$2.37	$2.58	$2.78
Draft Decision	$1.78	$1.98	$2.17	$2.22	$2.27	$2.32

While the Commission generally supports the mechanisms proposed by AGLP, it notes that the residual value of $45.12 million in the proposed fixed principle was derived as a function of a number of market variable elements (including forecast sales of services, the CPI, capital costs and non-capital costs). The Commission considers that this proposal is inconsistent with the requirement of section 8.48 of the Code that a market variable element cannot be a fixed principle. While the Commission accepts the NPV methodology adopted by AGLP for the CWP, it cannot accept this proposed fixed principle as part of the CWP access arrangement. Accordingly, the Commission proposes that the fixed principle be removed from the access arrangement.

Proposed amendments

The Commission has proposed the following amendments to the access arrangement.

Proposed Amendment – A2.1

In order for AGLP's access arrangement for the Central West Pipeline to be approved, the value of the initial capital base must be adjusted to reflect the impact of changes proposed in this *Draft Decision* on AGLP's costs and revenues and on the assumed inflation rate.

Proposed Amendment – A2.2

In order for AGLP's access arrangement for the Central West Pipeline to be approved, clause 3 of section 4 of the access arrangement (the reference tariff policy) must state that new facilities investment that does not satisfy the requirements of section 8.16 of the Code may be undertaken by AGLP and may be included in the capital base where this investment or part of this investment satisfies section 8.18 of the Code.

Proposed Amendment – A2.3

In order for AGLP's access arrangement for the Central West Pipeline to be approved, the reference tariff policy must be amended to allow the Commission, at the commencement of the subsequent access arrangement period, to review, and if necessary to adjust, the asset base for wholly or partially redundant assets.

Proposed Amendment – A2.4

In order for AGLP's access arrangement for the Central West Pipeline to be approved, the inflation index referred to throughout the access arrangement must be the CPI (All Groups – weighted average of eight capital cities).

Proposed Amendment – A2.5

In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must implement into its tariff model a forecast inflation rate of 2.3 per cent per year for each year of the access arrangement period.

In addition, the tariff model must incorporate the observed inflation rate for the financial year 1998-1999 where appropriate.

Proposed Amendment – A2.6

In order for AGLP's access arrangement for the Central West Pipeline to be approved:

(i) the WACC estimates and associated parameters forming part of the access arrangement must be amended to more accurately reflect the current financial market settings. In particular, the pre-tax real WACC should be set at 7.5 per cent and the associated inflation assumption set at 2.3 per cent; and

(ii) the target revenues and forecast revenues must be based on these new parameters, including the X factor of -0.01 per cent, and applied in the derivation of individual tariffs.

Proposed Amendment – A2.7

In order for AGLP's access arrangement for the Central West Pipeline to be approved, the reference tariffs are to be calculated by a CPI-X adjustment mechanism, as defined in the *Draft Decision*, from 1 July 2001. The value of X is to be -0.01 per cent per year.

Proposed Amendment – A2.8

In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must remove the fixed principle from the access arrangement.

Proposed Amendment – A3.1

In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must clearly specify that schedule 2 of the access arrangement prevails over the standard service agreement.

Proposed Amendment – A3.2

In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must include in the access arrangement the prudential requirements relevant for users and prospective users.

Proposed Amendment – A3.3

In order for AGLP's access arrangement for the Central West Pipeline to be approved, the words 'AGL Group' must be substituted for 'AGLP' in section 2.3(a).

In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must amend the access arrangement to state that AGLP will seek to amend its access arrangement following any recommendations by the Gas Quality Specification Working Group to adopt more flexible gas specifications in south-eastern Australia.

Proposed Amendment – A3.5

In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must specify in the access arrangement that it will notify the Commission of the commencement of services provided through expansions and extensions to the Central West Pipeline.

Proposed Amendment – A3.6

In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must state in the access arrangement that it will submit revisions to the reference tariffs to the Commission in the event that in the 12 month periods ending 30 June 2001, 2002 and 2003:

- throughput volumes achieved respectively exceed 900 TJ, 1 178 TJ or 1 455 TJ; and

- the revenue achieved in the corresponding period exceeds the forecast revenue (reflecting the impact of changes proposed in this *Draft Decision* on AGLP's costs and revenues and on the assumed inflation rate) by at least 20 per cent.

The access arrangement will:

- require that the level of the revised reference tariffs submitted to the Commission as a consequence of this amendment will be consistent with the revenue assumptions accepted by the Commission when it approves this access arrangement, coupled with revised demand forecasts that are reasonable in the light of available information;

- require AGLP to provide to the Commission details of volumes and revenues achieved in each 12 month period to 30 June by the subsequent 30 August, and to submit revisions to the reference tariffs, if required, by the latter date; and

- clearly state that, in the event of approval by the Commission of revised reference tariffs, users and prospective users of the CWP would be offered the revised reference tariffs in place of the originally approved tariffs, subject to the requirements of section 2.47 of the Code that persons not be deprived of certain existing contractual rights.

Any natural gas that is transmitted through the proposed extension to Tamworth will be excluded from the throughput volumes and revenues for the purposes of this mechanism.

1. Introduction

On 31 December 1998 AGL Pipelines (NSW) Pty Limited (AGLP) submitted a proposed access arrangement and access arrangement information for the Central West Pipeline (CWP) to the Australian Competition and Consumer Commission (the Commission) for approval under the *National Third Party Access Code for Natural Gas Pipelines Systems* (the Code).[1] The CWP extends from Marsden to Dubbo in NSW and links part of AGL Gas Networks Limited's (AGLGN) NSW gas distribution network to the Moomba to Sydney Pipeline system (MSP). The CWP, which is owned by AGLP, became operational in 1998.

The access arrangement and access arrangement information describe the terms and conditions on which the company will make access to its pipeline available to third parties. The Commission's assessment of the access arrangement is being conducted in accordance with the requirements set out in the Code and is based on information provided by AGLP and interested parties.

AGLGN has lodged access arrangements relating to its NSW and ACT gas distribution operations respectively with the Independent Pricing and Regulatory Tribunal (IPART) and the Independent Pricing and Regulatory Commission. The regulators have, where appropriate and possible, coordinated the assessment and approval process for these arrangements.

This document sets out the Commission's draft decision and related proposed amendments under section 2.13 of the Code for AGLP's access arrangement.

This introduction includes:

- a description of the current assessment process;
- a description of the NSW gas industry structure and regulatory framework;
- an outline of the CWP access arrangement submitted for approval;
- a summary of the criteria for assessing an access arrangement under the Code;
- a summary of the consultative process undertaken as part of the Commission's assessment; and
- the Commission's draft decision, and an outline of the path to the Commission's final approval.

[1] Under section 2.2 of the Code, AGLP was obliged to submit its proposed access arrangement to the Commission within 90 days of the commencement of the Code, which in the case of NSW occurred on 14 August 1998. AGLP sought an extension of this period to allow AGL to coordinate its submission with the access arrangements for AGLGN's NSW and ACT gas distribution business. The Commission decided on 28 October 1998, pursuant to section 7.19 of the Code, to grant an extension until 31 December 1998.

1.1 The current assessment process

The proposed access arrangement and access arrangement information set out the terms and conditions on which AGLP will make access to the CWP available to third parties during the initial access arrangement period which AGLP proposes will last approximately five years. AGLP will, however, have the discretion to submit revisions earlier than the scheduled review, and has indicated that it will do so in the event that it extends the CWP to Tamworth.

The Commission's current assessment process relates to the initial access arrangement period. However, it will also impact on subsequent access arrangement periods. In particular, AGLP has proposed a fixed principle that would not be subject to change, without AGLP agreement, when AGLP submits reviews to the access arrangement.

Under the Code the Commission is required to:

- inform interested parties that it has received the access arrangement from AGLP;
- publish a notice in a national daily paper which at least describes the covered pipeline to which the access arrangement relates; states how copies of the documents may be obtained; and requests submissions by a date specified in the notice;
- after considering submissions received, issue a draft decision which either proposes to approve the access arrangement or not to approve the access arrangement and state the amendments (or nature of the amendments) which have to be made to the access arrangement in order for the Commission to approve it. Submissions will be sought again following release of the Commission's draft decision;
- after considering any additional submissions and a revised access arrangement (if submitted), issue a final decision that it either approves or does not approve the access arrangement (or revised access arrangement) and states the amendments (or nature of the amendments) which have to be made to the access arrangement (or revised access arrangement) in order for the Commission to approve it; and
- if the amendments are satisfactorily incorporated in a revised access arrangement, issue a final approval. If not, the Commission must draft and approve its own access arrangement.

1.2 The NSW gas industry structure and regulatory framework

1.2.1 Structure of the gas industry in NSW

Briefly, the industry comprises:

- the Cooper Basin Producers in South Australia which have supplied natural gas to NSW since 1976 via the MSP. The Interconnect pipeline which links the NSW and Victorian natural gas systems was commissioned in 1998 and provides a further potential source of gas supply into NSW from the Gippsland Basin. However, as a result of the Longford processing plant explosion, gas flows are likely to be mainly southwards in the short term. In addition, Duke Energy International has announced its plans to construct the Eastern Gas Pipeline to ship gas from the Bass Strait to Port Kembla and Sydney with operation expected by September 2000;
- the MSP, owned by East Australian Pipeline Ltd (EAPL), which provides gas transmission services that are marketed by East Australian Pipeline Marketing Pty Ltd (EAPM). The

MSP transmits gas from the Cooper Basin to the city gate at Wilton, with spur lines to several regional centres (including Lithgow, Canberra, Yass and Wagga Wagga);

- the CWP which is a small (255 km) spur line from Marsden to Dubbo, the subject of this access arrangement;
- AGLGN which distributes natural gas to most major centres in NSW, including Sydney, Newcastle and Wollongong;
- the Albury Gas Company Ltd which distributes natural gas in Albury, and Great Southern Energy Gas Networks Pty Ltd which distributes natural gas in Wagga Wagga; and
- 21 authorised suppliers of gas (including retailers).

The Australian Gas Light Company (AGL) is a publicly listed corporation, which together with its wholly owned subsidiaries, is referred to as the 'AGL Group'.[2] AGL is also the majority shareholder of EAPL and EAPO. The AGL Group provides general, administration and marketing services to AGLP. EAPO, which carries out operations and maintenance activities on the MSP, is also contracted by AGLP to undertake these activities on the CWP. AGLP does not have any employees.[3]

1.2.2 Regulatory framework

The main legislation and relevant documents regulating access to the NSW gas transmission industry are:

- the Code, under which transmission service providers are required to submit access arrangements to the Commission for approval;
- the *Gas Pipelines Access (South Australia) Act 1997;*[4] and
- the *Gas Pipelines Access (New South Wales) Act 1998*.[5]

Code and appeals bodies in NSW with respect to transmission pipelines are:

- the Commission - Regulator and Arbitrator;[6]
- the National Competition Council - Code Advisory Body;
- the Commonwealth Minister - Coverage Decision Maker;
- the Federal Court – judicial review; and
- the Australian Competition Tribunal – administrative appeal.

IPART is currently regulator and arbitrator in NSW with respect to distribution pipelines. IPART is at present reviewing AGLGN's 1997 access undertaking. The access undertaking, which was approved under the NSW Third Party Access Code for Natural Gas Distribution Networks (NSW Code), is deemed to be an access arrangement in force under the Code. The review is being conducted under the Code, but subject to a number of provisions of the NSW

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2 AGLP submission, 19 March 1999, p. 1.

3 Supplementary Access Arrangement Information, 25 June 1999, p. 5.

4 South Australia acted as lead legislator for the national gas access legislation.

5 NSW subsequently enacted legislation applying the SA legislation in NSW.

6 The Commission is also regulator and arbitrator with respect of transmission pipelines in the other states and territories with the exception of Western Australia.

Access Code. This review also includes a number of transmission pipelines that are deemed to be distribution pipelines until 1 July 2002. These are: Wilton to Horsley Park; Horsley Park to Plumpton; Plumpton to Killingworth; Killingworth to Walsh Point; and Wilton to Wollongong.

1.3 Central West Pipeline access arrangement

Section 2 of the Code specifies that the service provider is required to submit a proposed access arrangement (and associated access arrangement information) to the regulator for approval. The service provider is defined as 'a person who owns (whether legally or equitably) or operates the whole or any part of a Pipeline'. AGLP currently owns the CWP. The access arrangement provides for ownership of the CWP to change over time.[7] The Commission expects that it will receive notification of any change in ownership or operation of the CWP as those changes occur.

Development of the Central West project, which includes the transmission and distribution of gas to the Forbes, Parkes, Narromine and Dubbo environs, was facilitated through the Federal Government's Regional Development Program, which made funding of up to $2 million available to the Orana Regional Economic Development Organisation (ORDO).[8]

The CWP transports gas from the Marsden off-take on the MSP to five off-take points at Forbes, Parkes, Narromine, Dubbo and Dubbo West. AGLGN reticulates the delivered gas in its systems in the Forbes, Parkes, Narromine, Dubbo and Wellington local government areas.

Construction of the CWP commenced in late 1997, with the sections from Marsden to Parkes and from Parkes to Dubbo being commissioned on 29 April 1998 and 1 August 1998 respectively.[9] Gas first flowed through the Forbes, Parkes and Dubbo off-takes on 1 May 1998, 2 May 1998 and 4 August 1998 respectively. As the CWP came into operation shortly before 14 August 1998 when the Code first came into operation in NSW it is considered to be an existing pipeline for the purposes of valuing the initial capital base.

The CWP has a maximum operating pressure of 10.2MPa. It is currently uncompressed, with a maximum delivery capability of 10.1 TJ/day (3.7 PJ/year). Its outside diameter is 219.1mm (eight inch) for the southern leg (30km) from Marsden to Alectown, and 168.3mm (six inch) for the remaining 125km to Dubbo.[10]

1.4 Criteria for assessing an access arrangement

The Commission may approve a proposed access arrangement only if it is satisfied that it contains the elements and satisfies the principles set out in sections 3.1 to 3.20 of the Code, which are summarised below. An access arrangement cannot be opposed on the basis that it

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7 Access Arrangement, Schedule 1: Definitions, p. 19.

8 ORDO later became Orana Development and Employment Council (ODEC). AGLP Revised Access Arrangement Information, p. 1.

9 AGLP, Additional General Information, 25 June 1999, p. 4.

10 Revised Access Arrangement Information, p. 21.

does not address a matter that section 3 of the Code does not require it to address. Subject to this, the Commission has a broad discretion in accepting or opposing an access arrangement.

An access arrangement must include a policy on the service or services to be offered which includes a description of the service(s) to be offered. The policy must include one or more services that are likely to be sought by a significant part of the market and any service(s) which in the Commission's opinion should be included in the policy. To the extent practicable and reasonable, users and prospective users must be able to obtain those portions of the service(s) that they require, and the policy must also allow for a separate tariff for an element of a service if requested.

An access arrangement must also contain one or more reference tariffs. A reference tariff operates as a benchmark tariff for a particular service and provides users with a right of access to the specific service at the specific tariff. Tariffs must be determined according to the reference tariff principles in section 8 of the Code.

An access arrangement must also include the following elements:

- terms and conditions on which the service provider will supply each reference service;
- a statement of whether a contract carriage or market carriage capacity management policy is applicable;
- a trading policy that enables a user to trade its right to obtain a service (on a contract carriage pipeline) to another person;
- a queuing policy to determine users' priorities in obtaining access to spare and developable capacity on a pipeline;
- an extensions/expansions policy to determine the treatment of an extension or expansion of a pipeline under the Code;
- a date by which revisions to the arrangement must be submitted; and
- a date by which the revisions are intended to commence.

In considering whether an access arrangement complies with the Code, the Commission must (pursuant to section 2 of the Code) take into account:

- the legitimate business interests and investment of the service provider;
- firm and binding contractual obligations of the service provider or other persons (or both) already using the covered pipeline;
- the operational and technical requirements necessary for the safe and reliable operation of the covered pipeline;
- the economically efficient operation of the covered pipeline;
- the public interest, including the public interest in having competition in markets (whether or not in Australia);
- the interests of users and prospective users; and
- any other matters that the Commission considers are relevant.

1.5 Consultative process

Pursuant to the requirements of the Code, in January 1999 the Commission published a notice in a national newspaper and informed interested parties that it had received AGLP's gas transmission access arrangement, and invited, received and considered submissions from interested parties.

In addition, in order to help foster the consultative process, the Commission published the notice in regional newspapers, and released an Issues Paper in February 1999.

The central themes put forward by interested parties in the submissions have concerned the proposed single pricing zone and reasonableness of tariffs.

AGLP provided additional access arrangement information in February and June 1999.

1.6 Draft decision

The Commission has now made a draft decision under section 2.13(b) of the Code that it proposes not to approve the CWP access arrangement in its current form. In order for the Commission to approve a revised access arrangement under section 2.16(c), the Commission must be satisfied that the amendments specified in this *Draft Decision* have been incorporated. These proposed amendments are set out in the relevant sections in the *Draft Decision* and in the Executive Summary.

The Commission is now seeking submissions from interested parties on the Commission's draft decision on the CWP access arrangement. All submissions must be delivered to the Commission by 8 October 1999 and should be addressed to:

Mr Mark Pearson
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All submissions must be in writing, and preferably should also be supplied in electronic form (compatible with Microsoft Word 97 for Windows). They may be e-mailed to the project manager, Michael Walsh, at 'michael.walsh@accc.gov.au'.

Final decision

After considering submissions and any revised access arrangement submitted by the service provider, the Commission must issue a final decision (pursuant to section 2.16 of the Code) which:

(a) approves the access arrangement; or

(b) does not approve the access arrangement or revised access arrangement and provides reasons why it does not approve the (revised) access arrangement and states the amendments (or nature of the amendments) which would have to be made to the (revised) access arrangement in order for the Commission to approve it and the date by which a revised access arrangement must be submitted; or

(c) approves a revised access arrangement.

In the event that the Commission issues a final decision (pursuant to section 2.16(b) of the Code) which does not approve the access arrangement, the Code (sections 2.18-2.19) requires the service provider to submit a revised access arrangement to the Commission for consideration. However, if the service provider does not submit a revised access arrangement by the required date, or does so and the Commission is not satisfied it incorporates amendments specified in the final decision, the Commission must draft and approve its own access arrangement (section 2.20 of the Code). Such a decision is subject to merits review by the Australian Competition Tribunal under the Gas Pipelines Access Law (GPAL).

The remainder of this *Draft Decision* comprises: the Commission's analysis of the determination of reference tariffs (chapter 2); the assessment of the access arrangement in terms of the non-tariff elements in the Code (chapter 3); information provision and performance indicators (chapter 4); and chapter 5 sets out the Commission's draft decision.

The Commission has identified amendments to the proposed access arrangement that must be satisfactorily incorporated in a revised access arrangement in order for it to be approved (under section 2.16(c) of the Code). These proposed amendments are set out in the relevant sections in this *Draft Decision* and in the Executive Summary.

2. Reference tariff elements

The Code specifies a set of mandatory elements with which an access arrangement must comply. This chapter considers matters relating to reference tariffs including the WACC, depreciation and asset value. Chapter 3 discusses AGLP's compliance with the remaining elements of an access arrangement.

Sections 3.3 to 3.5 of the Code require an access arrangement to include a reference tariff for at least one service that is likely to be sought by a significant part of the market and other services for which the Commission considers a reference tariff should be included. An access arrangement must also include a policy describing the principles that are to be used to determine a reference tariff (a reference tariff policy). The reference tariff and reference tariff policy must comply with the reference tariff principles in section 8 of the Code.

In addition to the access arrangement and access arrangement information, AGLP has provided the Commission with a spreadsheet file which contains the model used to construct the tariff from forecasts of volumes and cost data. This spreadsheet has not been made publicly available.

This chapter assesses compliance of the proposed reference tariff for the access arrangement using the structure below, taking into account specific requirements of the Code, proposals by AGLP, and submissions from interested parties:

2.1 Overall reference tariff methodology

2.2 The initial capital base

2.3 New facilities investment and capital redundancy

2.4 Depreciation and inflation

2.5 Rate of return

2.6 Non-capital costs

2.7 Forecast revenue

2.8 Cost allocation and tariff setting

2.9 Tariff path and incentive structure

2.10 Assessment of reference tariffs.

The Commission's proposed amendments relating to reference tariffs are located in the relevant sections of this chapter. All proposed amendments are replicated in the Executive Summary.

2.1 Overall reference tariff methodology

Section 8 of the Code contains the general objectives for a reference tariff and certain factors about which the relevant regulator must be satisfied before approving reference tariffs and the reference tariff policy. A discussion of reference tariffs and the reference tariff policy in relation to sections 8.1 and 8.2 of the Code is contained in section 2.10 of this *Draft Decision*.

The reference tariff principles of section 8.4 of the Code permit a choice of three methodologies for determining the total revenue:

- Cost of service: where the total revenue is set to recover costs with those costs to be calculated on the basis of a return (rate of return) on the value of the assets that form the covered pipeline (capital base), depreciation on the capital base (depreciation) and the operating, maintenance and other non-capital costs (non-capital costs) incurred in delivering all services.

- IRR: where the total revenue is set to provide an acceptable internal rate of return (IRR) for the covered pipeline on the basis of forecast costs and sales.

- NPV: where the total revenue is set to deliver a net present value (NPV) for the covered pipeline (on the basis of forecast costs and sales) equal to zero, using an acceptable discount rate.

While these methodologies are different ways of assessing the total revenue, their outcomes should be consistent (for example, it is possible to express any NPV calculation in terms of a cost of service calculation by the choice of an appropriate depreciation schedule). In addition, other methodologies that can be translated into one of these forms are acceptable under section 8.5 of the Code.

AGLP has provided an access arrangement and access arrangement information which specify an initial tariff for the transportation service. This is the only reference service. In the documents provided AGLP states the principles on which the tariff is based, outlines the incentive mechanism and sets (as a fixed principle) the residual asset value at the end of the access arrangement period to be $45.12 million.

AGLP has adopted a price path approach (which is permitted under section 8.3(c) of the Code) based on an application of the NPV methodology. The proposed tariff is to apply to actual throughput only with no penalty for overruns (until the pipeline achieves a contracted capacity of 85 per cent). There is no capacity component to the tariff. AGLP has stated that it expects that the pipeline's pattern of usage will be sufficiently known at the time of the scheduled review of the access arrangement for it to introduce a two-part tariff (with a capacity-commodity split), and that it is AGLP's present intention to offer such a service as a reference service at that time.[11]

The tariffs have been set low at the start of the access arrangement period in order to be competitive with alternate fuels and to encourage market growth. The tariffs then rise steeply

[11] Access Arrangement, p. 3.

throughout the period. AGLP anticipates that the tariffs in the next access arrangement period will be linked to the Consumer Price Index (CPI) (which, for the purposes of the tariff model, is assumed to be 2.5 per cent) with an X factor.

AGLP has proposed a single pricing zone, claiming that this reflects a regional infrastructure development objective of ensuring that no local community will be at a price disadvantage to any other. AGLP states that the proposed single zone reference tariff is intended to encourage sufficient demand in Forbes, Parkes, Narromine and Dubbo to justify the total investment. AGLP contends that other tariff methodologies, such as distance-based or stand-alone, would result in a delivered price for gas that would be uncompetitive with alternative fuels. As a result, the pipeline would not have been extended to Dubbo and some of the towns. AGLP states that without the combined volumes of the four centres, the pipeline would not be viable.

AGLP states that prospective users of the CWP have agreed to the single pricing zone. This is supported by submissions from Dubbo City Council (DCC) and the Mudgee Region Business Enterprise Centre (MRBEC).

Tariffs are proposed for each year and they will not be changed during the access arrangement period. This provides AGLP with an incentive for efficiency gains and increased volumes, as it will reap the total of any benefit. No comment has been made by AGLP on how these gains may be shared with users.

AGLP has used a CAPM approach to develop a pre-tax nominal rate of return (WACC). This is then converted to a pre-tax real WACC through the use of a conversion formula. The pre-tax real WACC is then applied to an initial asset base valued using the depreciated optimised replacement cost (DORC) approach. This asset base is adjusted each year by economic depreciation. An inflation rate of 2.5 per cent has been used by AGLP in these calculations.

AGLP has adopted the NPV methodology to which it has applied economic depreciation. Under the NPV methodology, notional depreciation over the access arrangement period is equal to the difference between the value of the initial capital base at the start of the period and the residual value at the end of the period (section 8.34(a) of the Code).[12]

As a result of low forecast throughput during the early years of the CWP, coupled with low initial tariffs (which are intended to stimulate demand), revenue is not expected to recover all costs during the first phase of the lifetime of the CWP. AGLP's economic depreciation approach is intended to allow AGLP to subsequently recoup these under-recovered revenues and have the opportunity to earn a revenue stream that covers efficient costs over the life of the asset. The methodology results in negative depreciation during the first phase, which has the effect of increasing the asset value for regulatory purposes. The residual value at the end of the initial access arrangement period is greater than the initial capital base at the start of the period. Similarly, the initial capital base is greater than actual cost of the assets as a result of revenue shortfalls translating to negative economic depreciation in the first year of operation. This is discussed further in the following section of this chapter.

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[12] A discussion regarding the derivation of WACC in a NPV framework can be found in Appendix B of this *Draft Decision*.

2.2 The initial capital base

2.2.1 Code requirements

Section 8.4 of the Code outlines how total revenue should be calculated under the cost of service, IRR or NPV methodologies. For the NPV methodology as adopted by AGLP:

> The initial value of the Covered Pipeline in the NPV calculation is to be given by the Capital Base at the commencement of the Access Arrangement Period and the assumed Residual Value at the end of the Access Arrangement Period should be calculated consistently with the principles in this section 8.
>
> The methodology used to calculate the Cost of Service, an IRR or NPV should be in accordance with generally accepted industry practice.

The Code therefore requires the regulator to approve a value for an existing pipeline (an initial capital base) as part of the first access arrangement for that pipeline. Under the NPV methodology, the residual value assumed in the initial access arrangement period is carried forward to the subsequent access arrangement period (adjusted for differences between actual and forecast new facilities investment and, where appropriate, redundant assets). The initial capital base will equate to the present value of expected future returns to the existing assets (evaluated using the regulated WACC). The initial capital base will have a significant effect on the level of tariffs over a considerable period given the long life of assets, and a commensurate effect on the value of the business.

The applicable principles set out in chapter 8 of the Code for establishing the initial capital base for a pipeline differentiate between pipelines that came into existence after the commencement of the Code (sections 8.12 and 8.13) and those that were in existence at the commencement of the Code (sections 8.10 and 8.11).

The initial capital base – new pipelines

For new pipelines (that is, pipelines that came into existence after the commencement of the Code), the Code (section 8.12) requires, subject to section 8.13, that the value of the initial capital base is the actual capital cost of those assets at the time they first enter service. A new pipeline does not need to pass the tests described in section 8.16.[13]

In addition, section 8.13 allows for adjustment to be made to the actual capital cost if it is appropriate to account for new facilities investment (or the recoverable portion, whichever is relevant), depreciation and redundant capital incurred or identified if a sufficient period exists between the time the covered pipeline first enters service and the time the reference tariff is proposed.

The initial capital base – existing pipelines

For existing pipelines, the Code (sections 8.10 (a) and (b) and 8.11) requires that normally the value of the initial capital base should not fall outside the range of depreciated actual cost (DAC) and depreciated optimised replacement cost (DORC). In establishing the initial capital base, the Code also requires the Commission to consider:

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[13] Section 8.16 allows the actual capital cost of new facilities investment to be added to the capital base only if the investment satisfies a number of conditions, including that it is prudent.

- other well recognised asset valuation methodologies (section 8.10(c)) and the advantages and disadvantages of these methodologies (section 8.10(d));
- international best practice and the impact on the international competitiveness of energy consuming industries (section 8.10(e));
- the basis on which tariffs have been (or appear to have been) set in the past, the economic depreciation of the covered pipeline, and the historical returns to the service provider from the covered pipeline (section 8.10(f));
- the reasonable expectations of persons under the regulatory regime that applied to the pipeline prior to the commencement of the Code (section 8.10(g));
- the impact on the economically efficient utilisation of gas resources (section 8.10(h));
- the comparability with the cost structure of new pipelines that may compete with the pipeline in question (for example, a pipeline that may by-pass some or all of the pipeline in question) (section 8.10(i));
- the price paid for any asset recently purchased by the service provider and the circumstances of that purchase (section 8.10(j)); and
- any other matters considered relevant (section 8.10(k)).

General principles

In addition, the Commission is guided by the objectives outlined in section 8.1 of:

(a) providing the Service Provider with the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the Reference Service over the expected life of the assets used in delivering that Service;
(b) replicating the outcome of a competitive market;
(c) ensuring the safe and reliable operation of the Pipeline;
(d) not distorting investment decisions in Pipeline transportation systems or in upstream and downstream industries;
(e) efficiency in the level and structure of the Reference Tariff; and
(f) providing an incentive to the Service Provider to reduce costs and to develop the market for Reference and other Services.

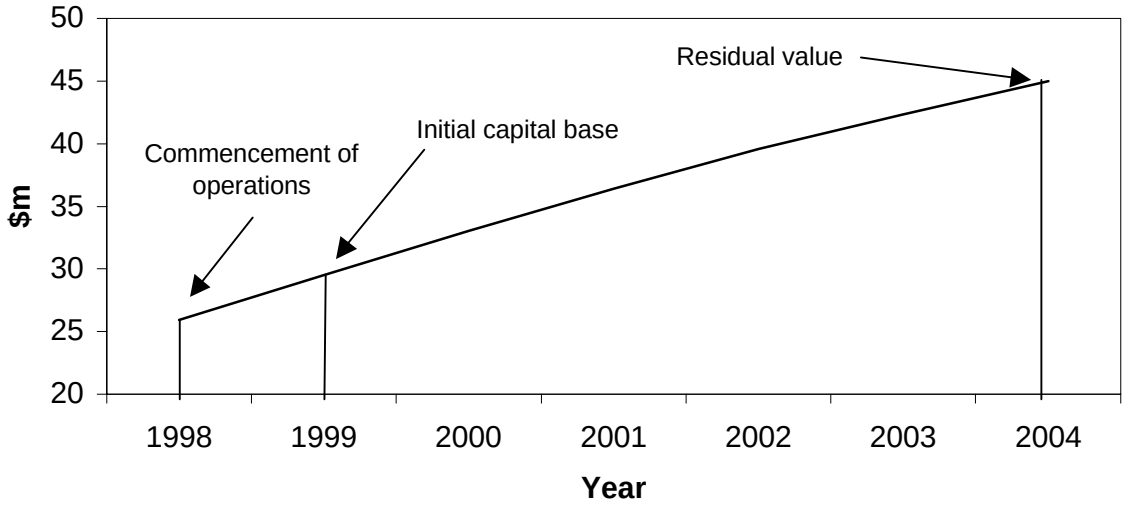
2.2.2 AGLP's proposal

AGLP has proposed that reference tariffs will be determined for the CWP based on a NPV methodology incorporating what AGLP defines as 'economic depreciation' in order to allow it the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the reference service over the expected life of the assets used in delivering that service.[14] This methodology impacts on the valuation of the initial capital base as a result of the time interval between the commencement of the pipeline operations (nominally) on 30 June 1998 and the establishment of the initial capital base on 30 June 1999.

[14] Chapter 2.4 of this *Draft Decision* discusses the Commission's views on the appropriateness of AGLP's use of economic depreciation.

Chart 2.1 below illustrates how the regulatory asset base grows under the NPV methodology during the first phase of the life of the CWP from an adjusted capital cost of $25.93 million (30 June 1998) to the initial capital base valuation of $29.49 million (30 June 1999), and subsequently to a residual value of $45.12 million (30 June 2004). The same outcome would have resulted if the initial capital base had been established a year earlier. Notionally, the value of the initial capital base has been determined by carrying over the residual value at the end of the first year of the CWP's operations.

Chart 2.1: Proposed valuation of the CWP capital base, 1998 to 2004 ($m)



Source: Supplementary Access Arrangement Information, p. 6.

The methodology proposed by AGLP implicitly categorises the CWP as an existing pipeline. AGLP has advised that the CWP was constructed and commissioned progressively.[15] Construction commenced late in 1997 and the sections from Marsden to Parkes and from Parkes to Dubbo were respectively commissioned on 29 April 1998 and 1 August 1998. Gas first flowed through the Forbes and Parkes off-takes respectively on 1 and 2 May 1998, and through the Narromine and Dubbo off-takes respectively on 2 and 4 August 1998.

AGLP has not explicitly addressed whether the CWP should be valued as a new pipeline, or referred to the pertinent sections of the Code (section 8.12 and 8.13). However, it is relevant that AGLP states that the reference tariffs for the years ending 30 June 1999, 2000 and 2001 were 'committed to by AGLP and communicated to the market' prior to lodgement of its proposed access arrangement to the Commission for approval. AGLP states that '[t]his was necessary because at the time the CWP was commissioned the Code was not in place, and Prospective Users required tariff certainty prior to committing to using the CWP.'[16]

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[15] AGLP, Additional General Information, 25 June 1999, p. 4.

[16] Revised Access Arrangement Information, p. 4. The tariff for the year ending 30 June 1999 date would not be a reference tariff in terms of the Code as the access arrangement had not commenced at that time.

AGLP states that it has used a DORC methodology to value the CWP, incorporating an adjustment for economic depreciation.[17] Table 2.1 summarises the process followed by AGLP to determine a proposed regulatory asset value of $29.49 million as at 30 June 1999.

Table 2.1: AGLP's proposed valuation of the initial capital base of the CWP

Asset type	$ million (at 30 June 1999)[a]			
	RC[b]	ORC[c]	Adjusted ORC[d]	AGLP valuation[e]
Transmission pipeline	29.76	26.98	24.98	28.54
Compressor stations:				
Rotating equipment	nil	nil	nil	nil
Station facilities	nil	nil	nil	nil
Regulation and metering stations	0.17	0.17	0.17	0.17
Odourisation stations	0.15	0.15	0.15	0.15
SCADA and communications	0.63	0.63	0.63	0.63
Total asset value	30.71	27.93	25.93	29.49

Source: Revised Access Arrangement Information, p. 8.

Notes: (a) All cost information in the table is in 1999 dollars.
(b) Replacement cost (RC) is the actual construction cost of the pipeline.
(c) The optimised configuration is a 168 mm (6") pipeline from Marsden to Dubbo in free flow.
(d) For regulatory purposes, AGLP has removed the Commonwealth Government grant of $2 million from the initial capital base.
(e) Economic depreciation has been applied.

AGLP used the actual construction cost for the pipeline (including regulation and metering stations, odourisation stations and System Control and Data Acquisition (SCADA) and communications) of $30.71 million as the replacement cost (RC).[18] While this amount includes an allowance of $0.15 million for capitalised interest, AGLP has advised that the additional interest charged to the project would have been in the vicinity of $0.6 million if construction costs had been capitalised since the commencement of construction activities in September 1997.[19]

The pipeline consists of a 219 mm (eight inch) pipe from Marsden to Alectown and a 168 mm (six inch) pipe from Alectown to Dubbo. This configuration has been built in anticipation of an extension of the pipeline to Tamworth. An optimised pipeline for Marsden to Dubbo would be a 168 mm pipe for the entire length. AGLP has removed $2.78 million from the asset base to give an optimised replacement cost (ORC) of $27.93 million for a 168 mm pipeline.

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[17] AGLP refers to the proposed valuation of $29.49 million as DORC. However this valuation does not accord with the definition of DORC which can never be greater than the ORC. Valuations resulting from AGLP's approach have been termed regulatory values in this *Draft Decision* in order to differentiate it from the generally accepted DORC methodology.

[18] Although construction of the CWP was completed in 1998, AGLP has taken the actual construction costs to be 1999 dollars. However, the CWP's regulatory asset value is subsequently indexed for forecast inflation in the year to 30 June 1999 as part of AGLP's proposed adjustments for economic depreciation.

[19] AGLP letter to the Commission, 12 May 1999.

The ORC has then been reduced by $2 million to $25.93 million (adjusted ORC in Table 2.1) in order to reflect the funding received by AGLP under the Federal Government's Regional Development Program.

Finally, AGLP states that it has applied economic depreciation to the adjusted ORC which increases that amount by $3.56 million to arrive at the proposed valuation of $29.49 million. AGLP has used the definition:

Economic depreciation = revenue – operating costs – return on capital

Normally an adjustment to account for depreciation would be expected to result in a decreased valuation, reflecting the fact that part of the asset's life has already been used. However, under the AGLP proposal, the pipeline incurs negative economic depreciation during the earlier phase of its lifetime such that initial under-recovery of the cost of the service can later be offset by commensurate over-recovery.[20] Therefore, the adjustment proposed to account for depreciation in this case increases the valuation of the CWP.

2.2.3 Submissions by interested parties

No comments were received on this issue.

2.2.4 Commission's considerations

Given the capital intensive nature of pipeline assets, the initial capital base and the regulated WACC together are prime determinants of the regulated revenue and hence the level of tariffs and likely profitability. Accordingly, the Code provides considerable guidance to the regulator to assist it in its assessment of the initial capital base, a crucial element of the access arrangement approval process.

The Commission carefully examined issues related to the establishment of the initial capital base when assessing the Victorian transmission access arrangements.[21] In that instance the major assets had been in existence for approximately 30 years and the choice of asset valuation methodology potentially allowed a wide range of asset valuation outcomes, with the DORC based valuation proposed by the service providers considerably exceeding DAC based valuations favoured by users. The Commission carefully weighed a range of factors to determine the appropriate asset valuation methodology, consistent with the principles established by the Code. This included both efficiency and equity objectives. The Commission noted at the time that each proposal must be considered on its own merits, and that the Victorian Decision would not establish a precedent to be followed for other access arrangements.

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[20] Based on the assumptions used in AGLP's revenue model, these amounts exactly balance on a NPV basis.

[21] Refer ACCC, *Final Decision: Access Arrangement by Transmission Pipelines Australia Pty Ltd and Transmission Pipelines Australia (Assets) Pty Ltd for the Principal Transmission System; Access Arrangement by Transmission Pipelines Australia Pty Ltd and Transmission Pipelines Australia (Assets) Pty Ltd for the Western Transmission System; Access Arrangement by Victorian Energy Networks Corporation for the Principal Transmission System*, 6 October 1998. To be subsequently referred to as *Victorian Final Decision*.

Valuation of the CWP as a new pipeline

The CWP, in contrast to the Victorian gas transmission assets, commenced operation immediately before the Code came into force in the relevant jurisdiction. The section from Marsden to Parkes was commissioned on 29 April 1998. The final section from Parkes to Dubbo was commissioned on 1 August 1998, and gas first flowed to Dubbo on 4 August 1998, shortly before the commencement of the Code in NSW on 14 August 1998.

The Code (section 8.12) requires that the value of the initial capital base for new pipelines should, subject to section 8.13, be the actual capital cost of those assets at the time they first enter service, and that the tests described in section 8.16 do not need to be passed. Section 8.13 (which allows certain adjustments to be made if there is a sufficient period between the time the covered pipeline first enters service and the time the reference tariff is proposed) is considered not to be of relevance in this instance as AGLP effectively implemented its proposed reference tariffs prior to submitting its access arrangement for approval.[22]

The Commission notes that, while the CWP does not fall within the definition of a 'new pipeline' for the purposes of section 8.12 of the Code, a period of weeks (or months for the Marsden to Parkes section) may be considered largely immaterial in the context of the CWP's estimated weighted average economic life of 78 years.[23] The Commission considers that, consistent with the overall principles of the Code, it needs to give considerable weight to the guidance provided by section 8.12 when assessing the reasonableness of the proposed value of the CWP's initial capital base.

Application of the provisions of section 8.12 would result in the initial capital base being valued at $30.71 million, the actual construction cost of the pipeline. Adjustment to reflect funding by the Commonwealth Government of $2 million could be made either through a commensurate reduction in the initial capital base or through the cash flows. The former option, which is simpler, and is consistent with AGLP's proposal, would result in a valuation of the initial capital base of $28.71 million.

Valuation of the CWP as an existing pipeline

The Code provides considerable guidance regarding the valuation of existing pipelines. In particular, sections 8.10 (a), (b) and (c) respectively require consideration of values arising from the DAC, DORC and 'other well recognised' asset valuation methodologies. Section 8.11 states that the valuation should not normally fall outside the range between the DAC and DORC valuations. The Commission has considered alternative methodologies as part of its assessment below of AGL's proposed four-stage process to establish the initial capital base of the CWP.

AGLP's methodology starts with the assumption that the replacement cost of the CWP is equal to $30.71 million, which it states is the actual construction cost. The Commission is

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[22] The initial access arrangement period commences 1 July 1999. While the tariff applying from June 1998 to 30 June 1999 is not a reference tariff for the purposes the Code, it has been incorporated in AGLP's revenue model.

[23] Derived from Revised Access Arrangement Information, p. 10.

satisfied that this amount is the actual construction cost of the pipeline, and that it provides a reasonable basis for establishing the RC.[24]

Second, AGLP optimised the configuration of the pipeline to remove the cost of 'oversizing' installed capacity to allow for potential future gas flows to Tamworth. AGLP re-costed the CWP as if it were comprised solely of 168 mm pipeline, reducing the valuation by $2.78 million. The Commission has modelled the likely gas flows through the CWP (including with the proposed extension), and has concluded that the proposed optimised configuration is reasonable. The Commission has also assessed the costing of the optimised configuration (an ORC of $27.93 million), which it considers to be reasonable.

Third, AGLP removed $2 million from the ORC valuation in recognition of the Commonwealth Government funding provided of that amount. The Commission agrees that users and prospective users should benefit from this contribution, and that AGLP's removal of the amount from the capital base is an appropriate adjustment.

The fourth stage of AGLP's proposal is to increase the ORC valuation by an amount of $3.56 million to reflect negative economic depreciation which AGLP expects to be incurred. AGLP refers to the resultant valuation of $29.49 million that it proposes for use as the initial capital base as a DORC valuation. However, the AGLP approach to determining a regulated asset base differs significantly from the accepted DORC methodology, and is not consistent with the value that the Commission should consider pursuant to section 8.10(b) of the Code. The Commission has referred to valuations resulting from the AGLP approach in this *Draft Decision* as the regulatory value in order to differentiate it from the generally accepted DORC methodology.

The Commission has confirmed that, based on assumptions applied in AGLP's revenue model, (minus) $3.56 million would be a reasonable estimate of the appropriate adjustment for economic depreciation. However, the magnitude of this adjustment is sensitive to assumptions applied in AGLP's revenue model. For example, higher early revenues or lower costs would reduce the amount of negative economic depreciation in this period.

The Commission has modelled cash flows under a range of plausible assumptions to derive alternative estimates of the value of economic depreciation. In each case the outcome is negative over the initial access arrangement period. For example, applying the WACC (of 7.75 per cent) adopted in the *Victorian Final Decision* would result instead in an economic depreciation adjustment of (minus) $2.95 million, and an asset valuation of $28.88 million at 30 June 1999. Conversely, if expected throughput volumes were reduced by ten per cent in the initial access arrangement period, the value of economic depreciation would increase to (minus) $3.00 million.

Chapter 2.4 of this *Draft Decision* discusses the Commission's views on the appropriateness of AGLP's use of economic depreciation and concludes that, subject to a number of reservations, the proposal to apply a form of levelising to eventually recoup under-recoveries accrued in the early period of the life of the CWP is consistent with Code principles.

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[24] AGL has taken the actual construction costs of the pipeline, which was completed in 1998, to be 1999 dollars. Adjustment based on AGLP's CPI assumption of 2.5 per cent a year for one year would have resulted in a RC valuation of $31.48 million.

As noted above, Chart 2.1 illustrates how the regulatory value of the asset base would grow under the NPV methodology from the (optimised) actual cost of the CWP ($25.93 million at 30 June 1998) to the initial capital base valuation ($29.49 million at 30 June 1999), and subsequently to a residual value ($45.12 million at 30 June 2004). It was also noted that the same regulatory asset base profile would have resulted if the initial capital base had been established a year earlier. Subject to the Commission's acceptance of AGLP's overall NPV approach, the fundamental regulatory asset valuation for the purpose of this access arrangement is that of 30 June 1998.[25] The Commission considers that the optimised valuation of the actual cost of the CWP proposed by AGLP is appropriate. The amount would be approximately $2.8 million higher if a non-optimised valuation were used.

The following section provides estimates of DAC and DORC valuations consistent with the Code.

Initial valuation of the CWP based on DAC

Section 8.10(a) requires the following factor to be considered when establishing the initial capital base:

> the value that would result from taking the actual capital cost of the Covered Pipeline and subtracting the accumulated depreciation for those assets charged to Users (or thought to have been charged to Users) prior to the commencement of the Code;

Table 2.2 provides an indicative estimate prepared by the Commission of DAC as at 30 June 1999. Straight line depreciation has been applied on the basis of the economic life of the assets as identified by AGLP, and on the simplifying assumption that all assets came into existence on 30 June 1998. As would be expected for such a new asset with a long expected life, the DAC valuation of $30.27 million is a little less than the actual cost. After making allowance for the Commonwealth Government's $2 million contribution to the funding of the CWP, the DAC based valuation of the initial capital base would be $28.27 million.

Table 2.2: Derivation of estimate of DAC valuation of the CWP

Asset type	Economic life (years)	$ million (at 30 June 1999)			
		Actual Cost	Depreciation	DAC	Adjusted DAC[(a)]
Transmission pipeline	80	29.76	0.372	29.39	27.39
Regulation and metering stations	50	0.17	0.003	0.17	0.17
Odourisation stations	35	0.15	0.004	0.15	0.15
SCADA and communications	10	0.63	0.063	0.57	0.57
Total asset value		30.71	0.443	30.27	28.27

Source: ACCC.

Note: (a) The Commonwealth Government grant of $2 million has been removed for the purposes of considering the initial capital base.

[25] While the 30 June 1999 valuation technically establishes the value of the initial capital base, it is in effect a residual value within the overall methodology.

Initial valuation of the CWP based on DORC

Section 8.10(b) requires the following factor to be considered when establishing the initial capital base:

> the value that would result from applying the "depreciated optimised replacement cost" methodology in valuing the Covered Pipeline;

AGLP has provided the estimate shown in Table 2.3 of the CWP's DORC as at 30 June 1999 of $25.55 million. Straight line depreciation has been applied on the basis of the economic life and remaining economic life of the assets as identified by AGLP.[26] The derivation is essentially the same as that provided by AGLP in the CWP access arrangement under its proposed approach, with the exception that the adjusted ORC valuation is reduced by accumulated depreciation of $0.383 million (instead of being increased by economic depreciation of $3.56 million) to calculate the DORC valuation.

Table 2.3: Derivation of estimate of DORC valuation of the CWP

Asset type	$ million (at 30 June 1999)[(a)]				
	RC[(b)]	ORC[(c)]	Adjusted ORC[(d)]	Accumulated Depreciation[(e)]	DORC
Transmission pipeline	29.76	26.98	24.98	0.312	24.668
Regulation and metering stations	0.17	0.17	0.17	0.003	0.167
Odourisation stations	0.15	0.15	0.15	0.004	0.146
SCADA and communications	0.63	0.63	0.63	0.063	0.567
Total asset value	30.71	27.93	25.93	0.383	25.55

Source: AGLP, Additional General Information, 25 June 1999, p. 5.

Notes: (a) All cost information in the table is in 1999 dollars.
(b) Replacement Cost is the actual construction cost of the pipeline.
(c) The optimised configuration is a 168 mm (6") pipeline from Marsden to Dubbo in free flow.
(d) For regulatory purposes, AGLP has removed the Commonwealth Government grant of $2 million from the initial capital base.
(e) Depreciation is calculated on a straight line basis assuming economic lives set out on page 10 of the Revised Access Arrangement Information.

Overall assessment of valuation of the initial capital base

For a recently commissioned pipeline such as the CWP, the Code, consistent with economic theory, provides that similar valuation outcomes for the initial capital base are likely under a range of valuation methodologies. In the specific case of a pipeline coming into existence after the Code commences, section 8.12 requires that the actual capital cost ($30.71 million for the CWP) would be the appropriate initial valuation.[27] After making allowance for the

[26] Revised Access Arrangement Information, p. 10.

[27] While section 8.12 is subject to section 8.13, the latter is not relevant in the circumstances of the CWP.

Commonwealth Government's $2 million contribution to the funding of the CWP, the initial capital base would be valued at $28.71 million.

While the Commission is guided by the requirements of section 8.12, it is aware that section 8.12 is not directly applicable to the CWP because the pipeline came into existence shortly before the Code commenced in NSW.

AGLP has proposed that the CWP be treated as an existing pipeline for the purpose of valuing the initial capital base. The Commission considers that AGLP's proposed valuation of the replacement cost is reasonable, and that the adjustments to reflect optimisation and Commonwealth funding are appropriate.

The Commission has carefully assessed AGLP's proposed methodology for determining a valuation for CWP's initial capital base. It has concluded that the proposed economic depreciation methodology that underpins this approach may provide an appropriate means to allow AGLP the opportunity to later over-recover early under-recoveries and so earn a reasonable return over the life of the CWP. However, the Commission notes that the proposed methodology differs from the DORC approach as it is generally accepted, and that the resulting valuation differs from the DORC value that the Commission should consider for the purposes of section 8.10(b). Further, the Commission notes that the valuation resulting from AGLP's methodology is dependent on assumptions incorporated, and that use of a pre-tax real WACC of 7.5 per cent would generate a valuation of $28.43 million under this methodology.

Table 2.4: Summary of asset valuation estimates for the CWP

	$ million (at 30 June 1999)[a]					
	RC	**DAC[b]**	**ORC**	**Adjusted ORC[c]**	**DORC[d**	**AGLP approach[e]**
Total asset value	28.71	28.27	27.93	25.93	25.55	28.43

Source: AGLP and ACCC estimates.

Notes: (a) Amounts are in 1999 dollars.
(b) Accounting depreciation (straight line) has been applied.
(c) The Commonwealth grant of $2 million has been deducted.
(d) Accounting depreciation (straight line) has been applied.
(e) Adjusted to reflect a pre-tax real WACC of 7.5 per cent.

The Commission has taken into consideration the factors listed in section 8.10 of the Code, and notes in particular that:

- $28.27 million and $25.55 million are respectively estimates of the DAC (section 8.10(a)) and DORC (section 8.10(b)) valuations which normally set the boundaries for the initial capital base for an existing pipeline (section 8.11);[28]

- valuations based on other methodologies (or variations of methodologies) include $28.71 million actual costs (AC) or replacement cost (RC) (section 8.10(c));[29]

[28] Net of the Commonwealth Government's $2 million contribution to the funding of the CWP.

- AGLP has proposed a regulatory value of $29.49 million, based on a NPV based methodology that applies economic depreciation to increase the ORC valuation during the earlier period of the life of the pipeline. Under the NPV methodology, the capital base at the beginning of an access arrangement period is the value carried forward (adjusted as necessary) of the residual value at the end of the previous period. Consistent with this approach, the initial capital base is set at the residual value at the end of the period preceding the establishment of the initial capital base (refer Chart 2.1);

- amendments proposed in this *Draft Decision* concerning the applicable WACC and inflation index would reduce the regulatory value to $28.43 million;

- these estimates would be higher if construction costs incurred from the commencement of construction activities in September 1997 had been capitalised or (with the exception of AGLP's regulatory value) if actual construction costs were indexed for consistency with 1999 dollars;

- as expected for an almost new pipeline, differences arising from alternative valuation methodologies are relatively small, and their comparative advantages and disadvantages are similar (section 8.10(d)); and

- while assessment of performance compared with best practice (see chapter 4 of this *Draft Decision*) is problematic, limited information provided by AGLP regarding comparative capital costs in Australia appears to indicate acceptable performance (section 8.10(e)).

The Commission notes that AGLP's proposal to employ an economic depreciation methodology to provide the opportunity for it to earn a stream of revenue that recovers the efficient costs of delivering the reference service over the expected life of the assets is consistent with the objective set out in section 8.1(a) of the Code. The Commission also notes two recent final decisions under the Code by the Office of the Regulator-General, Victoria (ORG) to approve access arrangements which incorporate comparable NPV based methodologies incorporating economic depreciation.[30] The Commission proposes to accept AGLP's proposed methodology.

The Commission has considered a number of asset valuation methodologies as required by section 8.10 of the Code and notes that the value of the initial capital base proposed by AGLP (once adjusted in line with changes proposed in this *Draft Decision* which impact on the revenue requirement) of $28.43 million lies approximately $0.2 million outside the range of $25.55 million (DORC) to $28.27 million (DAC) specified by section 8.11 as usually being acceptable for an existing pipeline. The Commission has considered the following additional factors in its assessment of the consistency of an asset valuation based on AGLP's proposed methodology with the section 8 reference tariff principles:

- the fundamental regulatory asset valuation for the purpose of this access arrangement is that of 30 June 1998, the nominal starting date of the CWP. The 30 June 1999 valuation,

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[29] Net of the Commonwealth Government's $2 million contribution to the funding of the CWP.

[30] ORG, *Final Decision in respect of the Envestra Ltd's proposed access arrangement for the Mildura natural gas distribution system*, 3 June 1999. ORG, *Final Decision in respect of the Eastcoast Gas Pty Ltd's proposed access arrangement for the East Gippsland natural gas distribution system*, 6 May 1999.

although it establishes the value of the initial capital base, follows from the 30 June 1998 value and the assumptions under the overall NPV approach, and is in effect a residual value required to provide the determined return on assets. The same regulatory values would have resulted if the initial capital base had been established a year earlier;

- AGLP has valued the asset base as at 30 June 1998 using ORC, which results in a valuation of approximately $2.8 million less than if a non-optimised valuation were used;

- adoption of the alternative approach to capitalisation of construction costs noted by AGLP would have resulted in a DAC valuation which does not significantly differ from the (adjusted) proposed AGLP regulatory value;[31] and

- the CWP would have been valued at its actual capital cost of $28.71 million as a new pipeline (pursuant to section 8.12 of the Code) if it had ' … come into existence after the [32]

The Commission proposes to accept a valuation derived through AGLP's methodology, adjusted to incorporate changes to costs and revenues as a result of amendments proposed in this *Draft Decision*. This valuation of $28.43 million would not materially differ from a DAC valuation or the actual capital cost, and is lower than if economic depreciation had been applied instead to a DAC base. As noted above, this valuation is conceptually equivalent to the residual value at the end of the period preceding the establishment of the initial capital base, which is consistent with AGLP's broader proposed methodology.

Two potential concerns are identified later in this *Draft Decision* about the proposal: the implications of likely forecasting errors are addressed in section 3.7; and economic efficiency and equity issues relating to setting the tariff path over time are addressed in section 2.9.

The convention has been adopted in this *Draft Decision* of referring to valuations arising from AGLP's proposed methodology as AGLP's regulatory valuation, or the regulatory value, to avoid inconsistency with accepted usage of DORC.

Proposed Amendment – A2.1

In order for AGLP's access arrangement for the Central West Pipeline to be approved, the value of the initial capital base must be adjusted to reflect the impact of changes proposed in this *Draft Decision* on AGLP's costs and revenues and on the assumed inflation rate.

[31] The regulatory value would be approximately $0.15 million higher.

[32] Gas first flowed from the Dubbo off-take on 4 August 1998. The Code commenced in NSW on 14 August 1998.

2.3 New facilities investment and capital redundancy

2.3.1 Code requirements

Once the value of the initial capital base is established, the capital base for each subsequent period must be determined. In the case, as here, where a NPV methodology is used, the subsequent period capital base is determined as the value of the capital base at the end of the preceding period (the residual value) adjusted for differences between forecast and actual new facilities investment (capital expenditure) and redundant capital (section 8.9 of the Code).

This leads to the issues of how capital expenditure and capital redundancies are treated under an access arrangement. These issues are the subject of this section.

New facilities investment

The Code (sections 8.15-8.16) allows for the capital base to be increased to recognise additional capital costs incurred in constructing new facilities for the purpose of providing services. The amount of the increase is the actual capital cost provided that the investment is prudent in terms of efficiency, in accordance with accepted good industry practice and is designed to achieve the lowest possible cost of delivering services.

Furthermore, if the incremental revenue is not expected to exceed the cost of the investment, the service provider (and/or users) must satisfy the relevant regulator that the new facility has system wide benefits (justifying higher tariffs for all users), or that the new facility is necessary to maintain the safety, integrity or contracted capacity of services.

Under sections 8.18 and 8.19 of the Code a service provider may also undertake new facilities investment if these criteria are not met. To the extent that an investment does not meet the section 8.16 criteria or is speculative in character the augmentation of the capital base needs to be correspondingly reduced.[33]

Reference tariffs may be determined on the basis of forecast investment during the access arrangement period provided that such investment is reasonably expected to pass the requirements noted above when the investment is forecast to occur (section 8.20 of the Code). However, the inclusion of forecasts does not imply that the criteria contained in section 8.16 of the Code have been satisfied. The relevant regulator may reserve its judgment until the time that the investment is undertaken or at the next review. The Code (section 8.22) also notes that the reference tariff policy should specify how discrepancies between forecast and actual investment are to be reflected in the capital base at the commencement of the next regulatory period (so as to meet the objectives of section 8.1 of the Code). The alternative is for the regulator to determine how the expenditure will be treated for the purpose of section 8.9 at the time a revision to the access arrangement is submitted to the regulator.

Capital redundancy

Section 8.27 of the Code allows a reference tariff policy to include (and the regulator may require that it include) a mechanism that will remove redundant capital from the capital base.

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[33] That part of the investment which is of a speculative nature is held in the speculative investment fund and may be added to the asset base at a later date when it meets the necessary criteria.

Such an adjustment is to occur at the commencement of the next access arrangement period and is to:

- ensure that assets which cease to contribute to the delivery of services are not reflected in the capital base; and
- share costs associated with a decline in sales volume between the service provider and users.

Before approving such a mechanism, the regulator must consider the potential uncertainty and its effect on the service provider, users and prospective users.

Where redundant assets subsequently contribute to or enhance the provision of services, the Code (section 8.28) allows the assets to be added back to the capital base as if they were new facilities investment subject to the associated criteria noted earlier in this section.

While the Code permits a reference tariff policy to include a mechanism to subtract redundant capital from the capital base, it also allows for other mechanisms that have the same effect on reference tariffs while not reducing the capital base (section 8.29 of the Code).

2.3.2 AGLP's proposal

New facilities investment

As permitted by section 8.18 of the Code, AGLP's reference tariff policy states that 'AGLP may undertake New Facilities Investment that does not satisfy the requirements of the Code for inclusion in the Capital Base'.[34]

In addition, an amount in respect of the balance after deducting the recoverable portion of the new facilities investment, that is, the speculative investment fund, may subsequently be added to the capital base. This can occur if the type and volume of services provided, which use the increase in capacity attributable to the new facility, change such that any part of the speculative investment fund would then satisfy the requirements of section 8.16 of the Code (see section 8.19 of the Code).

The CWP is a combination of an eight inch pipeline (Marsden to Alectown) and a six inch pipeline (Alectown to Dubbo). This is 'oversized' for the load between Marsden and Dubbo but will enable cost effective haulage of gas to Tamworth. AGLP has valued the oversized portion of the CWP at $2.78 million. This amount will be placed in a speculative investment fund. AGLP expects that this amount will be added to the capital base once the Central Ranges Pipeline (CRP) to Tamworth is built.[35]

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[34] Access Arrangement, p. 11.

[35] Revised Access Arrangement Information, pp. 7-8.

In accordance with section 8.22 of the Code, the reference tariff policy states that

> … for the purposes of calculating the capital base at the commencement of the subsequent access arrangement period, where the actual cost of new facilities differs from the forecast new facilities investment on which the capital base was determined, the new facilities investment will be included at actual cost.[36]

AGLP has not made a commitment to any major capital expenditure during the initial access arrangement period. The only expected capital expenditure concerns the replacement of minor pipeline components. This 'stay in business' capital expenditure is estimated at $6 750 per year in real terms. This totals to $33 750 for the five years 1999 to 2004.[37] The reference tariff policy states that upon calculating the capital base for the next access arrangement period, actual capital expenditure will be used rather than the forecast expenditure.

Capital redundancy

The reference tariff policy makes no comment on the treatment of redundant assets.

2.3.3 Commission's considerations

AGLP's access arrangement does not comment on determining the asset base in subsequent access arrangement periods. While this is dealt with in the Code at section 8.9 (see the earlier discussion in this section), the Commission considers that there is some merit in service providers acknowledging in an access arrangement the relevant sections of the Code and the intention of the service provider to implement the Code at the appropriate time. In relation to the CWP access arrangement, the Commission considers that users and prospective users would benefit from clarification of how the capital base for the subsequent access arrangement period is to be determined.

New facilities investment

The provisions in the access arrangement for adding new investments into the capital base follow the Code closely. However, an amendment is proposed by the Commission to aid in the interpretation of the access arrangement. There is no need for additional comment on this aspect of capital base augmentation from the perspective of acceptability of the approach within the framework of the Code.

Proposed Amendment – A2.2

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, clause 3 of section 4 of the access arrangement (the reference tariff policy) must state that new facilities investment that does not satisfy the requirements of section 8.16 of the Code may be undertaken by AGLP and may be included in the capital base where this investment or part of this investment satisfies section 8.18 of the Code.

AGLP's decision to place $2.78 million in a speculative investment fund and subsequently add this amount to the capital base is consistent with the Code. Details of adding the amount, in

[36] Access Arrangement, p. 11.

[37] Revised Access Arrangement Information, pp. 10-11.

whole or in part, to the capital base will be assessed by the Commission when a firm proposal is placed before it.

As permitted by section 8.20 of the Code, AGLP has determined tariffs on the basis of forecast capital expenditure. While this methodology is accepted by the Commission in this instance, this does not imply that the Commission considers such expenditure to meet the requirement of section 8.16 of the Code (see section 8.21 of the Code). An assessment on this matter will be made by the Commission at the time of the review of the access arrangement.

As noted earlier, section 8.22 of the Code requires either the regulator or the reference tariff policy to deal with the differences between actual and forecast capital expenditure. In this instance, AGLP has included a statement in the reference tariff policy on the treatment of actual and forecast capital expenditure in relation to determining the capital base in the subsequent access arrangement period. The Commission considers that this statement meets the requirements of the Code.

Capital redundancy

AGLP has not included in its reference tariff policy a mechanism that will remove redundant capital from the capital base at the start of the subsequent access arrangement period, as provided for by section 8.27 of the Code. The Commission considers that such a mechanism is needed in order to ensure that users do not pay for assets that have ceased, or substantially ceased, to contribute to the delivery of services. Accordingly, the Commission, pursuant to section 8.27 of the Code, requires that a mechanism dealing with redundant capital be included in the CWP reference tariff policy.

Proposed Amendment – A2.3

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, the reference tariff policy must be amended to allow the Commission, at the commencement of the subsequent access arrangement period, to review, and if necessary to adjust, the asset base for wholly or partially redundant assets.

2.4 Depreciation and inflation

2.4.1 Code requirements

Depreciation

AGLP has elected to use the NPV methodology to determine total revenue. As stated in section 8.34 of the Code, under the NPV methodology, the notional depreciation is the difference between the capital base at the beginning of the access arrangement period and the residual value. For a new facility, notional depreciation is the difference between the actual (or forecast) cost and the residual value. The residual value should reflect notional depreciation which meets the following principles (contained in section 8.33 of the Code):

- the change in reference tariffs over time is consistent with the efficient growth of the market for the services provided;

- depreciation occurs over the economic life of the asset(s) with progressive adjustments where appropriate to reflect changes in expected economic lives; and

- that an asset is depreciated only once and that total accumulated depreciation will not exceed the valuation of the asset when initially incorporated in the capital base.

Although there is no specific provision in the Code to allow for adjustments to the asset base based on 'economic depreciation', some flexibility is allowed in the method used to calculate revenue. Section 8.5 permits any methodology to be used provided it can be expressed in terms of one of the methodologies described in section 8.4 of the Code.

General principles set out in section 8.1 of the Code include that the service provider should have the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the reference services over the expected life of the assets used in delivering that service, and efficiency in the level and structure of the reference tariff. Section 8.34(d) is also relevant:

8.34 If the IRR or NPV methodology is used, then the notional depreciation over the Access Arrangement Period for each asset or group of assets that form part of the Covered Pipeline is:

to comply with section 8.33:

(d) the Reference Tariff should change over the Access Arrangement Period in a manner that is consistent with the efficient growth of the market for the Services provided by the Pipeline (and which may involve a substantial portion of the depreciation taking place towards the end of the Access Arrangement Period, particularly where the calculation of the Reference Tariffs has assumed significant market growth and the Pipeline has been sized accordingly).

2.4.2 AGLP's proposal

Depreciation

Growth in pipeline utilisation for the CWP will be gradual and returns in the initial access arrangement period will not cover accounting expenses. AGLP's concept of economic depreciation provides a mechanism for under-recovery in the early years which is offset by over-recovery in latter years. This results in a reference tariff that is consistent with efficient growth in the market as required by section 8.33(a) of the Code. It also allows cost recovery over the efficient life of the asset in accordance with section 8.1(a) of the Code.

AGLP define economic depreciation in the following manner:

Economic depreciation = total revenue – operating costs – return on capital

Economic depreciation can be either positive or negative. It is deducted from the capital base each year to reflect the extent that total revenue has covered costs. As costs are not covered in the initial access arrangement period, depreciation will be negative. This results in an increase in the capital base over the period. The level of economic depreciation anticipated by AGLP each year is shown in Table 2.5 below.

Table 2.5: Economic depreciation, 1999 to 2004

	$ million					
	1999	**2000**	**2001**	**2002**	**2003**	**2004**
Economic depreciation	(3.54)	(3.51)	(3.39)	(3.17)	(2.81)	(2.70)

Source: Additional Access Arrangement Information, 12 February 1999, p. 2.

AGLP has stated that

> … it will be some considerable time into the future before the CWP will generate sufficient revenue to cover both operating costs and the return on capital.[38]

The economic life is estimated to be 80 years for the pipeline, 50 years for the regulation and metering stations, 35 years for the odourising stations and ten years for SCADA.[39]

Inflation

The amounts of economic depreciation shown above in Table 2.5 are in nominal dollars. However, these and other figures are based on financial modelling by AGLP that is initially expressed in real terms, using year ending 30 June 1999 dollars. AGLP has applied its forecast inflation rate of 2.5 per cent per annum to convert amounts derived in real dollars to nominal dollars.

AGLP has specified the 'Sydney Consumer Price Index published quarterly by the Australian Statistician' as the applicable measure of inflation for adjusting tariffs until the next access arrangement period commences if the revisions commencement date is later than 30 June 2004.[40]

2.4.3 Commission's considerations

Depreciation

The Commission notes two recent regulatory decisions[41] by the ORG on new natural gas transportation assets where it accepted similar proposals for recouping expected early under-recoveries. The methodology in these cases involved adjustments only to the residual value. As both assets are new pipelines for the purposes of section 8.12 of the Victorian Code, the actual capital cost of the assets was used to set the initial capital base.[42]

In its June 1999 *Final Decision* in respect of Envestra Ltd's access arrangement for the greenfields Mildura natural gas distribution system, the ORG assessed various aspects of Envestra's proposal to recoup early revenue under-recoveries through subsequent over-recoveries.[43] The ORG described the methodology as follows:[44]

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38 Additional Access Arrangement Information, 12 February 1999, p. 1.

39 Revised Access Arrangement Information, p. 10.

40 The Commission understands that AGLP intends to use the Sydney All Groups Index (from the ABS' Consumer Price Index) for all inflation indexation associated with the access arrangement.

41 ORG, *Final Decision in respect of the Envestra Ltd's proposed access arrangement for the Mildura natural gas distribution system*, 3 June 1999. ORG, *Final Decision in respect of the Eastcoast Gas Pty Ltd's proposed access arrangement for the East Gippsland natural gas distribution system*, 6 May 1999.

42 Relevant requirements of the Victorian Code in this area are materially the same as those of the Code.

43 ORG, *Final Decision in respect of the Envestra Ltd's proposed access arrangement for the Mildura natural gas distribution system*, 3 June 1999. A number of aspects of the proposal had been integral elements of a competitive tender process approved by the ORG under the Victorian Access Code, and so were not subject to review by the ORG as a part of the access arrangement approval process.

44 ORG, *Final Decision in respect of the Envestra Ltd's proposed access arrangement for the Mildura natural gas distribution system*, 3 June 1999, p. 34.

> This under-recovery can be considered, in the terminology of the Code, as being 'an element of negative depreciation' which enables the Reference Tariff to be kept stable over the Access Arrangement period and the life of the asset, and that is consistent with the growth of the market for the Services.

While the ORG was concerned about the proposed allocation of risk, and the dependence of the methodology on relatively accurate forecasts (which it considered highly likely to prove inaccurate), it decided, on balance, to accept the proposed methodology. Similar to the AGLP proposal, Envestra's under-recovery would be calculated on the basis of the difference between revenues and costs (including a return on the capital assets). It would be included in the residual asset value at the end of the initial access arrangement period and be carried over into the capital base at the commencement of the subsequent access arrangement period.

In its May 1999 *Final Decision* in respect of Eastcoast Gas Pty Ltd's access arrangement for the greenfields East Gippsland natural gas distribution system, the ORG had earlier approved a proposal to recoup early revenue under-recoveries through subsequent over-recoveries. In this case the forecast residual value at the end of the initial access arrangement period, generated by inference from the tender bid, was accepted by the ORG as a tender outcome.[45]

The Commission's May 1999 *Draft Regulatory Principles* proposes the use of the competition depreciation approach (CDA) to achieve economically efficient price paths over the life of regulated electricity transmission assets. CDA is a form of regulatory depreciation that shares a number of characteristics with AGLP's economic depreciation. For example, application of the CDA to the CWP would also have the effect of levelising tariffs through a non-linear depreciation schedule. However, the CDA has been designed for application across regulated entities with prices to reflect forward looking long run costs. The CDA aims to be more flexible and less prescriptive than the AGLP proposal which simply incorporates the residual under-recovery based on company forecasts. Given that the regulatory value exceeds the ORC, the AGLP framework for the CWP does not necessarily produce efficient pricing.

The Commission has considered the appropriateness of deriving an asset valuation which incorporates AGLP's economic depreciation in the proposed asset valuation methodology. Under most conventional frameworks AGLP would be required to set tariffs much higher than currently proposed. This would compromise the expected rapid growth of the customer base, which would have the effect of raising the inherent risks for the project, and hence tariffs. A possible result of this could be that the CWP might never have been built. However, the projected volumes suggest that the users of the CWP will derive a consumer surplus from the existence of the pipeline. This implies that the CWP is in the public interest. The test of this will be whether the forecast long term volume growth is sustainable at the projected tariffs.

The Commission is guided in particular by section 8.1(a) of the Code which provides the objective that the service provider should have the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the reference services over the expected life of the assets used in delivering that service.

However, the Commission is concerned that the implementation of the proposal must be consistent with the Code and accord with accepted industry practice. In particular:

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[45] ORG, *Final Decision in respect of the Eastcoast Gas Pty Ltd's proposed access arrangement for the East Gippsland natural gas distribution system*, 6 May 1999, p. 28.

- as economic depreciation is the residual left after subtracting forecast operating costs and return on capital from forecast total revenue, it is likely to be highly susceptible to forecasting errors; and

- there may be a tension between flexibility in setting the tariff path over time and consistency with principles of competition, economic efficiency and equity.[46]

Subject to these reservations which are addressed later in this chapter, the Commission is of the view that AGLP's proposal to apply economic depreciation as a type of levelising mechanism to eventually recoup under-recoveries accrued in the early period of the life of the CWP is consistent with Code principles. However, it must be noted that the proposed framework is only feasible because of the lack of contestability of users and potential users of the CWP. This allows tariffs to be sustained above long run costs during the period when the economic value of the asset for regulatory purposes exceeds the ORC.

Inflation

The Commission understands that AGLP's cost and revenue values were initially derived in real or constant dollars, then converted into nominal dollars using AGLP's forecast of the Sydney All Groups Index of the CPI of 2.5 per cent per annum. As a result of this methodology, the accuracy of AGLP's financial projections, when expressed in nominal dollars, is dependent not only upon factors such as the level of demand and the price of the reference service, but also of the accuracy of the inflation rate forecast. This is relevant, for example, in that AGLP proposes that the residual value be expressed in nominal terms.

An issue for the Commission is whether the Sydney All Groups Index of the CPI is the most appropriate measure. The choice of index is also relevant to AGLP's proposal, in the event that the revisions commencement date is later than 30 June 2004, to adjust tariffs until the next access arrangement period commences. The related issue of the reasonableness of AGLP's inflation forecast is considered in section 2.5.

The Commission acknowledges that a general price index needs to be chosen, but it should be one which reflects the difference between real rates of return and nominal rates of return as perceived by financial markets. In this context the CPI may not be the ideal index. First of all, its consumer costs orientation means that it is over sensitive to some consumer oriented costs such as specific goods taxes and prices of products and services which may have only marginal relevance to general financial conditions. At the same time factors relevant to business oriented costs may be somewhat muted. Second, the selection of a Sydney based index is unnecessarily narrow given the financial markets oriented requirement of the index. Indeed an Australia-wide based CPI is less likely to be as susceptible to fluctuations of a spurious nature in this context. Despite these issues the Commission acknowledges the advantage of using a well recognised index like the CPI. Further support for the use of this index is the fact that it is also used as the basis for adjusting the value of treasury capital indexed bonds. Accordingly, the Commission proposes that the CWP access arrangement use the CPI (All Groups – weighted average of eight capital cities) in the calculation of tariffs.

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[46] The expected long effective life of the asset suggests that issues relating to inter-temporal equity may be particularly important.

Proposed Amendment – A2.4

In order for AGLP's access arrangement for the Central West Pipeline to be approved, the inflation index referred to throughout the access arrangement must be the CPI (All Groups – weighted average of eight capital cities).

2.5 Rate of return

2.5.1 Code requirements

The Code (sections 8.30-8.31) states that the rate of return used should provide a return which is commensurate with prevailing conditions in the market for funds and the commercial risk associated with the provision of reference services. As an example, it suggests using a weighted average of the returns applicable to each type of capital (equity, debt and any other source of funds) with such returns determined on the basis of a well accepted financial model such as the CAPM. The financing structure assumed should also reflect standard industry structures and best practice. However, a service provider may adopt other approaches if the regulator is satisfied that the objectives regarding the design of tariffs and a reference tariff policy set out in section 8.1 of the Code are met.

2.5.2 AGLP's proposal

AGLP has adopted a WACC approach and takes the Commission's decision on the Victorian transmission system (which set a pre-tax real WACC of 7.75 per cent)[47] as a benchmark. It then considers several factors that it believes are evidence of the CWP involving greater risk than the Victorian transmission system and consequently proposes a pre-tax real WACC of ten per cent.[48]

In its tariff model, AGLP has used real figures. Thus, the real rate of return becomes the critical parameter. The underlying parameters, equations and other assumptions used within the CAPM framework to develop the proposed post-tax nominal WACC and other WACC derivatives are summarised below in Table 2.6.

[47] ACCC, *Victorian Final Decision*, p. 65. The corresponding post-tax nominal cost of equity was 13.2 per cent.

[48] Revised Access Arrangement Information, p. 16.

Table 2.6: Parameter ranges proposed by AGLP for WACC calculations

Parameter			Ranges	
			High	**Low**
General Economic Parameters		Inflation[(a)]	2%	3%
	T	Corporate Tax Rate	36%	36%
	γ	Imputation Take Up Rate	25%	50%
Gearing	D	Debt	50	60
	E	Equity	50	40
Cost of Debt	r_f	10 Year Bond Rate	5.2%	4.8%
	r_f	2010 CPI Linked Bond Rate	3.5%	3.2%
	DM	Debt Margin	1.45%	1.0%
		Bank Costs	0.5%	0.5%
Nominal Cost of Debt		Based on 10 Year Bond Rate	6.65%	5.8%
		Based on CPI Linked Bonds	7.45%	6.7%
Cost of Equity	r_m-r_f	Market Risk Premium	7.0%	6.0%
		Asset Beta	0.9	0.55
	β_e	Equity Beta	1.66	1.23
		Margin for Asymmetric Risk	1.0%	0
		Margin for Self Insured Risk	0.5%	0
Nominal Cost of Equity	r_e	Based on 10 Year Bond Rate	18.2%	12.2%
	r_e	Based on CPI Linked Bonds	19.0%	13.1%
WACC Results		Post-tax nominal WACC	10.7%	6.0%
		Pre-tax nominal WACC	16.9%	9.4%
		Pre-tax real WACC	13.9%	6.8%

Source: Revised Access Arrangement Information, p. 13.

Note: (a) AGLP believes an inflation range of 2%-3% is acceptable, however all analysis in this table uses an inflation rate of 2.5%.

AGLP has modified the usual CAPM calculation of the cost of equity by adding a measure for asymmetric risk and an allowance for self insurance. Consequently, AGLP's nominal cost of equity (r_e) equation is:

$$r_e = r_f + \beta_e (r_m - r_f) + \text{asymmetric risk} + \text{self insurance}$$

The nominal cost of equity is a key variable in determining the rate of return. AGLP has defined the post-tax nominal WACC (W) by the formula:

$$W = r_e \frac{(1-T)}{(1-T(1-g))} \frac{E}{D+E} + (r_f + D_m)(1-T)\frac{D}{D+E}$$

AGLP's conversion from post-tax nominal to pre-tax real WACC is on the basis of firstly adjusting for tax and then for inflation.

AGLP has suggested that a range of 7.7 - 11.5 per cent for the pre-tax real WACC is a reasonable range based on its analysis. AGLP has nominated ten per cent as appropriate, on the basis that a figure in the lower half of the range could be a disincentive for investment and that the lower end of the range was similar to that considered appropriate for the Victorian

transmission system. According to AGLP this would suggest that the risk associated with the CWP is the same as that for the Victorian transmission system. AGLP does not believe this to be true.

2.5.3 Submissions by interested parties

Forcenergy Australia Pty Ltd (Forcenergy)[49] notes that the Code requires the rate of return used to determine tariffs is to provide a return to a service provider that is commensurate with prevailing market conditions. It believes that there is much readily available information in the market to suggest that the proposal by AGLP is not consistent with current market conditions.

In reference to the WACC, Forcenergy states:

> There is little evidence that an increase in the current WACC of 7.5% to 7.75% is warranted. The recent purchase prices for the gas distribution assets in Victoria at an average EBIT multiple of 15 is testimony that the ORG was generous. The Victorian Government had to balance the following two conflicting objectives:
>
> - maximise the price received from privatisations
> - establish a competitive gas market with commensurate value to end users
>
> The trade-off was a WACC of 7.75%. This number is not necessarily appropriate for all other service providers in Australia who own natural monopolies.[50]

Forcenergy also submits that a 60:40 debt-equity ratio is not suitable, noting that most of the recent purchases of Victorian energy assets used a ratio of 70:30. It suggests that the ratio for AGL may be higher.[51] Further comments provided by Forcenergy on the nominal cost of equity, for example, appear to be relevant to AGLGN rather than AGLP.

2.5.4 Commission's considerations

The WACC is a critical element of pricing principles since it is what determines the prospective profitability of the service provider in relation to a particular pipeline. Its value should be determined on the basis of prevailing financial market benchmarks taking into account the level of commercial risk involved in establishing the service infrastructure. If it is too low, the service provider would not expect to be able to recover the efficient and fair costs of service provision and perhaps, more importantly, may not have adequate incentive to augment facilities when appropriate. If it is too high, the service provider would have a strong incentive for over-capitalisation and the opportunity to derive monopoly rents. Such issues are directly relevant to the reference tariff objectives enunciated in section 8.1 of the Code.

The issues associated with the determination of the WACC were discussed extensively in the Commission's decision on the Victorian access arrangements.[52] At that time, the Commission indicated that on some issues it preferred a different approach to that proposed in the Victorian access arrangements. However, the Commission recognised that an alternative

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[49] Forcenergy submitted that it is a gas and oil producer with an interest in the Gunnedah Basin in NSW that is looking to supply coal seam methane to eastern Australia via AGLP's planned CRP and the CWP. Forcenergy submission, 19 March 1999, pp. 4-5.

[50] Ibid, p. 18.

[51] Ibid, pp. 18-19.

[52] For an in-depth discussion of the issues see also Professor Davis' paper, *The Weighted Cost of Capital for the Gas Industry - A report commissioned by the ACCC and prepared by Professor Kevin Davis of the University of Melbourne* (March 1998).

approach should be subject to wide examination and as such was reluctant to make changes without this further work. It noted that these issues would be pursued, in part, in the context of its *Draft Regulatory Principles* for the electricity sector. This statement was released in May 1999 and the Commission is presently considering submissions and comments on the proposed regulatory framework.

The *Draft Regulatory Principles* have been developed for, and in accordance with, the National Electricity Code (NEC). Some issues discussed in the *Draft Regulatory Principles* are specific to the electricity market. However, other issues, such as those relating to the rate of return are relevant to the Commission's regulatory work in regulated utilities other than electricity. While AGLP has used the Commission's *Final Decision* for Victorian gas transmission as a guide in developing the access arrangement for the CWP, the Commission is also guided by the principles developed in the *Draft Regulatory Principles*.

The post-tax nominal WACC formula adopted by AGLP has been noted above. AGLP has converted from a post-tax nominal WACC to a pre-tax real WACC by adjusting for tax and then inflation. However, as noted in the *Victorian Final Decision*, the Commission does not consider that the conversions for the pre-tax real WACC are appropriate. In that instance, the Commission used cash flow modelling to derive the pre-tax real WACC that yielded the post-tax nominal cost of equity indicated by the CAPM as the return over the lifetime of the assets if the forecasts and assumptions used for WACC are fulfilled. The Commission indicated in its *Final Decision* that a post-tax WACC framework is preferred to a pre-tax WACC framework. Further discussion on this can be found in the *Draft Regulatory Principles*.

Regardless of whether a pre-tax real or post-tax nominal WACC is used by service providers and the Commission, the basic rate of return critical to the regulatory framework is the post-tax nominal cost of equity from the CAPM. The cost of equity determines whether investors will be willing to advance equity to finance the capital infrastructure required to provide services.[53]

The development of a WACC figure from the cost of equity requires certain parameters and assumptions. The values assigned to the financial parameters remain contentious and warrant discussion in some detail since they form the basis for determining the rate of return that will be permitted on the regulated assets. Accordingly, each parameter will be dealt with in turn in the remainder of this section.

The key parameters are:

- the risk free interest rate (r_f), the real risk free rate (rr_f) and by implication the anticipated rate of inflation (f) and the interest rate applicable to debt (r_d);
- the market risk premium (MRP);
- the likely level of debt funding (D/V);
- the likely utilisation of imputation credits (γ);

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[53] ACCC, *Draft Regulatory Principles*, p. 73.

- the effective tax rate (T_e); and

- the equity beta (β_e) relevant to the stand-alone operation within the proposed regulatory framework.

Interest rates and inflation

The Code (section 8.30) clearly states that the rate of return should be 'commensurate with prevailing conditions in the market for funds'. The Commission interprets this as implying that all information for deriving the rate of return should be as up to date as possible at the point the access arrangement comes into effect and match the circumstances of the regulatory framework (for example, term and economic conditions). Interest rates and inflation expectations are parameters set by the financial markets on a daily basis and are readily determined.

Generally, the relevant WACC for regulatory purposes should be a forward looking concept which gives an indication of the minimum expected commercial return necessary to underwrite new investment in the facilities required to provide the reference services taking account of the commercial (and regulatory) risks involved.

Selected interest rates and inflation estimates relevant to the setting of the WACC are shown below in Table 2.7.

Table 2.7: Current financial market interest rates and inflation expectations

Financial indicator	Proposed by AGLP (per cent pa)	40 day moving average ending 27 August 1999 (per cent pa)[a]
5 year government bond rate		5.83
10 year government bond rate	4.8-5.2	6.18
Indexed bonds (August 2005 series)		3.47
Indexed bonds (August 2010 series)	3.2-3.5	3.64
Estimated 5 year real rate[b]		3.44
Estimated 10 year real rate[b]		3.50
Implied 5 year inflation expectation[c]		2.31
Implied 10 year inflation expectation[c]		2.59

Notes: (a) Based on daily closing quotes as published in *The Australian Financial Review*.
(b) Interpolations based on indexed bond figures.
(c) Inferred from the difference between nominal and real interest rates over the corresponding period using the Fisher Equation.

AGLP has adopted the nominal ten year bond rate and the CPI indexed bond 2010 series plus inflation component as indicators of the risk free rate. It recognises that these rates should be 'on the day' but has averaged the figures over an undefined 'short period of time' to remove volatility.

As argued in the Victorian decision, the Commission considers that the term associated with the risk free rate should coincide with the five year duration of the initial access arrangement period.[54] The Commission accepts the need to average over a short period to abstract from day to day market volatility. In the Victorian decision the Commission used the average of the eight weeks prior to the *Final Decision*. An alternative, which has been adopted by IPART, is the average over the last 20 business days. Since the release of the *Victorian Final Decision* in October 1998, the Commission has carried out further work and analysis in this area. As a result, the *Draft Regulatory Principles* propose the use of a 40 day moving average of the relevant bond rates covering the period prior to the decision analysis. This methodology has been adopted by the Commission for the present analysis, resulting in a risk free rate (r_f) of 5.83 per cent and a real risk free rate (rr_f) of 3.44 per cent.

While the inflation rate is not an explicit parameter in the basic WACC estimation, it is an inherent aspect of the nominal risk free rate and cost of debt parameters. Also it is fundamental to deriving real rates of return, which are used in the target revenue and economic depreciation calculations and is an important determinant of the effective tax liabilities. AGLP has suggested a range for the annual rate of inflation of two to three per cent over the initial five year price setting period but has used a rate of 2.5 per cent in all its analysis. The 2.5 per cent used by AGLP is higher than the official forecast inflation of 2.25 per cent for the year to June 2000.[55]

An indication of the inflation rate anticipated by financial markets and corresponding to the interest rate figures is provided by the difference in the nominal bond rates and inflation indexed bonds for the same term. The indexed bond series have maturity dates which do not correspond to current five or ten year bond rates but the corresponding figures are readily derived by interpolation and are shown in the Table 2.7 above. These figures represent the real risk free rate corresponding to the current nominal risk free rate (based on the five year bond yield) and indicate that the current expectation of inflation (f) over the initial regulatory period is 2.31 per cent. The Commission will use this market derived inflation rate in its calculations which has the additional benefit of being up to date. Official forecasts of inflation can become out of date and may reflect the policy perspective of the institution and not necessarily relate to the access arrangement period under consideration.[56]

In addition, part of the modelling undertaken to derive the tariffs included applying the assumed forecast inflation to historical circumstances, in particular the economic asset value for the year ending June 1998. The Commission considers it more appropriate to use actual observed inflation in these circumstances.

Accordingly, the Commission considers that the tariff model for the CWP should incorporate a forecast rate of inflation of 2.3 per cent[57] and an observed inflation rate for the financial year 1998-1999 of 1.1 per cent. An amendment to the access arrangement is proposed to this effect.

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54 ACCC, Final Decision – Victoria, pp. 49-51.

55 *Budget Paper 1 – Statement 2: Economic Outlook*, 11 May 1999, p. 22.

56 NERA, *A critique of the WACC parameters proposed for Transgrid – a report for the ACCC*, March 1999, p. 7.

57 While the Commission's calculations indicate the market forecast inflation to be 2.31 per cent, the Commission has rounded this to 2.3 per cent for the purposes of the proposed amendments for the CWP.

Proposed Amendment – A2.5

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must implement into its tariff model a forecast inflation rate of 2.3 per cent per year for each year of the access arrangement period.
>
> In addition, the tariff model must incorporate the observed inflation rate for the financial year 1998-1999 where appropriate.

In this access arrangement period tariffs proposed are expressed in nominal terms. This means that AGLP will bear any inflation risk. The use of a pre-defined inflation rate which is above the current rate and above that expected by the market implies that the risk of AGLP gaining by inflation being less than its forecast is greater than the risk of it losing by inflation being above the rate forecast. The Commission considers this risk should be removed from the service provider by the approval of real, rather than nominal tariffs at least in the period beyond which existing contracts apply. This is achieved by adjusting tariffs by CPI-X in the last three years of the access arrangement period. Further discussion regarding reference tariffs can be found in sections 2.9 and 2.10 of this *Draft Decision*.

Debt margin and cost of debt

AGLP suggested that the appropriate margin for the cost of debt is around 100-145 basis points above the relevant risk free rate and noted that the Commission had adopted 120 basis points in the Victorian decision.[58]

The lending margin is essentially an empirical matter. In the *Victorian Draft Decision* the Commission proposed a debt margin of 80 basis points. However, in the period following the release of the *Draft Decision* there was evidence that margins may have increased due to the growing uncertainties in global financial markets. On the basis of comments provided by financial institutions the Commission adopted an assumed debt margin of 120 basis points. This was based on an A- credit rating and 60 per cent gearing for the Victorian gas transmission business.

Since the release of the *Victorian Final Decision* in October 1998 the uncertainty in global financial markets has reduced. The margin for Envestra's purchase of Stratus and Energy21 (a Victorian gas distributor and retailer) which occurred in March 1999 has been reported to be approximately 100 basis points.[59] Boral's release of $150 million of notes in May this year was marketed at the equivalent of 111.5 basis points above Commonwealth government bonds. At the time Boral's credit rating with Standard & Poor's was A-.[60] More recently, AGL launched an issue of notes totalling $250 million. The notes have reportedly been marketed at 41 to 44 basis points over the swap curve.[61]

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58 Revised Access Arrangement Information, p. 14.

59 'Gas buy puts heat on ice Berg' *The Australian Financial Review*, 16 March 1999, p. 60.

60 'Boral bonds bear brunt of sentiment' *The Australian Financial Review*, 28 March 1999, p. 68.

61 'MTN issue for AGL launched by Commonwealth Bank' AGL media release, 10 June 1999.

In light of these recent events, the Commission considers that a range of 80 to 120 basis points is appropriate for the debt margin at this time. The Commission will use the mid-point of 100 basis points for its calculations.

The 100 basis point margin in combination with the nominal risk free rate of 5.86 per cent suggests a nominal cost of debt (r_d) figure of 6.86 per cent for use in the WACC estimation. With an inflation rate of 2.27 per cent, the corresponding real cost of debt (rr_d) is 4.49 per cent.

The market risk premium

The market risk premium is a parameter in the CAPM which together with the risk free rate and firm specific equity beta determine the expected cost of equity in the business. AGLP has proposed a range of 6.0-7.0 per cent for the market risk premium. This range has been the conventionally accepted range under the classical tax system. As reported in the Commission's *Final Decision* for Victoria, Professor Davis has suggested that this may not be in keeping with a forward looking CAPM framework favoured by the Commission. For example, the more stable inflationary environment now prevailing may mean that the relevant market risk premium is less than has been observed over recent years. In the *Victorian Final Decision* the Commission considered the probable range to be 4.5-7.5 per cent and chose to use a mid-value of 6.0 per cent.[62]

IPART has since released its *Final Decision* on GSN in which it notes further evidence (both Australian and overseas) that the market risk premium has fallen in recent years. One piece of evidence considered by IPART was a study by Tro Kortian that estimated the equity premium over the period 1928-1996 to be 3.9 per cent. Kortian's study noted that the premium has been falling and estimated the current equity premium to be around three per cent.[63] On the basis of this evidence, IPART considered the range of 5.0-6.0 per cent to be appropriate for the market risk premium.[64]

The Commission accepts that there is considerable evidence from recent studies of financial markets that the market risk premium has reduced in recent years. The Commission considers the evidence sufficient to lower the bottom end of the probable range of the market risk premium giving a probable range of 3.5-7.5 per cent. This is a particularly large range, reflecting the uncertainty (experienced both in Australia and overseas) associated with estimating the market risk premium. The Commission favours the lower numbers suggested by recent empirical evidence but acknowledges that such figures are not universally accepted by financial markets at present. Accordingly, the Commission has used 5.5 per cent in its calculations of the WACC for the CWP. However, the Commission will reconsider the appropriate level of the market risk premium over time as each regulatory decision is made.

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62 *Victorian Final Decision*, p. 53. See also "Welcome to bull country" *The Economist*, 18 July 1998, pp. 17-19.

63 Tro Kortian, *Australian Sharemarket Valuation and the Equity Premium*, September 1998.

64 IPART, *Final Decision: Access arrangement Great Southern Energy Gas Networks Pty Limited*, March 1999, p. 24. See also IPART, *Draft Decision: Access arrangement Albury Gas Company Limited*, June 1999, pp. 24-25.

Level of debt funding (gearing)

AGLP has suggested the proportion of debt funding applicable to CWP to be 50-60 per cent. The Commission considers that the nature of regulation proposed for CWP means there is relatively low commercial risk and the gearing for the company could be correspondingly high without adverse credit consequences.

Forcenergy suggests that a debt gearing of 60 per cent would be lazy. It notes that the Victorian energy assets have been purchased using gearing of 70 per cent and suggests that one could argue for even a higher level of gearing for AGLGN.[65] Comments in the media also suggest that a debt gearing of 60 per cent may be conservative with one analyst quoted as stating "For a regulated distribution business, with fixed cash flows until 2002, a 75:25 ratio is [66] Submissions from financial institutions and BHPP regarding the Victorian access arrangements for transmission expressed a strong expectation of gearing between 60 and 70 per cent. AGL's debt/equity ratio for the year ending 30 June 1998 is approximately 63 per cent.[67]

It is arguable that a 60-70 per cent range may be appropriate for the level of debt for the CWP. However, as the Commission noted in the Victorian decision, the Modigliani-Miller theorem suggests that the relevant cost of capital should be invariant over a broad range of gearing possibilities. The proposed WACC formulation also has this property and therefore the gearing assumption used is not a critical one.

For the purpose of deriving the WACC for the CWP the Commission considers the figure of 60 per cent to be reasonable.

Imputation credits

The availability of tax imputation credits requires a modification to the standard CAPM/WACC model to reflect the return to shareholders of tax credits associated with their share dividends. Thus, gamma (γ) is included in the WACC calculation to represent the proportion of franking credits which can, on average, be used by shareholders of the company to offset tax payable on other income. The higher the gamma, the lower will be the required return to equity holders and therefore the lower the estimated WACC. Consequently, gamma becomes a significant parameter.

AGLP has proposed a range of 25-50 per cent for gamma. Submissions to the Commission have not dealt with this issue. The Commission's *Final Decision* regarding Victorian gas transmission and the recent *Draft Regulatory Principles* note that the analysis of imputation credits is a controversial issue and there is considerable debate as to the value which should be ascribed. Ultimately, the Commission's choice of gamma will be a matter of judgement based on available empirical evidence.

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65 Forcenergy submission 19 March 1999, p. 18.

66 'Envestra unfazed by credit downgrade *The Australian Financial Review*, 16 March 1999, p. 21.

67 AGL 1998 Annual Report, p. 32. This is measured as net borrowings as a percentage of total capital and reserves. However, over the five years to 30 June 1998, the average gearing for AGL was approximately 45 per cent.

IPART has reported that to date, empirical evidence suggests that the average values for Australian imputation credits lie between 68 and 82 per cent of their face value. In addition, market studies undertaken by the Melbourne Business School indicate that gamma may be approximately 50 per cent.[68] Using the adjustments to gamma recommended by Professor Davis for less than a 100 per cent pay-out ratio, and a stylised model of cash flows, the discounted value of credits relative to their nominal value suggests a modified range for gamma of between 40 and 70 per cent based on the drop-off studies with a middle value of 55 per cent. In view of the fact that there are likely to be other tax concessions not considered in their analysis a somewhat reduced range of between 40 and 60 per cent may be more appropriate. The Commission is of the view that a gamma (γ) of 50 per cent is an appropriate assumption for calculating the WACC in this instance.

Effective tax rates

The difference between tax depreciation rates and economic depreciation rates means there is a more rapid payback of capital. This difference, in addition to the company's debt shield, results in a considerable deferral of any tax liabilities associated with the project. These serve to improve early cash flows to the investment and improve the internal rate of return of the project above that indicated by the assumed WACC parameters. This effect may be interpreted as an effective tax rate for the return on equity (T_e) which is less than the statutory rate (T) assumed by AGLP for the CAPM/WACC framework.

In the derivation of the CAPM/WACC equations the tax rate used is not usually identified. However, it is clear from the context that the effective tax rate should be used in place of the statutory corporate tax rate of 36 per cent in the relevant formula for calculating the post and pre-tax rates of return on equity.

At the WACC forum associated with the Victorian decision, a number of experts argued that their preferred regulatory approach was to avoid the use of a pre-tax WACC altogether. Subsequent discussions with these experts suggested how this could be done, by using a post-tax WACC directly available from CAPM estimates to reflect the return on assets and capturing the impact of taxes in the cash flows. Such taxes would simply then be added, along with other costs such as operations and maintenance, to calculate target revenues for the business.[69] Such an approach avoids the need for a special conversion formula, which is discussed later, and handles tax in a very transparent way.

The fact that the post-tax approach assesses tax obligations on an 'as you go' basis avoids both the need to calculate a long term effective tax rate and problems generated by post-tax returns diverging from market rates over time. As far as the business is concerned the post-tax approach would remove any risks associated with future tax liabilities and provide a return that was always commensurate with market requirements. However, the business would lose the benefit of early free cash flows that may be attractive to some owners.

The Commission sees benefits in a post-tax approach but also notes there are still a number of complex issues that are difficult to resolve. The Commission recognises the need to subject such an alternative to widespread examination by experts and other interested parties in a

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[68] IPART, *The rate of return for electricity distribution networks: discussion paper*, November 1998, p. 21.

[69] An approach similar to this has been adopted by regulatory authorities in the USA for many years.

public process. Part of this process includes the release of the *Draft Regulatory Principles*. Until this process is completed, the Commission is reluctant to change the proposed approach.

The Commission notes that a pre-tax real WACC has been used by AGLP in its proposal. However, the Commission considers that the revenue profile under the proposed pre-tax real approach is practically the same as that under a post-tax nominal approach. This result is due to the NPV framework established for the CWP, the derivation of the post-tax nominal cost of equity and the use of cash flow analysis to determine the WACC. In addition, the equivalence emerges because of the Commission's decision to avoid the pre-tax real conversion formulae, preferring instead to focus on the achieved post-tax cost of equity over the forecast life of the asset.

The Commission will report the WACC in this *Draft Decision* in pre-tax real and post-tax nominal terms as well as the relevant post-tax nominal cost of equity.

Beta[70] and risk

AGLP considers the WACC of 7.75 per cent in the *Victorian Final Decision* to be a benchmark but argues that AGLP faces materially different risks in comparison to Transmission Pipelines Australia Pty Ltd (TPA) in Victoria. The Victorian decision included the adoption of an asset (equity) beta of 0.55 (1.20). For the CWP, AGLP has proposed an asset beta (β_a) range of 0.55-0.90 and an equity beta (β_e) range of 1.23-1.66. No quantitative basis was given for this choice other than references to the asset betas of the groupings All Industrials (0.65), Diversified Industrials (0.71) and Diversified Resources (0.90). AGLP also proposes a margin for asymmetric risk of 0.0-1.0 per cent and a margin for self insured risk of 0.0-0.5 per cent.[71]

AGLP has made three observations relating to its perception of the higher risk of CWP compared to TPA. First, it notes that the *Victorian Final Decision* was released prior to an understanding of the full impact of the Longford gas plant incident. AGLP suggests that the risk of a Longford type incident may not have been fully taken into account by the Commission in its assessment of risk in the Victorian decision.

The Commission considered at that time of determining its *Final Decision* for Victoria that the risk of an incident such as the Longford explosion is small. Most of TPA's charges are based on the five days of peak maximum daily quantity (MDQ) and this will not be affected by the incident. The effect on volume charges is likely to be small given the likely frequency of an occurrence of this type. This risk was fully taken into account by the Commission in the *Victorian Final Decision*. The proposed tariff structure for the CWP consists only of a volume charge for the initial access arrangement period. Thus, the loss of income resulting from a reduction or cessation of transportation will be proportionally greater than it would be for a pipeline with a capacity charge or a peak charge.

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[70] Beta is a statistical measure of non-diversifiable risk associated with an asset or investment relative to the overall stock market. A higher value is generally associated with a more risky investment relative to a lower one. A value of greater than one means that the expected variation in returns correlated with overall market is greater than the variation in the overall market.

[71] Revised Access Arrangement Information, pp. 11-12 and 15-16.

Second, AGLP states that the risks associated with the CWP are greater than those associated with the Victorian transmission system. The factors leading to this higher risk include:

- general uncertainty due to the recent commencement of the pipeline;
- no significant foundation contracts;
- markets are not yet established;
- smaller size of the pipeline;
- greater concentration of usage among several large customers; and
- greater exposure to competing energy options.

The Commission does not consider these factors impact on beta which measure systematic risk. It does not consider that the smaller size of the CWP (compared to the Victorian Principal Transmission System) implies a greater risk (rather than just changing the scale). However, the Commission does accept that the larger concentration of users and the lower level of maturity of the CWP market may increase non-systematic risk associated with the CWP. It is also aware that AGLP's demand forecasts may prove in the future not to be accurate. The Commission also accepts that as a new energy source for the Central West region, natural gas faces competition from the existing energy sources of LPG, coal and electricity. In comparison to Victoria, where natural gas has been established for many years, AGLP must establish natural gas as a competitive fuel.

The third observation from AGLP is that to a large degree the pipeline's risk is dependent on the risks faced by its end-users. AGLP advised that the current large end-users are involved in agricultural processing, other resource processing and publishing. AGLP suggests that the asset betas for Australian Stock Exchange groups All Industrials, Diversified Industrials and Diversified Resources reflect the risk that it faces.

The Commission has been provided with information on the significant users currently contracted to purchase natural gas supplied through the CWP. In light of this information, the Commission considers that Diversified Resources, which includes mining companies, is not relevant to the assessment of the CWP. Agricultural and resource processing companies are diversified industrials, not resources. One group that the Commission considers to be of particular relevance for gas pipeline owners, including AGLP, is the Infrastructure and Utilities sector. The equity beta for this group is 0.63.[72]

As noted above, AGLP has also included margins for asymmetric risk and self insured risk in its calculation of the nominal cost of equity. AGLP has claimed there is significant asymmetry in the diversifiable risks faced by the service provider, and this should be reflected in a higher return. This is an empirical matter. AGLP has drawn attention to downside risks. Downside risks considered to be facing TPA were also brought to the Commission's attention during the assessment of the Victorian transmission access arrangements. However, comparatively little assessment has been made of upside benefits, including those available as a result of the

[72] AGSM Centre for Research in Finance, Risk Measurement Service, March 1999.

incentive based arrangements operating in the regulatory framework or a reduction in the company tax rate (as proposed by the Ralph Report).

However, as AGLP notes, it is not easy to quantify asymmetric risk and identification of its components is not generally undertaken. Nevertheless, AGLP has put forward a range of zero to one per cent and argues that asymmetric risk should not be incorporated in the CAPM framework through the asset beta.

Under normal CAPM assumptions the equity beta is meant to reflect only market related or non-diversifiable risks. However, it has been suggested that an allowance for unique (diversifiable) risks could be accommodated by increasing the value of beta instead of providing a specific allowance in the cash flows.

An increase in the equity beta would only be justified if there were a downside bias in the unique risks faced by the business. Arguing for such a bias, AGLP has noted the possibility of the regulator limiting price and/or return rises, increasing service and quality standards, and clawing back perceived excessive returns. The Commission does not consider these concerns to be valid. AGLP also suggests that by-pass or asset stranding is an asymmetric risk faced by the business.[73] However, particulars of assets that could be stranded and possible by-pass events were not identified by AGLP. The Commission does not consider the likelihood of these events occurring to be great given the nature of the pipeline.

On the issue of potentially insurable risks, AGLP suggests that infrastructure assets can be exposed to a variety of natural hazards. It suggests that these hazards may not be well covered by insurance and consequently, a business needs to allow for self insurance in its returns or as a notional cost. By not including self insurance risk in a regulatory model AGLP suggests that a regulator is assuming that either self insurance has no cost or businesses do not self insure.

Like asymmetric risk, self insurance risk is difficult to identify and quantify. AGLP suggests the risks are often company or infrastructure specific. However, AGLP used a range of 0 to 0.5 per cent in its calculations.[74] Further support for these figures was not provided by AGLP to the Commission.

On the basis of evidence presented, the Commission is not convinced that there are significant downside risks that outweigh potential upside benefits which would be in addition to the profits implied by the target revenue calculations. Nevertheless, the Commission does acknowledge that these risks are difficult to quantify. It also notes that for the Victorian decision, such risks were taken account of by choosing beta estimates towards the top end of the plausible ranges as suggested by the financial experts at the WACC forum.

Submissions to the Victorian assessment suggested that regulatory arrangements which are based on revenue caps or price caps are inherently more risky than the US rate of return regulation which has provided the main source of benchmark firms for beta determination.

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[73] AGLP fax to the Commission, 28 April 1999, pp. 1-2.

[74] Ibid, pp. 3-4.

The UK gas regulator Ofgas oversees a price cap regime. It has assessed the asset beta range for Transco, a gas transmission business, as being between 0.45 and 0.60.[75]

In addition, submissions suggested that the 'newness' of the regulatory framework introduced perceived uncertainties on the part of investors which should be taken into account in setting the cost of capital via the beta value assumption.

The Commission accepted these considerations as being relevant at the time and acknowledged that a commensurate increase in the beta estimates may be appropriate. The Commission considered an asset beta of 0.55 to be appropriate for the Victorian transmission system.

AGLP has asserted that it faces greater risks for the CWP than TPA faced for the Victorian transmission system. However, the arguments of AGLP ignore one crucial factor – the regulatory framework. If the regulatory frameworks applying to the Victorian transmission system and CWP were the same then the arguments put forward by AGLP regarding its greater relative risk may be valid to some extent. However, the frameworks are not the same. AGLP has proposed a NPV framework with economic depreciation. This essentially removes much of the commercial risk associated with demand uncertainty. If the framework is retained over the longer term, as understood by the Commission, much of the risk is removed by the fact that shortfalls in revenue are capitalised into the regulatory asset base. Thus, the shortfalls are likely to be fully recovered by the natural growth in the market.

This suggests to the Commission that the high end of the range 0.55-0.90 proposed by AGLP for the asset beta is not valid. While the Commission accepts that some asymmetric and self-insurance risks are relevant to AGLP, it is aware of the difficulties in quantifying them. On balance, the Commission proposes that a small adjustment to the asset beta for the Victorian transmission system, which has been considered to be generous, is appropriate in this instance. Accordingly, the Commission proposes an asset beta (β_a) of 0.60 in its analysis.

The *Victorian Final Decision* included an equation to determine the debt beta. This equation was:

$$\beta_d = (r_d - r_f - 0.50)/(r_m - r_f)$$

This equation includes the refinement by the Commission of bank costs accounting for approximately 50 basis points of the debt margin. These costs need to be deducted from the debt margin to determine the debt beta.[76]

Since the release of the *Victorian Final Decision*, the Commission has undertaken, and is aware of, further work in this area. As a result of these developments, the Commission considers that the appropriate level for the debt beta is zero.[77] This has been factored into the

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[75] In its review of this assessment, the Monopolies and Mergers Commission did not estimate a beta. However, it considered a WACC of seven per cent to be appropriate and this is consistent with the WACC range proposed by Ofgas. E-mail from UK Commerce Commission staff to the Commission, 28 April 1999.

[76] ACCC, Victorian Final Decision, p. 62.

[77] A zero value for the debt beta in this instance is supported by the fact that debt funding for AGLP is underwritten by its equity participant AGL which also underwrites the debt funding. Hence, the equity holders are essentially assuming non-performance risk that would in other circumstances be borne by

Commission's calculations for the equity beta for the CWP. As a result, the equity beta (β_e) for the CWP is 1.48.

Calculation of the rate of return

Table 2.8 summarises the parameter values proposed by AGLP and the Commission in this *Draft Decision*.

Table 2.8: Comparison of WACC parameters used by AGLP and ACCC

CAPM parameter	AGLP proposal	ACCC Draft Decision
Real Risk Free Rate (rr_f) %	3.2-3.5	3.44
Expected Inflation Rate (f) %	2.0-3.0	2.31
Nominal Risk Free Rate (r_f) %	4.8-5.2	5.83
Cost of debt margin (DM) %	1.0-1.45	1.00
Cost of debt (r_d) %	5.8-7.45	6.83
Real cost of debt (rr_d) %	na	4.42
Market Risk Premium (r_m-r_f) %	6.0-7.0	5.50
Corporate Tax Rate (T) %	36	36.0[(a)]
Usage of Imputation Credits (γ) %	25-50	50.0
Debt Funding (D/V) %	50-60	60.0
Debt Beta (β_d)	na	0.00
Asset Beta (β_a)	0.55-0.9	0.60
Equity Beta (β_e) [(b)]	1.23-1.66	1.48
Margin for Asymmetric Risk	0.0-1.0	0.00
Margin for Self Insured Risk	0.0-0.5	0.00
Nominal Cost of Equity $r_e = r_f+\beta_e(r_m-r_f)$ %	12.2-19.0	14.0
Real Cost of Equity $rr_e = (1+r_e)/(1+f)-1$ %	na	11.4

Source: Revised Access Arrangement Information, p. 13 and ACCC analysis.

Note: (a) The corporate tax rate of 36% is an input to the Commission's cash-flow analysis. The effective tax rate is estimated at approximately 6%.

(b) The Commission uses the Monkhouse formula $\beta_e = \beta_a +(\beta_a -\beta_d)(1-r_d/(1+r_d)T).D/E$ which reflects an assumption of an active debt policy aimed at maintaining a specific gearing ratio as assumed in the regulatory model.

The parameter values used are those considered most appropriate for the CWP as a stand-alone business. These generally fall near the middle of a narrow range based on the

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lenders. The impact of this adjustment is a small increase in the equity beta commensurate with the slight increase in risk assumed by equity holders.

information available, however a few, such as the equity beta and the margin on debt, have been chosen to give AGLP the benefit of associated uncertainty.

AGLP has chosen to convert from a nominal post-tax WACC to a pre-tax real WACC by first adjusting for tax and then for inflation. As noted in the *Victorian Final Decision*, the Commission does not consider such an approach valid. For the conversion formula to be accurate it requires the use of an effective tax rate and the rate of inflation. These are a source of uncertainty over the long term. Macquarie Risk Advisory Service suggested that the transformation order proposed by CS First Boston be reversed. That is, adjust the post-tax nominal WACC for inflation and then for tax to give a pre-tax real WACC. However, reversing the order of the transformation does not adjust for tax depreciation which has a different timing from depreciation for regulatory purposes.[78] Table 2.9 below shows the results of the alternative formulae that have been proposed.

Table 2.9: WACC estimates based on parameters given in Table 2.8

	per cent	
	AGLP proposal	**ACCC Draft Decision**
Nominal Cost of Equity $r_e = r_f + \beta_e (r_m - r_f)$	12.2-19.0	14.0
Post-tax nominal WACC $W = r_e [(1-Te)/(1-Te(1-\gamma))].E/V + r_d (1-T).D/V$	6.0-10.7	7.0
Post-tax real WACC $W_r = (1+W)/(1+f) -1$	5.83-10.41[(a)]	4.6
Pre-tax nominal WACC $W_t = r_e /(1-Te(1-\gamma)).E/V + r_d .D/V$	9.4-16.9	9.8[(b)]
Pre-tax real WACC $W_{tr} = (1+W_t)/(1+f)-1$ (applicant transformation)	6.8-13.9	8.4[(c)]
Pre-tax real WACC $W_{tr} = W_r/(1-T)$ (reverse transformation)	9.11-16.27[(a)]	7.1
Pre-tax real WACC (cash flow analysis by the Commission)	na	7.3

Source: Revised Access Arrangement Information, p. 13 and ACCC analysis.

Notes: (a) ACCC calculation from AGLP data.
(b) ACCC calculation from cash flow analysis.
(c) This figure is derived from the post-tax nominal WACC of 7.0% using the formula noted in the table. The tax rate used was the statutory rate of 36%.

Given the known shortcomings of the conversion formulae, the Commission has decided to focus primarily on computer analysis of cash flows over the life of the pipeline to find the WACC consistent with the CAPM parameters determining the nominal return on equity.[79]

[78] See ACCC, *Victorian Final Decision*, p. 61; ACCC, *Draft Regulatory Principles*, pp. 73-75; and ACCC, *Draft Regulatory Principles – Supplementary Papers*, pp. A10-A15.

[79] Further discussion regarding the derivation of WACC in a NPV framework can be found in Appendix B of this *Draft Decision*.

There is broad agreement among experts and commentators about how these are to be calculated from the basic input parameter assumptions.

To obtain the pre-tax real WACC (which has been used by AGLP), the Commission has used computer models that simulate the cash flows emanating from the regulatory framework. The value is chosen so that the cash flows indicated by the model are consistent with the nominal cost of equity of 14.0 per cent derived by the CAPM based on the parameters identified as being appropriate to AGLP within this access arrangement period. The value of the pre-tax real WACC consistent with these outcomes is 7.3 per cent.

In the Commission's *Victorian Final Decision* the post-tax nominal cost of equity was 13.2 per cent with a pre-tax real WACC of 7.75 per cent.[80] The two outcomes may, at first, appear to be in conflict. However, it must be noted that the Commission has accommodated for the higher risk associated with the CWP through a nominal cost of equity being 14.0 per cent in comparison to the 13.2 per cent for the Victorian transmission system. The resulting lower pre-tax real WACC for the CWP in comparison to Victoria reflects the difference in the regulatory frameworks put in place. As noted elsewhere in this *Draft Decision*, AGLP has adopted an NPV approach with economic depreciation to accommodate for the under-recovery of costs incurred during the first phase (which extends over a significant number of years) of the lifetime of the assets. In addition to the long asset life (80 years), the accelerated tax depreciation available to this new pipeline defers tax liabilities for a substantial number of years. Once these factors, plus a lower cost of debt (6.83 per cent for the CWP and 7.20 per cent for Victoria), are implemented into the cash flow model developed by the Commission[81] the resulting pre-tax real WACC for the CWP is lower than that derived for Victoria. This switch in relativities can be interpreted as a much lower effective tax rate on equity return in the case of the CWP.

For comparison purposes the Commission has calculated the pre-tax real WACC using the two conversion formulae that are often used in determining WACC. The pre-tax real WACC from the 'reverse transformation' formula (using the Commission's parameters set out in Table 2.8) is 7.1 per cent. The 'applicants transformation' gives a pre-tax real WACC of 8.4 per cent. In the application of both formulae, the tax rate used was the statutory rate of 36 per cent. A comparison between the pre-tax real WACC derived from the 'applicants transformation' and the Commission's cash flow analysis indicates that the relevant effective tax rate is approximately six per cent.

As the *Draft Regulatory Principles* states, the Commission considers that post-tax nominal WACC (established by a cash flow approach on the post-tax nominal return on equity) is preferred to the pre-tax real WACC. The Commission believes that a nominal framework has the benefits of being better understood by financial markets and that the treatment of depreciation is transparent.[82]

The post-tax nominal WACC relevant to the CWP access arrangement is 7.0 per cent. The key rates of return for the CWP are summarised in the table below. While the cash flow

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80 ACCC, *Victorian Final Decision*, pp. 62-66.

81 The complete model is confidential although the information relevant to the initial access arrangement is publicly available.

82 ACCC, *Draft Regulatory Principles*, pp. xii-xiii. See also Appendix B of this *Draft Decision.*

analysis used by the Commission derived a pre-tax real WACC of 7.3 per cent, the Commission has rounded this to 7.5 per cent for the purposes of the proposed amendments for the CWP.

Table 2.10: Rates of return for the CWP

	per cent	
	AGLP proposal	**ACCC Draft Decision**
Nominal cost of equity (r_e)	12.2-19.0	14.0
Post-tax nominal WACC (W)	6.0-10.7	7.0
Pre-tax real WACC (W_{tr})	10.0	7.5

Source: Revised Access Arrangement Information, p. 13 and ACCC analysis.

The inter-play between the assumed tax arrangements, tax depreciation, economic depreciation, the mix of asset classes, level of debt (and how it is funded) and the assumed inflation rates are all known to alter the relationship between the different rates of return. Given this dependence, however, it is important to note what assumptions have been made to arrive at the Commission's outcome. The model used is strictly in line with the regulatory framework proposed and asset values and capital expenditures are as specified in the access arrangement. Other costs and financial parameters are as specified in this *Draft Decision*.

While 14.0 per cent is the expected post-tax cost of equity under the assumptions of the regulatory framework, this is a long term expectation. In reality, returns may vary from year to year and can be expected to exceed this benchmark under the incentive provisions of the access arrangement.

It should also be reiterated that, under the pre-tax real regulatory framework where there is a provision for future tax liabilities in the revenue streams, actual post-tax returns to equity (including the capital gains implied by a negative economic depreciation) will be initially much higher than 14.0 per cent. However, when the bulk of available accelerated depreciation tax provisions are exhausted, the achieved return on equity can be expected to fall below the 14.0 per cent.[83] This is a feature of the pre-tax real approach. This result must be recognised as part of the implied regulatory contract underpinning the proposed access arrangements. The implication is that the lower future return cannot be used, at that time, to argue for an increase in the rate of return. To permit such a change would amount to double dipping since the business has already been compensated in earlier years. Similarly, if there is any future change in the regulatory framework (for example, a move to a post-tax approach) previous compensation for future taxation liabilities need to be accounted for.

[83] This assumes that the financial conditions remain as forecast. Changes in inflation etc may significantly vary the actual outcomes.

Proposed Amendment – A2.6

In order for AGLP's access arrangement for the Central West Pipeline to be approved:

(i) the WACC estimates and associated parameters forming part of the access arrangement must be amended to more accurately reflect the current financial market settings. In particular, the pre-tax real WACC should be set at 7.5 per cent and the associated inflation assumption set at 2.3 per cent; and

(ii) the target revenues and forecast revenues must be based on these new parameters, including the X factor of -0.01 per cent, and applied in the derivation of individual tariffs.

2.6 Non-capital costs

2.6.1 Code requirements

The Code (sections 8.36 and 8.37) allows for recovery of the operating, maintenance and other non-capital costs that would be incurred in providing the reference service by a prudent service provider acting efficiently and in accordance with good industry practice.

Attachment A to the Code (summarised in Box 4.1 in this *Draft Decision*) requires the disclosure of certain costs by the service provider in the access arrangement information, unless it would be unduly harmful to the legitimate business interests of the service provider, a user or a prospective user. The costs to be disclosed include wages and salaries, rental equipment, gas used in operations, materials and supply and corporate overheads and marketing. Some disaggregation by zones, services or categories of assets is also required where appropriate.

2.6.2 AGLP's proposal

As the CWP has only recently commenced operation, no historical information on operational costs is available. AGLP has estimated the costs that it expects to incur over the access arrangement period assuming real costs are unchanged from 1999. These are shown in the table below with costs for the years 2000 to 2004 calculated by applying AGLP's assumed annual 2.5 per cent inflation factor.

Table 2.11: Non-capital costs, 1999 to 2004

	Year ending 30 June ($'000)					
	1999	**2000**	**2001**	**2002**	**2003**	**2004**
Operations and maintenance	450.0	461.3	472.8	484.6	496.7	509.1
Administration	223.5	229.1	234.8	240.7	246.7	252.9
Sales and marketing	50.0	51.3	52.5	53.8	55.2	56.6
Total	723.5	741.7	760.1	779.1	798.6	818.6

Source: Revised Access Arrangement Information, p. 20.

Operations and maintenance will be carried out by EAPO which also carries out these activities for the MSP. EAPO has advised AGLP that the key operations and maintenance costs are labour (29 per cent of total costs), outside services (27 per cent) and material and supply (six per cent).[84] AGLP considers the $450 000 payable to EAPO for operations and maintenance during the year to June 1999 is reasonable and less costly to users than if carried out by AGLP itself.

Administration tasks are carried out by various parts of the AGL Group on behalf of AGLP. AGL Group also carries out marketing of the CWP. However, there are no formal agreements between AGLP and other members of the AGL Group for these functions. The cost to AGLP has been estimated as a proportion of the overall costs incurred by AGL Group in carrying out the administration and marketing activities. Further information regarding these costs has been provided to the Commission on a confidential basis.

2.6.3 Submissions by interested parties

BHPP submitted to the Commission that for services provided by AGL Group:

> AGLP should confirm that it has disclosed all related party transactions and provide details of the nature and quantity services that have been purchased or sold and the counter party to these transactions.[85]

2.6.4 Commission's considerations

As noted above, BHPP has raised concerns regarding related party transactions undertaken by AGLP in relation to the operation of the CWP. AGLP has provided information to the Commission regarding the nature and quantity of the services that are to be undertaken by the AGL Group and EAPO on behalf of AGLP. The Commission is satisfied that this information supports the costs estimated by AGLP and that the relationships between the entities are fully disclosed.

Two industry accepted benchmarks for operations and maintenance costs are cost per pipeline length and cost per volume transmitted. Comparisons between the CWP and other transmission pipelines in Australia are shown in Table 2.12 below. In terms of cost per

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[84] AGLP, Additional General Information, 25 June 1999, pp. 2-3.

[85] BHPP submission, 25 March 1999, p. 3.

1 000km, the CWP compares favourably with the other pipelines. However, in relation to cost per GJ, the CWP appears to be considerably more expensive to operate than other pipelines.

It must be noted that while these measures of pipeline cost efficiency have been accepted in the industry, they do have limitations. The comparisons can be made but in doing so, other aspects of the pipelines such as compression, age and throughput should, in general, be noted. For the CWP, the fact that it is a new pipeline may suggest that non-capital costs such as maintenance should be relatively low when compared to a pipeline that has been operating for some years. In addition, it must be noted that the volume of gas through the CWP is quite small in the initial years of the access arrangement period. The table below illustrates the impact of volumes on the comparison indicators. In 1999, the CWP non-capital costs per GJ are calculated as $2.62. In 2004, the last year of the initial access arrangement period, this falls to $0.58/GJ as a result of the increased volumes expected through the pipeline. These costs per GJ for 2004 are much closer to those for the other pipelines although there remains a significant gap.

Table 2.12: Comparison of transmission pipeline non-capital costs

	$/1 000km ($ million)	**$/GJ**
AGLP – CWP (1999)[(a)]	2.8	2.62[d]
AGLP – CWP (stand-alone) (1999)[(a)]	4.7	4.38[e]
EAPL – MSP (2001)[(b)]	6.1	0.12
Epic – Moomba-Adelaide Pipeline (1999)[(c)]	19.2	0.16
TPA – Victorian transmission systems (1998)[(a)]	16.0	0.13

Notes: (a) AGLP, Revised Access Arrangement Information, pp. 27-31.
(b) EAPL, Proposed Access Arrangement Information, p. 65.
(c) Epic, Proposed Access Arrangement Information, attachments 1 and 4.
(d) For 2004 non-capital costs are $0.58/GJ.
(e) For 2004 non-capital costs are $0.96/GJ.

Chapter 4 of this *Draft Decision* discusses the use of key performance indicators (KPIs) and performance benchmarks in more detail. It concludes that on the basis of the available information the operating, maintenance and other non-capital costs on the CWP are not unreasonable over the life of the pipeline. The costs incurred by AGLP can be considered to reflect costs that would be incurred by a prudent service provider acting efficiently within the framework proposed by AGLP. Nonetheless, the Commission is concerned that AGLP's contracting out of non-capital expenditure activities to EAPO and other businesses within the AGL Group has the effect of reducing the transparency of these operations.

2.7 Forecast revenue

2.7.1 Code requirements

Three alternative methodologies are set out in section 8.4 of the Code for determining total revenue. They are: cost of service; internal rate of return; and NPV. In this access arrangement, the service provider has proposed to use the NPV methodology. The NPV of

total revenue is calculated on the basis of a forecast of all relevant costs for the pipeline with the rate of return being the relevant discount rate. NPV methodology allows for forecast revenue in the initial access arrangement period to be less than that which is needed to fully recover costs in this period.

2.7.2 AGLP's proposal

Forecast revenue is set at a level, over the life of the asset, which ALGP states allows it to earn a reasonable rate of return on assets employed in providing tariffed transmission services on the CWP. In this initial access arrangement period, the tariffs proposed would produce a revenue from the forecast volumes which would under-recover costs. Consequently, economic depreciation would be negative which would lead to an increase in the regulatory asset value. It is proposed in the access arrangement that, as a fixed principle, the residual value at 30 June 2004 be $45.12 million (in dollars of that day).[86] Consequently, tariffs in future access arrangement periods, which would be based on this value, would recover costs that have not been recovered by tariffs in the initial access arrangement period.

AGLP does not provide a forecast of revenue in its access arrangement or access arrangement information. However, forecast revenue can be easily calculated from the proposed tariffs and the forecast volumes provided. The revenue associated with the proposed throughput charge for the reference service is shown in the table below. AGLP has not forecast revenue from any other source (either associated with the reference service, such as overrun or variance charges, or associated with negotiated services) as AGLP considers that this revenue is not material.

Table 2.13: Forecast revenue, AGLP proposal, 1999 to 2004

	Forecast revenue ($)	
Year ending 30 June	**Real dollars[(a)]**	**Nominal dollars**
1999	491 280	491 280
2000	961 990	986 040
2001	1 487 115	1 562 400
2002	2 073 135	2 232 540
2003	2 720 679	3 003 120
2004	3 083 679	3 488 900

Source: ACCC calculations from data in the Revised Access Arrangement Information, pp. 4 & 23.
Note: (a) An inflation rate of 2.5 per cent is assumed by AGLP.

The residual value of the asset is the asset valuation at the end of the initial access arrangement period. For each year (year n) the value of the asset has been determined by AGLP using the following formula:

[86] Pursuant to section 8.47 of the Code, a reference tariff policy may provide for certain principles that are fixed for a specified period of time and are not subject to change without agreement of the service provider when the service provider submits reviews for the access arrangement.

$$\text{Asset value}_{(n)} = \text{asset value}_{(n-1)} + \text{capital expenditure}_{(n)} - \text{economic depreciation}_{(n)}$$

As a result of the forecast revenue path which in turn determines the level of economic depreciation, AGLP has determined that the residual value of the asset for the initial access arrangement is $45.12 million in nominal terms. This figure has been incorporated into AGLP's proposed fixed principle.[87]

2.7.3 Submissions by interested parties

No submissions were received on this issue.

2.7.4 Commission's considerations

AGLP has applied a NPV framework to determine total revenue as permitted by the Code. For the initial access arrangement period, total revenue will under-recover costs. The Commission finds this framework acceptable for the CWP and notes that AGLP has complied with the Code in relation to determining forecast revenue.

However, AGLP has not quantified the forecast revenue in the access arrangement or access arrangement information. Users and prospective users need to calculate AGLP's forecast total revenue from the access arrangement information in order to form an opinion on compliance with the Code and the appropriateness of the level of revenues. The Commission does not consider this satisfactory. Not only should total revenue be calculated according to one of the methodologies identified by the Code but it should be specified in the revised access arrangement documents.

As a result of the Commission's amendments proposed for the WACC, inflation and tariffs, the actual revenue path for the CWP will be different to that proposed by AGLP and noted in the above section. The forecast revenues as a result of the Commission's amendments are provided in Table 2.14 below.

Table 2.14: Forecast revenue, ACCC draft decision, 1999 to 2004

	Forecast revenue ($)	
Year ending 30 June	**Real dollars[(a)]**	**Nominal dollars**
1999	491 280	491 280
2000	961 140	983 246
2001	1 490 400	1 559 747
2002	1 950 176	2 087 857
2003	2 410 064	2 639 557
2004	2 598 794	2 911 723

Source: ACCC calculations.

Note: (a) An inflation rate forecast of 2.3 per cent has been used other than for 1998-99 when the observed increase was 1.1 per cent.

[87] Access Arrangement, p. 12. The equivalent real value is $39.88 million (based on AGLP's proposed inflation rate of 2.5 per cent).

In addition, the residual value of the asset will also alter as a result of the Commission's proposed amendments. The Commission has determined that the residual value in nominal terms is $38 631 708. The equivalent in real terms is $34 479 880.

The Commission has noted in the *Draft Regulatory Principles* that financial indicator analysis can provide assistance in determining the impact of forecast revenue on the credit worthiness of the business. The Commission and IPART have previously carried out this type of analysis.[88]

While financial indicator analysis is useful for established businesses, it is not necessarily suitable for a new project such as the CWP. In the case of the CWP, the calculation of financial indicators is affected by the capitalisation of unrecovered costs through AGLP's economic depreciation that in turn impacts on cash flows and profits. However, it must be noted that the regulatory framework, which allows this capitalisation, provides a benefit to AGLP that the financial indicators for the business over the initial developing years do not reflect. When considered in isolation, financial indicators for the CWP over the initial access arrangement period do not provide meaningful results. As the demand for gas through the CWP grows and the market is established, the performance of the CWP as measured by the financial indicators is much improved. It should be noted, however, that the methodology of the CWP access arrangement is designed to allow AGLP to recover the efficient costs of delivering the reference service over the life of the pipeline. It would be expected, therefore, that the performance of the CWP as measured by financial indicators would improve over time.

2.8 Cost allocation and tariff setting

2.8.1 Code requirements

Section 8.38 of the Code requires that, to the maximum extent that is commercially and technically reasonable, reference tariffs should recover all costs directly attributable to the reference service and a fair and reasonable share of joint costs. It also requires (section 8.42) that a particular user's share of revenue to be recovered also follows these principles. These requirements must be met, regardless of the methodology used to calculate total revenue.

2.8.2 AGLP's proposal

The proposed tariff for the CWP consists solely of a commodity charge based on actual throughput volumes. Most other pipelines collect the majority of revenue on the basis of contracted amounts (through capacity reservation charges) with the smaller proportion of revenue collected through a commodity charge. AGLP has not differentiated between classes of customers or implemented capacity and commodity elements to its tariff structure. The single 'one-part' tariff proposed has the benefit, according to AGLP, of being simple and easy to understand and use. AGLP considers this an important aspect of the tariff structure in light of the need to develop the market for natural gas. It considers that the requirements of the Code are met by:

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[88] See, for example, ACCC, *Victorian Final Decision*, pp. 72-75 and IPART, *Draft Decision: Albury Gas Company Limited*, June 1999, pp. 59-63.

- recovering from users the costs incurred in providing the service;
- assisting in the development of the market; and
- not creating a barrier to the development of a competitive market for gas supply services.[89]

AGLP notes that capacity-based charges are expected to be introduced in the next access arrangement period.[90]

In addition, the CWP has not been separated into multiple pricing zones. AGLP has stated that this reflects a regional infrastructure development objective of ensuring that no local community will be at a price disadvantage to any other. In addition, AGLP considers that it would not be prudent to build a pipeline like the CWP without single zone pricing.[91] AGLP states that 'It is not technically and commercially reasonable to allocate costs to particular Users by any other means and maintain the long term viability of the pipeline'.[92]

AGLP states that the proposed single zone reference tariff is intended to encourage sufficient demand in Forbes, Parkes, Narromine and Dubbo to justify the total investment. AGLP contends that other tariff methodologies, such as distance-based or stand-alone, would result in a delivered price for gas that would be uncompetitive with alternative fuels at the regional centres. As a result, the pipeline would not have been extended to some of these centres. AGLP states that without the combined volumes of the four centres, the pipeline would not be viable.

AGLP has indicated that if the pipeline is extended to Tamworth, as anticipated, the extension would form a second pricing zone. It intends that the tariff for the Marsden to Dubbo pricing zone (the subject of this access arrangement) would not change from the structure or levels currently proposed.[93] That is, users in the Tamworth pricing zone would not contribute to the costs associated with the Marsden to Dubbo section of the pipeline even though their gas would use this facility. Users in the Marsden to Dubbo zone would not benefit from reduced tariffs that might otherwise result from the increased volumes which would be expected if the pipeline is extended to Tamworth.[94]

2.8.3 Submissions by interested parties

Forcenergy submits that 'The pipeline business is a fixed cost business and some, if not most, of those costs should be collected via a demand or capacity reservation charge.'[95] It does not accept AGLP's claim that the basis for a throughput-based tariff is to assist in the development of the market. Forcenergy suggests that AGLP has little or no capacity contracts for the CWP

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89 Supplementary Access Arrangement Information, 25 June 1999, pp. 2-3.

90 Revised Access Arrangement Information, p. 5 and Access Arrangement, p.3.

91 Supplementary Access Arrangement Information, 25 June 1999, p. 4.

92 Revised Access Arrangement Information, p. 5.

93 Access Arrangement, p. 16.

94 Under the proposed valuation of the initial capital base, users of the CWP will not pay for the eight inch pipeline that has been built in preparation for the CRP during the initial access arrangement period, but instead, the tariff is based on the optimised six inch pipeline.

95 Forcenergy submission, 19 March 1999, p. 24.

and has built the pipeline with little to no contractual underpinning. It also calls for tariffs to reflect the different costs associated with the other services it proposes should be offered by AGLP and that a comparison between the proposed tariff approach and other methodologies be made.[96]

Forcenergy has expressed concern about the volume forecasts used by AGLP in determining its tariffs and tariff methodology, suggesting that AGLP has not demonstrated that it has conducted a thorough market assessment for the CWP. Forcenergy submits that 'NSW gas demand should at least double between the year 2000 and the end of the review period'[97] although support for this claim is not provided. It considers that the tariff path does not reflect this growth in demand. If the demand growth does not occur, Forcenergy suggests that AGLP incurs substantial penalties.

Forcenergy also submits:

> We hope that the revenue collected on the CWP and the proposed CRP do not cross subsidise AGLN's (sic) effort to grow the tariff markets in rural NSW.[98]

The Commission received submissions in support of the single pricing zone. DCC supports the single pricing zone and further states that it does not expect users of the CRP to contribute to the cost of the CWP. The Council states that it understands and supports the low initial tariff which rises steeply over the access arrangement period.[99] The MRBEC states that:

> It is imperative to the future development of both regions that we achieve a regional pricing structure and remain competitive in our endeavours to grow business and industry for the regions.[100]

2.8.4 Commission's considerations

Major issues arising from AGLP's chosen tariff methodology include cost allocation and the adoption of a single charge for users based on throughput, the single pricing zone, the impact of the proposed extension to Tamworth on tariffs and the forecast volumes. These issues are addressed below.

Cost allocation

In assessing this issue, the Commission must consider whether, as claimed, all AGLP's costs are associated with the provision of the reference service or whether some costs are associated with other aspects of the company's operations. Almost all pipelines are used by more than one customer, as are facilities such as odourant stations. Operations and maintenance costs are related to the running of the system and are thus joint costs. This raises questions as to whether these costs have been shared appropriately between users.

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96 Services that Forcenergy considers will be sought by users over the next five years include interruptible, back haul, partial forward haul and parking. Ibid, pp. 26-27.

97 Ibid, p. 18.

98 Ibid, p. 17.

99 DCC submission, 4 March 1999, p. 1.

100 MRBEC submission, 5 March 1999, p. 1.

As noted above, AGLP has not established different tariff structures for different customers nor does it propose a commodity-capacity tariff structure or distance-based tariffs. As a result of this proposal, no cost allocation between users, distances, or between capacity and commodity is proposed. All costs are allocated to all users of the CWP on the basis of their actual throughput volumes.

One-part tariff

The Commission notes evidence that local communities support the proposed tariff structure. It has also considered the arguments put forward by AGLP in support for the proposed single 'one-part' tariff.

The proposed tariff structure is unusual in its simplicity. Two-part tariffs are normally considered to have desirable characteristics such as pricing efficiency, cost reflectivity and providing the market with the correct pricing signals. However, if, as suggested by AGLP, there is no chance of capacity constraint of the CWP during the term of this access arrangement then there is little benefit to AGLP or users in including a capacity-based charge in the reference tariff.[101] AGLP has proposed that capacity-based charges will be introduced in the next access arrangement period. Demand patterns for users will be sufficiently established at this time and gas management procedures can be implemented

The Commission has considered the views of the local communities and the operation of the CWP in the initial access arrangement period. Accordingly, the Commission proposes to accept the one-part tariff proposed by AGLP for the initial access arrangement period.

Single pricing zone

AGLP has provided detailed information to the Commission on its modelling of distance-based and stand-alone pricing methodologies for the CWP to support its claim that under its assumptions these pricing methodologies would result in tariffs that would be uncompetitive with the alternative energy sources available to users.

In adopting a distance-based pricing methodology the distance from Marsden to each of the four regional centres is factored into the determination of tariffs. Under AGLP's assumptions the tariff for Dubbo, which is at the end of the CWP, would be higher than the proposed tariff and the level considered competitive with alternative fuels. As a result, it would not be prudent to build the CWP as far as Dubbo. However, without Dubbo, some economies of scale for the project are lost since Dubbo represents approximately 59 per cent of the total annual volume through the CWP during the initial access arrangement period.[102] While the pipeline would be approximately 210 km to Narromine (rather than the full 255 km to Dubbo), the reduced total volume could not support the pipeline at tariffs that would be competitive. As a result, it would not be prudent to build the pipeline.

The Commission has also considered distance-based pricing under different assumptions to those included in AGLP's proposed access arrangement. It has found that it is possible to derive tariffs for Forbes and Parkes, the two centres closest to Marsden, that are lower than

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[101] This *Draft Decision* proposes a trigger mechanism to require AGLP to submit revised tariffs in advance of the specified revisions submission date in the event that actual throughput volumes substantially exceed those forecast. See proposed amendment A3.6.

[102] Revised Access Arrangement Information, p. 23.

that currently proposed in the access arrangement and so lower than the estimated prices of alternative fuels. However, tariffs for Narromine and Dubbo remain higher than the target level under all reasonable assumptions modelled by the Commission.

A stand-alone pricing methodology derives tariffs for each location based on the appropriately sized pipeline to that location and the forecast demand. There are no economies of scale available in this scenario. The Commission has established that under a range of assumptions this methodology results in tariffs for each location that are significantly higher than the prices of the alternative fuels of coal and LPG. The tariffs are also significantly higher than that proposed in the access arrangement. The Commission agrees with AGLP that with such a pricing methodology it would not be economical for the CWP to be built to any of the locations.

The Commission's sensitivity analysis indicates that should plausible changes in the assumptions used to develop the access arrangement, including the financial parameters and volumes, occur, distance-based pricing is unlikely to become feasible. Stand-alone pricing remains even less likely to be a feasible alternative to the single pricing zone proposed. However, any significant divergence between actual and forecast demand may result in distance-based tariffs for the CWP becoming viable. As outlined in section 3.7 of this *Draft Decision*, AGLP will submit revisions to the reference tariffs if there are significant increases in the actual throughput of gas during the initial access arrangement period.

The Commission proposes to accept the single pricing zone that AGLP has proposed for the CWP for this initial access arrangement. However, this does not indicate that the Commission will necessarily accept this type of pricing structure for other pipelines or for the CWP's future access arrangement periods.

Extension to Tamworth

It is anticipated that the CWP will be extended to Tamworth (the CRP) prior to the review of the access arrangement commencing in 2004. The Commission considers that the most appropriate time to consider the issues relating to the CRP would be when revisions are submitted to include it in the present access arrangement through the application of the extensions/expansions policy. All aspects of the access arrangement, including any augmentations of the CWP, will be examined as part of the scheduled review. Further discussion in relation to the CRP can be found in section 3.6 of this *Draft Decision*.

Volume

The Commission notes that without historical information on the demand for natural gas it may be difficult to estimate the gas required by new users. It is possible that, over time, actual demand may be quite different to that forecast. The Commission is not well placed to assess the forecasts that have been made and considers that the forecasts are uncertain. As discussed in section 3.7 of this *Draft Decision*, AGLP will submit revisions to the reference tariffs if there is a significant divergence in the demand figures during this initial access arrangement period. The Commission expects that the accuracy of the demand forecasts for the CWP will be greatly improved at the time of the scheduled review of this access arrangement.

Model audit

The Commission has assessed the model used by AGLP to construct the tariff and is satisfied that it correctly reflects the assumptions, forecasts and methodology described in the access arrangement and access arrangement information and is consistent with the Code.

Assessment

As noted above, AGLP has proposed to implement a single one-part reference tariff to all users of the CWP. The use of a single pricing zone will necessarily mean that some users will pay more, and some less, than they would have if multiple pricing zones had been proposed. Improved cost reflectivity of tariffs could be achieved by implementing a different tariff structure that included, for example, a capacity charge, a distance-based component or differentiated between groups of users.

Both sections 8.38 and 8.42 of the Code provide that there will be situations where the desired level of cost reflectivity may not be possible in designing a tariff structure. In light of these sections of the Code, the Commission undertook an analysis of the tariff structure proposed by AGLP in addition to the alternatives of distance-based tariffs and stand-alone tariffs. As noted previously, the Commission does not disagree with AGLP's claim that neither distance-based nor stand-alone tariffs would be feasible for the CWP during the initial access arrangement period. As a result, the allocation of costs and total revenue between users is no longer an issue as any reasonable alternative allocation method is not a commercial proposition for the CWP at present.

Accordingly, the Commission accepts AGLP's tariff proposal, and subsequent allocation of costs, for the initial access arrangement period. The Commission considers that the requirements of the Code are met as far as commercially feasible in this case. However, the Commission's proposal to accept a single reference tariff applying to all users in a single pricing zone in this instance does not imply acceptance of the same, or similar, proposal for the CWP in future access arrangement periods or for other pipelines.

Additional comments on the proposed tariffs in relation to the general principles of sections 8.1 and 8.2 of the Code can be found in section 2.10 of this *Draft Decision*.

2.9 Tariff path and incentive structure

2.9.1 Code requirements

The Code (section 8.3) provides discretion to service providers in how the reference tariffs may be varied during an access arrangement period. For example, tariffs may change according to a price path approach where tariffs follow a path determined at the start of the period. The price path is adjusted at the start of the next period. The alternative method specified in the Code is the cost of service approach. Tariffs are set according to forecast costs and are adjusted throughout the access arrangement period in light of actual outcomes. The Code also allows variations or combinations of the approaches to be used.

Section 8.44 of the Code also states that the reference tariff policy should, where the regulator considers appropriate, contain a mechanism to enable a service provider to retain some, or all, of returns which exceed the expected level, particularly where these increased returns are due

to the service provider's efforts. This incentive mechanism should encourage the service provider to increase sales volumes, minimise costs, develop new services, and undertake only prudent investment (section 8.46). It should also ensure that users gain from any increased efficiency, innovation and improved sales volumes. The mechanism may include:

- specifying that tariffs are based on forecast not realised variables;
- setting a target revenue and specifying how revenue in excess of this is to be shared between the service provider and users; and
- a rebate mechanism for rebatable services that does not provide a full rebate to users.

Sections 8.47 and 8.48 of the Code allow a reference tariff policy to include certain principles that remain fixed for a set period (referred to as the fixed period). These fixed principles can not be changed without the agreement of the service provider and may only include structural elements and not market variable elements.

Section 10.8 of the Code defines a market variable element as:

> … a factor that has a value assumed in the calculation of a Reference Tariff, where the value of that factor will vary with changing market conditions during the Access Arrangement Period or in future Access Arrangement Periods, and includes the sales or forecast sales of Services, any index used to estimate the general price level, real interest rates, Non Capital Cost and any costs in the nature of capital costs.

While a fixed period may be for all or part of an access arrangement, the regulator is required to consider the interests of users and prospective users in determining the period.

Sections 8.9(e) and (f) specify the methodology to calculate the capital base for the next access arrangement period. The residual value at the end of the first access arrangement period is adjusted to allow for any difference between actual and forecast new facilities investment and redundant capital. Once these adjustments are made, the residual value becomes the capital base for the commencement of the next access arrangement period.

2.9.2 AGLP's proposal

The tariffs for the initial access arrangement have been specified in nominal terms in the access arrangement. The tariffs increase by approximately \$0.20/GJ each year starting at \$1.78/GJ for the year ending 30 June 1999.[103] These prices, coupled with the forecast volumes, are insufficient to recover total forecast costs over this period. AGLP considers that the low initial tariffs it has proposed are needed to encourage prospective users to switch from existing fuels to natural gas.

AGLP has not yet proposed the reference tariffs to apply for periods after the initial access arrangement period. However, it has indicated that tariffs after the initial access arrangement period will be calculated through a CPI-X mechanism. The value of the annual escalation factor X that satisfies the NPV methodology and results from the initial proposed tariffs,

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[103] The tariff for the period ending 30 June 1998 is not a reference tariff as it pre-dates the initial access arrangement period. Tariffs are proposed to increase by between \$0.19/GJ and \$0.20/GJ each year. Access Arrangement, p. 8.

WACC and other elements incorporated into AGLP's model is 1.36 per cent.[104] This indicates that real tariffs are expected to increase significantly over the remaining life of the CWP.

Under AGLP's proposed NPV based price path approach, the tariff path would not be varied during the initial access arrangement period as a result of differences between forecast and achieved outcomes. AGLP states that this will provide an incentive to AGLP to improve on its forecasts as any benefits would be retained during the current access arrangement period. AGLP does not propose any sharing of benefits with users in the initial access arrangement period. AGLP also claims that the level of reference tariffs provides an incentive to develop the market.

Under AGLP's NPV methodology the increase in the regulatory value of the CWP over the initial access arrangement period is designed to allow later recoupment of these under-recoveries. The forecast residual value of $45.12 million at the end of the initial access arrangement period, which would be (after adjustments) carried over to the subsequent period, reflects the level of under-recovery AGLP proposes to subsequently recoup.

AGLP has proposed the following as a fixed principle:

> Reference Tariffs for this Pipeline will be determined on the basis of Net Present Value methodology incorporating economic depreciation with a residual value as at 30 June 2004 of $45.12m (in dollars of that day).

The $45.12 million in the proposed fixed principle has been derived by AGLP as a function of a number of variables, including the market variable elements of forecast sales of services, inflation, capital costs and non-capital costs. AGLP has not specified the duration of the fixed period associated with the fixed principle.

2.9.3 Submissions by interested parties

No submissions on this issue were received.

2.9.4 Commission's considerations

The Commission has considered a range of alternative tariff paths that would be consistent with the reduced revenue requirement for the CWP due to the proposed amendments regarding WACC and inflation. The Commission is aware that there can be tension between flexibility in setting the tariff path over time and consistency with the principles of competition, economic efficiency and equity. For example, if the reduction in revenue were achieved through AGLP's proposed CPI-X mechanism, tariffs would rise as proposed in the initial access arrangement period, then decrease in real terms. This might raise efficiency and equity issues.

In view of the overall regulated revenue stream available over the life of the asset, the sharp rise in real tariffs proposed over the initial access arrangement period may be excessive. In particular, the increasing tariffs may discourage prospective users adopting natural gas as a

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[104] AGLP have specified the CPI-X mechanism in the form of CPI+X with X = -1.4. Revised Access Arrangement Information, p. 18.

fuel in the initial access arrangement period and would reduce the overall total usage of the assets over their life. This would be the opposite result to that sought by AGLP.

Efficiency and equity considerations generally support a tariff path with a levelised real tariff over time, or one that declines slightly to reflect declining costs relative to output. The Commission's modelling of tariffs indicate that such a tariff structure is achievable for the CWP.

The proposed reference tariffs for the CWP for years ending 30 June 2000 and 2001 are already in place and have been communicated to the market by AGLP.[105] The Commission does not consider it necessary or appropriate to vary these tariffs but proposes to adjust the tariffs for the last three years of the access arrangement period from the levels specified by AGLP to CPI-X calculated tariffs. That is, for the years 2000 and 2001 the real tariffs are $1.93/GJ and $2.07/GJ.[106] For years three, four and five real tariffs are to be calculated as the tariff from the previous year escalated by the X factor calculated using the modified framework. This has the benefit of reducing the peak in the tariff path that would otherwise occur as a result of the Commission's amendments regarding the WACC and inflation. From the year ending 30 June 2000 the real tariff path is practically flat. The X factor used in determining the Commission's tariff path is -0.01 per cent. The Commission has calculated this X by the NPV methodology over the 80 year life of the asset. While the current approval process only covers reference tariffs for the initial access arrangement period, the Commission notes that, based on the underlying assumptions, the resulting tariff path over the life of the asset would be consistent with the reference tariff principles established in section 8 of the Code.

In calculating the tariff (t) for a particular year (year n) with a CPI-X adjustment, the formula often expressed is:

$$t_n = t_{n-1} (1 + (CPI_n - CPI_{n-1})/CPI_{n-1} - X)$$

However, the Commission prefers the alternative formula of:

$$t_n = t_{n-1} (1 + (CPI_n - CPI_{n-1})/CPI_{n-1}).(1 - X)$$

For small rates of inflation, as presently experienced in Australia, the difference in the results of the two formulae are minor. However, with higher inflation rates, the formulae produce quite different results. The Commission considers that the regulatory framework should use the more accurate formula and has incorporated the formula into its calculations.[107]

As a result of this analysis, the Commission proposes the amendment below in order to achieve the desired tariff path.

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[105] Revised Access Arrangement Information, p. 4.

[106] The tariff for year ending June 1999 was $1.78/GJ.

[107] See also ACCC, *Draft Regulatory Principles*, pp. 87-90.

Proposed Amendment – A2.7

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, the reference tariffs are to be calculated by a CPI-X adjustment mechanism, as defined in the *Draft Decision*, from 1 July 2001. The value of X is to be -0.01 per cent per year.

Further discussion and analysis on the level of tariffs is contained in the following section (section 2.10) of this *Draft Decision*.

The fixing of proposed tariffs throughout the current access arrangement period effectively implements an average price cap for AGLP. An average price cap provides an incentive to reduce costs and increase volumes. In the case of the CWP, AGL Group and EAPO directly incur the costs. AGLP pays for work carried out by AGL Group as that work arises. In contrast, AGLP has an agreement with EAPO in which EAPO carries out operations and maintenance for a set charge.[108] As a consequence, AGLP has control over the administration and marketing costs throughout the access arrangement period and has an incentive to reduce these costs. However, during the access arrangement period EAPO has an incentive to reduce operations and maintenance costs. It would be expected that AGLP share in the benefits of reduced operations and maintenance costs at the point of renegotiating its agreement with EAPO.

Reductions in capital expenditure in comparison to that forecast will be retained by AGLP for the remaining duration of the access arrangement period. Thus, AGLP has an incentive to reduce capital costs during the access arrangement period by seeking the most cost efficient method of enhancing the system. The Commission considers that this incentive is appropriate. It should be noted that in determining the capital base for the subsequent access arrangement period, the Commission is required to allow for the differences between actual and forecast capital expenditure under section 8.9 of the Code.

AGLP and EAPO have incentives to reduce costs and, for AGLP, to increase volumes during the access arrangement period. This incentive structure is permitted by the Code. The access arrangement does not discuss benefit sharing, implying that any increased profitability in this access arrangement period is not shared with users until the next access arrangement period. This sharing could be achieved by lower forecast costs leading to reduced tariffs over the next period. However, it must be noted that the revenue stream is already insufficient for AGLP to recover costs during the initial access arrangement period.

The fixed principle sets the residual value of the pipeline at $45.12 million (in dollars of the day) at the end of this access arrangement period (30 June 2004). AGLP has derived this figure from the NPV tariff model given the assumptions and forecasts expressed in the access arrangement and access arrangement information. The residual value would then be adjusted to take into account any redundancy of assets that may occur in the access arrangement period and any actual capital expenditure that differs from that forecast. The Commission notes that

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[108] Although costs arising from exceptional circumstances outside of EAPO's direct control will be borne by AGLP. Revised Access Arrangement Information, p. 20.

the amount of capital expenditure forecast for the CWP is quite small for the initial access arrangement period.

By including the residual value for the initial access arrangement period in the access arrangement as a fixed principle, AGLP has sought to ensure that the Commission will accept the NPV methodology used including economic depreciation. The Commission's overall assessment and acceptance of the proposed NPV approach based on economic depreciation was discussed earlier in this chapter (section 2.4). The Commission noted in particular the objective specified in section 8.1(a) of the Code of allowing the service provider the opportunity to earn a stream of revenue to recover the efficient costs of the pipeline over the expected life of the assets. Accordingly, the Commission proposes to accept the proposed NPV based price path approach under which the proposed tariff path would not be varied during the initial access arrangement period. AGLP would have the incentive to better its forecasts as it would (in the current period) be able to retain the whole benefit.

The Commission notes that the residual value of $45.12 million in the proposed fixed principle was derived as a function of a number of market variable elements (including forecast sales of services, the CPI, capital costs and non-capital costs). The Commission understands that this proposal is inconsistent with the requirement of section 8.48 of the Code that a market variable element cannot be a fixed principle. While the Commission accepts the NPV methodology adopted by AGLP for the CWP, it cannot accept this proposed fixed principle as part of the CWP access arrangement. Accordingly, the Commission proposes that the fixed principle be removed from the access arrangement.

In addition, the Commission notes that AGLP's reference tariff policy does not include a fixed period in relation to the proposed fixed principle. The Commission is of the view that all fixed principles included in an access arrangement must also specify a fixed period to comply with section 8.47 of the Code.

Proposed Amendment – A2.8

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must remove the fixed principle from the access arrangement.

The Commission notes the objectives of the fixed principle that have been argued by AGLP in addition to the Code requirement that a service provider be able to earn a revenue stream that, over time, covers the efficient costs of operating a pipeline. Under the NPV model used by AGLP and adjusted for other amendments proposed by the Commission the residual value of the initial capital base is calculated to be $34 479 880 in real terms. It must be noted, however, that according to section 8.9 of the Code the capital base must be adjusted at the commencement of the next period for differences between actual and forecast capital expenditure and any redundant assets. In addition, given the underlying real framework proposed, it is appropriate that the capital base be adjusted for the actual change in CPI over the period to enable it to be expressed in dollars of the day.

Productivity savings

The forecast of constant non-capital costs (in real terms) for all years in the initial access arrangement period indicates that there are no expected productivity improvements. It is then a question of whether the costs are at an appropriate level at the beginning of the access

arrangement period. The Commission has considered this and does not consider the level of costs included in the tariff model for the CWP are unreasonable.

The proportion in which productivity benefits are shared between users and AGLP in the subsequent access arrangement period will be determined by the Commission at the review of the access arrangement.

The Commission expects that gains resulting from productivity savings in the first access arrangement period will be fully or partially passed on to users in the second access arrangement period by way of lower forecasts of costs feeding into the tariff calculations for the second access arrangement period.

Factors contributing to out-performance

It is possible that AGLP will, in the first access arrangement period, achieve returns greater than those implied by the WACC used in calculating the target revenue. These 'excess' returns may occur for a number of reasons including: volumes achieved being greater than forecast; costs being less than forecast; and capital expenditure being less than forecast. In some instances the reason for the excess return will be due to the efforts of AGLP. In other situations, the benefit will result from a windfall gain by AGLP. The Commission understands the proposed access arrangement allows the Commission full discretion as to which parts of these excess returns are to be shared between AGLP and its customers, and which parts are to be wholly transferred to users at the beginning of the subsequent access arrangement period.

The Commission considers that it is appropriate that redundant assets be removed from the capital base as part of the process of determining the capital base at the commencement of the subsequent access arrangement period as specified in section 8.9 of the Code. An appropriate amendment has been proposed in section 2.3 of this *Draft Decision*.

Assessment

The Commission considers that AGLP has satisfied the Code in relation to establishing a price path for tariffs and an incentive mechanism to encourage efficiency gains.

The proposed tariffs give AGLP incentives to decrease some non-capital costs, increase market demand and reduce capital expenditure. One factor in constructing the appropriate incentives for AGLP is the extent to which AGLP will be allowed to keep returns in excess of those implied by the WACC, both in the initial access arrangement period and any continuing benefit in the subsequent access arrangement period.

The Commission considers that the retaining of returns greater than those forecast during the first access arrangement period by AGLP provides an appropriate incentive as envisaged by the Code. The Commission considers that the question of continuing to retain benefits into the subsequent access arrangement period is most appropriately dealt with at that time. The Commission has discussed the issue of benefit sharing, both within and between regulatory periods, in its *Draft Regulatory Principles*. In particular, the *Draft Regulatory Principles* focuses on CPI-X mechanisms, P_0 adjustments and glide paths.[109]

2.10 Assessment of reference tariffs and reference tariff policy

2.10.1 Code requirements

Section 3.5 of the Code requires the access arrangement to include a policy describing the principles that are to be used to determine a reference tariff (a reference tariff policy). This reference tariff policy must, in the regulator's opinion, comply with the reference tariff principles set out in section 8 of the Code.

Section 8 of the Code establishes the principles that must be followed in the establishment of reference tariffs. The reference tariff policy and all reference tariffs should be designed to achieve a number of objectives. These objectives are set out in section 8.1 of the Code:

(a) providing the Service Provider with the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the Reference Service over the expected life of the assets used in delivering that Service;

(b) replicating the outcome of a competitive market;

(c) ensuring the safe and reliable operation of the Pipeline;

(d) not distorting investment decisions in Pipeline transportation systems or in upstream and downstream industries;

(e) efficiency in the level and structure of the Reference Tariff; and

(f) providing an incentive to the Service Provider to reduce costs and to develop the market for Reference and other Services.

To the extent that there may be conflict between the application of these objectives, the Commission has the responsibility to determine how they may be best reconciled. In addition, section 8.2 of the Code specifies a number of matters on which the Commission must be satisfied before it can approve a reference tariff, including:

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[109] ACCC, *Draft Regulatory Principles*, pp. 86-97.

(a) the revenue to be generated from the sales (or forecast sales) of all Services over the Access Arrangement Period (the *Total Revenue*) should be established consistently with the principles and according to one of the methodologies contained in this section 8;

(b) to the extent that the Covered Pipeline is used to provide a number of Services, that portion of Total Revenue that a Reference Tariff is designed to recover (which may be based upon forecasts) is calculated consistently with the principles contained in this section 8;

(c) a Reference Tariff (which may be based upon forecasts) is designed so that the portion of Total Revenue to be recovered from a Reference Service (referred to in paragraph (b)) is recovered from the Users of that Reference Service consistently with the principles contained in this section 8;

(d) Incentive Mechanisms are incorporated into the Reference Tariff Policy wherever the Relevant Regulator considers appropriate and such Incentive Mechanisms are consistent with the principles contained in this section 8; and

(e) any forecasts required in setting the Reference Tariff represent best estimates arrived at on a reasonable basis.

These factors are mandatory requirements for the Commission. In addition, the Code specifies principles and requirements for each of these factors. These principles and factors are a mixture of mandatory requirements for the Commission and principles which provide the Commission with different levels of discretion. Furthermore, the Code provides the Commission with a limited ability to approve principles (fixed principles) in an access arrangement that will limit its actions at future reviews. However, these fixed principles are only permissible if they meet certain requirements outlined in section 8.48 of the Code.

Nevertheless, within these parameters, the reference tariff principles are designed to provide sufficient flexibility so that the reference tariff policy can be designed to meet the specific needs of each pipeline system. The overarching requirement is that when reference tariffs are determined and reviewed, they should be based on the efficient cost (or anticipated efficient cost) of providing the reference services.

The principles also require that, where appropriate, reference tariffs be designed to provide the service provider with the ability to earn greater profits (or less profits) than anticipated between reviews if it outperforms (or under performs) against the benchmarks that were adopted in setting the reference tariffs. The intention is that, to the extent possible, service providers be given a market-based incentive to improve efficiency and to promote efficient growth of the gas market. The Code refers to this type of approach as an incentive mechanism.

Reference tariffs are to be set on the basis that sales of all services provided by the covered pipeline deliver (or are forecast to deliver) a certain amount of revenue (total revenue) over the period for which the reference tariffs remain in effect (the reference tariff period).

2.10.2 AGLP's proposal

Section 4 of the access arrangement is the reference tariff policy for the CWP. This outlines the basis on which tariffs have been structured and states that AGLP may undertake new facilities investment that does not meet the requirements of section 8.16 of the Code. The reference tariff policy also sets out incentive mechanisms for AGLP and a fixed principle.

Section 3 of the access arrangement specifies the reference tariffs for the CWP. This is supported by the reference tariff policy itself in addition to other material provided to the Commission by AGLP.

2.10.3 Submissions by interested parties

Submissions to the Commission have not commented on AGLP's compliance with sections 3.5, 8.1 or 8.2 of the Code specifically. However, some submissions have been received regarding reference tariffs and these have been discussed in the relevant sections of this *Draft Decision*. It should be noted that the submissions received in relation to reference tariffs have focussed on the proposal for a single pricing zone. This may reflect the level of experience of users, prospective users and the communities in the Central West region regarding the provision of gas services.

2.10.4 Commission's considerations

The Commission notes that AGLP has complied with section 3.5 of the Code in providing a reference tariff policy in the access arrangement. As noted above, each of the aspects of the reference tariff policy have been assessed in the relevant section of this *Draft Decision*.

The Commission's assessment of the reference tariff in the AGLP's access arrangement for the CWP pursuant to the Code is outlined in this chapter. The following discussion draws together the Commission's conclusions within the framework of sections 8.1 and 8.2 of the Code.

Section 8.1 objectives

Recovery of efficient costs associated with the provision of reference services (8.1(a))

The costs of providing services on the CWP are largely contracted out to AGL Group and EAPO. The Commission has considered the level of these costs and whether they relate to the provision of the reference service specified in the access arrangement. The Commission has concluded that the costs of providing the reference service are appropriate and reflect the efficient provision of that service (see section 2.6 of this *Draft Decision*).

AGLP expects to under-recover these costs because of low revenues in the initial access arrangement period. The proposed framework compensates for the under-recovery through the use of economic depreciation which augments the capital base to ensure that AGLP has the opportunity for its revenue stream to recover all costs in the long run. That is, any shortfall of cost of service recovery in revenues is reflected in capital gains of the regulated asset base. The Commission considers that this arrangement meets this requirement of the Code.

Replicating the outcome of a competitive market (8.1(b))

Setting the regulated rate of return on CAPM benchmarks means the returns achieved are expected to be similar to those achieved by a firm facing similar commercial risks operating in a competitive environment. The return will be based on only those assets necessary to deliver the services required. The reference tariffs allow AGLP to achieve a return in excess of a normal return from increased efficiencies and growth in sales which can also occur in a

competitive market. However, over time, as in a competitive market, this benefit will pass onto customers.

Pricing reflective of efficient costs is also a feature of competitive markets and, as previously noted care has been taken to ensure that tariffs are reflective of efficient costs. However, this does not lead to competitive pricing for this pipeline over the entire 80 year period. During the life of the CWP the regulated asset base will be greater than a DORC valuation as a result of employing an NPV methodology and economic depreciation. As a result, tariffs will, at times, be greater than could be achieved in a competitive market. However, this is considered to be a time path issue rather than a genuine competition issue. Accordingly, the Commission concludes that section 8.1(b) of the Code is met.

Ensuring the safe and reliable operation of the pipeline (8.1(c))

The reference tariffs are based on costs forecast as being necessary for the safe and reliable operation of the pipeline. Each review of the access arrangement provides an opportunity for AGLP to increase its revenue if the safety and reliability of the pipeline demands it. AGLP may submit early revisions if appropriate. Other factors that will tend to preserve the integrity of the system include the contractual arrangements between AGLP and its users and the need by the AGL Group to satisfy commercial markets that its assets are well maintained and operated efficiently.

Not distorting investment decisions (8.1(d))

Efficient investment decisions upstream and downstream will be facilitated by transmission pricing based on an allocation of costs to users which approximates long run costs of service provision. Inter-temporal investment distortions are minimised by the levelising process which presents stable prices over the access arrangement period (see section 2.9 of this *Draft Decision*).

The level of the WACC determined by the Commission is considered unlikely to encourage over investment because of the redundancy provisions that the Commission proposes to be incorporated into the access arrangement. Under different circumstances, the Commission considers the risk of inefficient investment by another pipeliner seeking to bypass a pipeline is minimised by the upper limit, the DORC valuation, placed on assets by the Code which would tend to create pricing which makes such ventures commercially unviable. In the case of the CWP, the asset valuation actually increases to above DORC over the initial years of the project before it reduces to zero at the end of the pipelines life. This may suggest that bypass of the CWP may be feasible. However, it must be noted that the low initial tariffs resulting in the under-recovery of costs for some years would reduce the commercial feasibility of bypassing the CWP.

It should be noted that in respect to investments relating to the transmission pipeline, the Code allows for AGLP to impose surcharges to make up for any revenue above that collected through tariffs which is necessary to justify any investment decision.[110] This means that such

[110] Section 8.25 of the Code provides service providers with the option of levying a surcharge unless the extensions/expansions policy contained in the access arrangement specifically precludes this. The CWP access arrangement does not.

expansions will only be undertaken when the user can justify the surcharge in terms of the benefits to its own business or when AGLP can justify a surcharge on the basis of benefits to the overall system.

To the extent that new markets may emerge, the additional volumes will, as a result of the regulatory framework, lead to lower tariffs for all users sharing the same infrastructure in future access arrangement periods. The Commission is satisfied that the reference tariffs will not distort pipeline investment decisions or investment decisions in related markets.

Efficiency in the level and structure of the reference tariff(s) (8.1(e))

The efficiency of the structure of the reference tariff has been already noted above. The Commission is aware that some prospective users may argue that the tariff structure is inefficient in that it does not make any specific provision for gas from alternative sources (that is, other than via the MSP). If gas from Narrabri, for example, were to become available during this access arrangement period users would be able to settle for a negotiated service with AGLP. The Commission considers this the most appropriate method for dealing with this possibility in light of the progress in developing the Narrabri gas field to date. The Commission will assess the need for AGLP to accommodate alternatively sourced gas in its tariff structure and levels, as well as other services as sought by users and prospective users, at the next review of the access arrangement.

In implementing amendments specified in this chapter of the *Draft Decision*, the Commission has proposed a lower tariff path that avoids an unnecessary price peak and that results in real prices that fall slowly over time. The Commission considers that this tariff path reflects an efficient level and structure of reference tariffs for the CWP (see sections 2.8 and 2.9 of this *Draft Decision*).

Incentives to reduce costs and expand the market (8.1(f))

As noted previously in this chapter, the Commission considers that the proposed tariffs give AGLP an incentive to increase sales volumes and minimise costs. While AGLP reaps most of the benefits of such developments in the initial regulatory period, the benefits of increased efficiency, innovation and volume of sales will also flow to users in subsequent access arrangement periods following the Commission's reviews of the access arrangement (see section 2.9 of this *Draft Decision*).

The Commission is satisfied that, with the suggested changes to the proposed access arrangement, the reference tariffs are generally designed to achieve the objectives stated in section 8.1 of the Code.

Section 8.2 factors

Section 8.2 of the Code lists five factors on which the Commission must be satisfied in determining whether to approve the reference tariffs. These are assessed below.

Total revenue is established consistently with the principles and according to one of the methodologies contained in section 8 of the Code (8.2(a))

The Code states that the methodology to be used to calculate total revenue should be the cost of service, IRR or NPV methodology. AGLP has used an NPV framework. The Commission

has assessed the proposal and the tariff model provided by AGLP and considers that the forecast total revenue for the proposed access arrangement is based on a NPV framework that complies with the principles specified in section 8 of the Code (see section 2.7 of this *Draft Decision*).

The proportion of total revenue that any one reference tariff is designed to recover is calculated consistent with the principles of section 8 of the Code (8.2(b))

The Commission is satisfied that the allocation of operating, maintenance and other non-capital costs to the single reference service is appropriate for the initial access arrangement period as no material revenue is expected to accrue from negotiated services during this period. It notes that future access arrangements are anticipated to include a different tariff structure to that for the initial access arrangement period. This will require AGLP to allocate costs according to any new tariff structure.

The proportion of total revenue recovered from users of a service is calculated consistent with the principles of section 8 of the Code (8.2(c))

AGLP has a single service for all users. The Commission assessed the information used by AGLP to determine and allocate costs. Given the tariff structure for the initial access arrangement period, the Commission considers that tariffs recover revenue in compliance with the objectives of the Code (see section 2.8 of this *Draft Decision*).

Incentive mechanisms that are incorporated are consistent with the principles of section 8 of the Code (8.2(d))

Incentive mechanisms are incorporated into the reference tariffs for the CWP. By specifying that tariffs are calculated on the basis of forecasts, AGLP has the opportunity to achieve above normal returns. The above normal returns are kept by AGLP for the duration of the access arrangement period. At the conclusion of the period, users will be able to benefit from any gains achieved by AGLP if the Commission considers it appropriate to adjust costs to reflect the levels actually achieved by AGLP rather than those presently forecast. The Commission considers that the incentive mechanisms in this access arrangement are consistent with the Code.

Forecasts used are best estimates determined on a reasonable basis (8.2(e))

The Commission considers the forecast costs are reasonable. It also accepts the forecast volume figures used by AGLP in the tariff model. However, the Commission is aware that the forecast volume data is always subject to some uncertainty. Accordingly, the Commission has proposed that AGLP will submit revisions to the reference tariffs in the event that actual volumes significantly exceed that forecast (see section 3.7 of this *Draft Decision*). With this implemented, the Commission is satisfied that the forecast volumes will comply with the Code.

3. Non-tariff elements

Section 3 of the Code establishes the minimum contents of an access arrangement, which include the following non-tariff mandatory elements:

- a services policy that must contain at least one service that is likely to be sought by a significant part of the market;
- terms and conditions on which the service provider will supply each reference service;
- a capacity management policy to state whether the covered pipeline is a contract carriage or market carriage pipeline;
- in the case of a contract carriage pipeline, a trading policy which refers to the trading of capacity;
- a queuing policy which defines the priority that users and prospective users have to negotiate capacity where there is insufficient capacity on the pipeline;
- an extensions/expansions policy which determines whether an extension or expansion of a covered pipeline is or is not to be treated as part of the covered pipeline for the purposes of the Code; and
- a review date by which revisions to the access arrangement must be submitted and a date on which the revisions are intended to commence.

An access arrangement must also contain a reference tariff policy and at least one reference tariff. These are assessed for compliance with the Code in chapter 2 of this *Draft Decision*.

In this chapter the mandatory non-tariff elements for the CWP are assessed for conformance with the Code. The Code requirements are outlined for each mandatory element followed by a summary of the service provider's proposal, the issues raised in submissions, and the Commission's considerations. This is followed where relevant by amendments that the Commission proposes be made in order for the access arrangement to be approved. All amendments are replicated in the Executive Summary of this *Draft Decision*.

3.1 Services Policy

3.1.1 Code requirements

Sections 3.1 and 3.2 of the Code require an access arrangement to include a services policy which must include a description of one or more services that the service provider will make available to users and prospective users. The policy must contain one or more services which are likely to be sought by a significant part of the market, and any service or services that in the relevant regulator's opinion should be included in the services policy.

To the extent that is practicable and reasonable, a service provider should make available only those elements of a service required by users and prospective users and apply a separate tariff for each element if this is requested.

3.1.2 AGLP's proposal

AGLP's service policy consists of a reference service and negotiated services as follows:

- transportation service — transport service from the receipt point to any delivery points on the pipeline with tariffs charged on the basis of throughput ($ per GJ of throughput);[111] and
- negotiated services — agreements negotiated to meet the needs of a user that differ from those in the reference service.[112]

In order to encourage maximum usage of the pipeline in the initial phase of its operation, the transportation service has a reference tariff based solely on throughput (without an adjustment for load factor that is customarily adopted in transmission pipelines to encourage load management). Payment is based on actual throughput without the usual obligation to pay for a minimum quantity in each contract year whether or not that quantity is taken. There are no charges for authorised overruns until contracted capacity reaches 85 per cent of pipeline capacity.

AGLP states that the proposed simple tariff structure for the CWP is intended to encourage gas usage. Users would have the certainty of knowing that they only pay for the quantity of gas delivered. Inexperienced gas users, in particular, would benefit from not having to be concerned about load management issues which would usually be expected to affect gas transportation costs.

AGLP advises that it anticipates that by the time of the first scheduled review of the access arrangement, which is proposed to occur 4½ years after the commencement of the access arrangement, the pattern of usage of the pipeline will be sufficiently known to establish a service with capacity and throughput charges. It is AGLP's present intention to offer such a service as a reference service at that time.

Key factors relating to the proposed transportation service include:

- AGLP will receive gas at the receipt points, transport it through the pipeline and deliver it at the delivery points;
- users must establish a level of gas transportation required which fairly reflect their needs, including their maximum hourly quantity (MHQ) for each delivery point, the maximum daily quantity (MDQ) and the annual contract quantity (ACQ);
- AGLP's maximum obligation to deliver gas to a user is the agreed MHQ, MDQ and ACQ;
- in the event that a user's withdrawals at a delivery point exceed the MHQ in any hour or the MDQ on any day, an overrun (either authorised or unauthorised) will occur. There

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[111] The transportation service does not include pressure reduction or metering. The owner of this equipment, which will tend to be the user, will be responsible for these activities. AGLP, Additional General Information, 25 June 1999, p. 9.

[112] AGLP does not expect negotiated services to be sought by users in the initial access arrangement period. Ibid.

will be no charges for overruns until contracted capacity reaches 85 per cent of pipeline capacity;

- a daily variance of ten per cent is permissible. If variance greater than this occurs for more than four days in a month or more than 24 days during a contract year then a daily variance charge will be incurred for each day over the relevant limit;

- users are responsible for balancing input and withdrawals over three month periods. If an imbalance exists at the end of a three month period the user is charged an imbalance charge; and

- the term of the service is generally one year but may be longer if the user so elects.

The proposed access arrangement outlines the procedures that would be followed for a prospective user to gain access to a service, including the minimum level of detail to be provided in a request, and time periods within which AGLP will respond.

3.1.3 Submissions by interested parties

Some parties raised concerns in their submissions about the adequacy of the services policy being offered for the CWP.

Forcenergy, the operator of a Petroleum Exploration Licence for the Gunnedah Basin in NSW, submitted that a backhaul service is needed in the CWP access arrangement.[113] As a potential competing supplier of gas, Forcenergy is of the view that numerous services are likely to be requested by new or existing users over the forthcoming five years. These services include interruptible, partial forward haul and parking. Forcenergy submitted that it would be inefficient to omit these services from the access arrangement at this time.

The NSW Department of Energy (DOE) has also noted the potential for Forcenergy to provide a new source of gas supply in NSW in competition with the Cooper Basin and Bass Strait suppliers.[114] DOE considers that appropriate provisions are required to allow backhaul, in order to facilitate inter-basin gas competition and to ensure free and fair trade in gas.

In contrast, DCC and the MRBEC both support AGLP's proposed reference service. While neither specifically refers to the proposal that the tariff be based solely on throughput, both express support for a single zone reference service. MRBEC states:

> A regional price was the objective of all stakeholders [of the Central Ranges Natural Gas Working Group] to ensure that no town would be disadvantaged in attracting large energy users.
>
> All tariff users wanted to have the same price across the region, as in other regions.
>
> Without the regional pricing system, the price of gas at the end of the system becomes too expensive and therefore the project "implodes" and becomes uneconomic and in the case of the Central Ranges, will not be built. As the Central West pipeline has now been constructed

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[113] Forcenergy submission, 19 March 1999, p. 27.

[114] NSW Department of Energy submission, 24 March 1999, pp. 1-2.

> the price to other users would need to be increased if the load cannot be obtained. This would result in even higher energy costs and a loss of competition in the energy market. [115]

3.1.4 Commission's considerations

The Commission notes evidence that local communities support the proposed tariff structure, and AGLP's view that a simple tariff structure is likely to be attractive to gas users, particularly to inexperienced ones.[116] The Commission considers that a significant number of users and potential users are likely to seek the single pricing zone services being offered. Accordingly, the services policy complies with section 3.2(a)(i) of the Code.

The Commission has the power to require that a services policy include any service or services that the Commission considers should be included (section 3.2(a)(ii) of the Code). Forcenergy and DOE contend that the present access arrangement should allow for other services that may be sought by users or prospective users in the future, in particular backhaul.

As noted earlier, AGLP expects to provide a more complex suite of services in the subsequent access arrangement period when usage patterns are established and users are more experienced. The Commission notes that additional services of the type nominated by Forcenergy and DOE could be made available as negotiated services. The Commission does not propose that additional services be specified as reference services for the initial access arrangement period.

The Code also requires, to the extent practicable and reasonable, that a user be able to obtain only the elements of a service that it requires. AGLP has suggested that the majority of users will seek the transportation service, and that any variation of this service is able to be negotiated between the parties. While no interested parties have as yet expressed a view that further unbundling of the transportation service be required, this position may change over time once users have established a pattern of usage. With greater experience in the use of natural gas users may wish to explore additional options in obtaining a supply of natural gas.

After consideration of the issues raised by interested parties and the need and suitability for alternative services and unbundling of services, the Commission has formed the view that the proposed services policy is appropriate for this initial access arrangement period and meets the requirements of the Code.

3.2 Terms and conditions

3.2.1 Code requirements

Section 3.6 of the Code requires an access arrangement to include the terms and conditions on which a service provider will supply each reference service. Based on the relevant regulator's assessment, these terms and condition must be reasonable.

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[115] MRBEC submission, 5 March 1999, p. 1.

[116] See section 2.8 of this *Draft Decision* for further discussion regarding the tariff structure proposed by AGLP.

3.2.2 AGLP's proposal

AGLP states that it will provide the reference service on the terms and conditions set out in its standard service agreement for the reference service from time to time.[117] The key terms and conditions are set out in Schedule 2 to the access arrangement.

Schedule 2 is divided into three parts:

1. general - topics include: relationship between AGLP and user; obligation to transport; gas pressure; nominations; MHQ, MDQ and ACQ; daily variance; system use gas and linepack; metering; allocation; accounts and payments; force majeure; liabilities and indemnities; interruptions and curtailments; option to extend; title to and responsibility for gas; metering and records; gas quality; part periods; and overruns;

2. calculation of imbalance; and

3. connection of metering facilities to the pipeline.

AGLP states that it will not discriminate between prospective users in the provision of services on the basis of:

(a) past transactions or relationships with AGLP;

(b) the identity of the prospective user;

(c) the fact that the prospective user is a related party of AGLP; or

(d) the source of the gas proposed to be transported, subject only to the gas meeting the specifications.

Gas quality specifications

AGLP's gas quality specifications for the CWP are set out in Schedule 3 of the access arrangement. The specifications include heating value, Wobbe Index, sulphur content and receipt point temperature and reflect the specifications for the MSP.

Section 5 of the revised access arrangement information provides details relating to the technical specifications of the pipeline.

AGLP has nominated the pressure at which gas will be delivered to users as between 4 000 kPa and 6 000 kPa. This range of acceptable pressures is based on the pressures used in the MSP.[118]

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[117] AGLP has advised that it has not yet completed developing the standard service agreement for the CWP as it must reflect the access arrangement in the form approved by the Commission, in particular the reference service and the terms and conditions in Schedule 2. AGLP, Additional General Information, 25 June 1999, p. 10.

[118] Access Arrangement, Schedule 2 and AGLP, Additional General Information, 25 June 1999, p. 10.

Overruns, variances and imbalances

AGLP states that overruns are a method used by a pipeliner to ensure that on any day the pipeline can deliver users their MDQ. Overruns occur when either MHQ or MDQ is exceeded. That is, when gas delivered is greater than that nominated by the user. An overrun can be authorised (where AGLP has agreed to a user's request for additional gas at a particular delivery point) or unauthorised.

Users of the CWP face an overrun charge when the contracted capacity of the CWP is at least 85 per cent of the pipeline capacity.[119] AGLP propose an authorised overrun charge of 20 per cent of the reference tariff. The unauthorised overrun charge is to be 100 per cent of the reference tariff.[120]

In the event that the CWP contracted capacity is greater than 85 per cent of the pipeline capacity AGLP will limit the availability of authorised overruns to users. A user will not be entitled to an authorised overrun if that user has already exceeded MDQ for four days of the month or 105 per cent of MDQ on more than 12 days in the year.

Variances are used to ensure that users can be supplied with their nominated quantities. With users nominating their requirements for a particular day in advance AGLP is able to schedule deliveries by the operation of looped sections and compressors.[121]

AGLP allows daily variances (where the delivered or received quantity exceeds the nominated quantity by more than ten per cent) to occur on four days within a month (or 24 days in a year) before a user is required to pay a daily variance charge. By charging an additional 120 per cent of the reference tariff for the daily variance quantity AGLP claims that users are provided with an incentive to correctly nominate their gas needs.

AGLP acknowledges that it is impossible for a user to balance receipts and deliveries on any one day and, consequently, has established an inventory system. A user's imbalance is calculated each month.[122] If an imbalance exists a user is expected to rectify it during the next month. If at the end of three months a user remains out of balance then the quantity attracts an imbalance charge of 250 per cent of the reference tariff.

Apportionment

AGLP sets out its requirements for apportionment (referred to by AGLP as 'allocation') in clauses 21 and 22 of Schedule 2 of the access arrangement.

> 21. Where gas is delivered to a Delivery Point for more than one User, those Users must establish allocation methodologies, and notification processes reasonably acceptable to AGLP and must provide sufficient information to AGLP to enable it to reconcile between Users the quantities of gas received and delivered. If no such methodologies

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[119] Prior to reaching this load, AGLP does not consider it appropriate to charge for overruns that can be easily met. AGLP does not expect contracted capacity to reach 85 per cent of pipeline capacity in this access arrangement period. AGLP, Additional General Information, 25 June 1999, p. 10.

[120] These overrun charges differ from those in the access arrangement. AGLP advised the Commission that the overrun charges in the access arrangement were incorrectly specified.

[121] The CWP does not include any looped sections or compressors at present.

[122] Imbalance = input – withdrawal – change in user's linepack. Access arrangement, Schedule 2, Part 2.

or processes are established, AGLP will be entitled to adopt a reasonable methodology such as a pro-rating based on Nominations.

22. Where a Receipt Point is used by more than one User, those Users must establish allocation methodologies reasonably acceptable to AGLP, and must provide sufficient information to AGLP to enable it to reconcile between Users the quantities of gas received and delivered. If no such methodologies are established, AGLP will be entitled to adopt a reasonable methodology such as a pro-rating based on Nominations.

3.2.3 Submissions by interested parties

Gas quality specifications

Esso contends that the proposed gas specifications are unduly tight, and may raise a barrier to inter-basin competition. In particular, Esso notes that the minimum allowed value proposed for the Wobbe Index (a measure of heating value) applicable to gas shipped on the CWP is higher than the minimum allowable under regulations pursuant to the Victorian Gas Industry Act. Esso is concerned that Bass Strait gas, which meets standards applicable in Victoria, may not be accepted for transportation on the CWP. Esso contends that there are no valid reasons for the higher specifications.

The DOE has also suggested that the Wobbe Index range proposed by AGLP is too narrow. It questions the need for a transmission pipeliner to use the Wobbe Index when in Victoria the Wobbe Index is only specified for distribution systems. The Department states that if AGLP is to specify a Wobbe Index in the CWP access arrangement as proposed then the index should be broad enough to allow gas from the Bass Strait and the Narrabri field to be transported on the CWP.[123]

Apportionment

The DOE submits that the CWP Access Arrangement should address the issue of apportionment, noting that this issue has been identified by the Gas Reform Implementation Group (GRIG) as potentially a significant impediment to retail competition as it may deny new entrants access to gas, and that one option under consideration is to amend the Code to require a service provider to include an apportionment policy in an access arrangement.[124]

Other terms and conditions

No comments were received by interested parties regarding any other terms and conditions of access to the CWP.

3.2.4 Commission's considerations

The Commission notes, while schedule 2 of the access arrangement includes key terms and conditions, the proposed access arrangement does not include the standard service agreement which sets out the terms and conditions on which AGLP will provide the reference service. AGLP has advised that the standard service agreement cannot be finalised until the terms and

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123 NSW Department of Energy submission, 24 March 1999, p. 2.

124 Ibid.

conditions applicable to the CWP for the initial access arrangement period have been settled following the Commission's approval of the access arrangement.

The Commission is aware that AGLP cannot at this stage be confident that its standard service agreement is consistent with the terms and conditions which the Commission will approve as part of the access arrangement. The Commission expects that users may be primarily guided as to the terms and conditions on which they will gain access to the CWP by the content of the standard service agreement. Consequently, the Commission proposes an amendment to the CWP access arrangement to make it clear that, in the event that any apparent inconsistency arises, schedule 2 of the access arrangement prevails over the standard service agreement.

Proposed Amendment – A3.1

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must clearly specify that schedule 2 of the access arrangement prevails over the standard service agreement.

The Commission notes that the services policy and queuing policy of the access arrangement both require users and prospective users to meet AGLP's prudential requirements prior to the user requesting a service or assigning a request on a queue.[125] The prudential requirements that AGLP requires users and prospective users to meet are not specified in the access arrangement. The Commission considers that it is important for users and prospective users to be aware of all the conditions of use of the CWP including any prudential requirements. The reasonableness of the terms and conditions of access cannot be assessed by the Commission or interested parties in the absence of AGLP's prudential requirements.

Accordingly, the Commission proposes an amendment to the CWP access arrangement for AGLP to set out the prudential requirements that it will apply to users and prospective users in the access arrangement.

Proposed Amendment – A3.2

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must include in the access arrangement the prudential requirements relevant for users and prospective users.

Section 2.3 of the proposed access arrangement states that AGLP will not discriminate between users on a number of grounds, including on the basis of past transactions or relationships with AGLP (section 2.3(a)). The Commission notes that this provision is unnecessarily narrow as it only proscribes discrimination relating to relationships with AGLP, which is part of the much broader AGL Group. Accordingly, the Commission proposes an amendment to the CWP access arrangement for AGLP to extend the proscription of discrimination set out in section 2.3 of the proposed access arrangement to cover relationships with the AGL Group.

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[125] Access arrangement, pp. 6 & 14.

Proposed Amendment – A3.3

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, the words 'AGL Group' must be substituted for 'AGLP' in section 2.3(a).

Gas quality specifications

The Commission notes Esso's concerns about the gas quality specifications proposed for the CWP. It also notes that the same gas quality specifications are identified for the MSP transmission pipeline and for the NSW[126] and ACT[127] gas distribution network. EAPL states that all gas entering its pipeline system will be required to comply with certain quality specifications, and lists what it describes as typical requirements, which it notes correspond closely to the current specification for gas received into the MSP at Moomba.[128] While EAPL acknowledges that gas from other sources may have alternative or additional parameter limits, it must, in any case, be compatible with gas already being transported through the pipeline system to ensure that the quality of gas delivered meets required specifications.

The Commission understands that this issue has been debated extensively within the Australian natural gas industry, and that support for the higher Wobbe Index minimum is largely based on concerns about possible safety factors if older domestic appliances currently operating on Cooper Basin gas were to be fed gas with a lower heating value. While the Commission has not formed an opinion on the validity of these overall concerns, they are unlikely to be relevant for the CWP.

The Commission notes that IPART recently addressed a similar issue in relation to gas marketed in Wagga Wagga in its *Final Decision* on the access arrangement proposed by Great Southern Energy Gas Networks Pty Ltd. IPART decided to require the insertion of a trigger mechanism to

> enable the Tribunal to reopen the Access Arrangement if GSN fails, within a reasonable time, to seek an amendment to adopt new gas specifications following recommendations by the Gas Quality Specification Working Group. A working group has been formed by the Australian Gas Association (AGA), the Australian Petroleum Production and Exploration Association, and the Australian Pipeline Industry.[129]

The Commission is concerned that overly tight gas quality specifications may hinder the potential for inter-basin gas competition in NSW. However, it notes that changing the gas specification for the CWP in isolation would have little, if any, practical effect. In order for gas to reach customers in the Central West, it also must be acceptable on the MSP and the distribution network. The Commission is also aware that its role and expertise is as an economic rather than technical regulator, and that it has not conducted a full technical review of this issue.

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126 AGLGN access arrangement, 5 January 1999, Schedule 3.

127 AGL(ACT) access arrangement, 5 January 1999, Schedule 3.

128 EAPL Schedule of Tariffs and Charges, Issue B, 19 February 1997, attachment *Typical specification for gas entering the system at a receipt point.*

129 IPART, *Final Decision on the access arrangement proposed by Great Southern Energy Gas Networks Pty Ltd*, March 1999, p. 140.

The Commission does not at this stage propose to require amendments to the proposed access arrangement to change the parameters listed for the gas quality specifications. Instead, it proposes that AGLP's access arrangement be amended to ensure that any recommendations by the Gas Quality Specification Working Group to adopt a more flexible gas specifications in south-eastern Australia can be reflected in the access arrangement for the CWP.

Proposed Amendment – A3.4

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must amend the access arrangement to state that AGLP will seek to amend its access arrangement following any recommendations by the Gas Quality Specification Working Group to adopt more flexible gas specifications in south-eastern Australia.

Apportionment

The Commission has considered DOE's concerns about the potential for inadequate apportionment processes to impact on competition and also the proposal for the Code to be changed such that an explicit apportionment policy would be specified as a mandatory element of an access arrangement.

The Commission notes that AGLP's access arrangement requires users to establish apportionment or allocation methodologies where gas is delivered to a delivery point for more than one user, and that the methodologies and notification processes must be reasonably acceptable to AGLP. If no such methodologies or processes are established, AGLP will be entitled to adopt a reasonable methodology.

Whether AGLP's proposals would be consistent with a mooted Code requirement for an apportionment policy would depend on the specification of such a policy in the Code. For example, the Code might require a more prescriptive policy for apportionment than that set out in AGLP's terms and conditions. However, the Code does not currently require an apportionment policy, and such considerations may be considered speculative.

No comments were received on the reasonableness of AGLP's proposals concerning apportionment methodologies. The Commission does not propose to require AGLP to alter its allocation methodology.

3.3 Capacity Management Policy

3.3.1 Code requirements

Section 3.7 of the Code requires an access arrangement to include a statement that the covered pipeline is either a contract carriage pipeline or a market carriage pipeline.

3.3.2 AGLP's proposal

AGLP has provided a statement that, for the purposes of section 3.7 of the Code, the CWP is a contract carriage pipeline.

3.3.3 Submissions by interested parties

No comments were received on this issue.

3.3.4 Commission's considerations

As the access arrangement includes a statement that the CWP is a contract carriage pipeline, it satisfies the requirements of section 3.7 of the Code.

3.4 Trading Policy

3.4.1 Code requirements

If a pipeline is a contract carriage pipeline, the access arrangement must include a trading policy which explains the rights of a user to trade its right to obtain a service to another person. The trading policy must, amongst other things, allow a user to transfer capacity:

- without the service provider's consent, if the obligations and terms under the contract between the user and the service provider remain unaltered by the transfer; and
- with the service provider's consent, in any other case. Consent may be withheld only on reasonable commercial or technical grounds and the trading policy must specify conditions under which consent will be granted and any conditions attaching to that consent.

3.4.2 AGLP's proposal

According to section 5 of AGLP's access arrangement users can trade rights in three circumstances. These are:

- a user may make a 'bare transfer' without the consent of AGLP if, prior to utilising it, the transferee notifies AGLP of the portion and nature of contracted capacity subject to the bare transfer.
- a transfer or assignment of all or part of a user's contracted capacity may occur by a way other than a bare transfer with the prior consent of AGLP. AGLP's consent will only be withheld on reasonable commercial or technical grounds, and may be given subject to reasonable commercial or technical conditions.
- a user may only change the receipt point and/or delivery point specified in a service agreement with the prior consent of AGLP. AGLP's consent will only be withheld on reasonable commercial or technical grounds, and may be given subject to reasonable commercial or technical conditions.

3.4.3 Submissions by interested parties

No submissions were received on this issue.

3.4.4 Commission's considerations

The Commission notes that the access arrangement for the CWP requires a trading policy to meet the minimum requirements of the Code, as the pipeline is a contract carriage pipeline.

The Commission considers that the trading policy in the access arrangement closely follows, and consequently accords with, sections 3.9 to 3.11 of the Code.

3.5 Queuing Policy

3.5.1 Code requirements

Sections 3.12 to 3.15 set out the Code's requirements for a queuing policy. An access arrangement must include a queuing policy for determining the priority given to users and prospective users for obtaining access to a covered pipeline and for seeking dispute resolution (under section 6 of the Code).

A queuing policy must be set out in sufficient detail to enable users and prospective users to understand in advance how it will operate. It must also, to the extent reasonably possible, accommodate the legitimate business interests of the service provider and of users and prospective users and generate economically efficient outcomes.

3.5.2 AGLP's proposal

Where there is insufficient capacity to satisfy a user's request to obtain a service from AGLP a queue will be formed. A queue will include all relevant requests which cannot be satisfied. The date of a request is the date that it is received by AGLP. A request for a reference service will have priority over a request for a negotiated service.

At the time a request is placed in a new or existing queue, AGLP will advise the prospective user of:

- its position on the queue;
- the aggregate capacity of requests which are ahead on the queue;
- its estimate of when capacity may become available; and
- the size of any surcharge that may apply to developable capacity.

AGLP will update these details when the relative position of a request or the timing of available developed capacity changes.

Once on a queue, a prospective user may reduce but not increase the capacity sought in its request. An assignment of a request can be made to a bona fide purchaser of the prospective user's business or assets.

A request for service may lapse and be removed from the queue if:

- the prospective user does not respond to AGLP's request for confirmation of the request within the specified 14 days;
- the prospective user notifies AGLP that it does not want to proceed with the request; or

- the entity to whom the prospective user assigns its request does not meet AGLP's prudential requirements.

A request will not lapse in the event that there is a dispute. The request will retain its priority until the dispute is resolved in accordance with the Code.

When capacity can be made available which meets the requirements of any request in a queue, that capacity will be progressively offered to each prospective user in the queue in order of priority. AGLP will advise each of those prospective users of its plans to make capacity available, and the terms and conditions on which the capacity will be available.

A prospective user will have 30 days after an offer is made to enter into a service agreement, failing which the request will lapse or lose priority to those entering into such a service agreement.

3.5.3 Submissions by interested parties

No submissions were received on this issue.

3.5.4 Commission's considerations

The purpose of a queuing policy is to allocate spare capacity where there is insufficient capacity to satisfy the needs of all users and potential users who have requested capacity. The Commission notes that no comments have been raised by interested parties about the proposed queuing policy for the CWP. This may reflect a view that, based on AGLP's volume projections (which reach a peak load of 5.884 TJ/day in 2004, approximately half the maximum uncompressed daily delivery capacity of 10.1 TJ/day[130]) there would be little likelihood of a queue forming within the initial access arrangement period.

The Commission considers that the proposed queuing policy satisfies the minimum requirements of the Code. The policy may need to be further developed once demand grows and the possibility of a queue forming becomes more immediate.

3.6 Extensions and expansions policy

3.6.1 Code requirements

The Code requires an access arrangement to have an extensions/expansions policy (section 3.16). The policy is to set out the methodology to assess whether any extension to, or expansion of the capacity of the system will be treated as part of the covered pipeline. A service provider is also required to specify the impact on reference tariffs of including an extension or expansion with the covered pipeline.[131] In addition, an extensions/expansions

[130] Revised Access Arrangement Information, pp. 22-23.

[131] For example, reference tariffs may remain unchanged, but a surcharge may be levied on incremental users.

policy must outline under what conditions the service provider will fund new facilities and provide a description of those new facilities.[132]

3.6.2 AGLP's proposal

AGLP has proposed in its access arrangement that, in the event that the pipeline is extended to Tamworth, the extension (known as the CRP) will form part of the pipeline for the purposes of this access arrangement.[133] AGLP has stated that it will exercise its discretion to submit proposed revisions to the access arrangement under section 2 of the Code for the purpose of including the CRP with the CWP access arrangement. An extension to Tamworth would not affect reference tariffs for existing delivery points between Marsden and Dubbo.

AGLP's proposed access arrangement states that no other geographical extension to the pipeline will form part of the pipeline for the purposes of this access arrangement. However, AGLP has subsequently proposed to the Commission that this policy will be modified in its revised access arrangement such that, if an extension (other than the CRP) is undertaken, AGLP will decide (after consultation with the Commission) whether to include the extension with the CWP access arrangement.[134]

Any expansion to the capacity of the pipeline will form part of the pipeline, and such capacity will be offered at the reference tariff under this access arrangement.

3.6.3 Submissions by interested parties

DCC, in its submission, stated:

> Dubbo City Council is certainly supportive of the proposed single zone for Forbes, Parkes, Narromine and Dubbo and would not, in all fairness, then expect users between Dubbo and Tamworth to be expected to contribute to costs in this zone.[135]

3.6.4 Commission's considerations

The Commission considers AGLP's proposal that the mooted CRP extension to Tamworth be included in the access arrangement is reasonable. While it notes the unlikelihood in the short term of the transmission pipeline being extended beyond Tamworth, the Commission was concerned that the policy as originally proposed might unnecessarily act to preclude such an extension from inclusion in the access arrangement. The Commission welcomes the revised policy proposed by AGLP which it expects will be incorporated in AGLP's revised access arrangement.

Under the proposal, increases in throughput resulting from the extension of the pipeline to Tamworth would not be reflected in lower tariffs during the initial access arrangement period. This appears to raise a number of issues in terms of the principles set out in section 8 of the Code. The Commission expects that users of an extension to a pipeline would contribute to

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[132] Requirements in relation to new facilities investment are contained in sections 8.15-8.19. Further discussion is contained in chapter 2 of this document.

[133] Access arrangement, p. 16.

[134] AGLP, Draft revisions to the access arrangement, 13 May 1999.

[135] Dubbo City Council submission, 4 March 1999, p. 1.

the cost of the existing pipeline in proportion to their use of that pipeline and that revenues from the additional volumes would be reflected in reduced tariffs for existing users. The DCC, the only interested party to express a view on this matter, has stated that it did not expect potential users of the CRP to contribute to the costs arising on the CWP.

While AGLP has not disclosed its forecasts for the extension, the CRP appears unlikely to generate sufficient revenue to cover its total costs during the initial access arrangement period. The Commission considers it appropriate to assess tariffs for the CRP when revisions are submitted to include it in the access arrangement. All aspects of the access arrangement, including any augmentations, will be examined as part of the scheduled review in 2004. The Commission considers it reasonable that any capacity expansion will form part of the pipeline and will not impact on the existing reference tariff. However, there is at present no mechanism in the access arrangement to provide for notification of any expansions, or extensions, that come into service during the initial access arrangement period. The Commission considers, as a general principle, that it should be alerted to the commencement of extensions and expansions to aid in its role as transmission regulator. Accordingly, the Commission proposes an amendment to the CWP access arrangement.

Proposed Amendment – A3.5

> In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must specify in the access arrangement that it will notify the Commission of the commencement of services provided through expansions and extensions to the Central West Pipeline.

3.7 Review and expiry of the access arrangement

3.7.1 Code requirements

Section 3.17 of the Code requires an access arrangement to include a date upon which the service provider must submit to the regulator a revised access arrangement (revisions submission date) and a date upon which the revisions are intended to commence (revisions commencement date).

The regulator's assessment of the appropriateness of the two dates set under section 3.17 must include reference to the objectives contained in section 8.1 of the Code. The regulator may require an amendment to the proposed access arrangement to include earlier or later dates and may also define a specific major event as a trigger which compels the service provider to submit revisions prior to the revisions submission date.

An access arrangement period accepted by the regulator may be of any duration. However, if the period is greater than five years, the regulator must consider whether mechanisms should be included in the access arrangement to address the potential risk that forecasts, on which terms of the proposed access arrangement are based, subsequently prove to be incorrect (section 3.18 of the Code). The Code provides the following examples of mechanisms for guidance: triggers for early submission of revisions based on the service provider's profitability or the value of services reserved in contracts, or changes to the type or mix of services

provided (section 3.18(a)); and the return of some or all revenue or profits in excess of a certain amount to users (section 3.18(b)).

Finally, it should be noted that the revisions commencement date is not a fixed date for the revisions to commence but is subject to variation by the regulator at the time at which it approves the revisions pursuant to section 2.48 of the Code. This section states that:

> ... Subject to the Gas Pipelines Access Law, revisions to an Access Arrangement come into effect on the date specified by the Relevant Regulator in its decision to approve the revisions (which date must not be earlier than either a date 14 days after the day the decision was made or ... the Revisions Commencement Date).

3.7.2 AGL's proposal

AGLP proposes to submit revisions to the access arrangement four years and six months after the commencement of this access arrangement, and that the revisions would commence either six months later, or on the date that the Commission's approval takes effect, whichever is later. Thus, the length of the initial access arrangement period would be five years or longer.

3.7.3 Submissions by interested parties

Forcenergy contends that NSW gas demand could more than double between the year 2000 and the end of the review period, and that a five year review period is not in the best interest of the general public.[136] Forcenergy considers that the Australian gas industry is going through a period of unprecedented change:[137]

> The gas industry is in a state of revolutionary change as never before seen in Australia. Now is not the time to lock in rates that extend over a five year period. As market forces are unleashed in Australia the industry can expect change to occur at an ever increasing rate over the next decade. This was the case in America and many of the changes were not anticipated by the majority of industry participants.

Forcenergy states that it prefers incentive rate making over a strictly cost based approach, but is concerned about the difficulties involved in establishing a 'baseline' on which performance based rate making can be implemented.[138]

> The establishment of tomorrows baseline from which to build incentives has become problematic even in America where there are many years of cost-recovery data, as prescribed by traditional rate of return cost of service principles applicable to regulated public utility firms. To suggest that we have established a credible baseline in NSW for AGLP from which to enter into a five year performance based rate making formula is nonsense.

Forcenergy considers it 'totally unacceptable' that AGLP has proposed no sharing of over recoveries or under recoveries with users, and contends that, if the Commission does accept a five year price path before the first review, there should a considerable sharing of benefits.

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136 Forcenergy submission, 19 March 1999, p. 18.

137 Ibid, p. 25.

138 Ibid.

Forcenergy contends that operating costs are under AGLP's control, but not demand growth and throughput volumes.[139]

> It is our view that the upside for AGLP far exceeds the downside on a risk adjusted basis. An elaborate performance based formula with the sharing of most of the benefits with facility users realised outside of an earnings ceiling for each year must exist. Otherwise, material changes in variables such as throughput must trigger a new access arrangement.

3.7.4 Commission's considerations

AGLP's proposal for the revisions submission date is consistent with section 3.17 of the Code in that it includes a date upon which the service provider must submit revisions to the access arrangement and a date upon which those revisions are intended to commence.

The Commission notes that the effect of AGLP's proposal would be an initial access arrangement period of five years duration, or longer if the Commission's approval of revisions takes effect later than six months after the revisions submissions date. Therefore the Commission is unable to determine at this stage whether AGLP's initial access arrangement period will exceed five years, the period that would trigger an obligation on the Commission, pursuant to section 3.18 of the Code, to consider whether mechanisms should be included to address the risk of forecasts on which the terms of the access arrangement were based proving incorrect.

The Commission understands that these provisions of the Code are intended to safeguard against forecasting errors impacting on the terms and conditions of access over lengthy periods, and it has considered the principles underpinning sections 3.17 and 3.18 and the potential trigger mechanisms. Nonetheless, the Commission notes the ambiguity that can arise through the possible impact of one or more extensions to the length of the review period on the obligation on the regulator pursuant to section 3.18 of the Code.

The Commission notes Forcenergy's position that no 'credible baseline' exists that would support a five year tariff path as proposed by AGLP. In the event that the Commission does not require a shorter initial access arrangement period, Forcenergy has proposed '[a]n elaborate performance based formula with the sharing of most of the benefits with facility users realised outside of an earnings ceiling for each year'. Alternatively, Forcenergy proposes establishing a trigger for a review based on material changes in variables such as throughput.

As the CWP is a recently commissioned pipeline, there is no history of demand on which to base reference tariff calculations. The Commission acknowledges that significant market research has been undertaken by AGLP in developing the CWP project. However, it is sensitive to the issues raised by Forcenergy and the possibility that actual demand may be very different to the demand forecasts used by AGLP.

Chapter 2 of this *Draft Decision* noted that AGLP's proposed NPV based price path approach was likely to be particularly susceptible to forecasting errors as it is dependent on an economic depreciation methodology which incorporates a number of forecasts, including throughput volumes. While the Commission proposes to accept AGLP's approach, it has concerns regarding the potential impact of forecasting errors. Sections 3.17 and 3.18 of the Code can

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[139] Ibid.

provide a mechanism to require AGLP to submit revisions where forecasting errors (or other specified events) are likely to result in detriment to users which may be inconsistent with the principles set out in section 8 of the Code.

The Commission has considered whether it would be appropriate to reduce the proposed initial access arrangement period. A nominal duration of, say, three years would be achieved by bringing forward the revisions submissions date to two years and six months after the commencement of the access arrangement period which would be early in 2002. However, the CWP would have only been in operation for three years at that time, with projected throughput of approximately a quarter of the pipeline's uncompressed capacity.

An early review is likely to be premature if only a short history of usage then exists. As forecasts of likely demand growth underpinning the reference tariffs applicable in the second access arrangement period would also be uncertain, a short access arrangement period would again need to be considered. The Commission is aware that short periods between reviews increase regulatory uncertainty for service providers. Frequent reviews also increase regulatory costs.

The likely consequences of any forecasting errors by AGLP will depend on both the extent and the direction of the inaccuracies. If throughput achieved only varies to a moderate extent from forecasts, the proposed duration of the access arrangement period would remain appropriate.

However, the forecasts on which the terms of the access arrangement were based and approved may prove substantially incorrect. In this instance, continuation for the full course of the period may result in revenues being achieved by AGLP, and costs incurred by users, that are inconsistent with the objectives set out in section 8.1 of the Code.

A service provider may choose to submit revisions in advance of the revisions submission date if forecasting errors prove to be substantially to its disadvantage. However, it would be unlikely to voluntarily submit revisions early if forecasting errors proved to be to its advantage. Accordingly, the Code provides that mechanisms may be included in an access arrangement in order to help protect users from incorrect forecasts and other 'events'.[140]

One of the options specified in the Code (section 3.18(b)), which must be considered by the Commission if the access arrangement period is in excess of five years, is a mechanism which would require AGLP to return some or all revenue or profits in excess of a certain amount to users. Forcenergy has suggested such a formula. The Commission appreciates the potential merits of this approach. However, it notes that such a mechanism would need to be carefully specified to provide for a fair sharing of benefits without unduly muting AGLP's incentives to undertake efficient investment and to improve the performance of the CWP. The CWP's short period of operation at this time provides an uncertain base on which to design such a mechanism.

The Commission considers that the most appropriate mechanism to help protect users from substantially incorrect forecasts would be a requirement for AGLP to submit revised reference tariffs to the Commission in the event that throughput volumes substantially exceed forecast

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[140] 'Specific major events' and 'certain events' may trigger a requirement on the service provider to submit revisions prior to the revisions submission date, pursuant to sections 3.17 and 3.18 respectively.

volumes. As the mechanism would be specifically intended to remedy unnecessarily high tariffs, the Commission does not consider it would be appropriate to require an early review of the full access arrangement. The focus of the review would be on the level of the reference tariffs. In the absence of evidence that the access arrangement no longer complies with the Code, the review process would be limited to determining the effect of the proposed revisions on compliance of the revised access arrangement with the relevant criteria.[141]

The Commission would review these revised reference tariffs, under the process specified in section 2 of the Code, in the light of revised demand forecasts for consistency with the revenue assumptions it accepts when approving the access arrangement, for each remaining year of the initial access arrangement period. Following approval by the Commission, users and prospective users of the CWP would be offered the revised reference tariffs instead of the originally approved tariffs.

The Commission proposes that the access arrangement be amended to state that, in the event that throughput volumes exceed forecast volumes by specified amounts, AGLP will submit revised reference tariffs to the Commission for assessment against the principles established in section 8 of the Code. It also proposes that the access arrangement be amended to clearly state that, in the event of approval by the Commission of revised reference tariffs, users and prospective users of the CWP would be offered the revised reference tariffs in place of the originally approved tariffs. However, the revised reference tariffs must not deprive any person of a contractual right in existence prior to the date the revisions to the access arrangement were submitted (or were required to be submitted), other than an exclusivity right which arose on or after 30 March 1995.[142]

In view of concerns about the muting of incentives, and the CWP's limited performance history at this time, the Commission proposes that the mechanism not be unduly restrictive, and that it only be triggered by specific major volume-based events. While the focus of the mechanism is on volumes, the Commission is aware that service providers may, in some circumstances, provide services for prices that are lower than the reference tariffs, and that revenues may not fully reflect the level of increased throughput. In order to avert premature submission of revisions to the reference tariffs, it is proposed that a threshold based on revenue must also be exceeded. Recognising the potential for services to be provided at less than the reference tariffs, the Commission proposes a differential of five percentage points between the two thresholds.

The Commission considers that AGLP should be required to submit revised reference tariffs to the Commission if it achieves throughput volumes in any financial year that substantially exceed forecast volume for that period. The Commission considers that an appropriate margin for forecasting error would be no greater than 25 per cent in this instance. An error of that magnitude would indicate that reference tariffs may have been set approximately $0.70/GJ too high, and that consequently AGLP's pre-tax real WACC would be approximately 1.8

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[141] Sections 2.24 and 3.1 to 3.20 of the Code, and relevant contents of the access arrangement (pursuant to section 2.46 of the Code).

[142] Consistent with section 47 of the Code.

percentage points higher than justified.[143] The appropriate margin for forecasting error for revenues would be no greater than 20 per cent.

It is proposed that AGLP will submit revised reference tariffs to the Commission if its volumes exceed 125 per cent of forecasts, and if revenues exceed 120 per cent of forecasts, in any of the 12 month periods ending 30 June 2001, 2002 and 2003.[144] AGLP would be required to provide to the Commission details of volumes and revenues achieved in each 12 months period ending 30 June by the subsequent 30 August, and to submit revised reference tariffs, if required by the latter date.

The Commission proposes that, in the event that the Tamworth extension is constructed during the initial access arrangement period, any natural gas that is transmitted through that extension will be excluded from the trigger volumes. The impact of the Tamworth extension on the access arrangement will be considered by the Commission as part of its first review.

[143] Based on the assumptions that the error applies to all volumes forecast, and that all sales are at tariffs consistent with those proposed by the Commission and with the expected future tariff path.

[144] Throughput achieved in the year ending 30 June 2000 is not proposed as a trigger as it would result in an unnecessarily short period before submission of revised reference tariffs. Performance in the year ending 30 June 2004 cannot trigger early submission of revised reference tariffs as the revisions submission date pre-dates 30 August 2004.

Proposed Amendment – A3.6

In order for AGLP's access arrangement for the Central West Pipeline to be approved, AGLP must state in the access arrangement that it will submit revisions to the reference tariffs to the Commission in the event that in the 12 month periods ending 30 June 2001, 2002 and 2003:

- throughput volumes achieved respectively exceed 900 TJ, 1 178 TJ or 1 455 TJ; and

- the revenue achieved in the corresponding period exceeds the forecast revenue (reflecting the impact of changes proposed in this *Draft Decision* on AGLP's costs and revenues and on the assumed inflation rate) by at least 20 per cent.

The access arrangement will:

- require that the level of the revised reference tariffs submitted to the Commission as a consequence of this amendment will be consistent with the revenue assumptions accepted by the Commission when it approves this access arrangement, coupled with revised demand forecasts that are reasonable in the light of available information;

- require AGLP to provide to the Commission details of volumes and revenues achieved in each 12 month period to 30 June by the subsequent 30 August, and to submit revisions to the reference tariffs, if required, by the latter date; and

- clearly state that, in the event of approval by the Commission of revised reference tariffs, users and prospective users of the CWP would be offered the revised reference tariffs in place of the originally approved tariffs, subject to the requirements of section 2.47 of the Code that persons not be deprived of certain existing contractual rights.

Any natural gas that is transmitted through the proposed extension to Tamworth will be excluded from the throughput volumes and revenues for the purposes of this mechanism.

4. Information provision and performance indicators

4.1 Information provision

4.1.1 Code requirements

In conjunction with its proposed access arrangement, a service provider is required to submit access arrangement information. This must contain sufficient information to enable users and prospective users, in the opinion of the relevant regulator, to understand the derivation of the elements in the proposed access arrangement and to form an opinion as to compliance of the access arrangement with the provisions of the Code (section 2.6).

According to section 2.7 of the Code, the access arrangement information provided may include any relevant information, but must at least contain the categories of information described in Attachment A to the Code, which is summarised in Box 4.1 below.

Box 4.1: Summary of Attachment A information

The information required is divided into six categories:

Category 1: access and pricing principles

Tariff determination methodology; cost allocation approach; and incentive structures.

Category 2: capital costs

Asset values and valuation methodology; depreciation and asset life; committed capital works and planned capital investment (including justification for); rates of return for equity and debt; and debt/equity ratio assumed.

Category 3: operations and maintenance costs

Fixed versus variable; cost of services by others; cost allocation between, for example, pricing zones, and cost categories.

Category 4: overheads and marketing costs

Costs at corporate level; regulated versus unregulated; cost allocation between, for example, pricing zones, and categories of assets.

Category 5: system capacity and volume assumptions

Description of system capabilities; map of piping system; average and peak demand; existing and expected future volumes; system load profiles and customer numbers.

Category 6: key performance indicators

Indicators used to justify 'reasonably incurred' costs.

Under section 2.8 of the Code, information included in the access arrangement information may be categorised or aggregated to the extent necessary to ensure that disclosure of the information is not, in the opinion of the relevant regulator, unduly harmful to the legitimate business interests of the service provider, a user or prospective user.

If the relevant regulator is not satisfied that the access arrangement information meets the requirements of the Code, it may, of its own volition, require the service provider to make changes to the access arrangement information. Likewise, if requested to do so by any person,

the relevant regulator must review the adequacy of the access arrangement information. However, the relevant regulator must not require access arrangement information to be released which, in the regulator's opinion, could be unduly harmful to the legitimate business interests of the service provider or a user or prospective user (section 2.9).

If the relevant regulator requires the service provider to change the access arrangement information, it must specify the reasons for its decision and allow the service provider a reasonable time to make the changes and resubmit the access arrangement information.

This chapter relates specifically to access arrangement information, which is provided for the use of users and prospective users. However, it is important to note that the regulator also has much wider information gathering powers under the GPAL. If the regulator has reason to believe that a person has information or a document that may assist the regulator in the performance of any of the regulator's prescribed duties under the GPAL, the regulator may require that person to provide the information or a copy of the document to it.[145] Section 2.8 of the Code states that nothing in that section limits the regulator's power under GPAL to obtain information, including information in an uncategorised or unaggregated form. Both the Code and the GPAL place limitations on the discretion of the regulator to disclose information received that has been identified to be of a 'confidential or commercially sensitive nature'.[146]

4.1.2 AGLP's proposal

AGLP submitted access arrangement information in conjunction with the access arrangement on 31 December 1998.

In response to a request by the Commission pursuant to section 2.9(a) of the Code, AGLP submitted revised access arrangement information on 8 February 1999, and a further amended version on 12 February 1999. AGLP submitted supplementary access arrangement information on 25 June 1999 in response to concerns about the adequacy of the access arrangement information.

The Commission has made copies of these documents available to interested parties (including from the Commission's website) and details have been included, where appropriate, in its *Issues Paper* and this *Draft Decision*.

4.1.3 Submissions by interested parties

Forcenergy and BHPP raised concerns about the adequacy of access arrangement information provided by AGLP. Forcenergy contended that 'information disclosure is a chronic problem [147] Forcenergy did not provide support for this comment.

On 25 March 1999 BHPP lodged a formal request under section 2.9(b) of the Code that the Commission consider whether in its view the access arrangement information met the

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145 Section 41, Gas Pipelines Access (NSW) Act 1988.

146 Section 7.11 and 7.12 of the Code and section 42, Gas Pipelines Access (NSW) Act 1988.

147 Forcenergy submission, 19 March 1999, p. 2.

requirements of the Code.[148] As part of this request, BHPP raised a number of specific comments and concerns, including:[149]

> Category 4: Information Regarding Overheads and Marketing Costs
>
> - Total service provider costs at corporate level.
>
> AGLP has not complied. AGLP should provide total costs at an AGL Group level, the proportion allocated to AGLP and the basis of that allocation. The split of Administrative & General and Marketing costs between the regulated and unregulated activities of AGL should receive specific attention.
>
> BHP submits that the information provided by AGLP in their AA, AAI and RAAI does not enable a user to form an opinion as to compliance with the Code and to understand the derivation of the elements of the Access Arrangements. We believe the following information should be supplied:
>
> 1. A single zonal tariff is proposed, and a rationale for this has been put forward, together with volume forecasts for each city gate. A break out of the incremental costs (capital, operating) of servicing each of these city gates is requested to assist in assessment of the inefficiencies of a single zonal pricing model.
> 2. The calculation to derive DORC from ORC should be detailed, together with the calculations for the proposed 'fixed principle' amount.
> 3. Further information should be provided to substantiate the proposed write-up of the value after 5 years operation. The volume forecasts show growth to be plateauing at a level that could not support the initial capital value, far less a written-up value. In a competitive market, that would be a signal for an asset write-down to a supportable level. Clearly, in putting forward the write-up proposal, AGLP must be relying on information which has not yet been disclosed, and this information should be provided.
> 4. The Code requires that prices are set on the basis of efficient costs (clause 8.37). A significant proportion of the claimed costs are for services purchased within the AGL group. AGLP should confirm that it has disclosed all related party transactions and provide details of the nature and quantity [of] services that have been purchased or sold and the counter party to these transactions. The costs should be separated by service.
>
> Sufficient information should be provided to enable an audit to be conducted to ensure these transactions are on an arms-length, open market basis.
>
> Once sufficient information has been provided by AGLP, users and prospective users will be able to make an informed assessment as to whether the proposed AA complies with the Code.

4.1.4 Commission's considerations

Following receipt of AGLP's access arrangement and access arrangement information on 31 December 1998, the Commission assessed the access arrangement information for compliance with the requirements of sections 2.6 and 2.7 of the Code. Pursuant to section 2.9(a) of the Code, the Commission determined that the access arrangement information did not satisfy those requirements, and decided to require AGLP to make changes accordingly. On 29 January 1999 the Commission requested that AGLP provide additional access arrangement information relating to Categories 2 to 6 of Attachment A to the Code.

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[148] BHPP submission, 25 March 1999.

[149] BHPP also raised a number of issues in this request which fall outside the scope of access arrangement information, including the accuracy of information provided, and the basis for AGLP's request that the Commission not disclose certain information. These issues are not discussed in this section.

The Commission gave the following reasons for requiring changes to the access arrangement information:[150]

(i) the Commission is of the opinion that the access arrangement information would not enable users and prospective users to understand the derivation of the elements of the proposed access arrangement or to form an opinion as to the compliance of the access arrangement with the provisions of the Code, as required pursuant to section 2.6; and

(ii) the access arrangement information does not include all the categories of information described in Attachment A of the Code, as required pursuant to section 2.7.

AGLP submitted revised access arrangement information on 8 February 1999, and a further amended version on 12 February 1999. The Commission considered this information pursuant to section 2.9(a) and, following BHPP's request, section 2.9(b). In response to the Commission's continued concerns about the adequacy of the access arrangement information, AGLP voluntarily submitted supplementary access arrangement information on 25 June 1999.[151]

BHPP's request under section 2.9(b) of the Code required the Commission to consider whether the combined set of access arrangement information was adequate and the requirements of sections 2.6 and 2.7 had been satisfied, and whether to require the service provider to make changes to the access arrangement information.

The Commission has assessed the information provided by AGLP in its entirety and concluded that the original access arrangement information, together with all the additional information submitted, satisfied the requirements of the Code with respect to the proposed access arrangement as it stood at that time. Changes proposed in this *Draft Decision* to AGLP's proposed access arrangement would, however, be likely to result in a need for further revisions to the access arrangement information. Consequently, further assessment of the access arrangement information provided by AGLP will be required at a later date.

4.2 Key performance indicators

4.2.1 Code requirements

The Code identifies the need for KPIs to be disclosed by service providers to interested parties. Category 6 of Attachment A of the Code lists the following relevant items:

- industry KPIs used by the service provider to justify 'reasonably incurred' costs; and
- service provider's KPIs for each pricing zone, service or category of asset.

Section 8.6 of the Code allows the regulator to 'have regard to any financial and operational performance indicators it considers relevant in order to determine the level of costs within the range of feasible outcomes under section 8.4 that is most consistent with the objectives

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150 ACCC, Notice pursuant to section 2.9 of the Code to AGLP, 29 January 1999.

151 AGLP also provided information on that date (*Additional general information* and *Additional confidential information)* in response to requests by the Commission that AGLP contends is outside of the requirements of sections 2.6 and 2.7 of the Code.

contained in section 8.1.' The regulator must then identify the indicators and provide an explanation of how they have been taken into account (section 8.7 of the Code).

4.2.2 AGLP's proposal

AGLP identifies a number of limitations on the usefulness of publicly available information relating to the performance of the Australian natural gas transmission industry.[152] AGLP notes that much of the information that is in the public domain relates to publicly owned pipelines prior to their privatisation, and that private companies have declined to release performance indicators on the basis of commercial sensitivity and restrictions on disclosure. AGLP also notes the heterogeneity of transmission pipelines (due to differences in factors such as diameter, length, geography and topography of location, and operational characteristics) which can make comparisons difficult. In particular, it may be necessary and difficult to adjust for these differences in order to make comparisons meaningful.

Nonetheless, AGLP recognises the need for the regulator to benchmark performance and has provided a number of measures which it considers will contribute to the development of meaningful industry performance measures over time.

Capital efficiency

AGLP notes the relative importance of capital related expenses which it states represent 80-90 per cent of annual accounting costs, and has provided a comparison of pipeline capital costs, shown below in Table 4.1.

[152] Revised access arrangement information, p. 25.

Table 4.1: Comparison of pipeline capital costs

Pipeline	Operator	When Constructed	Length (km)	Diameter (mm)[(a)]	Unit Cost $/mm/km
Mereenie to Alice Springs	NT Gas	1985	270	200	730
Young to Lithgow	EAPL	1987	212	150	1115
Carnarvon Lateral	Epic Energy	1988	171	150	719
Whyalla Lateral	Epic Energy	1989	71	200	1212
Gladstone to Rockhampton	Duke Energy	1991	96	200	957
Junee to Griffith	EAPL	1993	170	150	805
Marsden to Dubbo	AGLP	1998	130[(b)] 125[(c)]	200[(b)] 150[(c)]	620

Source: Revised Access Arrangement Information, p. 28. The data were sourced from a paper "Australian Transmission Pipeline Costs" by Philip Venton of Venton and Associates, presented at the 1998 Australian Pipeline Industry Association (APIA) Convention.

Notes: (a) Outside diameter used in analysis.
(b) Marsden to Alectown.
(c) Alectown to Dubbo.

AGLP states that the comparison lists those Australian pipelines not dissimilar to the CWP in length and diameter and expresses the capital cost[153] on a $/mm/km basis which it describes as an industry accepted measure of pipeline installation cost efficiency. ALGP states that throughput related measures (such as $/GJ or $/GJ/km) provide poor measures of efficiency as they do not take into account differences due to factors such as the level of utilisation and load factor of a pipeline, or economies of scale for different sized pipelines. It contends that the derived unit cost figures suggest that capital applied to the construction of the CWP has been utilised efficiently.

Operating costs

AGLP's total operating costs for the year ending 30 June 1999 are estimated to be $723 500. Based on AGL Group's ' … experience as a major owner and operator of transmission pipelines in Australia', AGLP estimates that operation of the CWP on a stand-alone basis would require approximately ten employees and the use of various facilities and services which would result in an annual budget in excess of $1.2 million.[154]

AGLP also provided some analysis based on comparisons with:

- estimated operating costs ($/1 000 km) of other Australian pipelines;
- estimated operating costs ($US/1 000 km) of US pipelines; and
- estimated operating costs ($ million) of the Victorian transmission system operated by TPA (now owned by GPU GasNet), after various adjustments.

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[153] AGLP advised that costs listed in the source document were in 1995 dollars (quarter not stated), and that AGLP has adjusted them to what it terms 'September 1998 dollars (that is, financial year 1999 dollars)

[154] Revised access arrangement information, pp. 28-29.

While AGLP acknowledges that allowances have to made for factors such as pipeline size and the use of compression, it concludes that the comparisons indicate that total operating costs for the CWP are efficient.

4.1.4 Commission's considerations

The Commission noted in its *Victorian Final Decision* the challenges in identifying KPIs and benchmarks especially in a newly deregulated commercial environment such as the Victorian natural gas industry.[155] At that stage the Commission stated its intention to work closely with the Victorian service providers to establish appropriate KPIs but that, in the short to medium term, it would have regard to financial performance indicators pursuant to section 8.6 of the Victorian Code. The Commission also considered the use of benchmarks such as load factor and energy delivered per employee which are set out by the Steering Committee on National Performance Monitoring of Government Trading Enterprises as a basis for developing non-financial indicators for TPA.

Similar difficulties apply in identifying KPIs and benchmarks for a new pipeline such as the CWP where only the installation capital cost is known. All other parameters that might feed into performance indicators are at this stage estimates.

In particular, the degree of accuracy of the throughput projections that underpin revenue forecasts will not be known for some time. The impact of the throughput projections on performance measures is highlighted in section 2.6 of this *Draft Decision*. Non-capital costs per GJ for the CWP are estimated to be $2.62 in 1999. For 2004 the estimated non-capital costs are $0.58/GJ. As these costs are escalated by the forecast inflation rate over time, the significant drop solely reflects the growth in gas volumes that are anticipated by AGLP.

In addition, arrangements whereby AGLP has contracted activities out to EAPO and other companies in the AGL Group raise particular difficulties when considering use of some of the benchmarks mentioned above. As AGLP has no employees, 'per employee' measures are not directly available. Further, to the extent that these contracted entities are primarily engaged in activities unrelated to the CWP, there may be factors such as economies of scale and of scope that blur comparisons with pipelines that would on face value appear to be reasonably comparable with the CWP (for example, stand-alone pipelines of similar diameter and length).

The Commission also recognises the limitations of KPI information noted by AGLP. Nonetheless it welcomes AGLP's contribution to the available body of benchmarking information, and notes that, based on the information provided by AGLP regarding capital costs and operating costs that the CWP's performance over the long term appears to be reasonable in these areas given the framework proposed by AGLP.

In assessing the proposed access arrangement, the Commission has not considered financial performance indicators in terms of section 8.6 of the Code. The CWP is a newly established pipeline without significant foundation contracts, and is projected to under-recover revenues during the initial access arrangement period. AGLP's access arrangement methodology is designed to allow it the opportunity to recoup these revenues later in the life of the CWP and so recover the efficient costs of delivering the reference service over the total effective life of

[155] ACCC, Final Decision – Victoria, p. 157.

the assets. As noted in section 2.7.4 of this *Draft Decision*, most financial performance indicators derived from projected performance over the initial access arrangement period would provide results which are of little meaning and 'unsatisfactory' when considered in isolation. Considered solely over periods late in the life of the CWP, these financial performance indicators would indicate 'superior' performance.

Further discussion on the Commission's views regarding the use of financial indicator analysis is included in its May 1999 *Draft Regulatory Principles*.

5. Draft decision

Pursuant to section 2.13(b) of the Code, the Commission proposes not to approve AGLP's access arrangement for the Central West Pipeline in its present form. This *Draft Decision* states the amendments (or nature of amendments, as appropriate) which would have to be made in order for the Commission to approve the proposed access arrangement.

Appendix A: Submissions from interested parties

BHP Petroleum[156], 25 March 1999

Dubbo City Council, 4 March 1999

Esso Australia Ltd, 4 March 1999

Forcenergy Australia Pty Ltd, 19 March 1999

Mudgee Region Business Enterprise Centre Inc., 5 March 1999

NSW Department of Energy, 24 March 1999

[156] BHPP's submission was in the form of a request pursuant to s. 2.9(b) of the Code. It also raised a number of additional issues. The Commission has considered all the issues raised in BHPP's letter.

Appendix B: Post-tax and pre-tax WACCs in a NPV regulatory framework

In a NPV framework access prices are set according to a rule which recovers expected costs in NPV terms over the life of the asset. The advantage of the approach is that revenues do not have to recover the expected cost of service in every period. It is particularly useful for new infrastructure assets like the CWP where the initial level of business is insufficient to recover estimated costs at tariffs that are sustainable in the market place. In this situation shortfalls in income are compensated for, in NPV terms, by over-recovery of costs in later years.

The discount rate for assessing whether the revenues cover costs in NPV terms is the WACC. The WACC in question must be relevant to the cash flows being assessed. The service provider for the CWP proposed the use of a pre-tax real WACC based on pre-tax real cash flows. Of course, other rate of return measures can be used to give equivalent outcomes. In the case of the NPV proposal, the profile of tariffs over time is determined by the CPI outcomes and the X factor which together determine the CPI-X adjustments. Hence, it does not matter which cash flows are focussed on provided the appropriate rate of return (WACC) is applied. All equivalent rate of return measures will give identical outcomes.

The Commission has strong reservations over the derivation of the pre-tax real WACC based on a formula approach as used by the service provider. Instead, the Commission favours a post-tax WACC approach which utilises the post-tax rate of return directly from CAPM benchmarking without the need for a conversion formula. Compensation for tax liabilities of the service provider (net of the value of imputed credits) is determined on the basis of cash flow assessments.

If a pre-tax real WACC is used the Commission considers that it should be based on cash flow analysis to ensure consistency with the CAPM benchmark post-tax returns. In the NPV framework as proposed, this only requires the Commission to focus on the post-tax nominal cost of equity cash flows. As noted already, the post-tax and pre-tax frameworks converge to give the same outcome. This is not very surprising given that the tariff profile is determined by a CPI-X mechanism and cash flows that give the desired nominal post-tax cost of equity (from the CAPM) are precisely those that give the equivalent pre-tax real WACC. In the analysis the post-tax cost of equity is the internal rate of return associated with net cash flows to equity holders and the pre-tax WACCs are the internal rates of return for cash flows associated with the assets as a whole.

The analysis is somewhat cumbersome to illustrate for the CWP over its 80 year life. Instead, this appendix illustrates a simpler example, a single 20 year life asset based on a similar framework.

Table B.1: NPV cash flows

Period	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Consumer Price Index (assumed)	1.000	1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
REVENUE CALCULATION																					
Gas volume throughput TJ pa		250	500	750	1,000	1,100	1,210	1,331	1,464	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611
Tariff per GJ throughput ($)		2.400	2.600	2.800	2.850	2.902	2.954	3.007	3.061	3.116	3.172	3.229	3.287	3.346	3.406	3.468	3.530	3.593	3.658	3.724	3.791
Revenue ($'000) (tariff x volume)		600	1,300	2,100	2,850	3,192	3,574	4,002	4,482	5,018	5,109	5,200	5,294	5,389	5,486	5,585	5,685	5,787	5,891	5,997	6,105
TAXABLE INCOME and TAX CALCULATION																					
Revenue (nominal)		600	1,300	2,100	2,850	3,192	3,574	4,002	4,482	5,018	5,109	5,200	5,294	5,389	5,486	5,585	5,685	5,787	5,891	5,997	6,105
Less O&M costs		(1,000)	(1,025)	(1,051)	(1,077)	(1,104)	(1,131)	(1,160)	(1,189)	(1,218)	(1,249)	(1,280)	(1,312)	(1,345)	(1,379)	(1,413)	(1,448)	(1,485)	(1,522)	(1,560)	(1,599)
Less interest paid		(850)	(955)	(1,041)	(1,103)	(1,140)	(1,168)	(1,184)	(1,185)	(1,166)	(1,124)	(1,075)	(1,018)	(953)	(879)	(794)	(698)	(589)	(467)	(329)	(174)
Less tax depreciation		(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	-	-	-	-	-	-	-	-	-	-
Taxable profit (loss)		(3,251)	(2,680)	(1,991)	(1,329)	(1,052)	(726)	(342)	108	634	736	2,846	2,964	3,091	3,229	3,378	3,539	3,713	3,903	4,109	4,333
Accumulated tax loss		(3,251)	(5,930)	(7,922)	(9,251)	(10,303)	(11,029)	(11,370)	(11,262)	(10,628)	(9,892)	(7,047)	(4,083)	(992)	-	-	-	-	-	-	-
Tax payable at corporate rate of 36%		-	-	-	-	-	-	-	-	-	-	-	-	-	805	1,216	1,274	1,337	1,405	1,479	1,560

Table B.1: NPV cash flows (cont.)

Period		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	IRR																					
CASH FLOW TO ASSETS																						
Revenue (nominal)			600	1,300	2,100	2,850	3,192	3,574	4,002	4,482	5,018	5,109	5,200	5,294	5,389	5,486	5,585	5,685	5,787	5,891	5,997	6,105
Less O&M costs			(1,000)	(1,025)	(1,051)	(1,077)	(1,104)	(1,131)	(1,160)	(1,189)	(1,218)	(1,249)	(1,280)	(1,312)	(1,345)	(1,379)	(1,413)	(1,448)	(1,485)	(1,522)	(1,560)	(1,599)
Less Capital expenditure		(20,000)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-tax nominal cash flow to assets	*10.24% (a)*	(20,000)	(400)	275	1,049	1,773	2,088	2,443	2,842	3,293	3,800	3,860	3,920	3,982	4,044	4,108	4,172	4,237	4,303	4,370	4,438	4,506
CASH FLOW TO DEBT																						
Interest paid			850	955	1,041	1,103	1,140	1,168	1,184	1,185	1,166	1,124	1,075	1,018	953	879	794	698	589	467	329	174
Less Increase in debt		(12,000)	(1,469)	(1,215)	(875)	(530)	(395)	(223)	(6)	263	595	691	799	917	1,049	1,194	1,355	1,533	1,730	1,947	2,187	2,453
Net cash flow to debt	*7.09% (b)*	(12,000)	(619)	(260)	166	573	745	945	1,178	1,448	1,761	1,815	1,873	1,936	2,002	2,073	2,149	2,231	2,319	2,414	2,516	2,626
CASH FLOW TO EQUITY (cash flow to assets less cash flow to debt)																						
Net cash flow to equity (pre tax)	*14.98% (c)*	(8,000)	219	535	883	1,201	1,343	1,497	1,664	1,845	2,039	2,044	2,047	2,046	2,042	2,034	2,022	2,006	1,984	1,956	1,922	1,880
Less Tax payable			-	-	-	-	-	-	-	-	-	-	-	-	-	(805)	(1,216)	(1,274)	(1,337)	(1,405)	(1,479)	(1,560)
Net cash flow to equity (post tax excl. value of imputation credits)	*13.33% (d)*	(8,000)	219	535	883	1,201	1,343	1,497	1,664	1,845	2,039	2,044	2,047	2,046	2,042	1,229	807	732	647	551	442	320
Plus value of utilised imputation credits			-	-	-	-	-	-	-	-	-	-	-	-	-	403	608	637	668	703	740	780
Net cash flow to equity (post tax)	*14.22% (e)*	(8,000)	219	535	883	1,201	1,343	1,497	1,664	1,845	2,039	2,044	2,047	2,046	2,042	1,632	1,414	1,369	1,315	1,253	1,182	1,100
Regulatory asset value (at end of period)		20,000	22,449	24,474	25,932	26,815	27,474	27,846	27,856	27,417	26,426	25,273	23,942	22,413	20,665	18,675	16,416	13,861	10,978	7,733	4,088	(0)
Economic depreciation		-	(2,449)	(2,025)	(1,458)	(883)	(659)	(372)	(10)	439	991	1,152	1,331	1,529	1,748	1,990	2,259	2,555	2,883	3,245	3,645	4,088
Pre-tax real cash flow to assets	*7.56% (f)*	(20,000)	(390)	262	974	1,607	1,845	2,106	2,391	2,703	3,043	3,015	2,988	2,961	2,934	2,907	2,880	2,854	2,828	2,802	2,776	2,750

Notes: (a) Forecast nominal pre-tax WACC
(b) Forecast nominal cost of debt
(c) Forecast nominal pre-tax ROE
(e) Forecast nominal post-tax ROE (inclusive of valued imputation credits)
(f) Forecast real pre-tax WACC

(d) Forecast nominal post-tax ROE (not including the value of imputation credits)

Assumptions of an illustrative NPV model showing post-tax and pre-tax cash flows

General	
cost of pipeline	$20 million
life of pipeline	20 years
tax life of asset	10 years, straight line depreciation
initial tariffs	$2.40/GJ (year 1), $2.60/GJ (year 2), $2.80/GJ (year 3) from year 4 tariff adjusted by a CPI-X mechanism (ie. multiplied by $(CPI_t/CPI_{t-1})(1-X)$
expected volumes	250TJ/year, increasing by 250TJ each year (years 1-4) from year 5 volumes increase by 10% per year to year 9 then level off
inflation	2.5% pa

CAPM	
nominal risk free rate	6.09%
equity beta	1.48
market risk premium	5.5%
nominal cost of debt	7.09%
debt as a percentage of asset value	60%
utilisation of imputation credits	50%

Cash flows shown in Table B.1 above are the end result of the spreadsheet calculations. These calculations are performed using the spreadsheet solver facility. Essentially the X factor is adjusted so that the post-tax nominal cost of equity (measured by the internal rate of return) equates to the 14.22 per cent indicated by the CAPM assumptions.

Points to note

1. In this example, the cash flows reveal that the post-tax cost of equity (including the value of utilised imputation credits) of 14.22 per cent is equivalent to a pre-tax real WACC of 7.56 per cent. This contrasts with a pre-tax WACC of 8.5 per cent which would have been obtained using the conversion formula proposed by the service provider. This difference illustrates the magnitude of the error implied in relying on the formula approach.
2. The pre-tax nominal cost of equity is 14.98 per cent, while the post-tax return on equity (excluding the value of imputation credits) is 13.33 per cent. This indicates an effective tax rate of 11.03 per cent.
3. It is only by year eight that revenues exceed the cost of service (the return on capital and operation and maintenance costs) and a positive contribution can be attributed to depreciation. Shortfalls are reflected in negative depreciation which had added to the value of the asset base up until that year.
4. The X is adjusted so that the value of the asset is depreciated to zero by the end of its economic life. In this example X was calculated to be 0.68 per cent. Hence, the tariffs will fall in real terms but will be observed to rise in nominal terms if inflation outcomes average above 0.68 per cent per year.