AlintaGas Networks

Access Arrangement Information

For the Mid-West and South-West Gas Distribution Systems

AMENDED AAI draft dated 27 May 2005

AlintaGas Networks Pty Ltd
ABN 90 089 531 975
1 William Street
Perth WA 6000

TABLE OF CONTENTS

1 Introduction

1.1 Purpose of this Document

On 31 March 2004, AlintaGas Networks Pty Ltd (AGN) submitted to the Economic Regulation Authority (the Regulator) a revision to the Access Arrangement approved on 18 July 2000.

This Access Arrangement Information sets out further information to support the revisions, and seeks to assist the Regulator in forming its opinion as to the level of compliance of the Access Arrangement as revised in accordance with the provisions of the National Third Party Access Code for Natural Gas Pipelines (the Code). This Access Arrangement Information is submitted in accordance with section 2.28 of the Code.

In this Access Arrangement Information, unless the context otherwise requires, where a word or phrase is capitalised it has:

- the meaning given to that word or phrase in this Access Arrangement; or
- the meaning given to that word or phrase in the Code; or
- the meaning given to that word or phrase in the glossary contained in Part A of the Access Arrangement.

The purpose of this Revised Access Arrangement Information (RAAI) is to comply with the request of the Regulator to provide updated information consistent with their Draft Decision dated 28 February 2005.

The information contained in this document should be read in conjunction with the original AAI dated 31 March 2004, the Regulators Draft Decision dated 28 February 2005 and AGN's response to the Draft decision. Various tables have been re-produced to reflect the outcomes of the Draft Decision and other information AGN considers relevant.

1.2 AlintaGas Networks

AGN is a wholly owned subsidiary of Alinta Networks Holdings. Alinta Networks Holdings is owned by Alinta Ltd, a publicly listed company owning approximately 74% and Diversified Utilities and Energy Trust, an infrastructure trust managed by AMP Limited owning approximately 26%.

AGN is the leading distributor of gas to Western Australian business and households with over 500,000 Delivery Points. As an independent business, AGN operates the Gas Distribution System (GDS) in the Mid-West and South-West of Western Australia, which is the subject of this Access Arrangement Information, in accordance with its obligations as a Service Provider under the Code. The AGN GDS is described in detail in section 6.

1.3 Overview of Submission

AGN submits this Access Arrangement Information under section 2.28 of the Code and, in doing so, considers that the Access Arrangement Information meets the requirements of sections 2.6 and 2.7 of the Code. Section 2.6 requires the Access Arrangement Information to contain such information as would enable Users and Prospective Users to understand the derivation of the elements in the proposed Access Arrangement and to form an opinion as to the compliance of the Access Arrangement with the provisions of the Code. Section 2.7 provides that the minimum information to be provided is the categories of information described in Attachment A.

AGN has provided both the minimum information required by Attachment A and a substantial amount of additional information. To facilitate the consideration of its proposed revisions by Users and Prospective Users, AGN has taken a broad interpretation of the class of information "which will assist Users and Prospective Users to understand the derivation of the elements in the proposed Access Arrangement and to form an opinion as to the compliance of the Access Arrangement with the provisions of the Code". AGN believes there is no further information which it could provide for this purpose and, as a consequence, AGN believes it has met the test set out in section 2.6 of the Code for the information requirements of the Access Arrangement Information.

AGN is proposing revisions to its Access Arrangement which describes the terms and conditions on which access is granted to the AGN GDS. The revisions proposed by AGN reflect an extensive examination of the experience gained from 5 Years application of the Code to AGN's assets and reflect consultation with Users to determine their experience of the Access Arrangement.

Key features of the revision include:

- **Workable Competition Approach.** AGN believes the Regulator must apply the Code in order to replicate "workable competition" and has structured its revisions accordingly. This means that where a range of plausible outcomes presents itself, AGN has selected (in accordance with how the Code should be interpreted according to the Supreme Court of WA) a point within the range consistent with the efficient provision of Services.

- **External Verification.** AGN believes the essence of the Regulator's role is to approve the proposed revisions if they are consistent with the Code. A key input into these deliberations will be how AGN's costs compare to other jurisdictions. As part of the revisions process, AGN commissioned expert consultants to benchmark its operations. The results are outlined in section 7 of this document but in summary the benchmarking information clearly demonstrates, that compared with other businesses, AGN is an efficient gas distribution business.

- **Incentive Mechanism.** AGN is proposing a revised Incentive Mechanism for the Second Access Arrangement Period. The Incentive Mechanism is based on a rolling ten Year period such that efficiency gains made would be retained for a full ten Years, regardless of when they are made in the Access Arrangement Period. AGN believes such a mechanism provides the optimal combination of efficiency incentives and benefit sharing with Users.

- **Introduction of Full Retail Contestability (FRC).** The revised Access Arrangement has been amended to cater for the introduction of FRC in the Western Australian gas market. This has resulted in additional costs being incurred or expected to be incurred by AGN, (which have been assessed as consistent with the Code), as well as changes to the Access Arrangement itself to ensure consistency with the Retail Market Scheme.

- **Regulatory Pass Through Mechanism.** AGN understands that the Economic Regulation Authority, like its predecessor the Office of Gas Access Regulation, will be funded on the basis of an industry levy. This mechanism has been justified on the basis that regulation ultimately benefits Users and Service Providers will pass the costs of regulation on to Users, however, this depends on Service Providers actually being able to pass costs on.

Reliance on forecasts of regulatory costs is likely to lead to under-recovery, as such costs are very difficult to forecast. This has been AGN's experience in the First Access Arrangement Period, with its forecasts of regulatory costs (which are all it was able to recover) being significantly exceeded by the actual costs levied by the Regulator. Consistent with the principle of Users ultimately bearing regulatory costs and the Code requirement that a Service Provider is able to recover the efficient costs of Service provision, AGN has introduced a regulatory cost pass through mechanism in its Second Access Arrangement. This pass through mechanism will allow the actual costs of regulation to be recovered every Year as an adjustment to Tariffs. AGN believes that this mechanism is compliant with the Code and notes that a regulatory cost variation component to Tariff changes has been adopted by the Victorian Essential Services Commission and applied to the Victorian Gas Distribution businesses.

- **Guaranteed Service Levels.** As part of its commitment to customer service, AGN proposes to introduce guarantees to Small Use Customers, which will see payments made to such Small Use Customers where AGN fails to meet pre-determined standards it sets.

1.4 Full Retail Contestability

AGN welcomed the policy of FRC introduced by the State Government in 2000 and worked to achieve the commencement date of 31 May 2004 set by the Government for Full Retail Competition for all consumers.

The introduction of FRC and the proposed changes to the operation of the retail gas market in Western Australia, with AGN being required to be bound by an approved Retail Market Scheme under the Energy Coordination Act 1994, require revisions to the Access Arrangement:

(a) Amended Reference Service

Under the Retail Market Scheme, all Users consuming above 10 terajoules (TJ) of Gas at a Delivery Point in any 12 month period are required to have Telemetry installed at such Delivery Points. A new Reference Service, being Reference Service A2, has therefore been introduced where it is anticipated that an end use consumer will consume, or where an end use consumer is consuming, 10 TJ but less than 35 TJ of Gas in any 12 month period.

(b) Consequential Changes to the Access Arrangement

AGN has amended its Access Arrangement to ensure consistency with the Retail Market Scheme.

AGN has also incurred, and is expected to incur, significant costs as a result of the introduction of FRC and considers it appropriate that these costs be recovered via the Access Arrangement as follows:

(i) FRC New Facilities Investment

FRC New Facilities Investment associated with AGN implementing FRC has been estimated at $12 million. AGN has previously obtained approval from the Regulator[1] that these costs are reasonable and prudent and can be rolled into its revised capital base as part of the revisions to the Access Arrangement.

(ii) Non-Capital Costs

AGN estimates FRC non capital costs to be $1.3 million per annum and has built these into its cost base for the 2005-2009 Access Arrangement Period. While there is no provision in the Code for the Regulator to issue a binding pre-approval, the Regulator has indicated that this level of costs appears reasonable.

1.5 Structure of Documentation

Documentation for this Access Arrangement revision comprises the Access Arrangement and this Access Arrangement Information.

1.5.1 Access Arrangement

The Access Arrangement comprises three sections:

- **Part A - The Principal Arrangements.** This sets out the principal policy statements in relation to Services Policy, Reference Tariffs and Reference Tariff Policy, Capacity Management, Queuing, Trading, Extensions and Expansion, and Interconnections Policies. It also includes Review and Expiry Arrangements for the next Access Arrangement Period and a Glossary applicable to both the Access Arrangement and the Access Arrangement Information.

- **Part B - Reference Tariffs and Reference Tariff Policy.** This Part sets out the details of the Reference Tariffs, the basis for their adjustment and the Reference Tariff policy used to determine a Reference Tariff. Part B also sets out the Fixed Principles that are to apply to the Access Arrangement.

- **Part C - Terms and Conditions.** This Part sets out the terms and conditions on which AGN will supply each Reference Service.

[1] *Final Decision: Recovery of costs associated with the introduction of Full Retail Contestability in the Mid-West and South West Gas Distribution Networks*, 1 October 2003

1.5.2 Access Arrangement Information

This Access Arrangement Information includes:

- information regarding the Reference Services and Tariffs and proposed Guaranteed Service Level scheme (GSL) arrangements that are to apply during the Second Access Arrangement Period;
- the basis on which the Total Revenue allowed under the Access Arrangement is calculated;
- the method for calculating initial Reference Tariffs and the method for variations to those Tariffs within the Second Access Arrangement Period;
- information regarding system capability and volume assumptions; and
- information regarding key performance indicators.

1.6 Contact Details

WA Regulatory Development Manager

AlintaGas Networks Pty Ltd

1 William Street

Perth WA 6000

Tel: (08) 9486 3156

2 Overview of Regulatory Decisions Impacting Access Arrangements and Judicial and Other Findings Impacting the Code

Apart from AGN's own experience with the operation of the Code over the past 5 Years, there have been Access Arrangements and revisions to Access Arrangements in other Australian jurisdictions, which give guidance to, or impact on, how the Code should be applied. AGN has undertaken a thorough analysis of decisions in other jurisdictions and believes its revisions are consistent with regulatory best practice emerging in Australia.

AGN believes that regulatory decisions themselves, while important, are less so than the following other significant developments which have profound implications for the application of the Code to Access Arrangements:

- Productivity Commission inquiries into the National Access Regime and the Gas Access Regime;
- Epic Energy Court case; and
- successful appeals against ACCC decisions on access pricing.

2.1 Productivity Commission Reports

The Productivity Commission has considered third party access generally in some detail in its *Review of the National Access Regime.*[2] In common with the later review of the Gas Access Regime (the findings of which are discussed below) it found that, while third party access could be justified, it also had significant costs which need to be taken into account.

A key finding of the review of the National Access Regime was that regulatory costs are unlikely to be symmetrical in the case of over versus under compensation. Regulation is a necessarily imperfect tool and getting outcomes exactly right is difficult. But in the case of error, it is worse to err on the side of under compensating regulated entities.

As the Productivity Commission put it:

> "Regulators must operate with limited information and imperfect regulatory tools. This implies that precise delineation after the event between genuine monopoly rents and balancing upside profits on successful projects will be well nigh impossible …"[3]
>
> "… the Commission accepts that there is a potential asymmetry in effects:
>
> - "Over compensation may sometimes result in inefficiencies in the timing of new investment in essential infrastructure (with flow-ons to investment in related markets), and occasionally lead to inefficient investment to by-pass parts of a network. However, it will never preclude socially worthwhile investments from proceeding.

[2] Productivity Commission 2001, *Review of the National Access Regime*, Report no. 17, AusInfo, Canberra

[3] ibid., p. 82

- "On the other hand, if the truncation of balancing upside profits is expected to be substantial, major investments of considerable benefit to the community could be foregone, again with flow-on effects for investment in related markets.

"In the Commission's view, the latter is likely to be a worse outcome. Accordingly, it concurs with the argument that access regulators should be circumspect in their attempts to remove monopoly rents perceived to attach to successful infrastructure projects."[4]

Following its general assessment of third party access, the Productivity Commission commenced a detailed examination of the Code in June 2003. It released a draft report in December 2003[5], with a final report delivered in June 2004.[6] The Productivity Commission recommended changes to the Code and, while the timing of these is unclear, it is unlikely to happen in 2005. Nonetheless, the final report does provide some clear signals as to problems with the Code as it currently stands and key areas for amendment.

Key conclusions from the report include:

"The Gas Access Regime is… at the more intrusive end of regulation"[7]

"There are significant compliance and administration costs in the operation of the Gas Access Regime."[8]

"The following overarching objects clause should be incorporated into the Gas Access Regime….:

> "To promote the economically efficient use of, and economically efficient investment in, the services of transmission pipelines and distribution networks, thereby promoting effective competition in upstream and down stream markets."[9]

"[The Code should be amended to state] that reference tariffs should … be set so as to generate expected revenue for a reference service or services that is at least sufficient to meet the efficient costs of providing access to the reference service or services."[10]

"[There is] inevitable imprecision and subjectivity that occurs when regulators are required to approve reference tariffs."[11]

---

[4] ibid., p. 83

[5] Productivity Commission 2003, *Review of the Gas Access Regime*, Draft Report, Canberra.

[6] Productivity Commission 2004, *Review of the Gas Access Regime*, Inquiry Report, Canberra.

[7] ibid., Finding 3.1.

[8] ibid., Finding 4.6.

[9] ibid., Recommendation 5.1.

[10] ibid., Recommendation 7.1.

[11] ibid., Finding 7.5.

"There is high potential for regulatory error when approving reference tariffs. The Gas Access Regime requires regulators to make decisions about future market circumstances that are uncertain. This has led regulators to use many debatable assumptions. There is a consequential tendency for regulators to seek additional information from service providers and further studies by consultants. This is unlikely to reduce uncertainty significantly."[12]

"Even if a regulator had all of the information held by a regulated business, it is unlikely that the regulator (or any other party, including the regulated business itself) would be able to determine precisely the most efficient prices/revenue."[13]

"… the most efficient revenue target cannot be known with certainty."[14]

"[The function of regulators is] to determine the level of costs within the range of feasible outcomes that is most consistent with the guiding principles (s8.1) for reference tariffs."[15]

"Implementing the WACC/CAPM approach is not a precise science, given the numerous debatable assumptions involved."[16]

"… a range of plausible values can be generated for the regulatory rate of return using the WACC/CAPM approach. This in turn implies that meeting the Gas Code's requirements does not automatically lead to a single indisputable number for a reference tariff."[17]

"… if regulatory error leads to reference tariffs being set below efficient costs, then the longer term outcome will be declining service quality and inefficient investment to meet future demand. Regulatory error is a real possibility …"[18]

2.2 Epic Case

In August 2002 the Western Australian Supreme Court handed down its decision in the matter of *Re: Dr Ken Michael AM; ex parte Epic Energy (WA) Nominees Pty Ltd & Anor*[19]. While the major focus of the decision related to the determination of the Initial Capital Base, a matter not directly relevant to AGN's proposed revisions, the Court also provided considerable guidance as to interpretation of the Code, and in particular the Regulator's role. The decision is the only judicial interpretation of what the Code means and should therefore be taken into account in any decision by the Regulator, particularly in Western Australia where the case arose.

[12] ibid., Finding 7.9.

[13] ibid., p 240.

[14] ibid., p 264.

[15] ibid., p 264.

[16] ibid., p 296.

[17] ibid., p 296.

[18] ibid., p 331.

[19] *Re: Dr Ken Michael AM; ex parte Epic Energy (WA) Nominees Pty Ltd & Anor* [2002] WASCA 231.

The Court recognised the fundamental role of section 2.24 of the Code in guiding the Regulator's assessment of a proposed access arrangement. The Regulator must take into account:

- the Service Provider's legitimate business interests and investment in its pipeline system;
- firm and binding contractual obligations;
- safety and reliability;
- economically efficient operation of the pipeline system;
- the public interest;
- the interests of Users and prospective Users of the pipeline system; and
- any other matters the Regulator considers relevant.

The Court found that these seven factors were to be given weight as fundamental elements in the Regulator's assessment.

Furthermore, should the objectives for Reference Tariff Policy and Reference Tariffs as set out in section 8.1 of the Code conflict, these section 2.24 factors should be used for guidance in determining the manner in which such conflicts can best be reconciled or which of them should prevail.

In considering the objectives of section 8.1, consideration must be given to the efficient costs of delivering the Reference Service, to efficiency in the level and structure of the Reference Tariff, and to replicating the outcome of a competitive market. The Court was of the view that, while experts might differ as to the precise details, a reference to efficiency was a reference to economic efficiency. In addition, there was a close interrelationship between the role of a competitive market and the achievement of economic efficiency: competitive markets appear likely to lead, over time, to economic efficiency or at least to greater economic efficiency.

The Epic case made it clear that the Code's references to competition were to "workable competition" rather than perfect competition:

> "In simple terms [a workably competitive market] indicates a market in which no firm has a substantial degree of market power … a reference to a competitive market is to a workably competitive market…[20]"
>
> "In the particular context of the promotion of a competitive market for natural gas it would be surprising if what was contemplated was a theoretical concept of perfect competition … Workable competition seems far more obviously to be what is contemplated."[21]
>
> " …a reference tariff should be designed with a view to replicating the outcome of a competitive market ie. as indicated earlier, a workably competitive market."[22]

[20] ibid., para 124.

[21] ibid.

[22] ibid., para 143.

Having clearly established that competition referred to workable competition, the judgment then devoted some attention to what this may mean for application of the Code:

> "… the outcome of a workably competitive market is not capable of precise or certain calculation and at best, can only be approximated."[23]
>
> "It appears to be inherent in this that in a workably competitive market past investments and risks taken may provide some justification for prices above the efficient level."[24]
>
> "… [there is] a growing awareness of the long term disadvantages of striking the balance with too great an emphasis on the interest of consumers in securing lower prices, and without due regard to the interest of the Service Provider in recovering both higher prices and its investment."[25]

2.3 Regulatory Precedents

Finally, there have been two significant decisions by the Australian Competition Tribunal on the pricing principles applicable under the Code which have a direct bearing on how the Regulators should make Access Arrangement determinations.[26]

The Australian Competition Tribunal has found that the role of the Regulator is not to determine a correct return, rather it is to decide whether what is being proposed in the Access Arrangement is consistent with the Code:

> "Contrary to the submission of the ACCC, it is not the task of the Relevant Regulator under s 8.30 and s 8.31 of the Code to determine a 'return which is commensurate with prevailing conditions in the market for funds and the risk involved in delivering the Reference Service'. The task of the ACCC is to determine whether the proposed AA in its treatment of Rate of Return is consistent with the provisions of s 8.30 and s 8.31 and that the rate determined falls within the range of rates commensurate with the prevailing market conditions and the relevant risk."[27]

2.4 Implications for Assessment of the Revisions

AGN believes that the collective impact of these decisions is to clarify the way in which the Code should be implemented and provide substantial guidance to the Regulator in assessing AGN's proposed revisions. At a general level, the overarching conclusion is that there is high potential for regulatory error which will carry substantial costs and regulators should act in a way to minimise these effects. This in turn means that regulators should not attempt to be too focused on the costs of Service Providers. Rather they should look at the extent to which the proposed revisions are consistent with the Code and if they are, then accept them.

---

[23] ibid.

[24] ibid., para 144.

[25] ibid., para 145.

[26] *Application by GasNet Australia (Operations) Pty Ltd* [2003] ACompT 6; *Application by Epic Energy South Australia Pty Ltd* [2003] ACompT 5.

[27] *Application by GasNet Australia(Operations) Pty Ltd* [2003] ACompT 6, para 42.

2.5 Standard to be Implemented

The Epic case made it clear that under the Code, regulators must aim to replicate a "workably competitive" outcome. This means that the efficiency standards imposed are not those of a theoretical construct of perfect competition but rather one that might be found in a real market and this may well allow higher costs than the theoretical ideal.

2.6 Regulatory Uncertainty

Both the Epic case and the Productivity Commission's reviews made it clear that even the best regulator (or for that matter, the business itself according to the Commission) cannot precisely determine the most efficient prices or revenue. As an independent report commissioned by the three Victorian distribution businesses found[28], the gas industry is exposed to a wide range of risks which can impact on outcomes. The Regulator therefore needs to recognise the inherent uncertainty in its decisions and allow for it.

In addition to this general conclusion, the Productivity Commission specifically noted difficulties determining a precise cost of capital figure.

2.7 Asymmetrical Costs

The uncertainty referred to above suggests that the Regulator is likely to err. But the Productivity Commission found that the economic costs of error differ between over and under compensating Service Providers. The latter is likely to be more costly and therefore the Regulator should err on the side of over compensation if it is clear that the result cannot be precisely determined, as is the case with the level of revenue and prices.

2.8 Function of Regulator

One of the key conclusions of both the Productivity Commission and the Australian Competition Tribunal concerns the function of regulators. It is abundantly clear that it is not, as some have argued, to determine an efficient level of costs for a given business. Rather it is to determine whether Access Arrangement proposals made by a Service Provider and, in particular, the level of costs proposed are consistent with the Code. Only if they are not is there then a legitimate function for a regulator to advance its own proposal and to determine an efficient level of costs.

AGN therefore submits that the Regulator, in assessing its proposed Access Arrangement revisions should take account of the imperfections in the regulatory framework identified above as part of its determination of whether the revisions meet the requirements of the Code. AGN believes it has submitted abundant evidence that its costs are at the lower end of those in Australian jurisdictions and, in these circumstances, under the Code the Regulator should approve the proposed revisions.

---

[28] Deloitte Touche Tohmatsu, *Valuation of Excluded Events*, April 2002.

The Productivity Commission's findings on how regulators should conduct their assessment also drew attention to the significant costs involved in an overly intrusive regulatory process – costs that the Commission thought unlikely to be outweighed by any commensurate benefits from better regulatory outcomes.[29] One reason why more intrusive regulation is unlikely to result in better regulatory outcomes is that the Code, and the commercial environment faced by companies operating under it, places strong incentives on companies to operate in an efficient manner. Companies facing commercial incentives are unlikely to spend money without an expectation that it will make commercial sense, criteria, which the Code itself addresses, in areas such as section 8.16. In these circumstances, AGN submits that a reasonable approach to expenditure is that it is very likely to be efficient, given the incentives faced by privately owned companies, the fact that within Western Australia the provision of natural gas for consumption by Small Use Customers is not an essential service due to the alternative energy sources available and the low level of average annual consumption by Small Use Customers and the existence of very real competition from the Dampier to Bunbury Natural Gas Pipeline and Parmelia Pipeline in respect of commercial and industrial gas consumers.

In addition to these strong signals as to how the Regulator should undertake its assessment, AGN also submits that the Regulator must confine itself only to those matters allocated by the Code (and, in Western Australia, by the *Gas Pipelines Access (Western Australia) Act 1998*) to the Regulator in approving an Access Arrangement. Care must be taken that issues such as impact on end use consumers are considered only to the extent required by the Code and that areas more appropriately covered by Government policy, such as the retail price cap, do not intrude on the decision.

[29] Productivity Commission, *Review of the Gas Access Regime,* p xliii.

3 Information Regarding Access and Pricing Principles

3.1 Introduction

In accordance with the relevant provisions of the Code, this section of the Access Arrangement Information:

- details the changes between the First and Second Access Arrangement Periods;
- describes the method by which Tariffs are determined;
- describes the Reference Services that AGN proposes to provide during the Second Access Arrangement Period;
- describes the rationale for the Terms and Conditions under which AGN proposes to provide these Services; and
- outlines the proposed GSLs that AGN will deliver over the course of the Second Access Arrangement Period.

3.2 Changes Between Access Arrangement Periods

With the introduction of FRC and the associated Retail Market Scheme it has been necessary for AGN to vary the Reference Services provided in the First Access Arrangement Period. A new Reference Service A2 is proposed to meet the requirement that Users with Delivery Points taking more than 10 TJ of Gas per Year are required to have Telemetry installed at the Delivery Point. Consequential amendments have been made to the existing Reference Service B1 by splitting it into a new Reference Service A2 and a revised Reference Service B1. These changes are discussed further in section 3.4.

The introduction of FRC and the Retail Market Scheme have also required amendments to be made to the Terms and Conditions upon which AGN will supply each Reference Service. The rationale for the proposed amendments to the Terms and Conditions is set out in section 3.9.

As part of the revisions proposed, AGN intends to move from a "simple price cap" form of regulation to a "tariff basket" approach. Tariffs proposed for the Second Access Arrangement Period have been calculated based on this approach. It is considered that the tariff basket approach encourages efficient behaviour and discourages inefficient behaviour in the delivery of Services and the provision of Extensions and Expansions to the AGN GDS. AGN supports this approach to the form of regulation provided that there is sufficient flexibility provided to enable the timely introduction of new Tariffs.

AGN's proposal for a "tariff basket" approach to the form of regulation is described in section 5.2.

Ancillary Services are Services used in connection with the transportation and use of Gas. In the First Access Arrangement Period AGN offered four Ancillary Services. For the Second Access Arrangement Period, AGN proposes to offer five Ancillary Services. The rationale for AGN's position is set out in section 3.7.

3.3 Tariff Determination Method

The Reference Tariffs in the Access Arrangement have been designed to recover that portion of AGN's total revenue related to providing Reference Services delivered by means of the AGN GDS.

The Reference Services provided by means of the AGN GDS are:

- Reference Service A1;
- Reference Service A2;
- Reference Service B1;
- Reference Service B2; and
- Reference Service B3.

AGN will also provide an Interconnection Service as a non-Reference Service. Terms and Conditions for the Interconnection Service will be negotiated between AGN and the Interconnected Pipeline.

The above list is not exhaustive of the Services that AGN is prepared to make available. AGN will negotiate any other Service or element of a Service requested by a Prospective User.

The costs of providing Reference Services A1, A2, B1, B2 and B3 are to be recovered through Reference Tariffs A1, A2, B1, B2 and B3, respectively. The price upon which an Interconnection Service will be made available is to be negotiated by AGN and the Pipeline Operator to whom that Service is provided.

The structure of the Reference Tariffs is described in section 3.4 of this Access Arrangement Information.

Reference Tariffs A1, B1, B2 and B3 for the first Year of the Second Access Arrangement Period are determined from the current published price for Reference Services A, B1, B2 and B3 respectively.

A Reference Service A2 has been developed to meet the requirements of the Retail Market Scheme. Reference Tariff A2 has been calculated at the same rate as that calculated for Reference Tariff B1. Due to the requirement to install Telemetry, charges for User Specific Delivery Facilities will be increased for this additional cost.

The forecast total cost of providing Reference Services A1, A2, B1, B2 and B3 in the Access Arrangement Period is determined by subtracting the forecast cost of providing any other Services other than a Reference Service from the forecast cost of providing all Services by means of the AGN GDS in any particular Year. The forecast cost of providing all Services by means of the AGN GDS is provided in section 4 of this Access Arrangement Information.

Some Users who would otherwise have been charged Reference Tariff A1, A2, or B1, receive (or are to receive) a discount to the relevant Reference Tariff as described in section 5.4 of this Access Arrangement Information.

The components of the forecast total costs of providing Reference Services A1, A2, B1, B2 and B3 in the first Year, and in subsequent Years, of the Second Access Arrangement Period are set out in section 4 of this Access Arrangement Information.

Reference Tariffs designed to recover the forecast total costs for the first Year of the Second Access Arrangement Period are set out in Table 3.1 (current basis) and Table 3.1A (daily equivalent where appropriate).

Part B of the Access Arrangement sets out the pre-determined price path by which Reference Tariffs may be varied in the second and subsequent Years of the Access Arrangement. The price path, and hence the form of regulation, is described in section 5.2 of this Access Arrangement Information.

3.4 Reference Service/ Reference Tariff Structure

3.4.1 Reference Service A1/Reference Tariff A1

Reference Service A1 is a Service for Users requiring delivery of 35 TJ per Year or more of Gas at a Delivery Point in each Year of a Haulage Contract, and requesting a Contracted Peak Rate greater than or equal to 10 gigajoules (GJ) per hour. Users requiring Reference Service A1 tend to be those Users making efficient use of the AGN High Pressure GDS. For this group of Users, higher annual volumes tend to be associated with higher load factors.

The estimated number of Delivery Points for Users requiring Reference Service A1 is shown in Table 6.5 of section 6 of this Access Arrangement Information. The total volumes of Gas expected to be delivered at these Delivery Points in each Year of the Access Arrangement are shown in Table 6.4 of section 6.

Users requiring Reference Service A1 require that Service for the delivery of Gas to larger commercial and industrial installations. Their requirements for Service Pipes, regulators, Meters and associated facilities are generally specific to the installations to which AGN delivers Gas. Reference Tariff A1 has therefore been designed to recover from each User the cost incurred in using the AGN GDS. In addition Users are required to pay the cost of providing User Specific Delivery Facilities.

Relatively stable paths from Receipt Points to Delivery Points can be identified for Gas flows through the High Pressure System. The network assets used to deliver Gas to each Delivery Point at which a User takes Reference Service A1 can therefore usually be identified. As a consequence, the component of Reference Tariff A1 that recovers the cost of network use can be designed to recover the costs of installing, operating and maintaining the assets required to provide a User with Reference Service A1. The cost incurred by AGN in providing a User with Reference Service A1 is determined by:

- the location of the Delivery Point at which Gas is delivered to the User;
- the use the User makes of the Capacity of the AGN GDS; and
- the volume of Gas delivered to the User at the Delivery Point.

Reference Tariff A1 has therefore been designed to recover the cost of use of the AGN GDS through:

- a standing charge;
- a demand charge; and
- a usage charge.

In addition, Users will also be required to pay a charge for User Specific Delivery Facilities.

The values of the components of Reference Tariff A1 are set out in Table 3.1 in section 3.5.

The inclusion of a standing charge in Reference Tariff A1 is a recognition that the costs of installing, operating and maintaining the AGN GDS are largely fixed. It also serves the important purpose of ensuring that the structure of Reference Tariffs provides an appropriate signal for transfer from Reference Service A2 to Reference Service A1 as the volume of Gas delivered to a User approaches 35 TJ per Year.

The demand charge recovers that portion of the cost of use of the AGN GDS determined by the location of a User's Delivery Point, and by the use the User makes of the Capacity of the network. It is a charge for use of the AGN GDS measured as the product of use of Capacity and location. For the purpose of determining this charge, a User's use of Capacity is measured as the User's Contracted Peak Rate expressed in GJ per hour. Location is defined in terms of the distance, in kilometres, measured in a straight line, from the User's Delivery Point to the nearest transmission pipeline, irrespective of whether or not that pipeline is interconnected with the AGN GDS. The demand charge is, as a consequence, a charge per GJ per kilometre (km).

Use of distance to the nearest transmission pipeline as the measure of distance in the demand charge of Reference Tariff A1 is intended to mitigate the risk of inefficient by-pass of the AGN GDS.

The demand charge of Reference Tariff A1 is not a linear function of distance for a given Contracted Peak Rate. A declining block structure, with two distance-based blocks, has been adopted to provide better cost reflectivity in the Tariff. Users requiring Reference Service A1 for delivery of Gas to Delivery Points located at distances greater than 10 km from the nearest transmission pipeline are usually supplied at Delivery Points in urban fringe and rural areas. In these areas, the costs of pipe laying are lower than in more densely populated urban areas.

The usage charge of Reference Tariff A1 is a charge, which recovers that portion of the cost of use of the AGN GDS, determined by the User's location, and by the volume of Gas delivered to the User at a Delivery Point. It is a charge per GJ per km and, like the demand charge, has a distance-based declining block structure.

In addition to paying the demand and usage charges of Reference Tariff A1, a User of Reference Service A1 will pay a charge for Service Piping, regulators, Meters and associated facilities. That charge will be User-Specific, being determined by the costs incurred by AGN in connecting the User's facilities to the AGN GDS.

3.4.2 Reference Service A2/Reference Tariff A2

The Retail Market Scheme has been developed to facilitate the introduction of FRC in the Western Australian gas market. Under the Retail Market Scheme, all Delivery Points using more than 10 TJ of Gas in any 12 month period are required to have Telemetry installed, whereas historically, AGN has installed Telemetry equipment at Delivery Points taking 20TJs and above. The new requirement for a lower threshold facilitates the balancing and global settlement of gas flows into the AGN GDS under the Retail Market Scheme.

Reference Service A2 is a new Service for Users required by the Retail Market Scheme to have Telemetry installed, but which otherwise do not meet the requirements of Reference Service A1 because they require less than 35 TJ of Gas per Year at a Delivery Point, or have a Contracted Peak Rate of less than 10 GJ per hour.

The estimated number of Delivery Points for Users requiring Reference Service A2 is shown in Table 6.5 of section 6. The total volumes of Gas expected to be delivered at these Delivery Points in each Year of the Access Arrangement are shown in Table 6.4.

Users requiring Reference Service A2 require that Service for the delivery of Gas to a wide range of commercial and industrial installations. These installations take between 10 TJ per Year and 35 TJ per Year. Users in this group taking a smaller annual volume, take Gas at Delivery Points on both the High and Medium Pressure/Low Pressure Systems. The largest part of the Medium Pressure/Low Pressure System is an integrated network supplied from over 120 points of interconnection with the High Pressure System. The pattern of Gas flow through the Medium Pressure/Low Pressure System varies continuously over time with variations in flow through the High Pressure System, and variations in the volume of Gas taken at Delivery Points.

Accordingly, the cost of providing Reference Service A2 is not, in general, directly related to the location of the User's Delivery Point and to the use the User makes of the Capacity of the AGN GDS. In Tariff design, the cost of providing Reference Service A2 must be, at least in part, related to the volume of Gas delivered to a User at a Delivery Point. The cost of providing Reference Service A2 will also include a fixed component because the costs of installing, operating and maintaining the AGN GDS are largely fixed.

Given Users of Reference Service A2 require that Service for the delivery of Gas to a broad range of commercial and industrial installations, their requirements for Service Pipes, regulators, Meters and associated facilities are generally specific to the installations to which they deliver Gas. They cannot be supplied using the standard facilities Reference Service B2 or Reference Service B3.

Reference Tariff A2 has therefore been designed to recover the cost of use of the AGN GDS through:

- a standing charge; and
- a usage charge.

In addition Users will be required to pay a charge for User Specific Delivery Facilities.

The standing charge for Reference Tariff A2, like the standing charge for Reference Tariff A1, not only recovers fixed costs. It also ensures that the structure of Reference Tariffs provides an appropriate signal for transfer from Reference Service B1 to Reference Service A2 as the annual amount of Gas delivered to a User increases.

The usage component of Reference Tariff A2 is a charge which recovers that portion of the cost of use of the AGN GDS determined by the volume of Gas delivered to a User at a Delivery Point.

3.4.3 Reference Service B1/Reference Tariff B1

As detailed above the introduction of the Retail Market Scheme has necessitated a new Reference Service for Delivery Points falling within the 10-35 TJ range. This means that Reference Service B1 as set out in AGN's First Access Arrangement Period has been circumscribed to Users requiring less than 10 TJ per Year at a Delivery Point, or having a Contracted Peak Rate less than 10 GJ per hour.

The estimated number of Delivery Points for Users requiring Reference Service B1 is shown in Table 6.5 of section 6. The total volumes of Gas expected to be delivered at these Delivery Points in each Year of the Access Arrangement are shown in Table 6.4.

Users requiring Reference Service B1 require that Service for the delivery of Gas to a wide range of commercial and industrial installations. These installations take between about 1 TJ per Year and 10 TJ per Year. Many of these Users take Gas at Delivery Points on the Medium Pressure/Low Pressure System and as noted earlier, the pattern of Gas flow through the Medium Pressure/Low Pressure System varies continuously over time with variations in flow through the High Pressure System, and variations in the volume of Gas taken at Delivery Points.

The majority of Users requiring Reference Service B1 require less than 10 TJ per Year at a Delivery Point and will therefore only require Meters to record volumes of Gas delivered.

Accordingly, the cost of providing Reference Service B1 is not, in general, directly related to the location of the User's Delivery Point and to the use the User makes of the Capacity of the AGN GDS. In Tariff design, the cost of providing Reference Service B1 must be, at least in part, related to the volume of Gas delivered to a User at a Delivery Point. The cost of providing Reference Service B1 will also include a fixed component because the costs of installing, operating and maintaining the AGN GDS are largely fixed.

Given Users of Reference Service B1 require that Service for the delivery of Gas to a broad range of commercial and industrial installations, their requirements for Service Pipes, the Regulators, Meters and associated facilities are generally specific to the installations to which they deliver Gas.

They cannot be supplied using the standard facilities of Reference Service B2 or Reference Service B3.

Reference Tariff B1 has therefore been designed to recover the cost of use of the AGN GDS through:

- a standing charge; and
- a usage charge.

In addition Users will be required to pay a charge for User Specific Delivery Facilities.

The standing charge for Reference Tariff B1, like the standing charge for Reference Tariffs A1 and A2, not only recovers fixed costs. It also ensures that the structure of Reference Tariffs provides an appropriate signal for transfer from Reference Service B2 to Reference Service B1 as the annual amount of Gas delivered to a User increases.

The usage component of Reference Tariff B1 is a charge which recovers that portion of the cost of use of the AGN GDS determined by the amount of Gas delivered to a User at a Delivery Point.

3.4.4 Reference Services B2 and B3/Reference Tariffs B2 and B3

Reference Services B2 and B3 are Services for Users requiring delivery of smaller volumes of Gas at Delivery Points on the Medium Pressure/Low Pressure System. AGN has standardised, to the extent technically and commercially reasonable, the types of facilities it uses at these Delivery Points. In particular, the metering makes use of either a Standard 12 m^3/hr Meter, or a Standard 6 m^3/hr Meter. These Meters record aggregate volumes of Gas delivered between Meter readings, but not hourly or peak flows.

Reference Service B2 is a Service for Users supplying smaller commercial and small industrial consumers requiring delivery of Gas at a Delivery Point on the Medium Pressure/Low Pressure System, and requiring a Meter with a badged capacity of not less than 6m^3/hr and not more than 12 m^3/hr.

Reference Service B3 is a Service for Users supplying residential and smaller commercial and industrial consumers requiring delivery of Gas at a Delivery Point on the Medium Pressure/Low Pressure System, and requiring a Meter with a badged capacity of not more than 6 m^2/hr.

The estimated number of Delivery Points for Users requiring Reference Services B2 and B3 are shown in Table 6.5 of section 6 of this Access Arrangement Information. The total volumes of Gas expected to be delivered at these Delivery Points in each Year of the Access Arrangement are shown in Table 6.4 of section 6.

Reference Tariffs B2 and B3 have therefore been designed to recover the cost of use of the AGN GDS through:

- a standing charge; and
- a usage charge.

The standing charges of Reference Tariffs B2 and B3 are annual charges that recover fixed costs, including the costs of Standard Delivery Facilities. The standing charge for Reference Tariff B2 also ensures that the structure of Reference Tariffs provides an appropriate signal for transfer from Reference Service B3 to Reference Service B2 as the annual amount of Gas delivered to a User increases.

The usage charges of Reference Tariffs B2 and B3 are charges which recover that portion of the cost of use of the AGN GDS determined by the amount of Gas delivered to a User at a Delivery Point. These charges have a declining block structure that is intended to encourage use of Gas.

3.4.5 Changes to Reference Services

As outlined in sections 3.2 and 3.4, the Reference Tariffs have been changed to reflect changes to the cost of providing efficient Services and the introduction of the new Reference Service A2. As previously indicated, the introduction of the new Reference Service A2 is to cater for the Retail Market Scheme requirements that Telemetry be installed (which will constitute User Specific Facilities) at the Delivery Points using more than 10 TJ of Gas per Year.

Since the commencement of the Retail Market Scheme, there has been a mechanism by which a User taking above 10 TJ of Gas at such a Delivery Point is required to install Telemetry. If the Reference Service being delivered to the User in respect of that Delivery Point under their existing Haulage Contract does not include the provision of Telemetry, the User shall, at the User's expense, either:

- apply for access to Reference Service A2 in respect of that Delivery Point, subject to the requirements of the Access Arrangement; or
- (unless AGN triggers a change to a User's Reference Service, see Section 3.4.6 below) request AGN to install Telemetry equipment on terms and conditions to be agreed in which case it will either continue access to the capacity on its previous Reference Service, and have a separate agreement in respect of the User Specific Delivery Facilities, or alternatively (if the treatment of the User Specific Delivery Facilities is incorporated into the Haulage Contract) continue access on what is now a Non-Reference Service.

3.4.6 AGN can initiate a change of Reference Service

Part A of the Access Arrangement now includes a mechanism by which AGN may require a User to change its Reference Service at a Delivery Point, if the User's Gas receipts at the Delivery Point fall outside the Gas flow parameters of the Reference Service or the User has been required under the Retail Market Scheme to install Telemetry. This provides flexibility for both parties, if Gas flows were incorrectly estimated prior to the commencement of the Haulage Contract.

The User has an opportunity to provide information regarding why the Reference Service should not be changed, and AGN must have regard to that information.

3.4.7 User can initiate a change of Reference Service

Part C permits a User to change Reference Services at a Delivery Point, refer below "Replacement Reference Service" in section 3.9.

3.5 Reference Tariffs

The Reference Tariffs determined in accordance with the policies described in the preceding subsections of this Access Arrangement Information are summarised in Table 3.1 and Table 3.2. These Tariffs exclude the User Specific charges for User Specific Delivery Facilities payable by Users taking Reference Services A1, A2 and B1.

TABLE 3.1: REFERENCE TARIFFS (EXCLUDING USER SPECIFIC CHARGES WHERE APPLICABLE)

(REAL DECEMBER $2004 INCLUSIVE OF GST)

Tariff	Block Structure	Current 2004 Prices			Proposed 2005 Prices		
		Standing Charge $/Year	Demand Charge $/GJ-km/Yr	Usage Charge $/GJ-km	Standing Charge $/Year	Demand Charge $/GJ-km/Yr	Usage Charge $/GJ-km
A1	Standing First 10km >10km	47,478.6446	 196.0020 98.0010	 0.0478 0.0239	48,7058.4008	 201.0663 100.5331	 0.0490 0.0245
A2	Standing First 5TJ Next 5TJ >10TJ	539.5222	 NA NA NA	 NA NA NA	553.4624	 NA NA NA	 5.1017 4.8516 1.2804
B1	Standing First 5TJ Next 5TJ >10TJ	539.5222	 NA NA NA	 4.9732 4.7294 1.2482	553.4624	 NA NA NA	 5.1017 4.8516 N/A
B2	Standing First 100 GJ >100 GJ	539.5222	 NA NA	 5.4998 4.9537	539.5222	 NA NA	 5.6419 5.0817
B3	Standing First 15GJ Next 30GJ >45GJ	26.9722	 NA NA NA	 9.2248 6.4456 4.2418	27.6691	 NA NA NA	 9.4631 6.6122 4.3514

- NA = not applicable

Table 3.2 expresses that Table 3.1, where applicable, to an equivalent daily rate.

TABLE 3.2: REFERENCE TARIFFS (EXCLUDING USER SPECIFIC CHARGES WHERE APPLICABLE)

(REAL DECEMBER $2004 INCLUSIVE OF GST)

Tariff	Block Structure	Current 2004 Prices			Proposed 2005 Prices		
		Standing Charge $/Day	Demand Charge $/GJ-km/Day	Usage Charge $/GJ-km	Standing Charge $/Day	Demand Charge $/GJ-km/Day	Usage Charge $/GJ-km
A1	Standing First 10km >10km	129.9894	 196.0020 98.0010	 0.0478 0.0239	133.3481	 201.0663 100.5331	 0.0490 0.0245
A2	Standing First 5TJ Next 5TJ >10TJ	1.4771	 NA NA NA	 NA NA NA	1.5153	 NA NA NA	 5.1017 4.8516 1.2804
B1	Standing First 5TJ Next 5TJ >10TJ	1.4771	 NA NA NA	 4.9732 4.7294 1.2482	1.5153	 NA NA NA	 5.1017 4.8516 N/A
B2	Standing First 100 GJ >100 GJ	1.3428	 NA NA	 5.4998 4.9537	1.3428	 NA NA	 5.6419 5.0817
B3	Standing First 15GJ Next 30GJ >45GJ	0.0738	 NA NA NA	 9.2248 6.4456 4.2418	0.0758	 NA NA NA	 9.4631 6.6122 4.3514

- NA = not applicable

The approach to adjusting these Tariffs within the Second Access Arrangement Period is discussed in section 5.3 of this Access Arrangement Information.

3.6 Interconnection Service/Interconnection Tariff

An Interconnection Service is a Service provided to a Pipeline Operator in respect of the interconnection between a Sub-network and a Pipeline which is, or is to become, an Interconnected Pipeline supplying Gas to the Sub-network.

The Interconnection Service provides a right to interconnect with the AGN GDS. The terms and conditions and prices upon which an Interconnection Service will be made available are to be negotiated by AGN and the party to whom the Interconnection Service is provided.

There are currently three Interconnection Contracts in place with two separate Pipeline Operators. In each case there are specific issues to deal with and for this reason it is impractical to have a standard Tariff for the Interconnection Service.

Consideration was given to a number of methods for recovering the capital and Non-Capital costs that AGN would incur as a result of the interconnection of a Pipeline. In particular, in relation to operating, monitoring and otherwise managing heating value management plans to comply with the regulations addressing heating value management. Capital costs are likely to be around $2.04m for equipment to take Gas samples from the AGN GDS at predetermined intervals and frequencies. Annual Non-Capital costs in the order of $0.2m to $0.3m to model the network flows under a range of operating conditions, analyse the Gas samples supporting the modelling results and report compliance to the Office of Energy are also anticipated.

These costs will be recovered via the Reference Tariffs.

3.7 Ancillary Services/Ancillary Service Tariffs

Ancillary Services are Services used in connection with the transportation and use of Gas. During the First Access Arrangement Period four Listed Ancillary Services were offered:

- Disconnection Service;
- Reconnection Service;
- Additional Meter Reading Service; and
- Additional Meter Testing Service

AGN proposes to offer the following Ancillary Services during the Second Access Arrangement Period which reflect changes in the market including the introduction of the Retail Market Scheme:

- Apply Meter Lock Service – a Service by which AGN applies a Meter lock to the Meter at a Delivery Point at which a User is entitled to take delivery of Gas under a B3 Service;
- Remove Meter Lock Service – a Service by which AGN removes a Meter lock from a Meter at a Delivery Point at which a User is entitled to take delivery of Gas under a B3 Service;
- Deregistration Service – a Service to permanently remove a Meter from a Delivery Point and terminate the association of a User with the Delivery Point;
- Disconnection Service – a Service by which AGN discontinues the supply of Gas at a Delivery Point at which a User is entitled to take delivery of Gas under a B2 or B3 Service; and
- Reconnection Service – a Service in respect of a Delivery Point at which a User is entitled to take delivery of Gas under a B2 or B3 Service at which a Disconnection Service has previously been supplied, by which AGN recommences the supply of Gas at the Delivery Point.

In addition, the Retail Market Scheme requires a large number of Services to be provided by a network operator upon request of a User. AGN proposes to publish a list of the Services (other than Reference Services and Ancillary Services), that it will offer along with the fee and the terms and conditions for each.

An Additional Meter Testing Service was offered during the First Access Arrangement Period however there have been very few of these tests requested so AGN proposes not to offer the Additional Meter Testing Service during the Second Access Arrangement Period.

An Additional Meter Reading Service was also offered during the First Access Arrangement Period in order for Users to obtain a special meter read, however Users can now liaise directly with a meter reading company to arrange the equivalent of a special meter read service. AGN therefore proposes not to offer the Additional Meter Reading Service during the Second Access Arrangement Period.

3.8 Incentive Mechanism

Under sections 8.44 - 8.46 of the Code, an Access Arrangement should contain an Incentive Mechanism. A “price path approach” is the Incentive Mechanism nominated in AGN’s current Access Arrangement. In AGN's view this approach suffers from a number of deficiencies as an Incentive Mechanism, particularly the low level of incentives it provides for AGN and therefore, reduced User benefit. In Part B of its Access Arrangement, AGN proposes a new Incentive Mechanism to take effect from the Commencement Date.

The key features of this Incentive Mechanism are:

- **Multi-period Incentive Mechanism.** Consistent with the amendments to the Code in November 2001, the proposed Incentive Mechanism will operate for a period of ten Years or nominally two Access Arrangement Periods. This ten Year period equates to a 50:50 benefit sharing ratio between Users and AGN, when assessed on a net present value basis and, AGN believes, maximises total User benefit by providing the optimal combination of efficiency incentives and benefit sharing.

- **Rolling Incentive Mechanism.** Efficiency gains made will be retained for the full ten Years, regardless of when in the incentive period they are made. This means AGN will face the same efficiency incentives at the end of the incentive period as at the start. This contrasts with the current situation where, with a static mechanism, incentives are continuously eroded with the passage of time. Being able to keep efficiency benefits for ten Years regardless of when they are made clearly establishes different incentives to a static mechanism when only one or two Years efficiencies will be captured if they occur close to the end of the period.

AGN believes this revised Incentive Mechanism is consistent with the Code and with regulatory developments as outlined in section 2.

AGN is proposing this revised Incentive Mechanism on a prospective basis, to operate from the start of the Second Access Arrangement Period. The current Incentive Mechanism contains no provisions for carrying over efficiency benefits to the next Access Arrangement Period. Despite having made significant efficiency gains during the First Access Arrangement Period, AGN at this stage is making no provision for an Incentive Mechanism amount in its Second Access Arrangement financials.

3.9 Terms and Conditions

Section 3.6 of the Code requires a Service Provider to specify Terms and Conditions on which it will supply each Reference Service. These Terms and Conditions must, in the opinion of the Regulator, be reasonable.

AGN considers that the majority of the existing Terms and Conditions of the Access Arrangement for the First Access Arrangement Period are consistent with the requirements of the Code and have led to no disputes over access between AGN and Users. AGN proposes to largely continue with the existing Terms and Conditions as a basis for providing access to Users.

Several changes were required to be made to the Terms and Conditions as a result of the introduction of FRC and in order to ensure consistency with the requirements of the Retail Market Scheme, such as:

- **Balancing.** Users must comply with Gas balancing provisions which are consistent with the balancing provisions of the Retail Market Rules.
- **Provision of Information.** Information provided by a User to AGN is to be provided in an electronic form wherever possible.
- **Notices.** The format and procedure specified for notices in the Retail Market Scheme apply to notices under a Haulage Contract.
- **Removal of Delivery Points.** Where a Haulage Contract has been terminated in respect of a Delivery Point, and the customer taking Gas at the Delivery Point has not transferred to another User, a User may request a Deregistration Service which, once completed, will permanently remove the Meter from the Delivery Point and terminate the User's association with the Delivery Point. When the Delivery Point has been Deregistered, the User is no longer required to pay the applicable Charges for the Delivery Point, which it would otherwise continue to be liable to pay.

In addition to changes arising from the introduction of FRC, which AGN sees as the major scope change during the First Access Arrangement, proposed changes have also been made to areas of the Access Arrangement including the following, none of which AGN regards as significant:

- **Replacement Reference Service.** As mentioned in Section 3.4.7 above, if a User acquires a Replacement Reference Service at a Delivery Point where it is already contracted to receive a Current Reference Service, then AGN will, at a User's request remove the Delivery Point for the Current Reference Service from the Haulage Contract, provided that the provision of the Replacement Reference Service will not be less financially advantageous to AGN. This provision allows a User to request a more appropriate Reference Service for a Delivery Point during the term of its Haulage Contract, because for example, the quantity of Gas being delivered to the Delivery Point is significantly higher than expected. Therefore this clause provides flexibility for Users while protecting AGN's legitimate business interests.

- **Interconnection.** Users will be required to have, and comply with, a System Protection Plan, using one of five options. Interconnection considerations, (together with removing the previous requirement that there be a direct link between the Delivery Point and Related Shipper, in order to facilitate a more flexible market under the Retail Market Scheme) have generated additional changes to the curtailment provisions, where AGN may curtail on the basis of Users not having, or not complying with, a System Pressure Protection Plan or curtailment by an Interconnected Pipeline.

- **Relationship between AGN and User.** AGN has amended its provisions in this area to specify the level of security a User must provide to secure its obligations under the Haulage Contract and the minimum level of insurance cover required. The amended Terms and Conditions also provide that a User must pay the amount of a Tariff for a Service even if AGN was unable to carry out the Service, if the inability was due to an act or omission of the User preventing AGN from carrying out that Service. The amendments also clarify that AGN's ability to carry out a Service is subject to the User ensuring that AGN has unfettered access to the Meter. These changes are justified on the basis that they clarify the requirements on Users for AGN to be able to provide the Services.

- **Guaranteed Service Levels.** AGN has introduced a GSL scheme on the basis that this provides security to Small Use Customers that the high levels of service currently enjoyed will continue.

- **Curtailment.** Provisions have been added clarifying AGN's right in certain circumstances to refuse to accept or deliver Gas.

- **Interruptibility Provisions.** AGN has removed the interruption provisions that were in clause 20(1) of the First Access Arrangement as these do not relate to a Reference Service and may mislead Users into thinking that the Reference Services are provided on an interruptible basis. However, Users will still be able to approach AGN to negotiate an interruptible Service.

- **Commingling.** AGN has amended the commingling provisions to make it clear that AGN may commingle when necessary.

- **Novation of Contracts.** AGN has introduced a new clause allowing for novation of contracts with AGN's consent providing there is no increase in commercial or technical risk. This change allows for novation of contracts while at the same time protecting AGN's legitimate business interests.

- **Liability Regime.** The changes to the liability regime are designed to address an unintended deficiency in the previous wording, which could have inadvertently exposed the parties to extremely wide liability. It does not change the intended commercial effect. This new formulation is becoming widespread in the gas industry.

In addition a clause has been added addressing what has recently emerged as network operators' potential liability to downstream consumers, such as occurred in claims arising from the Esso Longford fire. The rationale for this inclusion is as follows:

- The usual commercial risk arrangement between a network operator and a User is (put very simply) that that the network operator's liability will be capped at direct damages. The User typically contracts with its consumer on a similar basis. That is, both the User and the consumer typically agree not to retain their right to indirect damages, consequential loss, lost production, etc. This is usual because network operators and gas suppliers simply cannot afford to underwrite the projects they supply.
- A technical legal defect has emerged with the standard clauses designed to achieve this result (such as were included in the first Access Arrangement). The defect was shown up in some of the litigation following the Esso Longford fire, and leaves AGN exposed to a potential claim from a consumer for indirect loss including consequential losses.
- In the Esso case (*Johnson Tiles Pty Ltd and ors. v Esso Australia and ors* (2203) Aust Torts Reports para 81-692.), the Court confirmed that a gas user further down the supply chain could sue someone further up the chain (there Esso, here AGN) directly in negligence, even though there was no contractual relationship between them. In addition, depending on the circumstances of a particular interruption, the consumer may be able to prove a sufficient duty of care in AGN that AGN became liable for "pure economic loss" such as lost production (*Caltex Oil v. The Dredge "Willemstad"* [1976-77] 136 CLR 529). AGN does not suggest that it would be straightforward or likely for a consumer to succeed in such a claim, but the risk is there and (as Esso can attest) it is more than just a theoretical one.
- AGN wishes to ensure this risk is covered, in a manner consistent with the basic commercial principles outlined above.
- The problem is that the current contractual release given by the User to AGN, releasing it from liability for Indirect Loss, would not assist AGN in an action brought against AGN by a third party such as a customer. Thus, assuming a case could be made out against AGN, the customer might be able to pursue AGN directly for consequential losses or lost production arising from a gas supply interruption, even though that is not consistent with the normal commercial position.
- AGN has therefore proposed an indemnity from the User to AGN, protecting it against claims from downstream consumers. The User would no doubt include a similar provision in its gas supply agreements, passing the risk back to the consumer, who has traditionally been regarded as the best person to bear the risk.

- **Exceeding Contracted Peak.** The terms and conditions for Reference Services A1 and A2 contain additional provisions concerning the situation where Contracted Peak Rate is exceeded and also provide for procedures to increase the Contracted Peak Rate or install flow protection devices where necessary. The terms and conditions for Reference Service A1 also introduces an Overrun Service in such circumstances. The changes strike a balance between protecting AGN's legitimate business interests in a relatively stable and predictable system and allowing the possibility that Users may need to exceed their Contracted Peak Rate on occasion.

AGN considers that by adopting this minimal change approach:

- the Terms and Conditions proposed will continue to be seen as consistent with the requirements of the Code;
- the likelihood of disputes about the Terms and Conditions of access will be minimised;

- existing knowledge and understanding among Users and AGN will be retained and assist in improving consistency of application going forward;
- changes to systems and processes will be minimised, and
- transitional issues in moving to new arrangements will be minimised.

3.10 Guaranteed Service Level Scheme

3.10.1 Proposed Scheme

Traditionally the performance of energy service providers in delivering services to customers has been measured at a "whole of customer level" with little concern about the level of service to individual consumers. Recent regulatory decisions in some Australian jurisdictions have seen the introduction of financially based service performance incentives for gas and electricity service providers, as well as GSL schemes delivering direct benefits to individual consumers.

GSL schemes are structured to provide an appropriate incentive to the Service Provider to ensure that the level of service delivered to individual end use consumers is not materially less than the high level of service reliability delivered, on average, by the network as a whole. Where the Service Provider fails to deliver prescribed services within predetermined service levels, payments are made by the Service Provider to consumers.

AGN's GDS has displayed a very high degree of customer service and reliability during the First Access Arrangement Period and AGN believes customer satisfaction amongst end use consumers to be high. AGN is not aware of the existence of any significant reliability or service issues or of any such issues being likely to arise in the Second Access Arrangement Period.

While gas is a fuel of convenience, rather than an essential service, given the importance of reliability of supply to end use consumers, AGN believes there is merit in introducing a GSL scheme for Small Use Customers. The GSL scheme described below sets out AGN's commitment to ensuring that Small Use Customer service levels, on which it impacts as network operator, continue at the current high levels in line with AGN's corporate values.

AGN also proposes that the GSL scheme would be implemented in a manner that preserves the economic value of a business that continues to meet its service targets at a network-wide level, as well as at the individual end consumer level.

AGN has developed the GSLs based on the following factors:

- Small Use Customers satisfaction levels and historical complaints;
- the aim of positively reinforcing the provision of satisfactory service to end consumers using less than 1 TJ/annum;
- the need for the GSL scheme to be simple and comprehensible; and
- the need for the costs of administering the GSL scheme to be minimised.

It is considered that the most appropriate GSLs for a network operator following the introduction of FRC are those focused upon the more common direct interfaces between AGN and Small Use Customers, as well as those events that have the greatest potential to cause inconvenience to end consumers.

On this basis, the following events were identified as relevant for GSLs:

- organising appointments where there is a loss of supply or a gas leak;
- seeking connection at an established home;
- repeat interruptions to the same Delivery Point; and
- lengthy interruptions to the supply of Gas to the Delivery Point.

GSL payments have been set at levels which, when considered in conjunction with the costs of their administration, would provide appropriate incentives to AGN to continue satisfactory levels of service.

Accordingly, the GSLs for the Second Access Arrangement Period are as follows:

- **Appointments.** If a Gas main or Service is broken in the street or garden and there is a strong smell of Gas, a contractor will be on site within one hour of the agreed time. If Gas supply is lost through an AGN fault or emergency, a contractor will arrive within three hours of the agreed time. If AGN is more than 15 minutes late for such an appointment, AGN will pay the Small Use Customer an inconvenience fee of $25.
- **Connections.** AGN will install a Gas Service and Meter where a Gas main runs past an established home within five business days of notice from a licensed gas retailer. Where AGN fails to do this, AGN will pay Small Use Customers $40 for each additional day later to a maximum of $120.
- **Repeat Interruption.** If Gas withdrawn at a Delivery Point by or in respect of a Small Use Customer is the subject of more than four unplanned interruptions in a Calendar Year and those unplanned interruptions arise as a consequence of a Fault in the GDS, then AGN will pay that Small Use Customer $100 for each subsequent unplanned Interruption in that calendar Year.
- **Lengthy Interruptions.** If supply at a Delivery Point at which Gas is withdrawn by or in respect of a Small Use Customer is interrupted for more than 12 continuous hours as a consequence of a Fault in the GDS, then AGN will pay that Small Use Customer $80.

The proposed GSLs apply to AGN's GDS and Services provided by AGN and its agents acting under AGN's direction for Small Use Customers. The proposed GSLs do not apply to:

- customers other than Small Use Customers;
- Force Majeure events;

- planned interruptions effected with the prior agreement of, or appropriate notice to an end consumer;
- events occurring downstream of the meter;
- events occurring in a transmission pipeline or natural Gas production facility; and
- interruptions caused by third party or consumer interference.

The arrangements under which GSL payments will be made to Small Use Customers are set out in the Terms and Conditions of the Access Arrangement.

3.10.2 Expected cost of GSL payments

Costs associated with the introduction of the proposed GSL scheme include initial establishment costs, plus on-going operating costs in the form of the expected value of payments to be made under the GSL scheme. These on-going costs have been incorporated into AGN's operating cost benchmarks for the Second Access Arrangement Period. Given the time necessary to establish the GSL scheme, AGN anticipates introducing it six months from the commencement of the Second Access Arrangement Period.. With the exception of establishment costs, which will be incurred from the commencement of the Second Access Arrangement Period, GSL costs for the first Year are expected to apply for only the portion of that year that the scheme is operational.

Detailed information relating to the estimation of the number of GSL payments are set out below. In the case of each GSL, estimates have been based on past experience and the limited data presently available.

(a) Late Appointment

AGN estimates that it has a total potential number of appointments of approximately 2,600 per Year. It is estimated that on 98% of all occasions, AGN would meet or exceed the required service standard. On this basis, AGN would expect to make GSL payments relating to 2% of its total appointments. At a rate of $25 per GSL payment, the total annual payment is estimated to be $1,300 per annum.

(b) Connections

Approximately 4,000 Small Use Customers on line of main are connected to AGN's GDS each Year. AGN considers that a reasonable initial benchmark target for this GSL would be 90% of new connections executed on time. Assuming that 10% of connections are not completed within the agreed 5 days then approximately 400 connections will be subject to a GSL payment each Year.

It is further assumed that where new connections are not provided within two days of the agreed date, then the average GSL payment would be for the amount of $80, being the average of the minimum of $40 for one day and the maximum payment of $120 for three days. The total GSL payments assumed therefore are 400 at a cost of $80 each, resulting in an annual total payment of $32,000.

(c) Repeat Interruptions & Lengthy Interruptions

Costs and inconvenience to Small Use Customers during supply interruptions will be exacerbated if supply is not restored within a reasonable time. It is therefore appropriate to set high levels of performance against these GSLs. Accordingly, a target in excess of 99% achievement have been set in relation to repeat interruptions and lengthy interruptions. The potential GSL payment that may arise is estimated to be $70,000.

(d) Establishment costs

There will also be establishment costs associated with the introduction of a GSL scheme. These include costs relating to development and implementation of business and performance monitoring processes, modification of existing information technology systems and training of operational staff. AGN has estimated the establishment costs of this scheme to be $150,000 and has therefore included this cost in the forecast of capital expenditure.

3.11 Regulatory Cost Pass Through

As part of the tariff basket approach, Total Revenue will vary by [CPI-X + R], where X is the price adjustment factor to smooth prices over the Access Arrangement Period. R is an adjustment to reflect the actual level of regulatory costs incurred by AGN and thus allow regulatory cost recovery.

This regulatory cost recovery mechanism is required on the grounds that regulatory costs are very difficult to forecast. During the First Access Arrangement Period, an allowance was made for forecast regulatory costs but actual costs exceeded this significantly. As a result, AGN under-recovered regulatory costs during this period. AGN anticipates similar difficulties in accurate forecasting of regulatory costs during the Second Access Arrangement Period. Consistent with the Code principle that efficient costs should be recovered via the access arrangement, the regulatory cost recovery mechanism will allow AGN to recover its actual costs of regulation.

4 Total Revenue

4.1 Introduction

This section sets out the approach that has been used to calculate the Total Revenue for the Second Access Arrangement Period. The Total Revenue has been calculated to meet the general principles and objectives set out in clause 8.1 of the Code and as interpreted by the WA Supreme Court and the Australian Competition Tribunal. Those objectives include:

- providing AGN with 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 those Services;
- replicating the outcome of a competitive market;
- ensuring the safe and reliable operation of the GDS; and
- not distorting investment decisions in pipeline transportation systems or in upstream and downstream industries.

Total revenue is established using the formula given below:

$$TR = AV * WACC + D + OC + NWC * WACC + ICM$$

where:

TR	=	Total Revenue
AV	=	Asset value (the total value of assets employed in providing services)
WACC	=	Pre-tax Weighted Average Cost of Capital
D	=	Return of Capital
OC	=	Non-Capital Costs
NWC	=	Net working capital, and
ICM	=	Incentive Carryover Mechanism Amount.

ICM is forecast to be zero in the Second Access Arrangement Period, however, the multi period Incentive Mechanism proposed will require it to form part of future calculations.

The method used to calculate the return on and return of assets is based on real asset values and a real pre-tax weighted average cost of capital.

Unless otherwise stated all monetary values, consistent with section 8.5 and 8.5A of the Code are expressed in real terms - real value applied is 31 December 2004. The basis of expressing all monetary values in real terms is to make comparatives and forecasts more transparent. 31 December 2004 has been chosen on the basis that at the time of amending this document and preparing the relevant analysis, 31 December 2004 data was the latest available.

Sections 4.2 and 4.3 below provide further detailed information in relation to each key component or "building block" of the Total Revenue with a summary of the composition of Total Revenue set out in section 4.3.10.

4.2 Capital Base Value

4.2.1 Initial Capital Base

The value of the AGN GDS, excluding the value of User Specific Delivery Facilities, as approved by the Regulator in its final decision on 30 June 2000, of $535.9m at 31 December 1999 is recognised as the Initial Capital Base. This is consistent with sections 8.8 – 8.14 of the Code.

4.2.2 Asset values for each category of asset

AGN has considered all of the factors listed in sections 8.9 and 8.10(a) – (j) of the Code in establishing the Capital Base of the AGN GDS for the purpose of determining Reference Tariffs for Reference Services for the 2005 – 2009 period. This calculation meets the requirements of these clauses of the Code.

Following the sale of AGN by the State of Western Australia, a detailed asset register has been developed. The opening values (as at 1 January 2000) have been matched to the values determined by the Regulator's final approval of the Access Arrangement, dated 13 July 2000.

For each Year of the First Access Arrangement Period the Initial Capital Base has been adjusted to reflect:

- actual new capital expenditure net of any contribution made by consumers meeting the requirements of section 8.16 of the Code has been added to the Initial Capital Base;
- the forecast regulatory Depreciation (Return of Capital) as detailed in the Regulator's final approval of the Access Arrangement, dated 13 July 2000, has been deducted from the Initial Capital Base;
- disposals at the regulatory written down book value has been deducted from the Initial Capital Base value; and
- changes in the Capital Base as a result of inflation, with adjustments made to bring all asset values to 31 December 2004.

Table 4.1 below provides a summary of the value of the Capital Base for each Year of the First Access Arrangement Period.

TABLE 4.1 - VALUE OF THE CAPITAL BASE DURING THE FIRST ACCESS ARRANGEMENT PERIOD

(REAL $ MILLION AT DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
	2000	2001	2002	2003	2004
High Pressure Mains	175.62	175.75	173.99	172.20	170.39
Medium Pressure Mains	210.30	209.25	209.25	208.93	208.04
Med / Low Pressure Mains	112.80	111.20	108.41	105.53	102.69
Low Pressure Mains	31.75	30.65	29.50	28.30	27.05
Secondary Gate Stations	2.25	2.14	2.03	1.91	1.79
Regulators	11.23	10.97	10.55	10.11	9.67
Meters & Service Pipes	70.85	75.65	89.28	105.36	116.12
Equipment & Vehicles	15.26	11.21	6.68	2.06	-2.89
Land & Buildings	7.5	7.67	7.57	7.47	7.37
Information Technology	3.56	4.23	4.61	4.96	5.95
FRC	0.00	0.00	1.82	3.07	12.20
Total	**641.12**	**638.72**	**643.69**	**649.9**	**658.38**

4.2.3 Capital Expenditure during the First Access Arrangement Period

AGN considers that it is reasonable for the Regulator to infer that the capital expenditure during the First Access Arrangement Period meets the Code's requirement.

Section 8.16 of the Access Code states;

> "The amount by which the Capital Base may be increased is the amount of the actual capital cost incurred (New Facilities Investment) provided that:
>
> a. that the amount does not exceed the amount that would be invested by a prudent Service Provider acting efficiently, in accordance with accepted good industry practice, and to achieve the lowest sustainable cost of delivering Services; and
>
> b. one of the following conditions is satisfied;
>
> i. the Anticipated Incremental Revenue generated by the New Facilities exceeds the New Facilities Investment; or
>
> ii. the Service Provider and/or Users satisfy the Relevant Regulator that the New Facility has system-wide benefits that, in the relevant Regulator's opinion, justify the approval of a higher Reference Tariff for all Users; or
>
> iii. the New Facility is necessary to maintain the safety, integrity or Contracted Capacity of Services."

AGN notes that an examination of the First Access Arrangement Period's capital expenditure would be a time consuming and costly process. Under the Code a Service Provider can only recover investment in capital where it passes the Economic Feasibility Test (EFT) of Section 8.16. As a privately owned company AGN faces ongoing and constant scrutiny of both capital and Non-Capital costs. AGN notes that regulators elsewhere have used these circumstances to conclude that past capital expenditure should prima facie be seen as efficient. Given the incentives faced to achieve efficient levels of capital expenditure, coupled with the effectively mandatory nature of a significant component of the capital budget, AGN questions whether any further examination of these costs is justified.

AGN has spent more capital expenditure in the First Access Arrangement Period than was projected in the First Access Arrangement Information as shown in Table 4.2 and Table 4.3 below.

TABLE 4.2 - REGULATORY FORECAST COSTS FOR 2000 – 2004

(REAL $ MILLION DECEMBER 2004)

	Year ending 31 December				
	2000	2001	2002	2003	2004
Regulatory forecast	28.6	22.4	18.9	18.5	15.5

TABLE 4.3 - REGULATORY ACTUAL COSTS FOR 2000 – 2004

(REAL $ MILLION DECEMBER 2004)

	Year ending 31 December				
Asset Class	2000	2001	2002	2003	2004
High Pressure Mains	1.36	1.87	0.00	0.00	0.00
Medium Pressure Mains	5.59	3.27	4.38	4.10	3.56
Med / Low Pressure Mains	2.16	1.28	0.08	0.00	0.04
Low Pressure Mains	0.00	0.00	0.00	0.00	0.00
Secondary Gate Stations	0.02	0.01	0.00	0.00	0.00
Regulators	0.18	0.17	0.01	0.00	0.01
Meters & Service Pipes	14.45	11.08	20.28	23.07	18.07
Equipment & Vehicles	1.23	0.26	0.01	0.18	0.08
Land & Buildings	0.27	0.26	0.00	0.00	0.00
Information Technology	3.56	0.67	0.38	0.35	0.99
FRC	0.00	0.00	1.82	1.24	9.14
Total	**28.82**	**18.87**	**26.96**	**28.94**	**31.89**

The regulatory forecasts are inconsistent with the actual level of efficient expenditure incurred during the First Access Arrangement Period, particularly the increase in connections made during this period and the costs incurred to comply with the introduction of FRC.

AGN also notes that, consistent with the incentive regimes of the Code, it has not earned a full return on its investment for those capital expenditures incurred above the regulatory forecasts. Notwithstanding the comments made above, the increase in capital expenditure in the First Access Arrangement Period has been incurred due to investment to comply with the introduction of FRC, and growth in consumer connections.

- **Full Retail Contestability.** To comply with the introduction of FRC AGN forecast to spend $12m. AGN notes that the Regulator has already approved this amount as being prudent and efficient in its Determination dated 1 October 2003. AGN seeks to include this amount into the regulated asset base starting from the date of approval of the revisions to the Access Arrangement.

- **Consumer Connections.** A significant amount of expenditure has been incurred in the provision of connecting consumers to the AGN GDS. Consistent with section 8.16 of the Code, AGN has developed a process to ensure that connections meet the EFT. This process is based on an assessment using discounted cashflow methodology. If the capital investment can be recovered over a reasonable term and return a positive net present value, then the investment proceeds. If there is a shortfall, a contribution will be sought or the capital investment does not occur. The exception to this is where an end use consumer on line of main seeks a connection and even though the economic evaluation may not result in a positive NPV, the cost of connection does not exceed $650. AGN has an obligation to connect in these circumstances under its Distribution Licence. The costs of connecting commercial consumers requiring specific metering and delivery facilities are captured separately as User specific charges. This form of capital investment has not been included in the regulated asset base.

The First Access Arrangement Period forecast the number of connections to be approximately 78,000 over the five Year period. This compares to approximately 98,000 (including 2004 forecast) actually made, an overall increase of 20,000 connections.

Based on the analysis prepared above the overspend (over the regulatory forecasts) in connections is approximately $29m consisting of:

- $10m – actual connections made above regulatory benchmarks; and

- $19m – actual unit rate paid above regulatory benchmarks.

Connection numbers were higher than forecast predominantly due to the introduction of the Federal Government's first homebuyer assistance scheme and other economic factors outside AGN's control, which led to a higher approval for new dwellings. This has resulted in a higher number of connections made over the five-Year period. In addition there has been an increase in multi unit redevelopment on existing property particularly in the older suburbs of Perth.

Expenditure per connection is consistent with industry best standards and is more favourable than unit rates paid on the eastern seaboard of Australia. The amount has been benchmarked internationally by consultant GTL International (refer section 4.3.11).

4.2.4 Regulatory Treatment of Redundant Assets

Clause 8.27 of the Access Code states:

> "Before approving a Reference Tariff which includes such a mechanism [for removal of redundant capital] the Relevant Regulator must take into account the uncertainty such a mechanism would cause and the effect that uncertainty would have on a Service Provider, User and Prospective Users. If a Reference Tariff does include such a mechanism, the determination of the Rate of Return (under sections 8.30 and 8.31) and the economic life of the assets (under section 8.33) should take account of the resulting risk (and cost) to the Service Provider of a fall in the revenue received from sales of Services provided by means of the Covered Pipeline or part of the Covered Pipeline."

AGN is not aware of any material assets that have become redundant during the course of the First Access Arrangement Period. The administrative cost associated with the stranding of customer-specific assets, which are generally just the Meter and Service Pipe is unlikely to be of significant value where the benefit of removing these assets from the regulatory asset base outweigh the benefits to the community.

4.2.5 Regulatory Depreciation during the first Access Period

TABLE 4.4 - REGULATORY DEPRECIATION FOR 2000 – 2004

(REAL $ MILLION DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
Asset Class	**2000**	**2001**	**2002**	**2003**	**2004**
High Pressure Mains	1.70	1.74	1.77	1.79	1.81
Medium Pressure Mains	4.24	4.32	4.38	4.42	4.44
Med / Low Pressure Mains	2.87	2.88	2.88	2.88	2.88
Low Pressure Mains	1.06	1.10	1.15	1.20	1.25
Secondary Gate Stations	0.11	0.12	0.12	0.12	0.12
Regulators	0.42	0.43	0.44	0.44	0.45
Meters & Service Pipes	5.92	6.29	6.64	6.98	7.31
Equipment & Vehicles	3.75	4.31	4.54	4.79	5.03
Land & Buildings	0.09	0.09	0.10	0.10	0.10
Information Technology	N/A	N/A	N/A	N/A	N/A
FRC	0.00	0.00	0.00	0.00	0.00
Total	**20.16**	**21.28**	**22.02**	**22.72**	**23.39**

Regulatory Depreciation (Return of Capital) as detailed in the Regulator's final approval of the Access Arrangement, dated 13 July 2000, has been deducted from the Initial Capital Base.

4.2.6 Opening value of the capital base as at January 2005

AGN has calculated the opening Capital Base as at 1 January 2005 in accordance with the methodology described above using data to 31 December 2004.

TABLE 4.5 - VALUE OF THE CAPITAL BASE FOR EACH YEAR OF THE SECOND ACCESS ARRANGEMENT PERIOD

(REAL $ MILLION AT DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
	2005	**2006**	**2007**	**2008**	**2009**
Mains:					
High Pressure	169.34	168.46	167.57	166.59	168.18
Medium Pressure	209.07	209.65	209.33	209.52	209.00
Med / Low Pressure	101.56	100.48	99.34	98.43	97.49
Low Pressure	26.05	25.05	24.04	23.04	22.04
Secondary Gate Stations	9.30	8.93	8.55	8.19	7.83
Regulators	1.71	1.62	1.53	1.45	1.36
Meters & Service Pipes	125.21	132.91	135.90	140.96	145.35
Equipment & Vehicles	-2.53	-1.16	0.18	0.58	0.98
Information Technology	8.05	9.06	9.03	9.59	8.23
FRC	9.76	7.32	4.88	2.44	0.00
Land & Buildings	7.39	7.40	7.41	7.44	7.47
Total	**664.91**	**669.72**	**667.76**	**668.23**	**667.93**

4.2.7 Assumptions on economic lives of assets for depreciation

For the purposes of determining Total Revenue the economic and average remaining lives of the assets forming the AGN GDS are set out in Table 4.6. These asset lives were used in determining Depreciation.

TABLE 4.6 - ECONOMIC LIVES OF ASSETS

Category of Asset	Economic life (Years)	Average Remaining life of Initial Capital Base (Years as at 31/12/04)
Mains:		
High pressure	120	100
Medium pressure	60	45
Medium low pressure	60	35
Low pressure	60	27
Secondary gate stations	40	19
Regulators	40	22
Meters:		
Residential	25	5
Commercial and industrial	25	5
Equipment and vehicles (including telemetry and monitoring systems)	10	0
IS (excluding FRC)	5	0
FRC and Other IT Equipment	5	N/A
Buildings	40	18
Land	N/A	N/A

4.2.8 Depreciation

Depreciation of the Capital Base is to be determined in accordance with the requirements of section 8.32 and 8.33 of the Code.

In accordance with these requirements of the Code, AGN has determined a Depreciation Schedule for each group of assets that form the AGN GDS. The Depreciation Schedule establishes the methodology for calculation of Depreciation to be used for the purpose of determining Reference Tariffs.

Depreciation for each group of assets that form the AGN GDS has been calculated using the straight-line method.

Depreciation is set out in Table 4.7.

TABLE 4.7 - VALUE OF DEPRECIATION FOR THE SECOND ACCESS ARRANGEMENT PERIOD (REAL $ MILLION AT DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
	2005	2006	2007	2008	2009
Mains:					
High pressure	1.70	1.71	1.72	1.72	1.73
Medium pressure	4.54	4.62	4.70	4.77	4.86
Medium low pressure	2.89	2.92	2.95	2.97	3.00
Low pressure	1.00	1.00	1.00	1.00	1.00
Secondary gate stations	0.09	0.09	0.09	0.10	0.10
Regulators	0.44	0.44	0.45	0.45	0.45
Meters and Service pipes	10.62	11.27	11.82	12.33	13.03
Equipment and vehicles (including telemetry and monitoring systems)	0.00	0.00	0.00	0.00	0.00
Information Technology	1.19	1.85	2.42	2.90	3.59
FRC	2.44	2.44	2.44	2.44	2.44
Land & Buildings	0.09	0.09	0.09	0.09	0.09
Total	**25.02**	**26.43**	**27.68**	**28.77**	**30.29**

The return of capital forecasts in Table 4.5 have been prepared on the basis that:

- 50% of capital expenditure that occurs within a Year is included in that Year and the remaining 50% is included in the following Year (for the purposes of calculating the appropriate return of capital charge);
- the cost of each asset or group of assets forming part of the Covered Pipeline is recovered over the economic life of that asset or group of assets; and
- each asset or group of assets forms part of the Covered Pipeline required to deliver Services covered by the Reference Tariffs.

4.2.9 Capital Works and Capital Investment

Section 8.20 of the Code permits forecast capital expenditure on new facilities to be taken into account in determining Reference Tariffs, provided that expenditure is reasonably expected to pass the requirements in section 8.16 when the New Facilities Investment is forecast to occur.

AGN's forecast capital expenditure on new facilities taken into account in determining Reference Tariffs is summarised in Table 4.8.

TABLE 4.8 - FORECAST CAPITAL EXPENDITURE FOR THE SECOND ACCESS ARRANGEMENT PERIOD (REAL $ MILLION AT DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
	2005	2006	2007	2008	2009
Mains:					
High pressure	0.66	0.83	0.83	0.74	3.32
Medium pressure	5.57	5.20	4.38	4.96	4.35
Medium low pressure	1.76	1.85	1.80	2.06	2.06
Low pressure	0.00	0.00	0.00	0.00	0.00
Secondary Gate Stations	0.01	0.01	0.01	0.01	0.01
Regulators	0.08	0.07	0.07	0.09	0.09
Meters and Service pipes	19.71	18.97	14.81	17.39	17.42
Equipment and vehicles	0.36	1.38	1.33	0.40	0.40
Information Technology	3.30	2.85	2.39	3.46	2.23
FRC	0.00	0.00	0.00	0.00	0.00
Land & Buildings	0.11	0.11	0.10	0.12	0.12
Total	**31.56**	**31.27**	**25.72**	**29.23**	**29.99**

4.2.9.1 Nature of planned new facilities investment

The planned New Facilities Investment shown in Table 4.6 mainly comprises:

- investment required to maintain the safety and integrity of the AGN GDS, to maintain Service levels, and to comply with regulatory requirements; and
- investment to extend the network to meet new User demand.

The main items of New Facilities Investment are shown in Table 4.9.

TABLE 4.9 - FORECAST CAPITAL EXPENDITURE FOR THE SECOND ACCESS ARRANGEMENT PERIOD: BY TYPE OF INVESTMENT (REAL $ MILLION AT DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
Category of Expenditure	2005	2006	2007	2008	2009
User Initiated	23.88	21.53	17.67	18.24	18.27
Renewals	3.01	3.63	3.32	4.67	3.53
Demand	1.24	2.18	1.35	2.90	6.01
Other	3.40	3.93	3.39	3.42	2.18
Total	**31.53**	**31.27**	**25.73**	**29.23**	**29.99**

Detailed information relating to the forecast capital expenditure is set out below.

AGN's capital expenditure is broadly categorised as follows:

- **User Initiated Capital.** This is primarily capital required to connect new end use consumers on behalf of Users.
- **Renewals (Asset Replacement).** This involves the replacement of aged and obsolete assets, or replacement of assets where the present-value cost of maintaining existing assets exceeds the cost of replacement. This expenditure is primarily driven by asset condition, safety and maintainability.
- **Demand Capital.** This is capital to expand network capacity to cater for the additional load on existing assets from new connections, and also any increase in peak consumption per Delivery Point of existing consumers.
- **Other Capital.** This category includes miscellaneous capital items such as information technology equipment (including any ongoing FRC compliance), vehicles, office furniture etc.

4.2.9.2 Justification of new facilities investment

AGN has developed a detailed Asset Management Plan (AMP) which includes both the medium and high-pressure distribution systems for the period from 2005 to 2009. The AMP sets out the long-term network development requirements from which the capital investments are derived. This long-term approach enables AGN to optimise its investment in network development by taking into account the best enhancement options resulting in maximum system integrity and minimum capital expenditure.

4.2.9.3 Demand and User-Initiated Capital Expenditure

Demand and User-initiated related capital expenditures are required to be undertaken, to ensure that the GDS has adequate Capacity to:

- meet peak load growth of existing consumers;
- meet peak load growth of new consumers;
- provide capacity upgrades for connection assets at Delivery Points;
- provide User-initiated capital expenditure including metering where applicable; and
- maintain system security, reliability of supply and safety standards.

Valuation of new assets is based on the forecast level of capital expenditure required to allow the Service Provider to meet forecast growth in demand for Reference Services. Augmentation of existing Services is essentially rolled-in to the Tariff, so that existing and Prospective Users will pay a common Tariff based on the overall cost of existing and new assets.

All work associated with demand related and User-initiated capital expenditure is contracted out. The unit rates used to compile cost estimates have been calculated from the average market rates paid for similar work. The unit rates have been benchmarked against comparable activities for UK Gas companies by GTL Consultants and found to be better than and/or broadly similar when adjusted for currency differences.

4.2.9.4 Renewals Capital Expenditure

The AMP sets out the long-term replacement plan for each major category of asset. Forecasts for renewals capital expenditure are based upon this Asset Replacement Strategy and an analysis of maintenance data for each asset class.

The maintenance plan forms a key element of the overall AMP and details what is necessary to maintain the assets at the required level of service and in a safe condition, while optimising life cycle costs for each category of asset. For mains and Services, leaks in the low-pressure network are the major source of maintenance costs. The low-pressure network has limited Capacity thus constraining the potential to accommodate redevelopment growth in an area without jeopardising system integrity.

The key area of asset renewal expenditure is distribution mains involving cast iron and steel mains in the low-pressure networks. The low-pressure network is limited in Capacity to support substantial growth. With approximately 1.5% of AGN’s new connections being on the low-pressure networks and multi-unit redevelopment prevalent in this area where the low-pressure network exists, AGN’s preferred method of mains replacement is to renew all low-pressure mains with medium pressure. This assists in achieving the long-term objective for development of the network, and eliminates ongoing maintenance problems associated with the low-pressure network.

In order to improve system reliability and security, extend asset life cycles and increase operational flexibility, AGN proposes a number of expenditure programs including:

- the installation of isolating valves on mains of 300mm or greater diameter to enable effective sectional isolation of network areas;
- the installation of cathodic protection and effective coating systems to mains currently not satisfactorily protected; and
- upgrading and or replacing sections of corroded mains to ensure ongoing operability and mitigate the risk of future failures due to further mains deterioration.

Other asset replacement expenditure will include the replacement of damaged and deteriorated high pressure blowdown and line valves that have been identified as part of scheduled maintenance programs.

A responsible approach to asset renewal is essential to maintain service standards and avoid future "bow wave" problems with large capital requirements. AGN's approach is therefore to replace assets at the end of their useful economic lives, taking into account safety issues and the need to maintain current service standards.

AGN believes that its integrated approach to renewals and demand capital programs ensures that capital expenditure is optimised. Further, AGN's approach to asset management is focussed on providing a safe, reliable network, operated and maintained on a cost effective basis, which meets the service, safety and environmental expectations of consumers, regulators and the community. The development of the 2004-2009 AMP is fundamental to successfully achieving this objective.

4.2.9.5 Other Capital (including FRC)

A significant amount of capital expenditure is required to support the business processes and network component of AGN's activities. During the First Access Arrangement Period, AGN prioritised its resources, within the constraints of the overall capital regulatory benchmarks, to deliver Services to meet its Distribution Licence obligations in respect of the level of demand growth experienced. As a result areas such as information technology were constrained.

Whilst this has delivered a low cost outcome in such areas in the First Access Arrangement Period, information technology expenditure in particular cannot continue to be deferred without unacceptable risk. In addition, the introduction of FRC in 2004 has placed increased obligations on AGN, increasing both the complexity and the performance requirements (availability & disaster recovery times) of AGN's systems.

Expenditure proposed for the Second Access Arrangement Period includes capital costs associated with:

- information technology infrastructure, such as PC / LAN network and printers;
- FRC;
- billing systems to enable distribution billing;

- asset management systems to assist in program management;
- external reporting requirements, such as statutory and regulatory accounts;
- internal management costing ledgers;
- cash payment and recording capability;
- motor vehicles and plant;
- miscellaneous field testing equipment; and
- office equipment.

Expenditure forecasts are based on the minimum requirements to support AGN's business and include costs associated with establishing and supporting FRC.

4.2.10 Return on the Capital Base

Since the Regulator made its Draft Determination on AGN's Access Arrangement it has made two other decisions which indicate a change of assessment methodology. These other decisions are the Draft Decision on the DBNGP and the Final Decision on the GGP.

In these latter decisions the Regulator has adopted the approach of:

> The Authority accepts that its task is to consider whether the Rate of Return used for the derivation of the Reference tariff in the Proposed Access Arrangement falls within the range commensurate with the prevailing market conditions and the relevant risk. The Proposed rate of Return will comply with the Code if the value used is within the range of values that different minds acting reasonably might attribute to the Rate of Return, applying the methodology of the CAPM that was chosen by DGNGPT. In undertaking this task, the Authority has given consideration to the range of values within which the Rate of Return might be supported by reasonable minds as being commensurate with the prevailing conditions in capital markets. The Authority then considered whether the value proposed by DGNGPT for the Rate of Return for the Proposed Access Arrangements falls within that range.[30]

This approach is quite different to that adopted by the ERA in AGN's Draft Decision and AGN support this change as it considers that it is required by legal interpretations of the National Gas Code. In light of this change AGN has restated its view on the range of WACC variables commensurate with the prevailing market conditions and the relevant risk and this is set out below.

The Return on the assets that form the AGN GDS has been calculated, for each Year of the Access Arrangement, by applying a pre-tax real Rate of Return (weighted average cost of capital, see Table 4.9) to an average of opening and closing asset values for the Year. The opening and closing asset values are expressed in (constant) 31 December 2004 dollar values.

The calculations are summarised in Table 4.10.

[30] ERA Draft Decision on the Proposed Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, p. 49.

TABLE 4.10 - RETURN ON CAPITAL BASE FOR THE SECOND ACCESS ARRANGEMENT PERIOD

(REAL $ MILLION AT DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
Category of Expenditure	**2005**	**2006**	**2007**	**2008**	**2009**
Asset values:					
Opening	658.39	664.90	669.72	667.78	668.23
Closing	664.90	669.72	667.78	668.23	667.93
Average	661.64	667.31	668.75	668.01	668.08
Total	**51.28**	**51.72**	**51.83**	**51.77**	**51.78**

4.2.10.1 Rates of return - on equity and on debt

The forecast cost of providing all Services by means of the AGN GDS is determined, in accordance with the Cost of Service method, as the sum of a Return on the Capital Base, Depreciation, and the Non-Capital costs.

The Return on the Capital Base in each Year of the Access Arrangement is the product of the Rate of Return and an average asset value for that Year. AGN has used, as the Rate of Return to be applied to the average asset value, a weighted average of the pre-tax returns applicable to the equity and debt used to finance the assets, which form the AGN GDS.

AGN has obtained independent expert advice from KPMG in relation to estimating a Return on the Capital Base. KPMG's report, *The Weighted Average Cost of Capital for Gas Distribution*, has been provided to the Regulator as part of this Access Arrangement Information.

In section 2, AGN referred to legal and administrative decisions as to how the Code should be interpreted. Combined with commentary from the Productivity Commission, these decisions lead inexorably to the view that where there is a range of plausible values, the Code does not require that the lowest number be selected but rather somewhere within that range. KPMG's report has identified a range of values for each parameter of the cost of capital and AGN has selected values consistent with this principle. AGN has not selected the highest possible values, despite expert advice that such values would be within a reasonable range, but rather has elected for an overall figure which falls between the lowest and highest possible rates of return.

Given the highly capital intensive nature of the gas distribution sector, return on capital, which is a function of capital base and allowable Rate of Return, is one of the most significant revenue building blocks. Consistent with its analysis of the emerging regulatory environment outlined in section 2, AGN therefore believes the following principles should guide analysis of the cost of capital:

- **Function of the Regulator.** It has been clearly established that the function of the Regulator is not to determine a correct return but rather to decide whether what is being proposed by a

Service Provider is consistent with the Code, and if it is, to approve it. Proposals can only be rejected if they are inconsistent with the Code. This has been affirmed in the specific cost of capital context by recent decisions of the Australian Competition Tribunal which found that "it is not the task of the Relevant Regulator to determine a return which is commensurate with prevailing conditions in the market for funds and the risk involved in delivering the Reference Service. The task of the ACCC is to determine whether the proposed Access Arrangement in its treatment of Rate of Return is consistent with the provisions of s 8.30 and s 8.31 and that the rate determined falls within the range of rates commensurate with the prevailing market conditions and the relevant risk."[31]

- **Potential for Error.** The Regulator needs to recognise that regulation generally is an imprecise science, with high potential for regulatory error. The Productivity Commission found that this is particularly the case when assessing cost of capital: "Implementing the WACC/CAPM approach is not an exact science, given the numerous debatable assumptions involved."[32]
- **Asymmetric Costs.** The costs of inevitable regulatory error do not behave symmetrically. The Productivity Commission, among others, has endorsed the view that the economic costs of under compensating Service Providers are likely to be greater than those of over compensation.[33] AGN believes that the long term interests of all parties, including Users, are best served by a cost of capital figure that sustains long term investment.
- **Standard of Workable Competition.** The Western Australian Supreme Court has found that the standard to be implemented when assessing an Access Arrangement is one of "workable competition". The outcome for cost of capital is that the lowest possible figure should not be selected but rather one consistent with the workable competition principle.

Based on these principles and the analysis outlined below, AGN is proposing a real pre-tax weighted average cost of capital of 7.75%.

The returns applicable to the equity and debt used to finance the assets which form the AGN GDS are based upon the following general formula:

Pre-tax real WACC = {(1+Pre-tax nominal WACC %) / (1+CPI)} -1[34]

Where:

Pre-tax nominal WACC % = $K_e * 1 / \{1-t*(1-\gamma)\} * E/V + K_d*D/V$

WACC is the weighted average cost of capital. E and D are, respectively, the market values of the equity and debt used to finance the assets, which form the AGN GDS, and V is the sum of E and

[31] *Application by GasNet Australia(Operations) Pty Ltd* [2003] ACompT 6, para. 42

[32] Productivity Commission, Gas Code Draft Report, p 234.

[33] Productivity Commission, Third Party Access Review, p 82.

[34] This formula for the pre-tax real WACC is derived using the forward transformation approach. This entails firstly grossing up the post-tax nominal WACC by 1 minus the tax rate then to derive the pre-tax nominal WACC, and secondly, deflating the pre-tax nominal WACC by the inflation rate (derived via the Fisher equation) to obtain the pre-tax real WACC.

D. K_e is the return applicable to equity, and K_d is the return applicable to debt. γ is the value attributed by investors to each dollar of franking credit, *t* and is the statutory corporate tax rate.

K_e can be estimated from capital market data using the Capital Asset Pricing Model:

$$K_e = R_f + \beta_e \times MRP.$$

R_f is the risk free rate of return, β_e is the equity beta, and MRP is the equity market risk premium.

The parameter values applied in the determination of the WACC to be used as the Rate of Return for calculation of the Return on the Capital Base are summarised in Table 4.11.

TABLE 4.11 - ESTIMATION OF THE RATE OF RETURN FOR THE SECOND ACCESS ARRANGEMENT PERIOD

Return Parameter		Value used to Determine Rate of Return in 2000	Appropriate Range
Risk free rate of return	R_f	6.27%	5.45%
Market risk premium	MRP	6.00%	5.0% - 7.0%
Equity beta	β_e	1.08	1.0 – 1.2
Debt margin	DM	1.20	1.125 – 1.34
Corporate tax rate	t	31.4%	30%
Franking credit value	γ	0.50	0.30 – 0.50
Debt to total assets ratio	D/V	60.0%	60%
Equity to total assets ratio	E/V	40.0%	40%
Expected inflation	π_e	2.78%	2.69%
Pre-tax real WACC		**7.5%**	**7.75%**

4.2.10.2 Capital Structure - Debt/Equity Split Assumed

Section 8.31 of the Code provides guidance on how the returns applicable to the equity and debt used to finance the assets, which form the AGN GDS, are to be weighted in determining the Rate of Return:

> "In general, the weighted average of the return on funds should be calculated by reference to a financing structure that reflects standard industry structures for a going concern and best practice."

A de facto standard for the financing structure of going concerns in the regulated electricity and gas network industries is emerging in Australia. That standard is a financing structure comprising 60% debt and 40% equity. Accordingly, a financing structure comprising 60% debt and 40% equity was adopted for determination of the WACC used as the Rate of Return for calculation of the Return on the Capital Base. This financing structure is also a Fixed Principle for the purposes of sections 8.47 and 8.48 of the Code.

4.2.10.3 Equity Returns Assumed – Variables Used in Derivation

As noted above, the Rate of Return on equity used in determining the WACC for the AGN GDS was calculated using the Capital Asset Pricing Model.

$$K_e = R_f + \beta_e \times MRP,$$

where R_f is a risk free rate of return, β_e is the equity beta, and MRP is the equity market risk premium.

The yield to maturity on Commonwealth Government 10 Year Treasury Bonds was used to estimate the risk free rate of return. That rate could be estimated using the yield on 10 Year Treasury Bonds at the time of WACC determination, or it could be estimated using an average of recent historic bond yields. An average of past bond yields - over the 20 trading days to 9 December 2003 - was used.

The nominal risk free rate of return used in calculating a return on equity for the purpose of determining the WACC was 5.45%. However, AGN notes its concerns with the historical low level of the risk free rate estimate and the likelihood that it will increase during the term of the next access period. As a result of this concern AGN favours a longer-term average of the risk free rate although its modelling does not include this estimate.

Equity betas must be estimated from market data and, in consequence, are available only for companies listed on a stock exchange. For unlisted entities, like the business unit within AGN responsible for provision of Reference Services using the AGN GDS, equity betas must be estimated from the betas of listed companies engaged in comparable business activities. Beta estimation therefore involves a degree of subjectivity.

A beta range of 1.00 – 1.20 was used in the calculation of the WACC, which is Based on the Regulator's Draft Decision and the original equity beta of the current Access Arrangement.

4.2.10.4 Debt Costs Assumed – Variables Used in Derivation

In the Draft Decision the ERA proposed:

> "Accordingly, the Authority proposes to adopt for the purposes of this Draft Decision a debt margin for the GDS business of 1.125 percent, which it considers to be the upper bound of a range complying with section

> 8.30 and 8.31 of the Code. This debt margin is based upon the sum of the debt margin for BBB+ bonds of 100 basis points and an allowance of 12.5 basis points for debt raising costs."[35]

AGN considers the requirements of the gas Code to consider the "prevailing conditions in the market for funds" is not met by using out of date data. In addition, it is not met by using econometric models that lack appropriate data inputs like the CBA Spectrum model. The Regulator states that this model provides the upper level for the cost of debt but this argument is fallacious as the Bloomberg model provides higher estimates and the CBA Spectrum model is clearly biased.

The example used by the Regulator to check the CBA Spectrum data was the Snowy Hydro's (9 year) BBB+ rated bond raised in Australia which represented a margin of around 80 basis points calculated over the 20 business days to 29 April 2004. This sample however is not from March 2005 and hence can be discounted as a valid check on the CBA Spectrum predictions.

In terms of the Hydro bond issue the latest bond as at 15 March 2005 was 6.682%, giving a spread over the 10-year government bond rate of 119.7 bps. A 20-day average gives a yield of 6.659% and a spread of 121.4 bps. AGN considers a more up to date figure better represents the "prevailing market for funds" as required by the National Gas Code.

AGN considers an adequate range for the cost of debt is therefore between 100 and 121.4 basis points and with a 12.5 percentage points in debt raising costs would imply a cost of debt range of between 112.5 to 133.9.

4.2.10.5 The Market Risk Premium

An equity market risk premium (MRP) with a range of 5.0% to 7.0% was used in applying the Capital Asset Pricing Model in calculating the return on equity for the purpose of determining the WACC for the AGN GDS.

The MRP has been subject to much uncertainty as it is a forward looking variable while the most effective tests are based on historical averages. There are four ways of estimating the MRP:

- historical averages;
- surveys of investors or debt providers;
- economic models such as the Dividend Growth Model; and
- inter-country comparisons.

In paragraph 319 of the Draft Decision the Regulator states that on the basis of a number of sources including previous regulatory decisions:

> "On balance, the Authority proposes to adopt a market risk premium of 6.0 percent which it considers to be the upper bound of a range complying with section 8.30 and 8.31 of the Code."[36]

---

[35] ibid p. 74.

[36] ERA Draft Decision on the Proposed Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, p. 49.

Such a conclusion is clearly incorrect as many reputable commentators consider that the MRP may be higher than 6. Indeed an adviser to regulators Professor Martin Lally argues that:

> "Notwithstanding this conclusion, there is considerable uncertainty about this figure and bounds of .05 -. 07 are broadly compatible with available evidence. In considering figures from this (or even wider) range, the consequences of error must be considered. In particular, an estimate that is too low gives rise to output prices that are too low (and therefore under-investment by regulated entities) whilst and estimate that is too high gives rise to excessive output prices. Clearly the former risk is the more serious of the two, and this argues for choosing a figure from the higher end of the scale."[37]

Notice the use of the term in the above quote, " broadly compatible with available evidence", which is similar in meaning to the term, "the prevailing conditions in the market". On this basis AGN considers that this statement provides strong evidence for a range of the MRP between 5.0% and 7.0%.

The reason Professor Lally considers 7% is the top of the range estimate of the MRP is that this represents a long-term average while shorter average estimates of the MRP always suffer from high standard errors of estimates to make the results unreliable:

> "In applying the process there are three significant controversies. The first concerns how much historical data is used. Use of older data risks sampling from periods in which the market risk premium was different. On the other hand, disregarding all but the most recent data guarantees an impossibly large standard error on the estimate. Theory offers no guidance as to the optimal trade-off. However, most of the arguments for time variation in the market risk premium would require the use of only recent data (30 years at most), and the resulting statistical unreliability would be unacceptable. So, this points to the use of the longest available series."[38]

Professor Lally in the same paper emphasises this point when he argues:

> However, I favour using the longest available time series on the grounds that the improved statistical reliability outweighs possible bias from the use of the older data.[39]

However, in the Draft Decision (para 314) the ERA argue that historical analysis is not to be relied upon:

> In view of the difficulties in using historical data to predict a market risk premium for the future, the Authority has taken into account the views of financial practitioners and the market participants, including institutional investors, as to the market risk premium to be factored into investment decisions. In this regard, the Authority has taken into account a Jardine Capital Partners survey of views on the market risk premium that indicates an average of market participants' views on the historical market risk premium of 5.87 percent, and expectations about the future market risk premium about 1 percentage point below this level. [40]

---

[37] Martin Lally, The Cost of Capital for Regulated Entities, Report for the Queensland Competition Authority, October 14, 2004, p. 44.

[38] ibid. p. 44

[39] ibid, p. 46

[40] op cit ERA Draft Decision, p.70

The problems with relying one surveys to estimate the MRP have been stated by the NECG:

> "The ACCC refers to a survey of brokers undertaken by Mercer Investment Consulting, which came up with a range of 3% to 6% for the MRP. The ACCC fails to note that surveys are necessarily subjective. The results of surveys reflect a number of factors such as the nature of the participants in the survey; the biases the participants may have with respect to the issues being surveyed, and the time horizons the participants may consider. The participants in the Mercer survey (shareholders) clearly have a bias, which at the time of the survey would likely have been downward. Reliance on surveys to determine the MRP can only increase uncertainty and regulatory risk."[41]

In a detailed review of the methods of estimating the MRP by Professor Stephen Gray in "Issues in Cost of Capital Estimation," 5 September 2003, an attachment to the Allgas submission to the Productivity Commission Inquiry into the National Gas Code, he argued that:

> "Theoretical economic models are based on potentially strong assumptions. A number of recent papers demonstrate that relaxing some of these assumptions solves the 'equity premium puzzle'. That is, the source of the puzzle lies in defects in the models rather than in sustained hysteria and irrational trading in equity markets causing the market risk premium to be greater than some simple economic models are able to explain. Moreover, there are many economic models from which to choose - how would a regulator justify the choice of a single model from within this large and growing, range of models? Choosing from among various theoretical economic models involves the same problems as using an asset-pricing model other than the CAPM - the choice of one of a number of competing models is subjective and it complicates matters as even more inputs and parameters must be estimated and debated."

Gray also supported the historical estimate methodology when he argued that:

> "Historical estimates of the market risk premium are more precise than estimates based on the evident growth model, which is the primary theoretical model entertained by Australian regulators."

Given that all methods of estimating the have some problems it is wise to consider a range of approaches and at least long term averages provide a reasonable estimate of the MRP compared to other ad hoc approaches. There is also strong support from economists for a higher MRP.

For example in the same paper Professor Gray concluded on the appropriate value of the MRP in light of the discussion of the various estimation techniques of the MRP by stating:

> "To adopt a market risk premium less than 6%-7% is to ignore the equilibrium outcome that reflects the collective wisdom of the market over the last 100 years."

In another submission to the Productivity Commission Inquiry into the National Gas Access Regime, NECG also analysed the MRP. The NECG Paper also supports the use of 7% for the MRP:

---

[41] NECG, Response to ACCC Supplementary Submission (No. 72) on International WACC Decisions, Submission to the Productivity Commission Review of the Gas Access Regime, march 2004, p. 39.

> "The ACCC also ignores other evidence on the MRP. Historical data and the results of benchmarking the MRP in Australia in relation to other markets support a range of 6-8%. The historical estimates of Lally in the quote above are consistent with a value of 7% for the MRP. Although the ACCC has repeatedly stated an inclination to lowering the MRP from 6%, it has not presented a credible case for doing so. In our opinion, if the MRP is to be adjusted, the case is stronger for an increase to 7%."

Both the Gray and NECG papers have been provided to the Regulator for consideration.

Professor Robert Bowman also argues that the MRP is much higher in Australia on the basis of inter-country comparisons. As quoted in the Gray paper Bowman argues that:

> "Australia has only recently become an open economy and that for much of the last 100 years equity and debt markets were subject to controls and intervention. For this reason, he argues that much of the historical data on the market risk premium is of limited use. His preferred approach is to base an estimate of the market risk premium on data from the United States, which has been an open economy for most of the period for which data is available. He suggests that an appropriate range for the U.S. market risk premium is 6% to 9% (p.6). Moreover, he suggests that Australia has a higher level of country risk that should result in a premium of 0.25% to 0.75% over the U.S. market risk premium. This yields a range of 6.25% to 9.75% for the Australian market risk premium."

Gray also quotes a later paper by Bowman,

> "This paper is based primarily on conjecture and qualitative arguments rather than firm empirical evidence, especially with regard to the composition of the market index in the U.S. versus Australia. Nevertheless, the paper illustrates an alternative approach that suggests the market risk premium is greater than 6%. In particular, Bowman (2001) concludes:
>
>> 'It is suggested Australia use an approach based upon using the US MRP as a benchmark. The forward-looking US MRP is estimated to be 6% to 9% with a point estimate of 7.5%. There are a number of issues that can be considered to adjust the US benchmark. I believe that on balance they support an adjustment of at least 0.3%. In my opinion the appropriate MRP to use for Australia is 7.8%.'"

Gray also quotes Ibbotoson Associates who also support a higher MRP in Australia:

> "The approach adopted by Ibbotson Associates (2001) is consistent with this conclusion. They suggest that the US market risk premium is 7.76% and that based on Australia's country credit rating, the expected return on the Australian market is 1.53% to 2.26% higher than for the U.S."

The need for a higher MRP and a return on capital is also supported by a major study of international rates of return by the NECG. In this paper NECG found that:

> "There is no evidence of excessively generous returns in the electricity distribution and transmission sectors, nor in the gas distribution sector - particularly against the U.S. Across all sectors where there are US compradors US decisions provide higher margins above the risk free rate than those in Australia and other countries".

The above evidence clearly supports an MRP of 7% as falling within the range of rates commensurate with the prevailing market conditions and the relevant risk profiles and AGN has used this as the upper bound of its MRP range.

4.2.10.6 Gamma

AGN notes that the Regulator in the decisions on the Goldfields Pipeline and the DGNP has used a gamma range of between 0.3 – 0.5. AGN has therefore adopted this range in this submission. The new range is based on the latest paper from Officer and Hathaway which has been provided to the Regulator.

4.2.11 Return on Working Capital

An allowance for a return on the working capital employed in providing Reference Services has been included in the forecast total cost from which the Reference Tariffs have been determined. This is consistent with the approach adopted in the First Access Arrangement Period and consistent with the Code requirements to recover the efficient cost of providing Reference Services.

AGN has adopted a simplified approach based on the typical payment cycle on internal processes and receipt cycle detailed in Part C of the Access Arrangement. The two significant components of the working capital formula are based on 30 days applied to total revenue applicable to providing the Reference Services and 20 days applied to the payment of both capital and operating costs incurred to provide the Reference Services.

4.3 Information Regarding Operations and Maintenance

4.3.1 Non-Capital costs during the First Access Arrangement Period

AGN has spent more on operating and maintaining the AGN GDS in the First Access Arrangement Period than was projected in the initial Access Arrangement Information. Table 4.12 compares the regulatory forecasts and actual Non-Capital costs for the period 2000-2004.

TABLE 4.12 - BENCHMARK AND ACTUAL NON-CAPITAL COSTS

(REAL $ MILLION DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
	2000	2001	2002	2003	2004
Regulatory forecasts	42.72	40.64	40.02	39.61	39.81
Actual Cost	45.72	42.41	38.05	39.71	39.81

Significant restructuring costs were incurred in addition to the costs detailed in Table 4.10 with a portion of these costs being incurred in 2000 and 2001. These restructuring costs have enabled AGN to achieve the level of efficiencies made. Without them, AGN's Non-Capital costs would likely have remained close to the actual 2000 – 2001 levels.

The outcome of this restructuring has seen an underlying cost base improvement of $5.7m from 2000 to 2004 (2004 forecast included $0.65m for FRC). This compares favourably with the regulatory benchmark improvement of $2.8m. This improvement in AGN's efficient cost base will be passed onto consumers in the Second Access Arrangement Period.

AGN considers that it is appropriate to infer that its actual operating expenditure is efficient because under the regulatory arrangements, distributors have a commercial incentive to minimise expenditure levels. In addition, it is important for AGN to demonstrate to all stakeholders that its actual expenditure is efficient.

AGN notes that it did not receive, nor will it receive any compensation for overspending against its benchmarks in the First Access Arrangement Period.

Notwithstanding the arguments presented above, AGN recognises that the Regulator and other stakeholders may require further assurances that the expenditure benchmarks proposed are consistent with the costs incurred by a prudent Service Provider, acting efficiently, in accordance with accepted and good industry practice. In section 4.3.11 below further evidence is provided, in the form of results obtained from independent benchmarking studies, which demonstrate that the company's proposed operating cost benchmarks for the Second Access Arrangement Period meet the requirements of clause 8.37 of the Code.

4.3.2 Non-Capital costs forecasts 2005-2009

In providing the Reference Services in each Year of the Access Arrangement, AGN's forecast of efficient Non-Capital costs is shown in Table 4.13.

TABLE 4.13 - NON-CAPITAL COSTS INCURRED IN PROVIDING THE REFERENCE SERVICES FOR THE SECOND ACCESS ARRANGEMENT PERIOD

(REAL $ MILLION AT DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
	2005	**2006**	**2007**	**2008**	**2009**
Network	23.26	22.62	21.86	21.57	21.57
UAFG	3.08	3.08	3.08	3.08	3.08
Marketing	1.35	1.35	1.35	1.35	1.35
Information Technology	5.03	5.03	5.03	5.03	5.03
Corporate	6.54	6.54	6.54	6.54	6.54
Full Retail Contestability	1.34	1.34	1.34	1.34	1.34
Total	**40.60**	**39.96**	**39.20**	**38.91**	**38.91**

Section 8.37 of the Code requires that the Non-Capital costs used in Reference Tariff determination be only those costs that would be incurred by a prudent Service Provider, acting efficiently, in accordance with accepted good industry practice, and to achieve the lowest sustainable costs of delivering the Reference Services. AGN has, therefore, obtained an independent review of its Non-Capital costs to ensure that they satisfy the requirements of section 8.37. These results are summarised in section 4.3.12.

The costs of providing Services other than Reference Services are not included in the forecast in Non-Capital costs shown in Table 4.11.

4.3.3 Basis for Determining Operating Expenditure Benchmarks

AGN favours a regulatory approach to determining benchmarks that de-couples the company's own costs from its prices, on the basis that such arrangements:

- provide the strongest incentives for the pursuit of efficiency gains; and
- are more likely to provide outcomes that mimic those produced in real-life competitive markets.

Notwithstanding AGN's position on this issue, AGN recognises that the Code is biased towards a Cost of Service approach to regulation. This therefore limits the adoption of more effective alternative regulatory models favoured by AGN.

AGN has applied an approach in determining an estimate of efficient Non-Capital cost for the Second Access Arrangement Period that infers that the current level of expenditure is efficient. It has then applied an adjustment for changes in scope between the First and Second Access Arrangement Periods, to the extent that these changes drive changes in efficient Non-Capital costs.

TABLE 4.14 - SUMMARY OF COSTS ASSOCIATED WITH SCOPE CHANGES

(REAL $ MILLION AT DECEMBER 2004)

	2004	Changes in Scope	2005 Benchmarks
Network	23.13	0.02	23.15
UAFG	3.08		3.08
Corporate	1.35		1.35
Marketing	5.03		5.03
Information Technology	6.54		6.54
Full Retail Contestability	0.67	0.78	1.45
Total	**39.80**	**0.80**	**40.60**

4.3.4 Network

The main factor contributing to the scope change is the proposed introduction of a GSL Scheme described in section 3.10.

4.3.5 Full Retail Contestability

The forecast increase in 2005 is a result of a full Year of operation. FRC was implemented in May 2004 which is reflected in forecast operating costs.

4.3.6 Gas used in Operations

The AGN GDS has no compression thus, no Gas is used in operations. A small amount of Gas used during commissioning and maintenance is classed as operational losses and is included in Unaccounted for Gas (UAFG).

4.3.7 Unaccounted for Gas

UAFG is defined as the difference between the measurement of the quantity of Gas delivered into the AGN GDS in a given period, and the measurement of the quantity of Gas delivered from the AGN GDS during that period. This difference is the total effect of:

- errors in Gas measurement;
- operational losses resulting from leakage and third party damage to pipe work, and from the use of Gas to "blow down", purge and pressurise during the commissioning of new facilities, and after maintenance;
- system line pack variations;
- errors in the estimation of volumes of Gas delivered from the AGN GDS; and
- theft.

Measurement errors associated with the more than 480,000 Meters at Delivery Points, and operational losses, are the main contributors to UAFG and each accounts for approximately 50% of total UAFG.

The quantity of UAFG can fluctuate significantly over short periods of time, principally because of the random nature of Gas measurement errors. Over an extended period, a systematic loss should be observed.

The determination of the volume of UAFG for the Year cannot be completed until approximately six months after the end of each Year of the Access Arrangement, after all Meters have been read, and after all Meter readings have been verified and, if necessary, corrected. Between the Years 2000 and 2002 UAFG rates for the AGN GDS have fluctuated between 2.6 and 2.7%.

During the Second Access Arrangement Period, the systematic loss of the volume of Gas delivered from the network is projected to be in accordance with Table 4.15 below. The small increase from 2006 onwards reflects the planned Parmelia Pipeline interconnection of the South Metropolitan Sub-Network and the forecast increase in the amount of Parmelia Gas entering both the North and South Metropolitan Sub-Networks. One consequence of having blended gas flowing into a Sub-network is that there will be the potential for greater variation in heating value which in turn is used to determine energy consumed. The regulations dealing with heating value management will introduce a monitoring regime to ensure that the flow weighted average of the blended Gas falls within an acceptable range. The range of +/- 1 megajoule introduces additional uncertainty in the calculation of UAFG in the order of +/-0.1% of network inflow.

TABLE 4.15 - UAFG PERCENTAGE OF VOLUME OF GAS DELIVERED

	2005	2006	2007	2008	2009
Total	2.7%	2.8%	2.8%	2.8%	2.8%

Although in the past, AGN has been responsible for calculating UAFG, this responsibility has been transferred to the Retail Market Company Limited (REMCo) under the Retail Market Scheme for the majority of Sub-networks.

On a daily basis AGN, based on its knowledge of Gate Point Inflows and interval metered consumption, will estimate UAFG for the previous day for each Sub-network. This estimate will be validated by REMCo prior to it being allocated to AGN's nominated UAFG supplier.

REMCo will perform a daily reconciliation of changes in UAFG for each Sub-network of the AGN GDS, largely as a result of actual basic Meter readings replacing estimated interval Meter readings and also due to revised basic and interval Meter readings. REMCo will calculate such revisions for up to 425 days in the past and will apply the resulting reconciliation amounts to the present day UAFG supplier. This reconciliation process is likely to result in substantial variations in the daily amounts of UAFG calculated.

Users are not required to make any allowance for UAFG. All of the UAFG is purchased separately by AGN. Forecasted benchmarks of UAFG purchase costs are included in the Non-Capital costs for recovery through the Reference Tariffs.

4.3.8 Fixed versus variable costs

The Non-Capital costs are fixed costs; they do not vary materially with the throughput of the AGN GDS.

4.3.9 Cost allocation

The allocation of costs between categories of asset and Services is described in section 5.

4.3.10 Summary of Composition of Total Revenue

Table 4.16 below provides a summary of the composition of the Total Revenue for each Year of the Access Arrangement Period commencing in January 2005.

TABLE 4.16 - COMPOSITION OF TOTAL REVENUE FOR THE SECOND ACCESS ARRANGEMENT PERIOD

(REAL $ MILLION AT DECEMBER 2004)

	YEAR ENDING 31 DECEMBER				
	2005	2006	2007	2008	2009
Non-Capital Costs	40.60	39.95	39.19	38.91	38.69
Return on Capital	51.28	51.72	51.83	51.77	51.78
Depreciation	25.02	26.44	27.68	28.78	30.29
Efficiency carry-over	0.00	0.00	0.00	0.00	0.00
Return on Working Capital	0.90	0.91	0.91	0.92	0.93
Total Revenue	**117.80**	**119.02**	**119.61**	**120.38**	**121.69**

In developing its revision to the Access Arrangement, AGN has been conscious of the need to ensure that any price change does not deliver a price shock to either Users, consumers or AGN.

As is demonstrated by the evidence presented in sections 4.2 and 4.3 of this Access Arrangement Information, AGN's present costs and prices already fully reflect those of an efficient business. At the time of the First Access Arrangement approval in 2000, the Regulator removed substantial Non-Capital Costs from the business, reducing the Non-Capital benchmark from $41.2m in 2000 to $38.4m in 2004.

In considering its future revenue needs, AGN has determined that a price increase (X factor) of 2.58% for each of the Years in the Second Access Arrangement, except the first Year, is consistent with the Code. This calculation does not include the expected cost of regulation (R factor).

4.3.11 External Assessment of AGN's efficiency

In the preparation of this Access Arrangement AGN has engaged consultants to review its unit costs and overall operating forecasts. AGN engaged PA Consulting to review the company's budgeted O&M, to assess whether these would exceed the costs that would "be incurred by a prudent Service Provider, acting efficiently" (in accordance with clause 8.37 of the Access Code). PA Consulting concluded that:

> "the forecast Non-Capital costs proposed by AGN meet the requirements of section 8.37 of the Code."

In addition to PA Consulting, GTL International was also engaged to review the unit costs of 19 field operations encompassing both capital and operating cost categories. This was to ensure that the unit costs used in these forecasts (both capital and operating) have been assessed as comparable and/or more competitive than UK benchmarks.

Table 4.17 below summarises the Key Performance Indicators (KPI) computed by PA Consulting.

TABLE 4.17 - UNIT PERFORMANCE MEASURES FOR A SAMPLE OF FIVE AUSTRALIAN GAS DISTRIBUTORS

KPI's	AGN	Multinet	Envestra (Vic)	TXU	Envestra (Qld)
$M/100 Km Main	3424	4524	4843	5170	5670
$/O & M Costs per Customer	76.6	63.0	78.3	84.4	164.4
$/GJ	1.32	0.86	1.11	1.38	2.22
Customers/Main (km)	44.5	71.8	61.8	61.2	34.5

The two independent unit cost analyses both indicate that AGN is efficient compared to its domestic peers.

Conclusions

In summary:

- Non-Capital Cost benchmarks submitted in this Access Arrangement Information were assessed by PA Consulting as those of a superior cost performer in its use of Non-Capital Costs inputs assessed against other Australian distributors;
- unit costs underpinning these forecasts (both capital and operating) have been assessed by GTL International as comparable to and/or more competitive than UK benchmarks;
- AGN has achieved significant efficiency gains in the First Access Arrangement Period; and
- different benchmarking methodologies have consistently assessed AGN as being highly efficient, based on forecast data contained in this Access Arrangement Information.

Taking all of these considerations into account, AGN considers that the company's actual cost performance in the First Access Arrangements Period, adjusted for scope changes, provides a sound indication of the efficient level of Non-Capital Costs for AGN over the Second Access Arrangement Period. It also considers that this methodology is consistent with the requirements of the Code and as such the cost estimates provided should be approved by the Regulator as being efficient and prudent.

5 Cost Allocation and Variation

5.1 Cost Allocation

The Reference Tariffs applying in 2005 (the first Year of the Second Access Arrangement Period) have been determined based on detailed cost of supply modelling described in the 2000 Access Arrangement Information. The only significant amendment was required to comply with the introduction of FRC and the subsequent introduction of Reference Tariff A2 (and a consequential amendment to Reference Tariff B1).

Since the initial Reference Tariffs were set, the price control formula in the First Access Arrangement Period has restricted the Tariff Component relativities from being altered. No new Tariffs or Tariff Components were introduced over that period, and the nature of AGN's distribution business, and the basis of allocating its underlying costs have not changed materially since 2000, with the exception of FRC and growth in new residential connections. To the extent that these result in an increase to the cost base, these have been appropriately allocated to the Reference Services. The costs and revenue relativities remain consistent with those determined by the cost of supply model applied in 2000.

The Reference Tariffs for the first Year of the Second Access Arrangement Period are set out in the Variation Report for 2005 which has been provided to the Regulator and published on the ERA website.

As mentioned previously, the only amendment to the Reference Tariff structure occurs at the beginning of the Second Access Arrangement Period due to the introduction of FRC. Reference Tariff B1 has been separated into the new Reference Tariff A2 and an amended Reference Tariff B1. Refer to sections 3.4.2 and 3.4.3 for more details regarding these revised Reference Tariffs.

The new Reference Tariffs have been structured to reflect the costs associated with the provision of the Reference Services A2 and B1. The combined cost of providing the new Reference Service A2 and amended Reference Service B1 do not alter from the cost of providing Reference Service B1 in 2004 with the exception of the forecast of total costs and volumes during the Second Access Arrangement Period.

5.2 Form of Price control

In this Access Arrangement revision, AGN has proposed a tariff basket form of price control as an appropriate and efficient form of price control, consistent with the requirements of the Code. Under a tariff basket, the limit on allowed price increases is expressed in terms of a ratio of "notional revenues", taking into account all of the components of a Service Provider's Tariffs:

- the first "notional revenue" is the revenue implied by the quantities of each Tariff Component sold in the previous Year and the Service Provider's current Tariffs. This becomes the denominator in the price control formula; and
- the second notional revenue is the revenue that would result if the same Quantity was sold at the Service Provider's proposed (new) prices. This becomes the numerator in the price control formula.

This cap is (CPI) x (1-X) x (1+R)

Where:

CPI is as defined in Schedule 2 of Part A of the Access Arrangement

X is the X factor

R is the regulatory cost recovery factor as outlined in clause 8 of Part B of the Access Arrangement.

AGN has adopted a tariff basket price-cap approach to Reference Tariff variation on the grounds of economic efficiency and compliance with the Code.

Section 8 of the Code sets out the principles to be followed in Tariff variation and section 8.3 provides that as long as a variation policy is consistent with the objectives contained in section 8.1, then this falls within "the discretion of the Service Provider." AGN believes a tariff basket approach is consistent with section 8.1 and notes that such an approach has been both advocated by regulators and applied in other jurisdictions.

There are also strong efficiency arguments for a tariff basket approach which are directly applicable to the section 8.1 criteria:

- **Risk.** AGN faces significant risk in forecasting volumes, with issues such as weather and competition from other energy sources meaning that outcomes may vary considerably from those forecast. Given that revenues are a function of volume and Tariffs, this creates a commercial risk. The tariff basket approach allows this risk to be managed in the most efficient way, by allowing revenues to shift between Reference Services, subject to an overall cap to ensure that AGN is not earning more than its allowable revenue as a result.

- **Variations in Costs.** The cost of providing Reference Services may also vary within an access period. The tariff basket approach allows for Tariff variation to meet these cost changes so that the cost of providing Services continues to track the revenues from those Services. A scenario where costs and revenues diverge is a recipe for inefficiency and runs counter to the principles in section 8.1.

- **Efficient Behaviour by Service Provider.** A tariff basket approach promotes efficient behaviour by AGN in that it does not encourage restrictions or increases to output when it is not efficient to do so.

- **Reduced Cost of Tariff Variation.** It has been suggested that an alternative to a tariff basket approach is that a Service Provider can trigger a revision at any time and that therefore Tariff variation can be dealt with in this way should they be necessary. However, this ignores the very significant costs involved in a reset – costs which ultimately are borne by Users. AGN believes the tariff basket approach provides a much more cost-effective approach to Tariff variation.

5.3 Variation of Reference Tariffs

The Reference Tariff Principles of section 8 of the Code permit the setting of Reference Tariffs for the first Year of the Access Arrangement, and adjustment of those Tariffs in subsequent Years. The approach to future Tariff adjustment is referred to as the form of regulation. The form of regulation may be:

- Tariff adjustment in accordance with a pre-determined price path;
- Tariff adjustment on the basis of actual outcomes (such as sales volumes and actual cost) in subsequent Years; or
- Tariff adjustment in accordance with a variation or combination of these two approaches.

The Reference Tariff Policy set out in Part B of the Access Arrangement provides for Tariff adjustment in accordance with a pre-determined price path combined with an adjustment to reflect the actual costs of regulation imposed upon AGN.

The method by which the Reference Tariffs are to be adjusted in each Year of the Access Arrangement after the first is set out in Part B, of the Access Arrangement.

AGN has adopted a tariff basket price-cap approach to the variation of the Reference Tariffs during the Second Access Arrangement Period. Under the price-cap, AGN may vary any Tariff or Tariff Componentfor each Year so that the change to the value of the tariff basket does not exceed CPI x (1-X) x (1+R), where CPI is the Year on Year increase in the Consumer Price Index and R is the regulatory cost factor reflecting the actual regulatory costs imposed on AGN (as defined in Part B of the Access Arrangement).

However, in addition, a further limitation exists on AGN's ability to vary Tariff Components. After application of the price path of CPI x (1-X) x (1+R) to a Tariff Component, the Tariff Component may be increased by no more than 2%. The overall limitation outlined in the paragraph above applies not to each Tariff Component, but to the value of the tariff basket as a whole. AGN believes that such a 2% limitation limits the effectiveness of the tariff basket approach, but is willing to accept such a limitation during the Second Access Arrangement Period in order to introduce the tariff basket concept and its benefits into the Access Arrangement.

X has the effect of smoothing the price variations evenly over the Second Access Arrangement Period.

AGN will give the Regulator a Variation Report consistent with section 8.3 of the Code.

5.4 Prudent Discounts

Clause 8.43 of the Code provides for prudent discounts to be applied, with the approval of the Regulator, to Reference Tariffs in appropriate circumstances. Under the Code, a User subject to a prudent discount must be in circumstances where paying the Reference Tariff would result in them not using the Service. As a result the Reference Tariff for other Users would be higher than if calculated on the basis of a prudent discount approach.

The Code allows the cost of discounts to be recovered from other Users on the basis that it provides a benefit to them by spreading system costs across a wider Tariff base, even taking into account the discounts offered.

Consistent with the Code, a discount to the relevant Reference Tariff is offered where:

- there has been (or will be) a reasonable expectation that:
  - the User can obtain haulage Service from a bypass pipeline at a Tariff lower than the relevant Reference Tariff; or
  - without the discount, the consumer supplied by the User would cease to use Gas delivered from the AGN GDS; and
- continued delivery of Gas from the AGN GDS to the consumer, with the User paying a discounted Reference Tariff, would result in Reference Tariffs which were lower than they would have been if the User were to have obtained haulage Service from a bypass pipeline, or if the consumer supplied by the User had ceased to use Gas delivered from the AGN GDS.

That part of the Total Revenue which is not recovered from those Users of Reference Service A1, Reference Service A2 and Reference Service B1, paying a discount to the relevant Reference Tariff, is recovered from the remaining Users.

While the Access Arrangement for the First Access Arrangement Period has no stated provision for prudent discounts and thus no mechanism to recover the foregone revenue from discounting, AGN implemented a discount regime during that period based on a rigorous assessment of applications received to ensure that both criteria under the Code are met. As AGN has under recovered from those Users receiving discounts, there has been an extremely powerful incentive to restrict discounts only to those Users who would otherwise not use the system at all. For the Second Access Arrangement Period it is anticipated that those Users who received discounts in the First Access Arrangement Period, and continue to be in the same situation in the Second Access Arrangement Period, will continue to receive prudent discounts.

Based on internal modelling the average price of those users who receive a discount is approximately $0.34 per GJ. Annual revenue received from these users is approximately $3.4m.

5.5 Fixed Principles

Section 8.47 of the Code allows a Service Provider to submit, as part of its Reference Tariff Policy, certain Fixed Principles. Fixed Principles are included in an Access Arrangement to provide certainty to a Service Provider that certain matters will not be subject to review at the conclusion of a specific Access Arrangement Period, instead continuing for a defined period, the Fixed Period. There is no restriction on the subject matter of Fixed Principles, other than that they are “elements of the Reference Tariff Policy” and “may include any structural element”. In practice, Fixed Principles relate to those elements of the Access Arrangement that the Service Provider is particularly concerned should not be automatically reviewed as part of the revision process and where longer term stability is appropriate. Fixed Principles cannot be changed when the Service Provider submits reviews to an Access Arrangement, without the agreement of the Service Provider.

The Access Arrangement for the First Access Arrangement Period contains the following Fixed Principles, each of which applies for a Fixed Period of 10 Years commencing 1 January 2000, unless amended as provided for above.

(a) the method of calculation of the Total Revenue;

(b) the financing structure (being a 60/40 debt/equity ratio) assumed for the purposes of determining the Rate of Return in accordance with section 8.30 of the Code;

(c) the straight-line method of depreciation for each group of assets;

(d) the method of allocating revenue between Services.

AGN proposes that these Fixed Principles, which currently operate for ten Years from January 2000, should be amended to run for ten Years commencing at the start of the Second Access Arrangement Period.

In Part B, of the Access Arrangement, AGN has proposed two additional Fixed Principles, namely:

- the inclusion of FRC costs as a component of Non-Capital Costs for the duration of the Fixed Period as described in Part B of the Access Arrangement; and
- the Incentive Mechanism described in Part B of the Access Arrangement

Both Fixed Principles are proposed to apply for a Fixed Period of 10 Years. Set out below is the rationale in support of these additional Fixed Principles.

5.5.1 FRC Cost Recovery

The principle of FRC cost recovery is sought as a Fixed Principle as AGN has, and will be expending significant amounts of money in complying with its obligations under the Retail Market Scheme as a result of the introduction of FRC. In doing so it has consistently been concerned that it can recover this expenditure and, to the extent possible under the Code, has sought the Regulator's approval of both the costs and cost recovery before proceeding. To date the Regulator has taken the view that these costs can be recovered and AGN believes this should continue into the longer term.

5.5.2 Incentive Mechanism

As part of its revisions, AGN is proposing a multi period Incentive Mechanism which would operate for ten Years. As such, AGN believes it is appropriate that there should be certainty as to the Incentive Mechanism over the anticipated period of operation and that there should therefore be a Fixed Principle preventing its amendment half way through the incentive period.

6 Information Regarding System Capability and Volume Assumptions

6.1 Description of System Capabilities

The AGN GDS is not a contiguous system of Gas distribution pipes and associated facilities, but comprises a number of discrete segments or Sub-networks. At the time of submission of this Access Arrangement Information to the Regulator, the AGN GDS comprised approximately 11,320 kilometres of Gas distribution pipelines and associated facilities located in the following areas of Western Australia:

- Geraldton;
- Eneabba;
- Muchea;
- the Perth metropolitan area (including Ellenbrook, Rockingham and Mandurah);
- Pinjarra;
- Harvey;
- Kemerton;
- Bunbury;
- Capel; and
- Busselton.

Each of these Sub-networks has been constructed using similar methods and materials, and each operates under a similar pressure regime. Each is supplied with Gas from one or more Receipt Points immediately downstream of Meter stations on the Dampier to Bunbury Natural Gas Pipeline and the Parmelia Pipeline. These Meter stations and Receipt Points are at the following locations:

- Nangetty Road (Geraldton);
- Eneabba;
- Muchea;
- Della Road (Bullsbrook);
- Ellenbrook;
- Harrow Street (West Swan);
- Caversham;
- Welshpool;

- Forrestdale;
- Russell Road (Wattleup);
- Barter Road;
- Rockingham;
- Oakley Road (Pinjarra);
- Harvey;
- Kemerton; and
- Clifton Road (Bunswick).

Gas delivered into the AGN GDS is delivered into the High Pressure System. The High Pressure System comprises all pipelines in the AGN GDS operating at a nominal pressure greater than or equal to 300 kPa. The operating pressure of the various GDS are listed in Table 6.1.

TABLE 6.1 - AGN GDS OPERATING PRESSURES

Network Segment	Maximum Allowable Operating Pressure (kPa)	Nominal Operating Pressure (kPa)	Minimum Operating Pressure (kPa)
Geraldton lateral	6,900	3,800	2,400
Narngulu high pressure	1,900	1,000	700
Geraldton town high pressure	1,900	800	700
Geraldton town medium pressure	60	35	15
Eneabba lateral	1,900	1,500	700
Muchea lateral	1,900	1,200	700
Perth metropolitan:			
Della Road lateral	6,900	3,000	2,200
Harrow Street lateral	6,900	3,000	2,500
East Perth lateral	5,300	4,000	2,400
Barter Road high pressure	1,900	1,800	700
Class 150 high pressure	1,900	1,800	700
Rockingham HP (including Mandurah)	1,900	1,800	700

Network Segment	Maximum Allowable Operating Pressure (kPa)	Nominal Operating Pressure (kPa)	Minimum Operating Pressure (kPa)
Fremantle high pressure	550	550	350
Perth city block	200	200	160
Neerabup polyethylene	200	80	60
Ellenbrook polyethylene	200	180	60
Medium pressure	60	40	15
Medium low pressure	7	5.5	2
Low pressure	3	2	1.25
Pinjarra high pressure	700	600	350
Pinjarra medium pressure	60	30	15
Harvey high pressure	1,900	1,500	700
Harvey medium pressure	60	40	15
Kemerton high pressure	1,900	1,000	900
Bunbury high pressure steel	1,900	1,800	700
Bunbury medium pressure	60	40	15
Capel to Busselton polyethylene	500	450	350
Busselton polyethylene	200	100	60

A number of secondary gate stations, at which pressure is reduced, are an integral part of the High Pressure System. These Pressure Reducing Stations are located:

- in the Geraldton area, at Narngulu and Bootenal, and in the town of Geraldton;
- in the Perth metropolitan area, at Wanneroo (Neaves Road), South Caversham, Viveash, Ballajura, Bayswater and East Perth; and
- in the Bunbury-Busselton area, at Capel.

Gas flows from the High Pressure System into the Medium Pressure/Low Pressure System through approximately 143 high pressure regulator sets. These regulator sets reduce pressure to nominal pressures less than 300 kPa. The Medium Pressure/Low Pressure System comprises these high pressure regulator sets together with those pipelines that operate at nominal pressures less than 300 kPa.

The nominal operating pressures of the pipelines that comprise the Medium Pressure/Low Pressure System are listed in Table 6.1. The nominal operating pressure of a network segment is the pressure (measured at the start of the segment) at which the segment is normally operated. The nominal operating pressure may be less than the segment’s maximum allowable operating pressure for a number of reasons including the provision of operating margins for control equipment gas flow stop processes for breaks response and load management.

The maximum allowable operating pressure for a network segment shown in Table 6.1 is the maximum pressure at which that network segment may be operated without any modification.

Pipelines comprising the Medium Pressure/Low Pressure System are constructed predominantly from polyvinyl chloride pipe, although some sections of main have been constructed using polyethylene, steel, galvanised iron or cast iron pipe.

Approximately 295 medium pressure Regulator sets reduce pressure within the Medium Pressure/Low Pressure System from medium to medium low and low pressures.

Gas is delivered from the mains of both the High Pressure System and the Medium Pressure/Low Pressure System through Service Pipes, valves, regulators, and Meters, all of which are usually located immediately upstream of Receipt Points. These facilities are integral parts of the High Pressure and Medium Pressure/Low Pressure Systems, as are the Meters and data logging facilities at secondary gate stations, regulator sets and Receipt Point metering. These data logging facilities record Gas flows, temperatures and pressures for the monitoring of system operation and performance, and for the billing of Users.

The Capacity of the AGN GDS and its potential, as currently configured, to deliver a particular Service between a Receipt Point and a Delivery Point at a point in time, is determined by the minimum pressures at which the various segments of the network operate. These minimum operating pressures are shown in Table 6.1. They are the minimum pressures, which must be sustained in the various segments of the network so as to provide a safe Gas supply and meet User delivery requirements under peak load conditions.

If the delivery requirements of a Prospective User were expected to cause the pressure in a network segment to fall below the minimum operating pressure of that segment, system enhancement would be required before a Service could be provided to that Prospective User.

6.2 Average Daily and Peak Demands

Table 6.2 shows the current average and peak daily demands for the AGN GDS, and current maximum hourly demand.

TABLE 6.2 - SYSTEM AVERAGE AND MAXIMUM QUANTITIES 2003

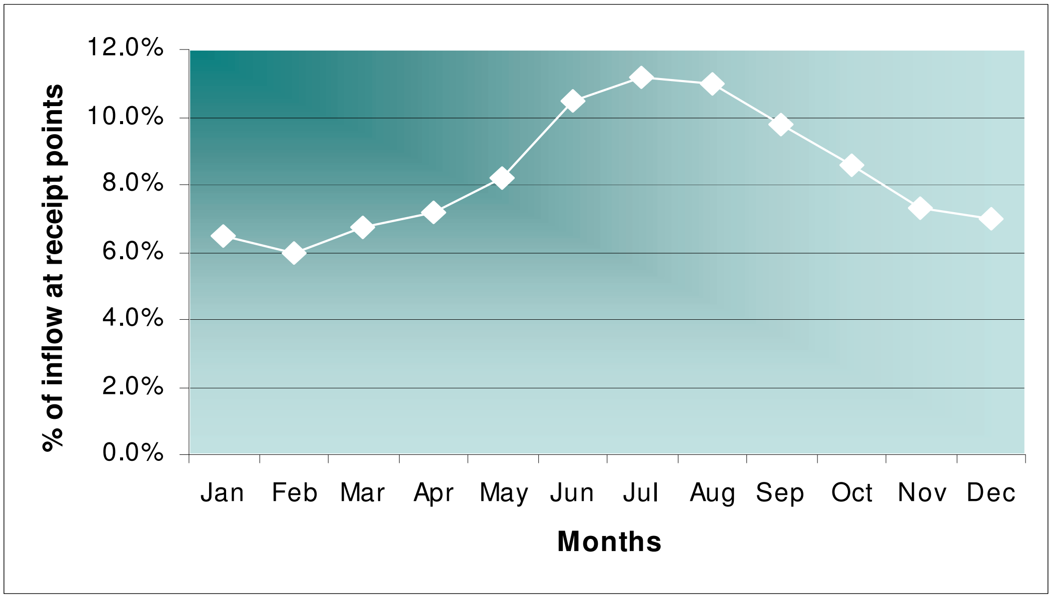
	TJ
Average daily quantity	**82.7**
Maximum daily quantity	**129.7**
Maximum hourly quantity	**8.9**

The load profile of the AGN GDS is shown in Table 6.3 and Figure 6.1.

TABLE 6.3 - TYPICAL SYSTEM LOAD PROFILE BY MONTH

Month	Total Gas inflow at Receipt Points (%)
January	6.5%
February	6.0%
March	6.7%
April	7.2%
May	8.2%
June	10.5%
July	11.2%
August	11.0%
September	9.8%
October	8.6%
November	7.3%
December	7.0%
Total	100.0%

FIGURE 6.1 - SYSTEM LOAD PROFILE BY MONTH



6.3 Annual Volume

AGN engaged the National Institute of Economics and Industry research (NIEIR) to assist in the preparation of volume forecasts. The model used by NIEIR was developed within a regional economic model of the Western Australian economy.

Temperature is an important factor affecting consumption. Data collection from the Australian Bureau of Meteorology from various Perth based weather stations indicates a strong trend towards warming weather. This has been factored into the "Heating Degree Days" underpinning the volume forecasts.

In addition, average consumption by Small Use Customers for residential purposes is expected to be negatively impacted by two key items.

- the replacement of gas hot water systems by solar hot water systems supported by State and Federal rebate schemes; and
- the extensive use of reverse cycle air conditioners replacing traditional gas heating loads.

Early evidence suggests that these impacts will have the potential to reduce average usage, below that which is included in Table 6.4 and Table 6.5 for Small Use Customers. This is further reason why the introduction of the Tariff basket (preferably without a 2% increase limit for Tariff Components) is required to protect AGN's ongoing investment.

TABLE 6.4- FORECAST VOLUMES BY SERVICE

	Year ending 31 December				
Service	2005 TJ	2006 TJ	2007 TJ	2008 TJ	2009 TJ
Reference Service A1	5,031	5,743	6,369	6,014	6,033
Reference Service A2	1,710	1,777	1,821	1,845	1,911
Reference Service B1	1,804	1,802	1,901	1,923	1,982
Reference Service B2	1,011	1,045	1,074	1,092	1,124
Reference Service B3	9,816	10,087	10,368	10,589	10,781
Discounted	9,946	9,942	9,939	9,935	9,943
Total by Service	**29,318**	**30,396**	**31,472**	**31,398**	**31,774**

6.4 Delivery Point Numbers

The estimated numbers of Delivery Points at which Gas is delivered to Users are shown in Table 6.5.

TABLE 6.5 - FORECAST DELIVERY POINTS 2005 – 2009 (YEAR ENDING)

Service	2005	2006	2007	2008	2009
Reference Service A1	41	41	41	41	41
Reference Service A2	79	79	79	79	79
Reference Service B1	1,070	1,070	1,070	1,070	1,070
Reference Service B2	5,552	5,912	6,212	6,522	6,837
Reference Service B3	527,005	545,505	560,505	576,005	591,905
Total Delivery Points	**533,747**	**552,607**	**567,907**	**583,717**	**599,932**

TABLE 6.6- FORECAST DELIVERY POINTS 2005 – 2009 (AVERAGE)

Service	2005	2006	2007	2008	2009
Reference Service A1	41	41	41	41	41
Reference Service A2	79	79	79	79	79
Reference Service B1	1,070	1,070	1,070	1,070	1,070
Reference Service B2	5,357	5,732	6,062	6,367	6,680
Reference Service B3	517,005	536,255	553,005	568,255	583,955
Total Delivery Points	**523,552**	**543,177**	**560,257**	**575,812**	**591,825**

7 Information Regarding Key Performance Indicators

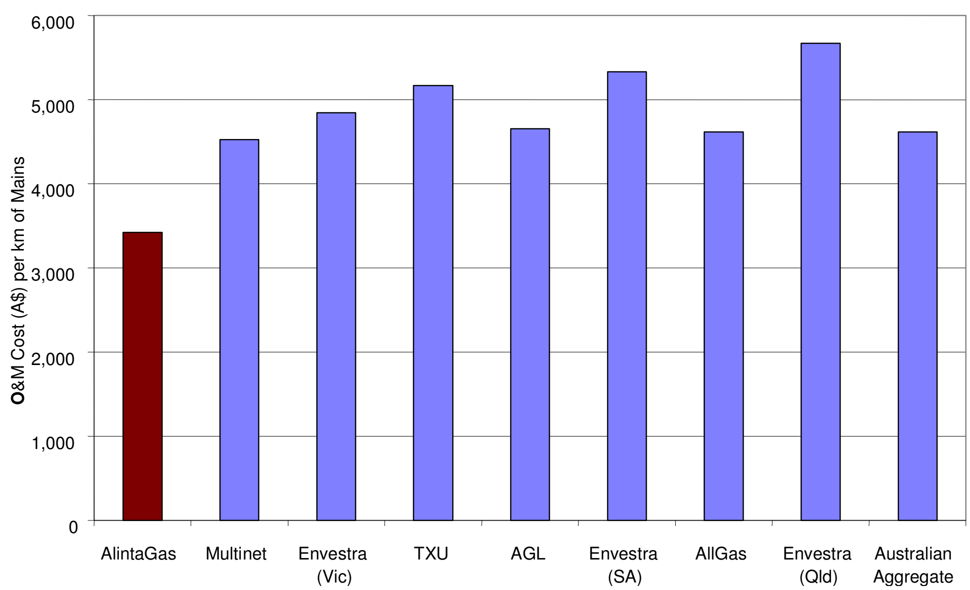
A number of key performance indicators have been used as benchmarks against which the forecast of capital expenditure, and the Non-Capital costs, used in determining the Reference Tariffs have been assessed for reasonableness. They are presented in the following subsections of this section.

These key performance indicators were compiled by the PA Consulting Group as part of its independent assessment review of Non-Capital costs. PA's general conclusion is that AGN "delivers comparable customer service standards, and is generally in the top or second quartile of cost efficiency."[42]

7.1 Operating and Maintenance Cost per Kilometre of Main

AGN's operating and maintenance cost per kilometre of main compares favourably against that of other Australian Gas distribution businesses. The comparison is presented graphically in Figure 7.1. Operating and maintenance cost per kilometre of main is the most important of the available measures for assessing the reasonableness of Non-Capital costs because network size is a fundamental cost driver.

Figure 7.1: Operating and Maintenance Cost per Kilometre of Main

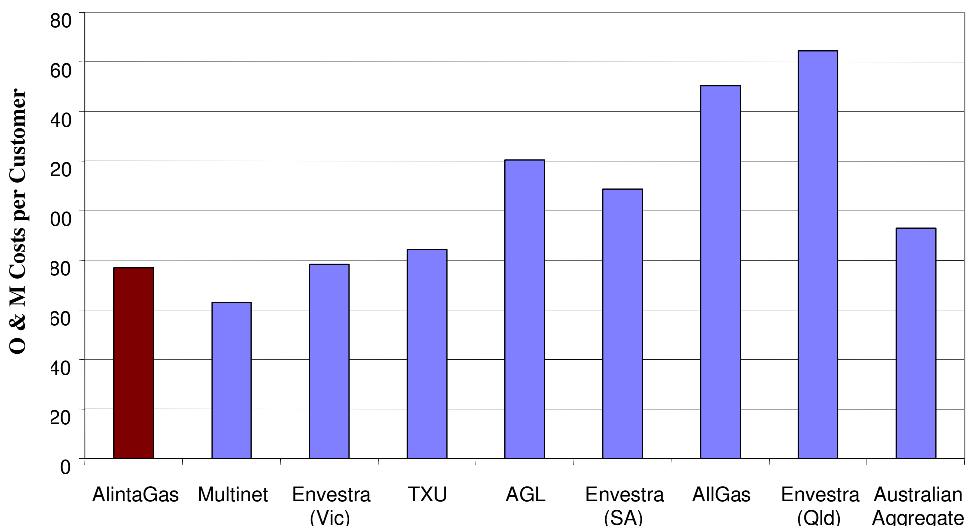


[42] PA Consulting Group, March 2004, *AlintaGas Networks Review of Operating And Maintenance Costs,* p.i

7.2 Operating and Maintenance Cost per Customer

Operating and maintenance cost per customer ranks second lowest in the Australian comparisons and well below the national average. This is shown in Figure 7.2.

Figure 7.2: Operating and Maintenance Cost per Customer

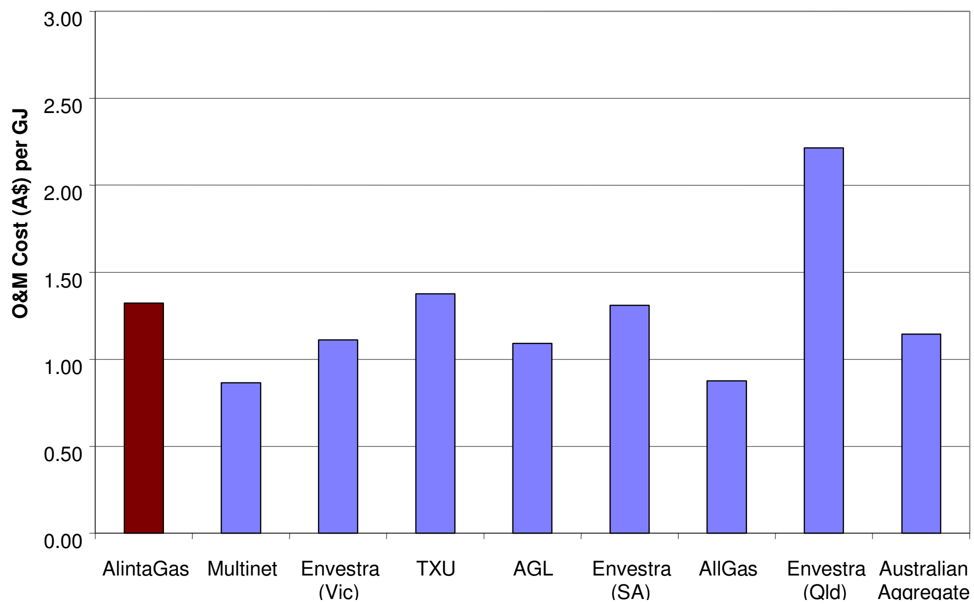


Only one Victorian Gas distributor is superior in terms of operating and maintenance cost per Delivery Point. This result is particularly good given Melbourne has a higher density of Delivery Points (the number of Delivery Points per kilometre of main is higher in Victoria than elsewhere in Australia), and a higher incidence of winter heating, than Perth. Western Australia's mild winters, hot summers and low Delivery Point density constrain the demand for reticulated natural Gas and limit AGN's performance on this measure.

7.3 Operating and Maintenance Costs per GJ Delivered

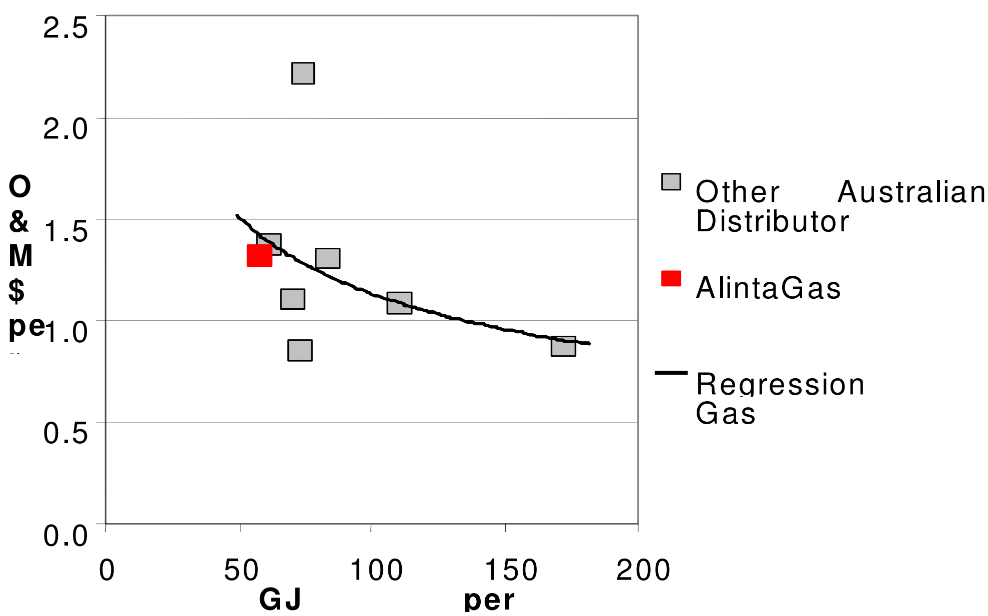
AGN's operating and maintenance cost per GJ delivered is above the national average. This is shown in Figure 7.3. Consumption per customer is a relevant factor here, not only in governing the numerator in the ratio of cost per GJ, but also indicating the seasonality of gas usage hence the utilisation of the network and associated costs. Western Australia's mild climate constrains the demand for reticulated natural gas; hence per Delivery Point GJ is relatively low.

Figure 7.3: Operating and Maintenance Cost per GJ Delivered



The relationship between O&M cost per GJ and average consumption (GJ per customer) is shown in Figure 4, together with a regression trendline for the reference group.

Figure 4: AGN's O&M Cost per GJ Regression Analysis



This analysis indicates that AGN's O&M cost per GJ is slightly below the regression trendline for other Australian gas distributors – ie AGN's above-average cost per GJ is a function of having Australia's lowest average consumption per customer rather than inefficient O&M costs.

ACCESS ARRANGEMENT INFORMATION
SCHEDULE 1

The Weighted Average Cost of Capital
for Gas Distribution

31 March 2004