Public Submission
By BHP Billiton

In response to Goldfields Gas Transmission Pty Limited's
Proposed revisions to the Goldfields Gas Pipeline Access Arrangement

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1 Overview

Goldfields Gas Transmission Pty Ltd (**GGT**) is the operator of the Goldfields Gas Pipeline (**GGP**), a significant piece of Western Australian regulated infrastructure. GGT has recently provided the ERA with its proposed draft access arrangement for the regulatory period 2015-2019 (**Draft AA**).

GGT has made substantial changes from the current AA in the Draft AA. The Draft AA is the third since the GGP became regulated and the issues it covers have been thoroughly considered. Accordingly, substantial changes should only be considered where they will increase economic efficiency and ultimately contribute to achievement of the national gas objective (**NGO**). Changes which do not have this effect should not be accepted.

This submission considers the following:

- **Cost Allocation** – GGT's approach to cost allocation is to allocate all costs on a standalone basis to the covered pipeline. This approach needs to be reconsidered following the transition from the National Third Party Access Code for Natural Gas Pipeline Systems (**Gas Code**) to the National Gas Law (**NGL**) and National Gas Rules (**NGR**). Costs which are jointly incurred in providing both reference and non-reference services should be allocated between those services according to their use. This is consistent with the approach taken by a number of other regulatory regimes in Australia and New Zealand. This approach is supported by economic principles and is consistent with the NGO.
- **Building Blocks** – GGT is proposing a number of changes to the building blocks for reference tariffs including: calculating the Rate of Return otherwise than in accordance with the ERA's guidelines, applying straight line deprecation and making significant changes to the asset lives assumed in the GGP's Tax Asset Base. These changes will result in windfall gains to GGT inconsistent with operating a regulated asset and should therefore be resisted.
- **Gas Specification** – GGT is proposing again to increase the minimum gross heating value of gas as well as introduce a mechanism for increasing tariffs / reducing capacity for users who transport broader specification gas. The ERA previously rejected a higher minimum gross heating value and the circumstances surrounding that analysis remain unchanged. Furthermore, the proposed tariff increase/capacity reduction regime is contrary to legislation already in place to compensate pipeline owners for any losses from transporting broad specification gas.
- **Extensions & Expansions Policy Election** – The current procedure under the Extensions and Expansions Policy for determining coverage is not timely enough. GGT's election and the subsequent ERA decision can be deferred by GGT until the expansion capacity has been fully contracted, meaning users do not get the opportunity of a clear and efficient contracting path and have no safeguard against the extraction of monopoly rents. The current process should be improved by: requiring expansions to be automatically covered, unless GGT can satisfy the ERA that this is inconsistent with the NGO, allowing expansions to be funded by references services (not just negotiated services), requiring GGT to notify users where existing capacity becomes available and generally improving transparency in the planning process.
- **Reference Service Terms & Conditions** – GGT's proposed amendments to the terms and conditions for reference services represent a significant deterioration in the rights of both new and existing users compared to the current AA. GGT has not provided any compelling rationale for the changes to be made and absent such a rationale the previous terms and conditions should remain unchanged.

2 About BHP Billiton

BHP Billiton is a leading global resources company. BHP Billiton is among the world's top producers of major commodities, including iron ore, metallurgical and energy coal, conventional and unconventional oil and gas, copper, aluminium, manganese, uranium, nickel and silver.

BHP Billiton extracts and processes minerals, oil and gas from production operations located primarily in Australia, the Americas and southern Africa.

In Australia, BHP Billiton is a leading gas producer and a major user of gas and gas pipelines and is a key shipper on the GGP. As a result, BHP Billiton has a keen interest in the demand for gas transportation services in Western Australia in general and in the Draft AA in particular.

3 Cost Allocation

3.1 Costs should be allocated fairly

The methodology for allocating costs in respect of the GGP should ensure that users are treated fairly. A fair allocation of costs should allocate costs incurred jointly in providing both covered and uncovered services so as to avoid one group of users unfairly subsidising another group of users.

Under the NGR, total revenue is allocated between all pipeline services (both reference and non-reference) in the ratio in which costs are allocated between those same pipeline services.

The NGR contains a methodology which governs the allocation of costs between pipeline services (Rule 93), which relevantly requires:

- costs directly attributable to either reference services or non-reference services to be allocated to those services; and
- other costs which are incurred providing both reference and non-reference services to be allocated between those services on a basis approved by the ERA (consistent with revenue and pricing principles).

3.2 Cost allocation under the Gas Code

The ERA considered cost allocation in the review leading to the current GGP AA.

Initially, the ERA formed the view that, where costs were incurred in providing both reference and non-reference services, all of those costs should be incorporated into the total revenue, with no regard to the actual contracts in place (**Draft Decision**). Otherwise, a disproportionate share of costs would be recovered from users of the reference services (who would effectively be subsidising the users of the unregulated capacity expansions). BHP Billiton agrees with this approach and submits that this is the most equitable and efficient approach to cost allocation and one which would contribute to the achievement of the NGO.

However, the ERA moved away from this position in its final decision for the current GGP AA. The ERA took a narrow interpretation of the relevant words in the Gas Code. The Gas Code provided that total revenue should be allocated as 'attributable to providing the Reference Services jointly with other Services'. A 'Service' under the Gas Code is 'a service provided by means of a Covered Pipeline'. The ERA came to the view that the definition of 'Services' (which specifically used the word 'covered') was limited to services

provided by means of a 'covered pipeline', and that its approach in the Draft Decision was not supported by the wording of the Gas Code.

This issue was further considered by the Western Australian Electricity Review Board (**ERB**) in its review of the ERA's final decision[1] (**ERB Decision**).The ERB again focused on the precise words of the definition of 'Services'. The ERB concluded that, because of the use of the word 'covered' in the definition of 'Services', the relevant non-reference services were not appropriately considered services provided by a 'covered pipeline', even if they shared common infrastructure with reference services.

3.3 NGL / NGR uses a broader definition

Since the ERB Decision, there have been significant developments in the regulation of gas transmission pipelines. In particular, the Gas Code has been replaced by the NGL / NGR. There are a number of important differences between the Gas Code and the NGL / NGR which compel a different approach to cost allocation.

Relevantly, the NGL defines a 'pipeline service' as a service provided by means of a 'pipeline'. There is no appearance of the word 'covered' before 'pipeline'. That is, the qualification which was critical to the previous decisions by the ERA and ERB has been removed (i.e. pipeline services are not limited to the services provided by a 'covered' pipeline).

The removal of the word 'covered' indicates that, when allocating costs, services provided by means of the pipeline (not just a 'covered' pipeline) should be included in the calculation of total revenue. This conclusion is reinforced by the fact that the term 'covered' is used in a number of other places in the NGL/NGR, suggesting that the omission from this particular definition was intentional.

Another key distinction between the Gas Code and the NGL / NGR is the introduction of the NGO. The commentary around the introduction of the NGO, which was not in the Gas Code, makes it clear that the NGO was designed to guide the interpretation of all aspects of the NGL / NGR by regulators, rule makers and review bodies (including courts) in the future. Accordingly it is key to interpreting the appropriate allocation of costs.

3.4 Allocating costs across all users

The explanatory material relating to the introduction of the NGO indicates that the primary focus when considering how to achieve the NGO is economic efficiency, as the promotion of economic investment 'will encourage productive efficiency, allocative efficiency and dynamic efficiency'[2]. Maximising the long term interests of consumers is considered to be the ultimate goal but one which will be achieved by focusing on efficient investment.

A share of joint costs should be allocated between covered and uncovered services. This position is supported by the underlying economic principles. Costs are allocated most efficiently when the price paid by a user reflects the additional cost of providing services to that user (i.e. the marginal cost). However, because pipelines have significant economies of scale and sunk costs, setting tariffs at the marginal cost means that the service provider is not able to recover all of its efficient costs of providing a service. The difference between the marginal cost and the actual cost of providing that service is the residual cost.

When recovering this residual cost, economic efficiency is enhanced by:

- in the first instance, seeking to recover proportionately less of the residual cost from users whose are the most responsive to price;

[1] In the Western Australian Electricity Review Board Application No.1 and No. 2 of 2010

[2] SCER 2006 Legislative package: Gas Legislation Framework November 2006 page 8

- but where users are not responsive to price in this manner, spreading costs evenly across users. This improves economic efficiency because the inefficiency caused by setting prices above marginal cost increases the further prices rise above marginal costs – meaning that the total inefficiency across users would be minimised by equalising the burden that covered and uncovered users bear over marginal cost.

Allocating joint costs across covered and uncovered services provided by the GGP would reduce the residual costs recovered from users of the covered service. Provided that GGT is able to recover this residual cost from users of uncovered capacity then such an allocation would be expected to increase economic efficiency. Evidence suggests that these costs are capable of being recovered. A report previously prepared by NERA regarding past expansions of the GGP establishes that the charges imposes on users of uncovered capacity under those expansions were higher than charges for covered services[3]. It is reasonable to expect the situation to be same in respect of the most recent 43.3 TJ/day expansion of the GGP, but this would need to be confirmed by the ERA.

The economic principles regarding cost allocation, as well as the points raised in sections 3.5 and 3.6 below, are discussed in further detail in Incenta report attached to this submission.

3.5 Cost allocation approach consistent with other regulators

There is support for the above approach to cost allocation in the approach taken by a number of Australian and International regulators.

It is clear from regulatory precedent that regulators consider it desirable that a contribution be made to the recovery of regulated costs from unregulated services where joint costs are present. While regulators have acknowledged that this cost allocation would improve consumer welfare through a reduction in regulated prices, it has also been acknowledged that the sharing of such costs promotes economic efficiency more broadly by promoting the efficient use of services.

- National electricity market– the Australian Energy Market Commission found that allocating regulated costs to unregulated services would promote efficient use of services in order to retain existing users or gain new users[4]. As such, it found that a contribution from unregulated services to regulated cost recovery would promote the National Electricity Objective (which is framed in almost identical terms to the NGO). Cost allocation of shared assets is undertaken in this case on the basis of an amount that reasonably reflects the part of the cost that the network business is recovering through charges for the unregulated service[5].
- Australian telecommunications services – this sector provides a particularly useful guide because the regulated and unregulated services in question are similar or identical. Again, specific provision is made for the sharing of costs such that the provision of unregulated services makes a contribution to the recovery of the costs of regulated assets. For fixed line services, the framework prescribes that this sharing is based on relative use of the network by various services[6].
- Australian airport terminals – major airports in Australia are subject to a price monitoring regime, and as part of that regime they are required to allocate costs

[3] ERB Decision page 77

[4] AEMC, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Draft Rule Determination, dated 23 August 2012, page 208

[5] Clause 6.4.4.(a) of the National Electricity Rules for the distribution arrangements

[6] ACCC, FAD instruments for the declared fixed line services dated 20 July 2011, page 8

that are jointly incurred for regulated and unregulated activities between those activities.

- New Zealand gas pipeline services, electricity distribution services and major airports – these services contain specific arrangements for allocating shared costs between regulated and unregulated services, the allocation is made predominantly on the basis of causal factors[7]. The New Zealand economic regulator indicated that, at least over the longer-term, on the basis of willingness to pay, all services are expected to recover some proportion of shared costs and that it would be "implausible" for a service to have demand characteristics that meant that no allocation was appropriate.[8]

3.6 GGT analysis

As part of the Draft AA, GGT has commissioned HoustonKemp to provide economic analysis in support of its proposed cost allocation. BHP Billiton submits that there are a number of shortcomings with the conclusions reached in that report.

The report ignores the potential for changes to the average level of prices below stand alone cost to affect economic efficiency. That is, as prices increase above marginal cost, there are likely to be different forms of inefficiency:

- prices above marginal cost (as are necessary to recover the residual cost) may encourage a user who may otherwise have used the GGP not do so, despite the value they would obtain from such use exceeding the cost of that use, and
- once prices exceed stand alone cost, customers may be encouraged to build their own duplicate infrastructure or seek alternative fuels even though there is sufficient capacity on the existing infrastructure.

HoustonKemp would appear to ignore the potential for the first form of inefficiency when discussing this matter, and hence for the potential for an allocation of cost to uncovered services to improve efficiency.

4 Building Blocks

4.1 GGT is using higher values than the ERA Guidelines

GGT is proposing to use values to calculate the rate of return which are significantly higher than those set out in the ERA's Rate of Return Guidelines for gas transmission pipelines and distribution networks (**Guidelines**).

For example, GGT is proposing an estimate for the equity beta which is nearly double the value set out in the Guidelines: 1.10[9], compared to 0.50 to 0.70. GGT is also proposing a value for the market risk premium which is outside the range set out in the Guidelines – 7.7% (p.118), compared to 5% to 7%.

GGT is proposing these higher values notwithstanding that the Guidelines were finalised less than 1 year ago. The issues that GGT raises in support of these higher values are not new. The Guidelines were developed over the course of nearly a year of consultation and the ERA received a significant volume of material, including numerous expert reports

[7] Commerce Commission, Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper, December 2010, page 75

[8] Commerce Commission, Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper, December 2010, page 68

[9] Guidelines, page 106

from various parties and 3 submissions from GGT itself. In light of that material, the ERA carefully selected the values and ranges set out in the Guidelines.

The rate of return guidelines are not mandatory but, if the ERA makes a decision in relation to the rate of return that is not in accordance with them, the reasons for departing from the Guidelines must be compelling and clearly articulated.

The importance of following the Guidelines unless there is compelling evidence justifying a deviation was emphasised in the recent draft decision in respect of the Mid-West and South-West Gas Distribution System[10]. In that decision, the ERA generally rejected the operator's (ATCO) proposals to deviate from the Guidelines. For example, in respect of equity beta, the ERA noted that ATCO had not raised any new evidence to support its proposed deviation from the Guidelines and had only raised issues which the ERA had already considered in great detail as part of the Guidelines approval process.

BHP Billiton submits that the ERA should use the values (or ranges) established in the Guidelines. Doing so, will produce a determination which achieves the allowed rate of return objective. Considerable effort was spent on developing the Guidelines and no adequate basis has been established to justify the departures (and higher tariffs) proposed by GGT.

4.2 GGT already benefits from a favourable approach to depreciation

One of the arguments GGT relies on to support its claim for significantly higher values (and hence higher tariffs) is that the GGP is exposed to higher levels of risk than other gas pipeline because it serves a small number of users concentrated in the mining and minerals processing sectors[11].

To the extent that there is any merit in this argument, it should be noted that GGT already receives favourable treatment compared to most other regulated utilities in the form of accelerated depreciation. That is, GGT applies a straight line method of depreciation to the historical capital base of the GGP, rather than the more common approach of applying straight line depreciation on a capital base that is escalated annually for CPI less inflation. This results in a faster rate of depreciation. As a result, GGT is currently allowed to charge higher tariffs than it would be under the more traditional approach applied to most other regulated businesses in Australia.

Given that GGT already receives favourable treatment, it should not also be allowed to increase tariffs by using values that are higher than those established in the Guidelines issued less than a year ago following a lengthy and extensive consultation process. GGT should not receive special treatment and the ERA should follow its published approach, which is designed to achieve the allowed rate of return objective.

4.3 Taxation

Following the transition from the Gas Code to the NGR, a post-tax rate of return must now be applied and the allowance for company taxation must be based upon an explicit calculation of tax.

Previously, the Gas Code provided flexibility as to how compensation for taxation should be provided. For GGT, this compensation was provided through the use of a pre-tax weighted average cost of capital (**WACC**), the application of which is based upon stylised assumptions about the taxation system. As a result, pre-tax WACC typically results in taxation being overstated compared to a business's actual tax liabilities to the Australian Taxation Office.

[10] ERA Draft decision on Proposed Revision to the Access Arrangement for the Mid-West and South-West Gas Distribution System dated 14 October 2014

[11] Guidelines, page 95

The NGR emphasises that all aspects of the calculation of the taxation allowance need to reflect benchmark assumptions, as shown in the definition of the estimate of taxable income (rule 87A):

> 'ETI_t is an estimate of the taxable income for that regulatory year that would be earned by a benchmark efficient entity as a result of the provision of reference services if such an entity, rather than the service provider, operated the business of the service provider.'

Many of the elements of such a benchmark taxation calculation are already required to calculate the revenue requirement (e.g. revenue, operating expenses and interest payments, which are a component of the WACC) or should be reasonably uncontroversial (namely the lives permitted for tax purposes).

However, as part of the switch from the previous implicit allowance for taxation (through the use of a pre-tax WACC) to an explicit allowance for taxation, the ERA is required to determine an opening value for the assets for tax depreciation purposes (**Tax Asset Base**). The setting of the Tax Asset Base has similarities to the setting of the initial capital base - it requires the ERA to exercise its judgement and set an appropriate value for the tax asset base at that time of transition, in light of the requirements of the NGL and NGR.

The ERA is given some discretion in setting the Tax Asset Base because the same physical assets could have different Tax Asset Bases depending upon the history of the relevant business or businesses that owned the assets. The starting Tax Asset Base is always the cost of the assets; however, where assets are the subject of a subsequent transaction, then (depending upon the form of the transaction) the owner may be able to reset the Tax Asset Base at the acquisition price of the assets. Accordingly, in order for the ERA to determine the Tax Asset Base for a benchmark entity, it must first decide what it is reasonable to assume about the history of the relevant assets.

GGT has proposed that the "benchmark entity" be assumed to have been created (and begin depreciating) when the assets were first constructed (1996). GGT's proposal is at the most extreme end of the range of assumptions that could be made about the history of the relevant assets. Such a proposal would mean that all of the original pipeline assets would be fully depreciated for taxation purposes during the Draft AA period (reflecting an assumed 20 year tax life). This proposal also implies ignoring:

- any of the transactions associated with the GGP assets since construction, some of which presumably would have permitted the Tax Asset Base to be reset at the transaction value; and
- the commencement of regulation as having an effect on the characteristics of the benchmark efficient entity.

BHP Billiton submits that a more reasonable benchmark assumption would be that the GGP assets were either constructed or transacted at the time that the GGP became regulated in 2000. The date of commencement of regulation was important because it was at that date that the "investment value" in the GGP assets (i.e. the initial capital base) was determined for regulatory purposes, which was set substantially in excess of the depreciated historical cost of the assets at that time. It would be consistent with the resetting of the deemed investment value in the GGP, and reasonable, for the Tax Asset Base also to be assumed to have been reset at that date at the deemed investment value.

The table below shows the opening Tax Asset Base as at 1 January 2015 and the assumed tax depreciation deductions for the Draft AA period under GGT's proposal and under the more reasonable assumption discussed above[12].

Table – All figures in millions of dollars.

[12] This table shows the calculation of tax depreciation for all of the shared assets (rather than only the appropriate allocation to the covered services) and so is consistent with GGT's proposal.

	GGT	Suggested approach
Opening TAB at 1/1/2015	63.17	168.36
Sum of tax depreciation over AA (2015-2019)	56.11	142.66

While this is a more reasonable position, even this alternative method would provide GGT with a substantial windfall in relation to taxation. This is because GGT has been compensated for taxation using a pre-tax WACC until this point in time, which is equivalent to assuming that tax depreciation has been equal to regulatory depreciation over the period since 2000.

This proposition is demonstrated mathematically in the Box below.

Box Y

The formula for calculating the revenue requirement for assets in service for a given year when a post-tax WACC is used is given by:[13]

$$Rev\ Req\ (Post\ tax\ WACC) = r.CB + RegDep + Opex + \frac{T}{1-T}(r.CB + RegDep - TaxDep)$$

Where *r* is the post-tax vanilla WACC, *RegDep* is regulatory depreciation, *Int* is the benchmark interest deduction, *TaxDep* is tax depreciation, CB is the capital base and T is the statutory tax rate.

Noting that the pre-tax WACC (*R*) has been calculated as:

$$R = \frac{r}{1-T}$$

the equivalent formula when using the pre-tax WACC is given by:

$$Rev\ Req\ (Pre) = \frac{r}{1-T}.CB + RegDep + Opex$$

The difference between the revenue requirement calculated using the pre-tax WACC and post-tax vanilla WACC is therefore given by:

$$Rev\ Req\ (Pre) - Rev\ Req\ (Post) = \frac{r}{1-T}.CB - r.CB - \frac{T}{1-T}(r.CB + RegDep - TaxDep)$$

This expression simplifies to:

$$Rev\ Req\ (Pre) - Rev\ Req\ (Post) = \frac{T}{1-T}(TaxDep - RegDep)$$

Thus, for the pre-tax WACC to generate the same revenue requirement as the post-tax WACC, tax depreciation must equate with the values used for regulatory depreciation.

The implication of the above is that the reference tariffs over the previous AA regulatory periods have assumed that GGT has previously only been able to claim tax depreciation deductions equal to the regulatory depreciation allowances.

The opening Tax Asset Base that is consistent with how reference tariffs have been calculated in the past is the opening capital base as at 1 January 2015, which is $397 million. This is more than double the figure that would be derived from BHP Billiton's proposed basis for determining the benchmark opening tax asset value.

Thus, even under BHP Billiton's proposal GGT would enjoy a time value benefit from being able to depreciate assets more quickly for tax than had been assumed in the pre-

[13] The traditional post-tax WACC is assumed here, which has the value of the interest deduction included in the WACC. The same result can be derived where the post-tax vanilla WACC is used to establish the revenue requirement; however, as the relationship between the pre-tax and post-tax WACC is more complex, the demonstration is more complex.

tax WACC, but this would avoid tax depreciation deductions that had not been applied to date for regulatory purposes being assumed to merely vanish.

BHP Billiton urges the ERA to consider how to avoid GGT making such a material windfall gain from the transition to a post-tax WACC and instead develop a Tax Asset Base which would contribute to the achievement of the NGO.

4.4 Demand for pipeline services

BHP Billiton urges the ERA to carefully consider GGT's forecasted drop in quantities (contracted capacity and throughput) on the GGP. This should include testing the facts (on a confidential basis) with the shippers in question. These forecasts should be tested to ensure that they are rigorous enough to comply with the requirements for forecasting under the NGR (i.e. forecasts are to be arrived at on a reasonable basis and must represent the best forecast possible in the circumstances).

Additionally, given GGT has proposed a change in the minimum HHV for the reference service (see section 5 below) there would also be value in confirming the HHV assumptions in the forecast.

5 Gas Specification

5.1 Gas specification changes unnecessary and inefficient

GGT is proposing two significant changes in respect of gas specification:

- a new clause 2.2.3 in the Draft AA provides for a reduction in contracted capacity and increased tariffs if a user transports gas below a specified minimum Higher Heating Value (**HHV**); and
- raising the minimum HHV specification for gas shipped through the GGP from 35.5 MJ/m3 under the previous AA to a new minimum of 37 MJ/m3 under the Draft AA.

Gas with a low HHV (i.e. broad specification gas) has a lower energy content than higher HHV gas. Gas takes up the same volume regardless of its energy content. Pipelines have a fixed capacity and operators sell that capacity on the basis of energy transported (not volume of gas). As a result, lower HHV gas can result in less energy being transported by a pipeline. Clause 2.2.3 aims to 'compensate' GGT for this potential capacity reduction and the increased operating costs that can result from broad specification gas.

However, an efficient mechanism already exists for compensating GGT for broad specification gas transported on the GGP. Minimum specifications for gas in Western Australia are already provided for by the *Gas Supply (Gas Quality Specifications) Act 2009* and *Gas Supply (Gas Quality Specifications) Regulations 2010* (together the **GSL**). The GSL allows GGT to be directly compensated for adverse effects on capacity if gas is received into the pipeline below the prescribed specification.

The Public Utility Office (**PUO**) is currently in the process of determining the minimum HHV for the GGP in accordance with the GSL. The PUO has proposed a reference specification of 35.5 MJ/m3 for the GGP, a figure which has yet to receive ministerial approval.

If the Minister approves the PUO recommended HHV specification then GGT's proposed amendments to the Draft AA will provide it with a right to compensation over and above what is considered as reasonable and necessary under the GSL.

5.2 Proposed gas specification changes should not be accepted

BHP Billiton submits that GGT's proposed changes to gas specification under the Draft AA are unnecessary.

The GSL already provides an appropriate compensation mechanism for below specification gas and contains rules against double compensation. For an additional or alternative compensation mechanism to be included in the AA as proposed by GGT is contrary to the Western Australian government's policy objective to ensure that the GSL deals with 'all issues associated with the gas producer supplying gas at below the reference specification'[14].

GGT previously tried to implement the same minimum HHV specification under the current AA. The ERA rejected the change previously on the basis it might restrict competition from upstream producers of broader specification gas from being able to sell that gas into downstream markets, while also denying downstream customers competitive alternative gas.

BHP Billiton submits that the relevant analysis underlying this conclusion has not changed since the current AA was decided. The proposed changes will lead to a number of negative consequences which are likely to be contrary to the achievement of the NGO:

- increased prices to end customers – a higher minimum HHV specification than under the previous AA will mean users will incur unnecessary or inflated costs in transporting broad specification gas as they will be required to pay compensation for what was previously within specification gas on the GGP. This will ultimately raise the costs to end customers;
- GSL does not permit 'double recovery' – The proposed changes would potentially allow GGT to recover twice for transporting the same broad specification gas, such recovery is contrary to the GSL; and
- reducing the future supply of gas – the proposed changes will create additional financial and other barriers to entry for gas producers looking to develop gas fields which include broader specification gas, potentially reducing the development of gas fields in the future.

6 Extensions & Expansions and Policy Election

6.1 The extensions & expansions policy for the GGP

The policy relating to the treatment of extensions and expansions of the GGP (i.e. whether or not they are to be treated as part of the covered pipeline) is an important element of the Draft AA.

In Western Australia, owners of significant pipeline infrastructure, such as the GGP, enjoy a position of considerable market power. The principles of the gas access regime, especially the NGO, can be seriously undermined by an extensions and expansions policy which is not sufficiently robust and transparent.

The expansions and extensions policies of the GGP have ensured that past expansions were not covered and could therefore not be contracted on regulated terms.

- In the first AA, GGT was only required to notify the ERA (but not obtain prior consent) where it made an election that an extension/expansion would not be covered (clause 10.3(c) AA approved by the ERA on 17 December 2008). As a

[14] *Gas Supply (Gas Quality Specifications) Bill 2009* – Explanatory Memorandum page 30

result of this policy, 49TJs in GGP capacity expansions over the period 2006 to 2009 were treated as uncovered.

- In the subsequent and also current AA, the ERA drafted its own AA (which was subsequently amended by the ERB which required the ERA's consent for an election by GGT in relation to whether or not a proposed extension/expansion of the GGP should be treated as part of the Covered Pipeline (see clause 10.2(a)). However, even though ERA consent for an election is required, the GGT is not required to expand the GGP unless users commit to a Negotiated Service (see clause 10.2(c)). As a result of this policy a further 43.3 TJs in GGP capacity expansions over the period 2012 -2014 were treated as uncovered.

In the Draft AA, GGT is proposing to maintain the current approach of seeking consent for elections in relation to expansions / extensions including requiring expansions to be underpinned by Negotiated Services.

6.2 A more timely consent process is required

BHP Billiton submits that the Draft AA should require a more efficient and certain approach to extensions/expansions.

The current requirement (which GGT proposes to retain) only requires GGT to elect 'at some point in time' whether or not a proposed extension/expansion should be treated as part of the covered pipeline (Draft AA clause 7.2(a)).

BHP Billiton submits that this approach does not give sufficient protection to users or enable the ERA to properly consider the implications of a proposed election. In particular:

- it has resulted in ERA decisions on coverage being made after extension/expansion capacity has been contracted with users not having the opportunity of a clear and efficient contracting path (a negotiated versus a regulated service) and therefore not being able to mitigate against the extraction of monopoly rents. This is inefficient and undermines the rationale for having coverage elections in the first place; and
- it does not allow the ERA sufficient time to properly consider whether a decision to consent to a proposed election contributes to the achievement of the NGO, which ultimately means the ERA's election is of limited benefit to users.

The ERA expressly mentioned this timing issue in its decision on coverage of the most recent GGP expansion (30 May 2014) and again in its issues paper in respect of the Draft AA (**Issues Paper**)[15]. The ERA noted that it was contrary to the requirements of the current AA for GGT to wait to apply for approval until the expansion capacity was nearing its commissioning date. The ERA stated that GGT should have applied for consent earlier, when the expansion was first being considered. This would have allowed the ERA to engage with GGT to ensure that the coverage determination occurred in a timely way and related to an expansion of optimal size, given the prospective demand.

The current arrangement also creates uncertainty for users when negotiating for capacity. Transportation is a key element which underpins a user's business. If users are unclear about whether the service that they are negotiating for will be regulated, it makes it more difficult to plan future investment in production.

6.3 More robust mechanism required

BHP Billiton submits that the Draft AA should provide a robust mechanism for dealing with extensions/expansions. The Draft AA is the right place for a policy on managing the treatment of extensions/expansions.

[15] ERA Issues paper on proposed revisions to the Goldfields Gas Pipeline Access Arrangement dated 3 November 2014

The fact that users could separately apply for coverage of an extension/expansion outside the AA mechanism is not sufficient protection for users. It would not be efficient for users to apply to the National Competition Council (**NCC**) for coverage of an extension/expansion which the ERA has already considered. Unlike the NCC, the ERA is required to have regard only to the NGO when considering an election, ignoring external considerations (such as the coverage criteria) (see the Australian Competition Tribunal (**ACT**) decision in relation to the proposed access arrangement for the Dampier to Bunbury transmission pipeline (**DBP**))[16].

Putting the onus on users to seek coverage would involve inefficient duplication and put the burden on users rather than on the pipeline owner - users should not have this burden, particularly given that they will have incomplete information about the capacity of any extension/expansion and the likely demand for such an extension/expansion.

GGT has more complete information, is responsible for monopoly pipeline infrastructure and should be required to consider the proper treatment of a proposed extension/expansion in a timely manner, in conjunction with the ERA, and with the aim of making a decision which is likely to contribute to the achievement of the NGO.

The ERA's review of the Draft AA provides it with the ideal opportunity to strengthen the requirements in relation to extensions/expansions and clarify the requirements on GGT.

The Draft AA should require GGT to deal with the proposed treatment of extensions/expansions in a more timely manner. This would avoid a repeat of the problems experienced in the most recent GGP expansion (as discussed in section 6.2 above).

BHP Billiton submits that, under the Drat AA, extensions/expansions should be presumed to be covered unless GGT elects otherwise and is able to satisfy the ERA that an uncovered extension/expansion would not be inconsistent with the NGO. This would bring the Draft AA into line with the DBP access arrangement. This change would put the onus on GGT to make timely elections in respect of coverage, encouraging an efficient and timely process which would contribute to the achievement of the NGO.

An alternative, though less effective, method to ensure the appropriate treatment of expansions would be to include a requirement in the Draft AA that until the ERA has consented to any election, GGT should be prevented from entering into agreements with users in respect of the additional capacity.

This would prevent GGT from being able to extract monopoly rents a concern highlighted by the ACCC in its final decision in relation to the Moomba to Sydney Pipeline System Access Arrangement[17]:

> '… in cases where a pipeline is operating at or near capacity a service provider may, in the absence of regulation and competition, be able to extract monopoly rents by pricing expansions just below the point where it would no longer be commercially viable for a user or prospective user to continue with its proposal.'

6.4 Expansion only for negotiated service

Under Clause 7.1(c) of the Draft AA, GGT is only required to expand the GGP where a user:

- has sufficient reserves and financial capability to pay for the services covered by the expansion; and
- commits to sufficient negotiated services for GGT to recover all its costs in undertaking such an expansion.

[16] Application by NBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14

[17] ACCC final decision, Access arrangement for the Moomba to Sydney Pipeline System dated 2 October 2003

A negotiated service is by definition not a reference service and accordingly is not subject to a regulated tariff. Should a user want to obtain a reference service for a potential expansion, there is no obligation on GGT to expand, even if the amount of capacity sought would be sufficient to recover all of GGT's costs of expansion.

Limiting the expansion obligation to 'negotiated services' was a change which occurred in the second GGP AA (covering the period from 2009-2014). It is unclear why this limitation was inserted but its effect is that GGT is not obligated to expand the GGP unless a user contracts for a negotiated (i.e. non-regulated) service.

BHP Billiton submits that requiring expansions to be funded by negotiated services is unnecessary. GGT should not be obliged to expand unless it is able to recover its costs of providing such an expansion. However, where GGT is able to recover these costs by providing sufficient reference services, users should be given the opportunity to obtain such reference services. Limiting the situations in which the GGP can be expanded without a compelling reason to do so are likely to be contrary to the achievement of the NGO.

6.5 Notification of existing uncovered capacity

The ERA determined that the most recent expansion of the GGP (43.3 TJ/day) should not be treated as part of the covered capacity of the GGP. In reaching this decision, the ERA noted that this expansion, when combined with the previous expansions of the GGP (49 TJ/day), significantly increased the proportion of the total GGP capacity which is uncovered to 201.3 TJ/day.

As noted above, the ERA was critical of GGT for its delay in making an election in respect of this capacity, but noted in its determination that it remained open for interested parties to apply to the NCC for coverage of the uncovered expansion capacity if they considered that coverage would deliver significant net benefits for the community and therefore not be contrary to the public interest.

In order for interested parties to be able to make such an application (and for their own clarity around available contracting options) current and prospective users must have visibility regarding when capacity becomes available and whether such capacity is likely to be covered or uncovered. This includes the existing capacity of the GGP.

BHP Billiton submits that GGT should be required to notify the ERA and any current or prospective users of the GGP prior to any portion of its existing uncovered capacity ceasing to be contracted. The timing of this notification should be such that all interested parties are afforded adequate time to consider the appropriate treatment of any available GGP capacity. This would encourage the efficient use of pipeline infrastructure and contribute to the achievement of the NGO.

BHP Billiton suggests that this could be achieved by the following process:

- GGT notifies the ERA and current or prospective users of the GGP five years prior to the expiry of any gas transportation agreement which utilises the uncovered capacity (including details of any remaining option periods and the deadlines for exercising those options);
- GGT confirms the exercise or expiry of any of the above options as soon as practicable after the termination of the GTAs utilising such uncovered capacity;
- in providing such notice, GGT also provides adequate information in respect of the uncontracted capacity to allow current and prospective users to evaluate whether such capacity would meet the applicable coverage criteria;
- current and prospective users then have 6 months to evaluate this information and notify GGT if they intend to seek coverage for this capacity; and
- following the expiry of this period, GGT would be free to enter into agreements for that uncovered capacity. If a party seeks coverage, GGT would be required

to wait until such time as that coverage process has been completed (i.e. considered by the NCC and relevant Minister and any review of that decision has been completed) prior to again contracting that capacity.

6.6 Better planning / transparency is required in the process

The Draft AA should also provide for greater transparency and better planning of expansions more generally.

A number of other access regimes provide for greater user involvement in the planning of extensions/expansions so that investment is conducted efficiently:

- National Electricity Rules – service providers are required to comply with various obligations in relation to investments in electricity transmission / distribution networks. Requirements include an annual planning review regarding the requirements of the relevant network (including coordinating with any relevant connected pipelines) and publishing the results in an annual report (with relevant details of constraints and any planned augmentations (upgrades) to address those constraints). There are also requirements to comply with the relevant AER guidelines, consult with relevant interested parties (including AEMO and parties likely to be materially impacted by the investment) and to conduct costing studies for certain projects.
- Aurizon's 2010 access undertaking (UT3) – Aurizon is required to consult with all access holders likely to be interested in additional capacity where: (i) certain capacity thresholds have been reached; (ii) Aurizon believes investment is necessary to meet demand for access; or (iii) the investment is requested by a supply chain co-ordination group / new unloading facility. Where these conditions are satisfied, Aurizon is required to undertake all necessary planning and scoping studies and the regulator (QCA) can allow access seekers to conduct these studies at their own cost in the event of unreasonable delays by Aurizon.

GGT should be required to adopt a similarly open and transparent approach to planning extensions/expansions. Introducing a more transparent system in relation to the planning of extensions/expansions in the Draft AA would contribute to the achievement of the NGO.

7 Reference Service Terms & Conditions

GGT has proposed a number of amendments to the terms and conditions on which it will offer the reference service (i.e. the firm service). BHP Billiton submits that the amendments represent a significant deterioration in the rights of both new and existing users from the current AA. GGT has not provided any compelling rationale for the changes and absent clearly articulated reasons the previous terms and conditions should remain. The proposed amendments will increase inefficiency, raise costs and would be contrary the achievement of the NGO.

BHP Billiton's specific comments on GGT's proposed amendments are set out below.

7.1 Minimum term

GGT is proposing to increase the minimum term under which it will offer the firm service on the GGP from 1 year to 5 years. GGT's stated rationale for this change is that a majority of its contracts in respect of the GGP are for terms of five years or longer.

BHP Billiton submits that the minimum term should remain unchanged at 1 year. GGT's proposal represents a fivefold increase in the minimum term for reference services. GGT

has offered no compelling rationale why such a change is necessary. This change is also not consistent with firm regulated services offered in respect of other transmission pipelines such as the DBP.

The consequence of a 5 year minimum term is that it forces users who require shorter terms (e.g. for flexibility reasons) to acquire higher priced negotiated services (offered at unregulated prices). The higher transportation costs incurred may have the effect of discouraging use of the GGP (i.e. alternatives may be considered) which is contrary to increased use of the GGP and the achievement of the NGO.

7.2 Title to Gas

GGT have proposed that title to gas transported via the GGP does not pass to GGT and remains with the user at all times during transportation.

This is in contrast to the previous AA where title to gas was transferred to GGT upon receipt then re-transferred back to the user once the gas had been delivered. The effect of this change is that GGT will no longer be required to bear the risk while gas is being transported in the GGP. This risk will accordingly be transferred to users.

GGT has noted that the change has been made in order to be consistent with access arrangements in respect of other pipelines operated by its wider group (which are both regulated and unregulated). However, it has not provided any justification as to why such a change is necessary or desirable in respect of the GGP specifically.

BHP Billiton submits that the regime relating to the transfer of title from the previous AA should remain. Users have no visibility or control over the transportation of their gas via the GGP. Absent a compelling reason to change the current arrangements for title to gas (which have been in operation for the entire period the GGP has been regulated), users should not be required to bear the risks during gas transportation. The arrangements under the previous AA are also consistent with BHP Billiton's current negotiated transport agreements.

7.3 Dispute resolution process

GGT have proposed a material change to the dispute resolution mechanism under the terms and conditions for the firm service.

The Draft AA provides that in the event of a dispute, representatives of GGT and the user will meet to resolve the dispute. If unsuccessful, senior executives of each will then meet to negotiate a resolution. The Draft AA removes the ability in the previous AA for a matter to be referred to either expert determination or arbitration for resolution. GGT's rationale for this change is that it provides simplicity and flexibility in the dispute resolution process.

BHP Billiton submits that this change is unnecessary and may delay the effective resolution of disputes in the future. If parties are not able to negotiate a commercial resolution then they will no longer have the right to seek expert determination or arbitration, processes likely to be lower cost and more efficient methods of resolving disputes than litigation. The transition from negotiation to an alternative dispute resolution mechanism is a common feature of a number of access regimes, including the regulated DBP, Dawson Valley and the Amadeus transmission pipelines.

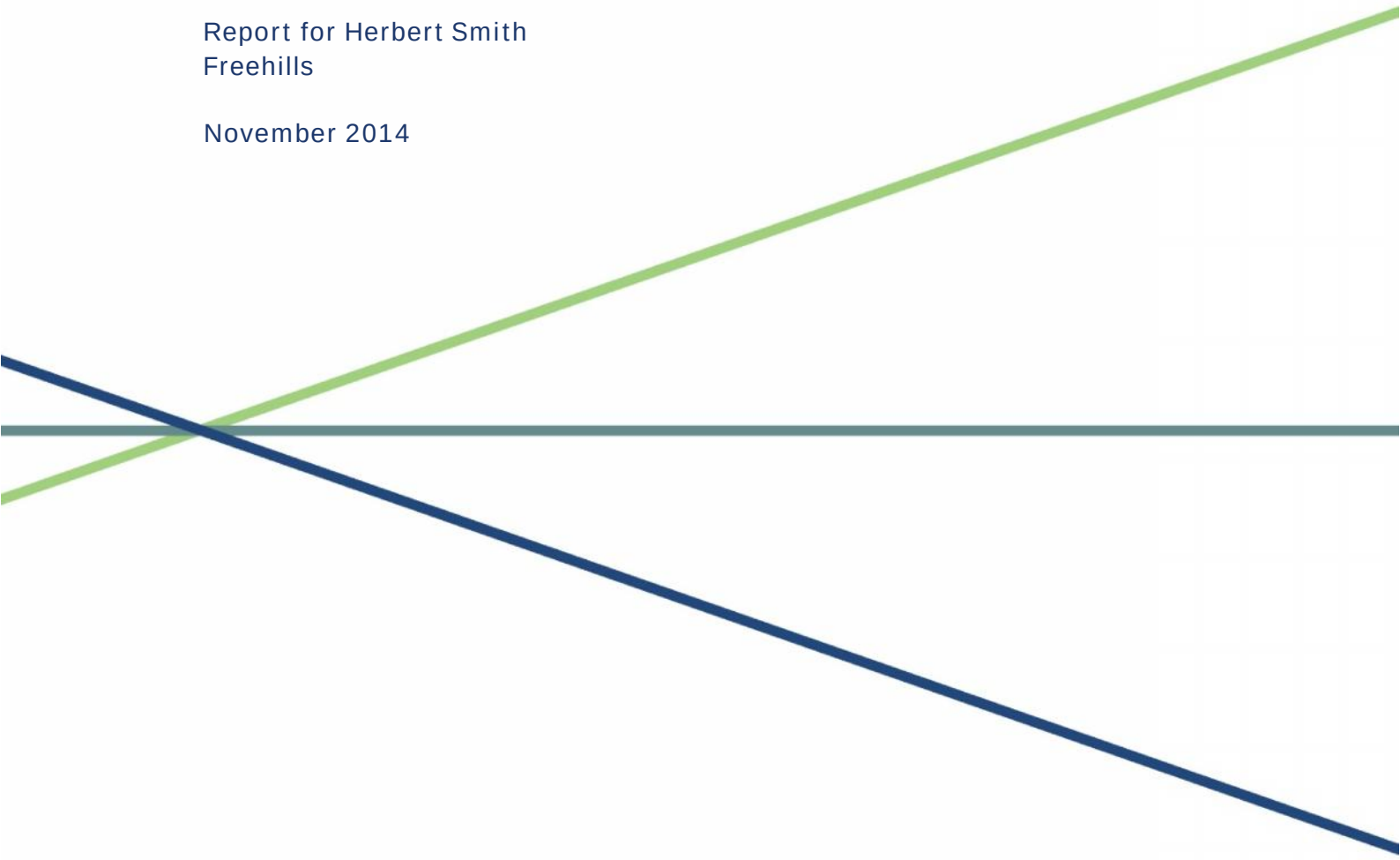
GGT's proposed amendments will unnecessarily increase uncertainty, cost and time in the dispute resolution process, which will be contrary to the achievement of the NGO.

Attachment – Incenta economic consulting report

Cost allocation between covered and uncovered services

Report for Herbert Smith Freehills

November 2014



INCENTA
ECONOMIC CONSULTING

Table of Contents

1. Introduction and summary of conclusions

1.1 Preliminary matters

1.1.1 Authorship and instructions

1. My name is Jeffrey John Balchin. I am the Managing Director of Incenta Economic Consulting, which is a consulting firm specialising in economic regulation matters. I have 20 years of experience in relation to economic regulation across a range of infrastructure sectors, which has included advising regulators, governments, asset owners and major customers. This has included many years of experience with the design and implementation of cost based regulation in Australia and New Zealand. My curriculum vitae is attached to this report at Appendix B.

2. I have been asked by Herbert Smith Freehills, who act on behalf of BHPBilliton, to prepare a report addressing the question of whether it is appropriate for the reference tariff(s) for the Goldfields Gas Pipeline (GGP) to be calculated on the basis that part of the cost that is incurred jointly to provide the covered and uncovered services by means of the GGP is allocated to the uncovered services.[1] The effect of allocating part of the costs that are incurred jointly to provide the covered and uncovered services to the uncovered services is that the costs to be recovered from covered services would fall, thereby producing a lower reference tariff(s). The specific questions I have been asked to consider are as follows:

   a. Do economic principles support the allocation of costs incurred in providing uncovered services as part of the calculation of Total Revenue for the Goldfields Gas Pipeline (GGP)?

   b. Are you aware of other examples of regulators applying this type of cost allocation methodology?

   c. Is this approach consistent with the national gas objective and the revenue and pricing principles in the National Gas Law and National Gas Rules?

   d. Do you have any other comments on the cost allocation approach proposed by GGT, especially any comments on the reports prepared by Houston Kemp and the Competition Economists Group?

3. In preparing this report, I have been assisted by Scott Stacey; however, I take responsibility for all of the report's contents. I have read, understood and have complied with the Federal Court's guidelines for expert witnesses.

[1] I use the term "Goldfields Gas Pipeline", or GGP, to refer to both the physical pipeline and as a reference to the entity that owns the pipeline.

1.2 Summary of conclusions

1.2.1 Question 1: Do economic principles support the allocation of costs incurred in providing uncovered services as part of the calculation of Total Revenue for the Goldfields Gas Pipeline (GGP)?

4. Yes, economic principles do support allocating a share of the costs incurred jointly in providing the covered and uncovered services to the uncovered services.

5. I first set out the relevant background to this proposition, and then apply this to the context of cost allocation and to the circumstances of the GGP.

Defining the issue

6. The GGP provides both covered and uncovered services, with approximately equal capacity currently installed for each. The costs that are incurred for each of these services can be separated into those that are related to assets or activities that are:

   a. used or undertaken either exclusively to provide covered services or exclusively to provide uncovered services, which the National Gas Rules refers to as the "directly attributable" costs, and

   b. used or undertaken to provide both the covered and uncovered services, which the National Gas Rules refers to as the "other costs". I also use an alternative term, "joint costs", reflecting the fact that the relevant costs are associated with assets or activities that provide the two services jointly.

7. The issue being addressed in this report is how this second class of costs (the joint costs) should be divided between the covered and uncovered services when determining reference tariffs. I observe that it would appear to be common ground that the direct costs should be defined as the compressor equipment associated with the different tranches of capacity, and the joint costs should be defined as comprising the main pipeline and associated measurement and control equipment.

Economic principles for pricing

8. Efficiency in pricing for infrastructure services requires that:

   a. Customers face a price that reflects the (marginal) cost caused by their use, and also

   b. Providing the regulated business with an opportunity to recover their costs.

9. These principles are typically in conflict because the presence of economies of scale in infrastructure services means that efficient prices will not allow total cost to be recovered. The compromise that typically adopted is to:

   a. Set prices that accurately signal to customers the cost caused by their consumption, and

b. Then seek to recover the cost that cannot be recovered through efficient prices (the "residual cost") in a manner that has the least effect on consumption, while acknowledging that the need to recover this residual cost nonetheless is likely to affect customer behaviour and so cause some inefficiency.

10. In this context, allocating part of the cost of providing the regulated service to other users of the relevant infrastructure will result in the quantum of the "residual cost" to be recovered from users of the regulated service to be reduced. This would be expected to increase economic efficiency provided that the regulated business nonetheless had the opportunity to recover its costs overall. This latter point requires an assessment of the capacity for the unregulated activity (in this case, the uncovered services) to bear a share of the joint costs.

Appropriate cost allocation method for the GGP

11. In my view, the joint costs associated with providing the covered and uncovered services should be allocated between the two groups of services on the basis of:

a. The relative use of the assets that give rise to the joint costs by the covered and uncovered services, subject to

b. Confirmation that the share of joint costs allocated to the uncovered services can in fact be recovered though the charges from those services.

12. Meeting the second point above requires an analysis of the revenue received (or assumed to be received) from the sale of the uncovered services, and the directly attributable costs associated with those services. I observe that there are reasons for using the actual revenue (tariff) in this exercise as well as for assuming that sales of the uncovered services occur at the reference tariff.

1.2.2 Question 2: Are you aware of other examples of regulators applying this type of cost allocation methodology?

13. Yes, I am aware of other examples of regulators applying this type of cost allocation methodology. These include:

a. the Australian Energy Regulator in relation to non-regulated use of electricity networks – this is very relevant to this context as this decision was made under near identical statutory guidance to what applies to covered gas pipelines

b. the Australian Competition and Consumer Commission in relation to fixed line telecommunications services – this is also very relevant to the current context as the case involves regulated and unregulated services that are similar or identical

c. the Australian Competition and Consumer Commission in relation to the shared use of airport terminal infrastructure, and

d. the Commerce Commission of New Zealand in relation to the shared use of electricity networks, gas pipelines and airport terminal infrastructure.

1.2.3 Question 3: Is this approach consistent with the national gas objective and the revenue and pricing principles in the National Gas Law and National Gas Rules?

14. Yes, in my opinion this approach is consistent with the national gas objective and the revenue and pricing principles in the National Gas Law and National Gas Rules.

National Gas Objective

15. The national gas objective has two components that are relevant here, which are:

    a. a requirement to promote economic efficiency, and

    b. a reference to the pursuit of the long term interests of consumers.

16. How these two components should be read together is not altogether clear nor settled and ultimately will be a legal question. In relation to each of the components separately:

    a. *Applying the economic efficiency component in isolation* – this is the framework that I applied in section 1.2.1. That is, when I concluded that economic principles support the allocation of a share of the costs incurred jointly in providing the covered and uncovered services to the uncovered services I was saying that economic efficiency would be advanced by such an allocation of costs.

    b. *Applying the "long term interests of consumers" component in isolation* – allocating costs to the unregulated service would reduce the return that GGP was able to earn from the unregulated sales and transfer this to consumers of the regulated service (via a reduction in the reference tariff). Provided this transfer did not remove GGP's incentive for investment, then there would be an obvious benefit to customers from this action.

Revenue and pricing principles

17. The revenue and pricing principles set out the preferred mechanisms or contributors for achieving the national gas objective. The two relevant aspects of the principles to this matter are as follows.

    a. A central focus of the revenue and pricing principles is that a regulated business should have the opportunity to recover the costs incurred in providing the regulated service. As I have discussed above, allocating costs to unregulated use of the relevant infrastructure is not inconsistent with cost recovery, provided that care is taken that the costs allocated to the unregulated use can in fact be recovered.

    b. A second theme in the principles is that the regulated business should be provided with effective incentives to promote various dimensions of economic efficiency. One of the dimensions of economic efficiency listed is the efficient of use of the pipeline, which I concluded above would be advanced by allocating costs to uncovered services.

1.2.4 Question 4 – Do you have any other comments on the cost allocation approach proposed by GGT, especially any comments on the reports prepared by Houston Kemp and the Competition Economists Group?

18. HoustonKemp and CEG both conclude that GGP's proposed allocation of costs is consistent with economic efficiency and the requirements of the National Gas Rules. GGP's proposed allocation method involves allocating none of the "other costs" referred to in rule 93(2)(c) to services other than reference services. However, HoustonKemp and CEG justify GGP's cost allocation method for different reasons.

    a. The key conclusion of HoustonKemp is that GGP's cost allocation method results in no more costs being recovered from the covered services than the stand alone cost. GGP's allocation is therefore found to result in prices between the upper and lower bound for efficiency. A corollary of this is that the fact that uncovered services are sold does not result in higher reference tariffs than would have been the case if uncovered services had not been sold.

    b. CEG, on the other hand, focuses on the propensity for GGP to expand the pipeline further, and argues that this is more likely if none of the joint costs are allocated to the uncovered services so that GGP is able to fully recover its costs if it sets prices for the use of expanded capacity at the incremental cost of that capacity (which I refer to as directly attributable costs, following the terminology of the rules). CEG also states that it understands that the GGP sets prices equal to incremental cost for sales of uncovered services.

19. Regarding HoustonKemp's conclusions, in my view a shortcoming in its analysis is to ignore the potential for a change to the average level of prices to affect economic efficiency, even where prices are already below stand alone cost. As prices are raised above marginal cost (which, as I argued above, is likely to be necessary to recover the "residual costs"), different forms of inefficiency may result:

    a. customers may be discouraged from using the infrastructure even though the value from that use exceeds the cost, which would be inefficient, and

    b. once prices exceed stand alone cost, customers may be encouraged to build their own duplicate infrastructure or seek alternative fuels even though there is sufficient capacity on the existing infrastructure, which would also be inefficient.

20. HoustonKemp would appear to ignore the potential for the first form of inefficiency when discussing this matter. That is, by allocating a share of the joint costs to uncovered services, the potential is reduced for customers to be dissuaded from using the covered services when that use would be efficient. In contrast to HoustonKemp's analysis with respect to cost allocation, the analytical framework that it applied with respect to depreciation (in a separate paper in this proceedings) was carefully framed around the potential for changes to the average level of prices to affect allocative efficiency, which is consistent with the analytical framework that I have applied to the current matter.

21. Regarding CEG's conclusions, I agree with the principle espoused that the amount of cost that is allocated to the uncovered services should be limited to what can be recovered from those services, so that further expansion of the pipeline not be impeded. However, as I explained when discussing the economic principles above, the capacity for uncovered services to bear a share of joint costs is an empirical question that can and should be tested. No evidence has been presented that the possible new uncovered services could not bear a share of the joint cost. I note that the evidence available about the first tranche of uncovered capacity (the 2006 and 2009 expansion) is clear that GGP was able to receive a large surplus over the incremental cost of this capacity.[2]

[2] This evidence is discussed further in the report, but in brief: (i) the ERA obtained and published the cost and demand forecasts for the 2006 expansion capacity, and this implied that the incremental cost was materially lower than the average cost of (and reference tariff for) the covered capacity, and (ii) an adviser to GGP observed that GGP was able to charge tariffs above the reference tariff for this capacity (discussed in the Review Board decision, para.218).

2. Further elaboration and analysis

2.1 Implications of economic principles for cost allocation

2.1.1 Economic principles relevant to cost allocation

General conditions for efficiency

22. Economic principles posit economic efficiency as a desirable outcome for an economy, which is a condition in which the society's scarce resources are devoted to their most valuable uses and the net benefit of society is thereby maximised. There are typically three dimensions to economic efficiency that are defined, which care:

    a. *allocative efficiency* – which means the right amount of the right type of the good or service is produced and consumed, so that the economy's scarce resources cannot be reallocated in a manner that results in a higher valued bundle of outputs

    b. *productive efficiency* – which means that goods and services are produced at minimum cost, including that the least-cost combination of inputs (land, labour and capital) are employed

    c. *dynamic efficiency* – which means that allocative and productive efficiency continues to be achieved over time (often referred to as the continued achievement of static efficiency) as consumer tastes and technology changes, which includes both responding to external factors and applying effort to improve performance and innovate.

23. When applied to the case of regulated infrastructure, economic efficiency is consistent with the following outcomes amongst others:

    a. Consumption/use of the regulated service occurs when the benefit from that consumption/use exceeds the cost caused by that use (and, conversely, consumption/use does not occur if the benefit is lower than the cost)

    b. New or continued investment occurs to support efficient consumption/use (and, equally, does not occur if the associated consumption/use would be inefficient)

    c. Production of the service occurs at least cost, and

    d. These outcomes continue to be met over time.

Role of regulated prices in encouraging economic efficiency

24. Regulated prices can encourage the achievement of economic efficiency as described above by:[3]

[3] The mechanisms discussed here relate to the first two outcomes (efficient use and investment). Cost efficiency is typically encouraged by allowing regulated businesses to retain (or forcing them to bear)

a. Signalling to customers the additional cost associated with their consumption/use – if prices reflect cost, it can be inferred that when a consumer makes a voluntary decision to consume/use that its values the service more than the cost, and

b. Providing a revenue stream that is consistent with the regulated business recovering the cost of providing the relevant service, and so providing the incentive and capacity for the continued provision and new investment in the regulated service.

25. For infrastructure services, however, it is typically the case that prices that provide the appropriate signal to consumers with respect to the efficient use of the infrastructure will not provide the regulated business with the opportunity to recover its cost. This is because the cost that is relevant for consumption is the cost that is caused by additional consumption (or the cost that is avoided by reduced consumption), which is typically lower than the average cost of provision as a consequence of economies of scale. Given this constraint, the task of deriving efficient prices for regulated businesses is typically specified as:

a. setting a component to prices that signals to customers the cost that is caused by their consumption/usage, and so encourages efficient use of the infrastructure, and

b. then recovering the additional amount that is required for the regulated business to recover its cost (referred to below as the "residual cost") in a manner that has the least effect on customers' consumptions/usages.

26. The key technique available to a regulator to minimise the extent of inefficiency of use that is caused by the recovery of this residual cost is to test whether the residual cost itself is a valid cost to be recovered. Indeed, the well accepted proposition that regulating the prices of monopoly infrastructure is likely to increase economic efficiency rests on the assumption that higher average prices are likely to cause inefficiency in consumption. This in turn means that if average prices can be reduced without having an adverse impact on service provision, efficiency will be improved.

27. Once the costs to be recovered through regulated prices – and hence the residual cost – have been established, then a variety of techniques exist that may be used to reduce the extent to which recovering the residual cost may cause inefficiency in consumption. These include:

a. applying fixed charges as part of the suite of charges, and

b. spreading the recovery of this cost across customers and across time in a manner that has the least effect on consumption.

28. With respect to spreading the cost recovery across customers, economic efficiency is advanced by setting prices that:

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the benefits (costs) associated with improvements (declines) in cost efficiency for a period. The design of such schemes is not relevant to the issues discussed in this report.

a. Seek to recover proportionately less of the residual cost from customers whose use is the most responsive to price, and

b. In the absence of differences in the price responsiveness of customers, spreading costs evenly across customers. This even spreading of costs improves economic efficiency because economic principles suggest that the inefficiency from setting price above marginal cost increases at an increasing (non-linear) rate – this means that the total inefficiency across customers is minimised by equalising the burden that each bears over marginal cost.

Related principle: tests for subsidy and "lower bound" and "upper bound"

29. It is also common to apply a related set of constraints to regulated prices to ensure that a customer or group of customers is not subsidising (or being subsidised by) another customer or group of customers. These constraints are that:

a. *Lower bound* – each customer and group of customers should pay an amount that at least recovers the additional (future) costs that they cause, and

b. *Upper bound* – no customer or group of customers pays more than they would to provide the same service themselves on a stand-alone basis (provided this is above the lower-bound charge, as above).

30. The first of these constraints is consistent with the need for prices to signal cost to ensure consumption/usage is efficient, as noted above. The second of these bounds recognises that as the price is raised above (marginal) cost, different forms of inefficiency may be observed, namely:

a. Consumption of the service may be deterred (i.e., price > customer value), even though the value to the customer exceeds the cost, which is consistent with the discussion in the previous section, or

b. Consumption of the service may continue, but the price may be sufficiently high for the customer to bypass the regulated infrastructure and provide the service through duplicated infrastructure.

31. This latter outcome would also be a source of inefficiency if supply though the existing infrastructure would have caused lower cost to society overall.

2.1.2 Applying the principles to cost allocation

Context and key implications

32. The relevant provision in the National Gas Rules addressing the allocation of costs between covered and uncovered services is as follows:[4]

Costs are to be allocated between reference and other services as follows:

[4] National Gas Rules, r.93(2).

> *(a) costs directly attributable to reference services are to be allocated to those services; and*
>
> *(b) costs directly attributable to pipeline services that are not reference services are to be allocated to those services; and*
>
> *(c) other costs are to be allocated between reference and other services on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the AER.*

33. The context for applying this clause to the case of the GGP is as follows:

    a. the GGP provides both covered and uncovered services, and a reference tariff is determined for the former

    b. the GGP has assets that can be said to be used exclusively to provide either the covered services or the uncovered services, most notably the compressor facilities – these (and the associated operating expenses) are the "directly attributable" portion of costs as this term is used in the National Gas Rules

    c. the GGP also has assets the use of which is required to provide both the covered services and the uncovered services, namely the main pipeline and the associated control and monitoring equipment – these (and the associated operating expenses) are what I refer to above as the joint costs, and comprise the "other costs" as the term is used in the National Gas Rules, and

    d. the "cost allocation" question is whether some recovery of cost of those joint costs (or "other costs") should be assumed to be derived from the sale of the uncovered services, with the result that the cost to be recovered from the covered services thereby falls.

34. Two implications can be drawn from applying the economic principles discussed above to this matter.

    a. First, by allocating a portion of the joint costs to the uncovered services, the capacity is provided for the extent of residual cost – and potential inefficiency caused with respect to the covered services – to be reduced. Subject to meeting the principle below, allocating a portion of cost to the uncovered service would be expected to increase economic efficiency.

    b. Secondly, the extent of costs that are allocated to the uncovered service needs to be consistent with GGP recovering its costs overall in order to ensure that an impediment is not created to efficient new investment proceeding. This means that there needs to be confidence that the cost that are assumed to be recoverable from the uncovered services can in fact be recovered from those services.

35. Whether or not the second criterion is met is largely a matter of the method by which the amount of cost to be allocated to the uncovered service is determined.

Method of allocation of joint costs between covered and uncovered services

36. Turning now to the method by which the portion of costs to be allocated to the uncovered services is determined, in my view the appropriate starting point is that the joint costs are allocated between the covered and uncovered services in relation to the relative use of the assets comprising the joint costs by the different services. The structure of the tariff for the reference service – in which use is measured on the basis of reserved capacity (toll charge), reserved capacity multiplied by distance and throughput multiplied by distance – in turn is likely to provide a reasonable basis for determining the "relative use" of the covered and uncovered services. I note that this method of allocation has the benefit of simplicity and is consistent with how costs are required to be allocated between regulated and unregulated services in a similar case (namely, in relation to fixed line telecommunications services).

37. However, an implicit assumption behind allocating costs according to the relative use of different services is that the capacity to recover the joint costs is the same across the covered and uncovered services. This condition would need to be met in order for there to be confidence that the GGP is able to recover its costs in total, which I argued above is a constraint to the amount of cost that ought to be allocated to the uncovered services. Accordingly, an issue that would need to be investigated is whether it is possible to recover the same share of costs (per unit of use of the mainline) from the uncovered services as from the covered services.

38. I observe that the amount of the joint cost that could be recovered from the uncovered services depend upon:

    a. the tariff that is charged (or is assumed to be charged) for the uncovered services, and

    b. the "directly attributable" costs of providing the uncovered services (in which I include a reasonable return on, and return of, invested capital).

39. On this issue, a decision is required as to whether it is more appropriate for the revenue that is assumed to be received from sales of the uncovered services to be based upon the actual tariff being charged, or an assumption that the reference tariff applies to the uncovered service.

    a. The rationale for using the actual tariff in the calculation is that this will reflect the facts regarding the capacity for GGP to recover the joint costs from the uncovered service.

    b. An objection to applying the actual tariff when calculating the costs able to be recovered from sales of the uncovered service is that this could be argued to have the effect of extending regulation to the uncovered services because any premium able to be charged above the (regulated) reference tariff would add to the amount of joint cost that is assumed able to be borne by the uncovered service. The remedy to this objection would be to assume that the reference tariff (rather than the actual tariff) is charged in relation to the uncovered services when testing the capacity for this service to bear a share of the joint costs.

40. I acknowledge that an assumption in the analysis above that the allocation of a share of the joint costs to the uncovered services will not affect the price that GGP is able to charge for those services, but rather will affect the profit that GGP makes and ultimately whether GGP chooses to provide these services. Given that the uncovered services are unregulated but only able to be provided by GGP, it would be expected that the tariff would reflect the alternatives open to the gas users rather than GGP's own costs, in which case this assumption would be reasonable.

2.2 Practice of other regulators with respect to cost allocation

41. I am aware of a number of examples of other regulators allocating a share of the cost of assets (or functions) that are used by (or undertaken for) regulated and unregulated services jointly to the unregulated service, with the effect that a lower cost base is derived for the regulated service than otherwise. I provide more detail on these cases in Appendix A of this report, and highlight the main implications in the discussion directly below.

42. Turning first to the case of the National Electricity Market, the rule maker, the Australian Energy Market Commission (AEMC), recently considered the question of how the costs of assets that provided regulated and unregulated services jointly should be treated. It implemented a change to the rules to permit a share of these joint costs to be allocated to the unregulated service. The objective for calculating the amount of cost to be allocated to the unregulated activity is the amount that reasonably reflects the cost the network business is recovering from the unregulated service.[5]

43. In reaching the conclusion that such a rule change was warranted, the AEMC decided that allocating a share of the joint costs to unregulated services would promote efficient use of services in order to retain existing users or gain new users.[6] As such, it found that a contribution from unregulated services to regulated cost recovery would promote the national electricity objective. I observe that the national electricity objective is framed in almost identical terms to the national gas objective, and that the AEMC's reasoning as to why such an allocation of costs would promote this objective is very similar to the reasoning I have presented in section 2.1.

44. A second example from Australia of where there is an allocation of joint costs between regulated and unregulated activities is in relation to the regulated fixed line telecommunications services.[7] The regulatory framework in this case (which is the result of a determination of the Australian Competition and Consumer Commission, ACCC) requires the joint costs to be allocated between regulated and unregulated services in accordance with the "relative use" of those services of the assets or activities in question.[8] I observe that the case of telecommunications is particularly relevant to the circumstances of the GGP because, like for the GGP, in telecommunications the

5 Clause 6.4.4.(a) of the National Electricity Rules for the distribution arrangements.

6 AEMC, 'Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Draft Rule Determination', 23 August 2012, p.208.

7 These are the telecommunications services that are provided through the copper local loop, as distinct from mobile services or services provided through cable.

8 ACCC, 2014, 2011 Final Access Determinations (as varied), 18 June, clause 6.14.

regulated and unregulated services that jointly use assets and activities are very similar in nature, whereas the unregulated services in the electricity sector are generally quite different in nature to the regulated services. I observe that in this case where the regulated and unregulated services are similar in nature, the ACCC has decided that the "relative use" is an appropriate basis of allocation, which is consistent with what I have proposed as the starting point when deciding how the GGP's joint costs should be allocated.

45. One further relevant example from Australia with which I am aware is the case of regulation of our major airports. These airports are under a price monitoring regime and under this regime the ACCC measures and reports on the profitability of the regulated activities, and as such is required to decide upon how costs should be allocated between the regulated and unregulated activities. The ACCC has released a guideline that addresses cost allocation, in which there is a requirement for an allocation of joint costs between regulated and unregulated activities, and the relative use by these activities is specified as an example of an allocation that would be appropriate. Again, this is consistent with the allocation method that I have proposed as the starting point for allocating GGP's joint costs.

46. Lastly, I am also aware that the New Zealand regulator, the Commerce Commission, addressed the issue of cost allocation between regulated and unregulated services at some length when determining the "input methodologies" for the regulated sectors (electricity and gas networks, which are subject to price control, and the major airports, which are subject to information disclosure). The key aspects of the Commerce Commission's decision in relation to cost allocation between regulated and unregulated services are that:

    a. the only circumstance in which there is no requirement to allocate a share of joint costs to unregulated activities (akin to GGP's proposal) is where the unregulated service is an immaterial user of the assets or activities that give rise to the joint cost, and

    b. the starting point for deciding the allocation to the unregulated service is that it reflect causal factors (with an exception where this may unduly deter investment in the unregulated activity), with such factors in turn defined in terms of the relative use of the asset or activity in question.

47. I note for completeness that the Western Australian Electricity Review Board in its decision on the appeal of the Economic Regulatory Authority's 2010 Access Arrangement decision for GGP recognised that it is common for regulators to allocate some portion of joint costs to unregulated services. Further, it also recognised that the approach of other regulators appears consistent with a commercial reality where some allocation of joint costs will be made to unregulated services.[9]

[9] Electricity Review Board, 'Application for review of the decision by the Western Australian Economic Regulation Authority published on 5 August 2010 to approve its own revised Access Arrangement for the Goldfields Gas Pipeline', 22 November 2011, para. 234.

> *234 In response to a request by the Board, the Authority provided information about the approach to cost allocation taken by other regulators in Australia. In determining the price payable for regulated services, some regulators do adopt the practice of making an allowance for the use made of regulated assets to provide unregulated services. However, the regulators were operating under different regulatory regimes which, of course, determine the matters which they may take into account in determining tariffs. They do not assist the Board in its present deliberations. It appears, however, that some of these other arrangements represent commercial reality more closely than the situation that applies for the Pipeline. If, for example, another entity wished to connect additional pipes or compressors to the Pipeline to deliver gas to a third party, one would expect that GGT would ordinarily charge a service or fee to that entity for the use of its upstream pipeline assets.*

2.3 Implications of the National Gas Objective and the Revenue and Pricing Principles

2.3.1 National Gas Objective

48. The objective of the National Gas Law (National Gas Objective) is as follows:

> *...to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas*

49. The objective contains within it three separate components, namely:

a. the requirement to promote economic efficiency;

b. the reference to the long term interests of consumers; and

c. the requirement that the above instruction be focussed upon the price, quality, safety reliability and security of supply of natural gas.

50. To an economist, how the first two components of the objective are to be read together is not wholly unambiguous. The difficulty is that the "promotion of economic efficiency" and pursuit of the "long term interests of consumers" each could provide complete guidance for economic regulatory decisions in isolation, and while that guidance for regulatory decisions will be the same or similar in many cases, it is not always the same.

51. The difference between an objective that is focussed on achieving economic efficiency and one that is directed to the long term interests of consumers is how the regulator is required to regard transfers between classes of participants. A pure economic efficiency objective looks only at the aggregate benefit of all participants – consumers, producers, transmission businesses, distribution businesses, retailers – whereas the pursuit of the long term interests of consumers, on the face of it at least, gives priority to the interests of consumers.

52. The construction of the objective, and how these two elements should be reconciled, is a legal question.[10] To this end, my comments about what each of the objectives would mean to the current matter if applied in isolation are as follows.

    a. *"Economic efficiency" objective* – this coincides with the objective that I have addressed in section 2 in my discussion of the implication of economic principles. I concluded in that section that the objective of economic efficiency supports allocating a share of the joint costs to uncovered services.

    b. *"Long term interests of consumers" objective* – under this objective, the case for allocating a share of the joint costs to uncovered services is stronger than with an "economic efficiency" objective.[11]

        i. Allocating costs to the unregulated service would reduce the return that GGP was able to earn from the unregulated sales and transfer this to consumers of the regulated service.

        ii. Under a "long term interests of consumers" objective, provided that investment is not adversely affected, the whole of this transfer would be treated as a benefit.

2.3.2 Revenue and pricing principles

53. The Revenue and Pricing Principles[12] in the National Gas Law set out preferred mechanisms or contributors for achieving the National Gas Objective. In broad terms, the National Gas Objective sets out the outcome to be achieved, and the revenue and pricing principles specify how that outcome is intended to be achieved.

54. A central focus of the revenue and pricing principles is that a regulated business has the opportunity to recover the costs incurred in providing the regulated service. This emphasis is found in:

    a. Principle 1 (subsection 2) – which requires the regulated business to be provided with the opportunity to recover at least the efficiency cost of providing reference services

    b. Principle 3 (subsection 4) – which deals with asset values, a component of cost

    c. Principle 4 (subsection 5) – which deals with the rate of return, another component of cost, and

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10 I have previously discussed how the different components of the objective may be reconciled: Balchin, J. (2012), Economic Meaning of the Gas Regulatory Instruments, Report for the Victorian Gas Distribution Businesses, November (available at: http://www.aer.gov.au/sites/default/files/Attachment%209.20%20PricewaterhouseCoopers%20-%20Economic%20meaning%20of%20gas%20legal%20instruments%2C%20Expert%20Report%2C%20November%202012.pdf).

11 I acknowledge that a key assumption in this analysis is that allocating costs to the uncovered services will not affect the price charged for those services. This assumption was discussed in section 2.1.2.

12 National Gas Law, section 24.

d. Principles 5 and 6 (subsections 6 and 7) – which deals with how uncertainty with the estimation of cost should be treated.

55. This need for the regulated business to have the opportunity to recover its costs is consistent with my discussion of the economic principles in section 2.1, and consistent with my conclusion that the costs that are allocated to the unregulated services should be limited to the amount that can be extracted from those services. The effect of allocating cost to the unregulated services is that, while those costs would be recovered, they would be recovered from the unregulated services rather than the unregulated services. I observe that the fact that the costs are recovered from elsewhere is not inconsistent with the requirements of principle 1 (subsection 2). That is, principle 1 requires only that the regulated business have the opportunity to recover its costs, it does not require the costs to be recovered exclusively from users of the regulated service.

56. The other mechanism or contributor encouraged by the Revenue and Pricing Principles is that the regulated business is provided with effective incentives to promote various dimensions of economic efficiency (principle 2, subsection 3). Importantly, one of the dimensions of economic efficiency listed is the efficient of use of the pipeline. The intention of encouraging the efficient use of the pipeline – through a more efficient spreading of the joint costs – is consistent with analysis of the implications of economic principles discussed earlier.

2.4 Comments on the conclusions of the other experts

2.4.1 Summary of conclusions in the other experts' reports

HoustonKemp Report

57. The main conclusions from the HoustonKemp report entitled "Methodology for Allocating Goldfields Gas Pipeline Costs" are as follows:

a. The relevant dimension of efficiency for assessing how to allocate costs between covered and uncovered capacity of the GGP is allocative efficiency.

b. Allocative efficiency is satisfied where the revenue generated by reference tariffs is between:

   i. An upper bound, which is the point at which all existing users could procure the same capacity at a lower total cost, and

   ii. A lower bound, which is the incremental or avoidable cost caused by the relevant service.

c. GGT's proposed approach to determining the costs to be recovered from users of the covered capacity of the GGP falls between these outer bounds for allocative efficiency and is therefore consistent with both the national gas objective and the revenue and pricing principles.

Competition Economists Group Report

58. Dr Hird (CEG report entitled "Cost Allocation for the Goldfields Gas Pipeline") concludes that the key advantage of GGP's proposed cost allocation methodology is that it makes it commercially viable for GGP to charge customers of uncovered expansions an amount that will recover only the incremental cost of those expansions. GGP's cost allocation method is therefore concluded to be most compatible with those new investments occurring.

59. To this end, Dr Hird observes that if users of uncovered services were required to also make a contribution to the joint costs, then the price may exceed what mining companies are prepared to pay and those investments may therefore not proceed. Dr Hird also records his understanding that the prices charged for the use of past expansions have been set at the incremental cost of those expansions.[13]

2.4.2 Comment on both experts – interpretation of the national gas objective

60. Both the HoustonKemp report and Dr Hird assume that the national electricity objective require an assessment solely against the criterion of economic efficiency. However, as I noted in section 2.3, the national gas objective (like the national electricity objective) is more complex because it contains references to both the pursuit of economic efficiency as well as the pursuit of the long term interests of consumers, although it is a legal question (and beyond my expertise as an economist) as to how the different components of the objective are to be read together. However, as I also explained in section 2.3, it would appear to be clear that allocating a share of joint costs to unregulated services will promote the "long term interests of customers", provided that allocating costs in this manner does not dissuade efficient investment.

61. The discussion below addresses the reports of the other experts under the assumption that the national gas objective requires the application of an economic efficiency criterion.

2.4.3 Comment on the HoustonKemp report

62. I agree with the proposition in the HoustonKemp report that discerning the effect on allocative efficiency is important to the question of how the joint costs should be allocated between covered and uncovered services. I also agree that reference tariffs that generate revenue above the upper bound as specified in their report may be expected to generate material inefficiency by encouraging users to cease using the GGP (and either banding together to build a duplicate pipeline or seeking alternative fuels).

63. However a shortcoming in the analysis in the HoustonKemp report is that it ignores the potential for a change to the average level of prices to affect economic efficiency, even where prices are already below stand alone cost. As prices are raised above marginal cost (which, as I argued in section 2.1, is likely to be necessary to recover the "residual costs"), different forms of inefficiency may result:

[13] Hird, T., 2014, Cost allocation for the Goldfields Gas Pipeline, July, para.50.

a. customers may be discouraged from using the infrastructure even though that the value from that use exceeds the cost, which would be inefficient, and

b. once prices exceed stand alone cost, customers may be encouraged to build their own duplicate infrastructure or seek alternative fuels even though there is sufficient capacity on the existing infrastructure, which would also be inefficient.

64. The analysis in the HoustonKemp report identified only the second of these sources of inefficiency, and hence led to its conclusion that if the reference tariff is below the stand alone cost equivalent then the reference tariff (and hence the cost allocation method underpinning it) can be deemed to be not-inefficient. However, as I argued in section 2.1, if the reference tariff is above marginal cost, then the potential exists for efficient use to be dissuaded – which is the first category of inefficiency identified above. If therefore follows that allocating a share of the joint costs to unregulated services can reduce this potential for inefficiency.

65. I would not expect HoustonKemp to disagree more generally with my proposition that cost recovery for utility services typically requires prices to be set above marginal cost, but by doing so to generate the potential for efficient use to be dissuaded. Indeed, HoustonKemp applied this principle its report for these proceedings on regulatory depreciation ("Depreciation Methods for the Goldfield Gas Pipeline"), reasoning as follows:[14]

> *Setting reference tariffs such that the revenue per unit of service that must be recovered by them varies through time so as to reflect as closely as possible to LRMC of the relevant reference service will ensure that consumers face price signals that reflect the resource cost of providing reference services. This in turn encourages consumers to demand reference services only when the benefit to them exceeds the cost of provision. Such a time profile of reference tariffs will be allocatively efficient and promote efficient growth in the market for reference services.*
>
> *However, in circumstances whereby capital costs previously incurred need to be recovered, the total revenue per unit of service is likely to include a residual element that exceeds the forward-looking LRMC of providing a unit of service. This residual revenue requirement is affected by the return of capital building block element, the time profile of which will be affected by the choice of depreciation method.*
>
> *Determining a depreciation schedule that promotes efficient growth in the market for reference services then becomes a question of how to allocate this residual revenue requirement per unit of service through time, in a manner that minimises the extent of departure from the allocatively efficient, LRMC-based tariff.*
>
> *It follows that, to the extent there is scope for growth in the market for reference services, this will best be achieved by a depreciation schedule that results in a time*

[14] HoustonKemp, Depreciation Methodologies for the Goldfields Gas Pipeline, A report for Goldfields Gas Transmission Pty Ltd, 25 August 2014, pp.9-10.

> *profile of total revenue per unit of service that minimises the extent of departure from the ideal, LRMC-based structure of tariffs.*

66. Thus, the reasoning applied by HoustonKemp was that the potential for allocative inefficiency from recovering the "residual element" could be reduced by spreading the recovery of the "residual element" in a sensible manner over time. It would be consistent with this same reasoning to observe that the potential allocative inefficiency could be reduced by accepting that part of the residual element could also be recovered from the users of the uncovered services.

2.4.4 Comments on Dr Hird's opinion

67. I agree with Dr Hird that capacity for GGP to recover a share of the joint costs from the uncovered services is an important issue for deciding the extent of the shared cost that should be allocated to the uncovered services. To this end, I have argued that while the "relative use" of the shared infrastructure is an appropriate starting point for deciding upon the appropriate allocation of the joint costs to the uncovered services, this is subject to confirmation that the costs so allocated can be recovered.

68. However, where I disagree with Dr Hird is that I do not see any reason for assuming that users of uncovered services can only pay a tariff that reflects the incremental cost of the service. Rather, the question of how much of the joint cost can be recovered from the uncovered services is a factual matter that can be tested. If a price above incremental cost can be charged to users of the uncovered services, then applying part or all of this surplus to the recovery of the joint costs – and hence to reduce the reference tariff – will reduce the potential for the covered services to be inefficiently underutilised without impeding investment in uncovered services.

69. I observe that an important fact for the current review is the extent to which the prices for the existing uncovered services permit GGP to earn a surplus over the incremental cost of proving those uncovered services. Dr Hird notes that he has been advised that the prices to users of existing tranches of uncovered expansions have been set at the incremental cost of those expansions. However, in relation to the 2006 and 2009 expansions, this advice does not appear to be consistent with the public information on these expansions. For example, the Electricity Review Board commented as follows:[15]

> *Fourth, BHPB pursued a broader argument that its construction of "Services" was consistent with and furthered the purposes of the Code. The purposes of the Code include preventing abuse of monopoly power and promoting a competitive market for gas on terms that are fair and reasonable. This appears from paragraphs (b), (c) and (d) of the Introduction to the Code, and ss 2.24 and 8.1. Section 10.5 allows regard to be had to the Introduction to confirm meaning or where a provision is ambiguous or absurd. If the "Additional Services" were "Services" within the definition of that term, then the Reference Service would not have to bear the whole of the cost of the pipeline assets through the Reference Tariff, when GGT uses the Pipeline to earn*

[15] Electricity Review Board, 'Application for review of the decision by the Western Australian Economic Regulation Authority published on 5 August 2010 to approve its own revised Access Arrangement for the Goldfields Gas Pipeline', 22 November 2011, para. 218, p.77.

income through the Additional Services as well. BHPB argued that the approach of the Authority in its Final Decision allowed GGT to make windfall profits from the supply of the Additional Services, which was not fair or reasonable. BHPB supported its position by referring to the NERA Report, which states that the incremental costs of the Additional Compressors are below the Reference Tariff and yet the charges for Additional Services are higher than the Reference Tariff.

70. It would be appropriate for the Economic Regulatory Authority to establish to its satisfaction whether GGP has been able to earn a surplus over the incremental cost for the various tranches of expansions to date, as well as the likely position in relation to future expansions.

3. Declaration

71. I have has made all of the inquiries that I believe to be desirable and appropriate in the preparation of this report and no matters of significance that I regard as relevant have, to my knowledge, been withheld.

Jeffrey John Balchin
27 November 2014

A. Summary of regulatory decisions with respect to cost allocation

A.1 National Electricity Market

72. The treatment of assets that are contained in businesses' regulatory asset bases that jointly provide regulated and unregulated services was recently considered by the Australian Energy Market Commission (AEMC) as part of a broader rule change proposal that was submitted by the Australian Energy Regulator (AER).[16] As part of that consideration, the national electricity rules now include a specific requirement that where a regulated asset also provides unregulated services, then the annual revenue requirement (i.e., the revenue to be recovered from prices for the regulated service) may be reduced by an amount that reasonably reflects the share of the cost that the network business is recovering through charges for the unregulated service.[17]

73. In order to make this rule change, the AEMC was required to form the view that the allocation of a share of joint costs to the unregulated activities would meet the national electricity objective. The AEMC articulated its view about why a sharing of costs between regulated and unregulated uses would promote the national electricity objective most completely in its Draft Decision, where it observed that this sharing was expected to promote the efficiency of use of the infrastructure in question:[18]

> *The Commission considers that consumers should receive some benefit when assets used to supply regulated services are shared with other services, as consumers are funding the assets and bearing the risk if they are under-utilised. Using electricity assets for additional purposes should reduce the (average) costs of providing electricity services since the fixed costs are spread over a larger number of consumers. This promotes efficient use of electricity services with respect to price. This could be seen as a form of innovation, which NSPs should be encouraged to achieve, where it does not have a negative effect on the service provided to electricity consumers. The regulatory framework needs to find the appropriate level of sharing of benefits so NSPs are rewarded for cost-cutting and consumers benefit through lower prices.*

74. This reasoning is consistent with the reasoning that I presented in section 2.1. It is particularly relevant to the case of the GGP because the national electricity objective and national gas objective are specified in almost identical terms. The AEMC also noted that the outcome whereby customers of one services benefited when assets were also used to provide other services was something that would be expected to be observed in a competitive market.[19]

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16 See: http://www.aemc.gov.au/Rule-Changes/Economic-Regulation-of-Network-Service-Providers

17 For distribution networks, National Electricity Rules, clause 6.4.4(a).

18 AEMC, 'Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Directions Paper', 2 March 2012, p.64.

19 AEMC, 'Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Draft Rule Determination', 23 August 2012, p.208.

> *In a competitive market, a business would seek ways to provide its customers with the lowest possible price, in order to retain its existing customers and gain new ones. One way to do this could be to make more efficient use of the business' assets by employing them for new services. This would increase the number of customers having access to the asset, and allow the business to spread the fixed costs of the asset over this greater number of customers, therefore reducing costs for consumers of the services.*

A.2 Australian telecommunication fixed line services

75. The experience in the fixed line telecommunication sector is particularly relevant to the circumstances of the GGP because the unregulated services and regulators services in that sector are both telecommunications services and are very similar in nature. This is like the case of the GGP because the regulated and unregulated services of the GGP are both gas transportation services. This is different to the electricity sector where the services that may share the use of unregulated assets may be serving a very different market.[20]

76. The framework for the economic regulation of Telstra's fixed line services is set out in clause 6 of the Australian Competition and Consumer Commission's 2011 final access determinations in what are referred to as "fixed principles". Clause 6.14 of the fixed principles set out the following requirement in relation to cost allocation (the clause being headed "cost allocation factors"):[21]

> *(a) The allocation of the costs of operating the PSTN should reflect the relative usage of the network by various services.*
>
> *(b) Direct costs should be attributed to the service to which they relate. The cost allocation factors for shared costs should reflect causal relationships between supplying services and incurring costs.*
>
> *(c) No cost should be allocated more than once to any service*
>
> *(d) The determination of cost allocation factors should reflect the principles in 6.14 (a) – (c) above except where reliable information is not available to support the application of the principles.*

77. Thus, a direct requirement exists for joint costs to be shared between regulated and unregulated activities, and with lower regulated prices thereby determined. In addition, the requirement to allocate cost based upon relative usage is consistent with what I have advocated as the starting point for cost allocations.

A.3 Australian airports

78. Australian airports are subject to price monitoring. Price Monitoring is different from direct price control regulation in that the regulator is not required to make a decision on

[20] An example is the use of electricity assets to deliver broadband internet services.
[21] ACCC, 2014, 2011 Final Access Determinations (as varied), 18 June, clause 6.14.

the maximum price that can be charged by the service provider. However, as returns from the regulated services are measured and reported – from which inferences may be drawn about whether market power is being exercised – the question of how shared costs should be allocated between regulated and unregulated activities nonetheless needs to be addressed.

79. The ACCC's financial reporting guideline for airport monitoring sets out the requirements in relation to the allocation of costs between aeronautical (regulated) and non-aeronautical (unregulated) services at airports. The cost allocation principles that "need to be adopted" in the airports' financial reports are as follows:[22]

> *1. A directly traceable cause and effect relationship with the provision of the product or service; or*
>
> *2. A verifiable relationship between the item and the output of the individual product or service; or*
>
> *3. A cost having a direct causal relationship associated with a pool of common costs and allocation of that pool can be made using a relevant, reliable and verifiable factor such as relative use.*

80. The type of shared assets that are the subject of this report fall clearly within item 3 of the list above (i.e., relating to a pool of common costs where direct causal relationships cannot be established). It is observed that the formal requirement is for the allocator to be "relevant, reliable and verifiable", and that "relative use" is provided as an example of an allocator that would meet this requirement.

A.4 New Zealand Electricity Distribution, Gas Pipeline Services and Airports

81. In New Zealand the economic regulator, the Commerce Commission, addressed in some detail the matter of allocating joint or shared costs between regulated and unregulated activities when determining the Input Methodologies in relation to the for electricity distribution businesses (EDBs), gas pipeline businesses (GPBs) and airports in 2010.

82. The Commerce Commission described the issue it was addressing in relation to cost allocation for EDBs and GPBs as follows:

> *EDBs provide regulated electricity distribution services and GPBs provide gas distribution and/or transmission services. Many suppliers also provide unregulated services. Some suppliers provide two or three types of regulated services. For instance, Vector supplies three types of regulated services (electricity distribution*

[22] ACCC, 'Airports prices monitoring and financial reporting guideline, Information Requirements under Part 7 of the Airports Act 1996 and Sections 95ZF of the Trade Practices Act 1974', June 2009, p.10, where the words "need to be adopted" has been placed in parenthesis to highlight that these words are taken from the guideline. The cost allocation principles are not strictly binding on the airports; however, the guideline indicates that if an airport prepares information using principles different to those set out here that it must outline the relevant account item allocation principles used and explain the reasons for their adoption in preference to those prescribed in the guideline.

services, gas distribution services, and gas transmission services) as well as a range of unregulated services (e.g. telecommunications services, utilities training, tree cutting and electricity generation from wind power).

The provision of these different types of services by a regulated supplier gives rise to the sharing of operating costs (e.g. expenses related to head office functions) and capital costs through the sharing of assets (e.g. power poles also used to carry telecommunications lines). The cost allocation IM [Input Methodology] covers the allocation of shared operating costs and shared asset values (which drive capital costs). Setting an IM that allocates asset values that are shared will therefore also allocate capital costs.

83. The Commission described its decision in relation to cost allocation as follows:[23]

3.3.1 The IM provides for the following two-step allocation of operating costs and asset values:

- ***allocation of costs directly attributable (CDA)**, (i.e. operating costs and asset values that are wholly and solely associated with the provision of electricity distribution, gas distribution or gas transmission services) to the services to which they are directly attributable; and*

- ***allocation of costs not directly attributable (CnDA)**, (i.e. operating costs and asset values that are associated with the provision of two or more of electricity distribution, gas distribution, gas transmission services or both regulated services and unregulated services in aggregate) to the regulated services they are associated with. This is undertaken based on rules that determine the circumstances in which the application of each of the three approaches set out below is appropriate.*

3.3.2 Hence, following the allocation of CDA, suppliers must allocate CnDA. The three complementary approaches for the allocation of CnDA are the accounting-based allocation approach, the optional variation to the accounting-based allocation approach, and the avoidable cost allocation methodology.

*3.3.3 The **accounting-based allocation approach (ABAA)** requires operating costs and asset values to be allocated based on causal factors, or based on proxy factors where causal-based allocators are not available. This approach ensures an allocation of shared costs across all types of services and in many circumstances is expected to move the allocation of shared costs closer to those in workably competitive markets than when applying ACAM, which results in all shared costs being allocated to the regulated services.*

[23] Commerce Commission, 'Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper', December 2010, pp.74-75.

> *3.3.4 Use of the **optional variation to the accounting-based allocation approach (OVABAA)** is appropriate in those situations where the application of the ABAA might unduly deter investments in unregulated services. This reflects outcomes produced in workably competitive markets where some services may bear most of the shared costs while others bear little (e.g. during the start-up phase of a new service).*
>
> *3.3.5 Where regulated and unregulated services have only a small proportion of their costs in common, the use of either of the above approaches may not move outcomes materially closer to those in workably competitive markets. This is because, where shared costs are not large, an approach that allocates some shared costs to all services (such as the ABAA) may not produce cost allocation outcomes that are materially different from an approach that allocates shared costs only to certain services. In these instances, suppliers may use the **avoidable cost allocation methodology (ACAM)**, which is based on the implementation of ACAM currently used by many suppliers. [footnotes omitted]*

84. The Commission provided further guidance as to what it meant by a "causal relationship" in relation to the allocation of asset values as follows:[24]

> *'Causal relationships' are defined in relation to: … asset values, as a circumstance in which a factor influences the utilisation of an asset during the 18 month period terminating on the last day of the*

85. I highlight from this that the Commission's decision means that:

a. The starting point is that the joint costs are to be shared between regulated and unregulated services according to causal factors or proxy factors, which is defined to mean a relevant measure of the relative use of the asset (itself measured over a historical period)

b. A lesser allocation may be applied if the causal/proxy allocation would unduly deter investment in the other activity, and

c. Apart from where an undue impact on investment is demonstrated, a business would only be permitted not to allocate a share of shared costs to unregulated activities where the shared costs are immaterial.

86. The Commission's reasoning for adopting this approach to cost allocation was because such an allocation would be more consistent with the outcome observed in workably competitive markets than would be the case if all costs were allocated to regulated services. The particular importance of the outcome of competitive markets reflected the statutory guidance applicable to the Commission's decision. To this end, the Commission

[24] Commerce Commission, 'Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper', December 2010, p.56.

observed that none of the various economic experts that appeared in relation to this matter contested the proposition that in a competitive market all services provided by means of a shared facility would bear a portion of the shared cost:[25]

> *3.2.53 Experts advising EDBs and GPBs (as well as Airports) unanimously agreed that in workably competitive markets firms would expect to recover some proportion of shared costs from all services in the longer-term. As such, some benefits of efficiency gains would be shared with consumers of all types of services with shared costs. [footnote omitted]*

87. In relation to airports, the Commission observed that the extent of unregulated activities were large, with a corresponding significance of shared costs.[26]

> *Based on the size and scope of regulated and unregulated services, a significant proportion of operating costs and assets (including terminal space, air conditioning power and equipment, access roads to airports) is likely to be shared between regulated and unregulated services.*

88. Notwithstanding differences between the nature of shared costs between airports and the energy networks, the Commission determined principles for allocating shared costs between regulated and unregulated activities that very similar to what it determined for electricity and gas businesses that were described already above.[27]

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25 Commerce Commission, 'Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper', December 2010, p.68.

26 Commerce Commission, 'Input Methodologies (Airport Services) Reasons Paper', December 2010, p.51.

27 Commerce Commission, 'Input Methodologies (Airport Services) Reasons Paper', December 2010, p.45.

B. Curriculum vitae of Jeffrey John Balchin

Jeff Balchin

Managing Director

Email:
Telephone:

Jeff is the Managing Director of Incenta Economic Consulting. Jeff has 20 years of experience in relation to economic regulation issues across the electricity, gas, ports, airports, rail, water and telecommunications sectors in Australia and New Zealand. He has advised governments, regulators and major corporations on issues including the development of regulatory frameworks, regulatory price reviews and issues around the introduction and measurement of competition (including franchise bidding). His particular specialities have been on the application of finance principles to economic regulation, the design of incentive compatible regulation and efficient tariff structures and the drafting and economic interpretation of regulatory instruments.

In addition, Jeff has substantial experience with the application of economic and finance principles to pricing and investment appraisal and associated commercial disputes in unregulated infrastructure and non-infrastructure markets. He has also assisted with applying economic principles to transfer pricing.

Jeff has undertaken a number of expert witness assignments.

Past positions

Jeff previously was a Principal at PwC in its economics and policy team for almost 4 years, prior to that a director and partner at the Allen Consulting Group for over 13 years, and prior that he held a number of policy positions in the Commonwealth Government. In this latter role, he was on the secretariat of the Gas Reform Task Force (1995-1996), where he played a lead role in the development of the National Gas Code.

Relevant experience

A. Economic regulation of network / monopoly activities

Assistance to parties during price reviews/negotiations

- Regulatory valuation of telecommunications local loop assets (Client: Chorus, 2014) – prepared a report advising on the appropriate valuation of local loop assets for the purpose of deriving a TSLRIC price for unbundled local loop access.
- Design of incentives for operating expenditure efficiency (Client: ElectraNet, 2012-13) – provided expert advice on the detailed application of the incentive arrangements for operating expenditure, including the link between the incentive scheme and the forecasting method.
- Regulatory depreciation (Client: APA, 2012-13) – provided expert reports on the economic principles relevant to the depreciation method that is applied to set gas transmission charges.
- Regulatory cost of debt (Clients: Powerlink, ElectraNet and Victorian gas distributors 2011-2012) – provided a series of reports addressing how the benchmark cost of debt should be established pursuant to the National Electricity Rules and on the appropriate benchmark allowance for debt and equity raising costs.
- Real cost escalation (Client: Energex, 2009-10) – advised Energex on appropriate escalators to apply to forecasts of operating and capital expenditure over the regulatory period.

- Strategic advice, Victorian electricity distribution review and NSW gas distribution review (Client: Jemena Electricity Networks, 2009-2011) – retained as strategic adviser during the review and also provided advice on a range of technical regulatory economic issues, including on regulatory finance matters, service incentives, party contracts, allocation of costs between regulated and unregulated activities and forecasting of expenditure.
- Regulatory cost of debt (Client: Powercor Australia Limited, 2009-2010) – provided a series of reports addressing how the benchmark cost of debt should be established pursuant to the National Electricity Rules.
- Service incentive scheme (Client: Powercor Australia Limited, 2010) – assisted Powercor to quantify the financial effect that would have flowed if the former service performance incentive scheme had continued. Also prepared an expert report pointing to a material inconsistency in how the AER intended to close out the old scheme and the parameters for the new service performance incentive scheme, which was accepted by the AER.
- Input methodologies for NZ regulated businesses (Clients: Powerco NZ and Christchurch International Airport, 2009-2012) – advised in relation to the Commerce Commission's development of input methodologies, focussing asset valuation, the regulatory cost of capital, the use of productivity trends in regulation and the design of incentive-compatible regulation. Also assisted in briefing counsel in subsequent reviews.
- Commercial negotiation of landing charges (Client: Virgin Blue, 2009-2012) – economic advice to Virgin Blue during its commercial negotiation of landing charges to a number of major and secondary airports.
- Equity Betas for Regulated Electricity Transmission Activities (Client: Grid Australia, APIA, ENA, 2008) – Prepared a report presenting empirical evidence on the equity betas for regulated Australian electricity transmission and distribution businesses for the AER's five yearly review of WACC parameters for these industries. The report demonstrated the implications of a number of different estimation techniques and the reliability of the resulting estimates. Also prepared a joint paper with the law firm, Gilbert+Tobin, providing an economic and legal interpretation of the relevant (unique) statutory guidance for the review.
- Economic Principles for the Setting of Airside Charges (Client: Christchurch International Airport Limited, 2008-2013) – Provided advice on a range of economic issues relating to its resetting of charges for airside services, including the valuation of assets and treatment of revaluations, certain inputs to the cost of capital (beta and the debt margin) and the efficiency of prices over time and the implications for the depreciation of assets and measured accounting profit.
- Treatment of Inflation and Depreciation when Setting Landing Charges (Client: Virgin Blue, 2007 2008) – Provided advice on Adelaide Airport's proposed approach for setting landing charges for Adelaide Airport, where a key issue was how it proposed to deal with inflation and the implications for the path of prices over time. The advice also addressed the different formulae that are available for deriving an annual revenue requirement and the requirements for the different formulae to be applied consistently.
- Application of the Grid Investment Test to the Auckland 400kV Upgrade (Client: Electricity Commission of New Zealand, 2006) - As part of a team, undertook a review of the Commission's process for reviewing Transpower's proposed Auckland 400kV upgrade project and undertook a peer review of the Commission's application of the Grid Investment Test.

- Appropriate Treatment of Taxation when Measuring Regulatory Profit (Client: Powerco New Zealand, 2005 2006) - Prepared a series of statements on how taxation should be treated when measuring realised and projected regulatory profit.
- Application of Directlink for Regulated Status (Client: Directlink, 2003-2004) – Prepared advice on the economic efficiency of the conversion of an unregulated (entrepreneurial) interconnector to a regulated interconnector and how the asset should be valued for pricing purposes.
- Principles for the 'Stranding' of Assets by Regulators (Client: the Independent Pricing and Regulatory Tribunal, NSW, 2005) - Prepared a report discussing the relevant economic principles for a regulator in deciding whether to 'strand' assets for regulatory purposes (that is, to deny any further return on assets that are partially or unutilised).
- Principles for Determining Regulatory Depreciation Allowances (Client: the Independent Pricing and Regulatory Tribunal, NSW, 2003) - Prepared a report discussing the relevant economic and other principles for determining depreciation for the purpose of price regulation, and its application to electricity distribution. An important issue addressed was the distinction between accounting and regulatory (economic) objectives for depreciation.
- Methodology for Updating the Regulatory Value of Electricity Transmission Assets (Client: the Australian Competition and Consumer Commission, 2003) - Prepared a report assessing the relative merits of two options for updating the regulatory value of electricity transmission assets at a price review - which are to reset the value at the estimated 'depreciated optimised replacement cost' value, or to take the previous regulatory value and deduct depreciation and add the capital expenditure undertaken during the intervening period (the 'rolling-forward' method). This paper was commissioned as part of the ACCC's review of its Draft Statement of Regulatory Principles for electricity transmission regulation.
- Application of Murraylink for Regulated Status (Client: Murraylink Transmission Company, 2003) – Prepared advice on the economic efficiency of the conversion of an unregulated (entrepreneurial) interconnector to a regulated interconnector and how the asset should be valued for pricing purposes.
- Proxy Beta for Regulated Gas Transmission Activities (Client: the Australian Competition and Consumer Commission, 2002) - Prepared a report presenting the available empirical evidence on the 'beta' (which is a measure of risk) of regulated gas transmission activities. This evidence included beta estimates for listed firms in Australia, as well as those from the United States, Canada and the United Kingdom. The report also included a discussion of empirical issues associated with estimating betas, and issues to be considered when using such estimates as an input into setting regulated charges.
- Treatment of Working Capital when setting Regulated Charges (Client: the Australian Competition and Consumer Commission, 2002) - Prepared a report assessing whether it would be appropriate to include an explicit (additional) allowance in the benchmark revenue requirement in respect of working capital when setting regulated charges.
- Pricing Principles for the South West Pipeline (Client: Esso Australia, 2001) - As part of a team, prepared a report describing the pricing principles that should apply to the South West Pipeline (this gas transmission pipeline was a new asset, linking the existing system to a new storage facility and additional gas producers).
- Likely Regulatory Outcome for the Price for Using a Port (Client: MIM, 2000) - Provided advice on the outcome that could be expected were the dispute over the price for the use of a major port to be resolved by an economic regulator. The main issue of contention was the valuation of the port

assets (for regulatory purposes) given that the installed infrastructure was excess to requirements, and the mine had a short remaining life.

- Relevance of 'Asymmetric Events' in the Setting of Regulated Charges (Client: TransGrid, 1999) - In conjunction with William M Mercer, prepared a report (which was submitted to the Australian Competition and Consumer Commission) discussing the relevance of downside (asymmetric) events when setting regulated charges, and quantifying the expected cost of those events.

Major roles for regulators

- Aurizon Network price review (Client: Queensland Competition Authority, 2013-14) – advised the QCA on the appropriate rate of return (discount rate) for the Aurizon Network business, which included an assessment of the relative risk of Aurizon Network compared to other infrastructure sectors, advice on the appropriate benchmark gearing level and on the benchmark debt interest rate.
- Victorian Gas Distribution Price Review (Client: the Essential Services Commission, Vic, 2006 2008) - Provided advice to the Essential Service Commission in relation to its review of gas distribution access arrangements on the treatment of outsourcing arrangements, finance issues, incentive design and other economic issues.
- Envestra Gas Distribution Price Review (Client: the Essential Services Commission, SA, 2006) - Provided advice on several finance related issues (including 'return on assets' issues and the financial effect of Envestra's invoicing policy), and the treatment of major outsourcing contracts when setting regulated charges.
- DBCT price review (Client: QCA, Qld, 2004-2006) – advice on a number of finance related issues, including the calculation of IDC for a DORC valuation, cost of debt and equity beta.
- Victorian Electricity Distribution Price Review (Client: the Essential Services Commission, Vic, 2003 2005) - Provided advice to the Essential Service Commission on a range is economic issues related to current review of electricity distribution charges, including issues related to finance, forecasting of expenditure and the design of incentive arrangements for productive efficiency and service delivery. Was a member of the Steering Committee advising on strategic regulatory issues.
- Victorian Water Price Review (Client: the Essential Services Commission, Vic, 2003 2005) - Provided advice to the Essential Services Commission on the issues associated with extending economic regulation to the various elements of the Victorian water sector. Was a member of the Steering Committee advising on strategic regulatory issues, and also provided advice on specific issues, most notably the determination of the initial regulatory values for the water businesses and the role of developer charges.
- ETSA Electricity Distribution Price Review (Client: the Essential Services Commission, SA, 2002 2005) - Provided advice on the 'return on assets' issues associated with the review of ETSA's regulated distribution charges, including the preparation of consultation papers. The issues covered include the valuation of assets for regulatory purposes and cost of capital issues. Also engaged as a quality assurance adviser on other consultation papers produced as part of the price review.
- Victorian Gas Distribution Price Review (Client: the Essential Services Commission, Vic, 2001 2002) - Economic adviser to the Essential Services Commission during its assessment of the price caps and other terms and conditions of access for the three Victorian gas distributors. Was responsible for all issues associated with capital financing (including analysis of the cost of capital and assessment of risk generally, and asset valuation), and supervised the financial modelling and derivation of regulated charges. Also advised on a number of other issues, including the design of

incentive arrangements, the form of regulation for extensions to unreticulated townships, and the principles for determining charges for new customers connecting to the system.

- ETSA Electricity Distribution Price Review (Client: the South Australian Independent Industry Regulator, 2000 2001) - As part of a team, prepared a series of reports proposing a framework for the review. The particular focus was on the design of incentives to encourage cost reduction and service improvement, and how such incentives can assist the regulator to meet its statutory obligations. Currently retained to provide commentary on the consultation papers being produced by the regulator, including strategic or detailed advice as appropriate.
- Dampier to Bunbury Natural Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 2000 2002) - Provided economic advice to the Office of the Independent Regulator during its continuing assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft decision, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Represented the Office on these matters at a public forum, and provided strategic advice to the Independent Regulator on the draft decision.
- Goldfield Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 2000 2004) - Provided economic advice to the Office of the Independent Regulator during its continuing assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft decision, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Represented the Office on these matters at a public forum, and provided strategic advice to the Independent Regulator on the draft decision.
- Victorian Electricity Distribution Price Review (Client: the Office of the Regulator General, Vic, 1999 2000) - Economic adviser to the Office of the Regulator General during its review of the price caps for the five Victorian electricity distributors. Had responsibility for all issues associated with capital financing, including analysis of the cost of capital (and assessment of risk generally) and asset valuation, and supervised the financial modelling and derivation of regulated charges. Also advised on a range of other issues, including the design of incentive regulation for cost reduction and service improvement, and the principles for determining charges for new customers connecting to the system.
- Victorian Ports Corporation and Channels Authority Price Review (Client: the Office of the Regulator General, Vic, 2000) - Advised on the finance related issues (cost of capital and the assessment of risk generally, and asset valuation), financial modelling (and the derivation of regulated charges), and on the form of control set over prices. Principal author of the sections of the draft and final decision documents addressing the finance related and price control issues.
- AlintaGas Gas Distribution Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 1999 2000) - Provided economic advice to the Office of the Independent Regulator during its assessment of the regulated charges and other terms and conditions of access for the gas pipeline. This advice included providing a report assessing the cost of capital associated with the regulated activities, overall review of all parts of the draft and final decisions, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Also provided strategic advice to the Independent Regulator on the draft and final decisions.
- Parmelia Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 1999 2000) - Provided economic advice to the Office of the Independent Regulator during its assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft and final decisions, with particular

focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Also provided strategic advice to the Independent Regulator on the draft and final decisions.

- Victorian Gas Distribution Price Review (Client: the Office of the Regulator General, Vic, 1998) - Economic adviser to the Office of the Regulator General during its assessment of the price caps and other terms and conditions of access for the three Victorian gas distributors. Major issues addressed included the valuation of assets for regulatory purposes, cost of capital financing and financial modelling. Principal author of the draft and final decision documents.

Development/Review of Regulatory Frameworks

- Review of the Australian energy economic regulation (Client: Energy Networks Association, 2010-2012) – assisting the owners of energy infrastructure to engage in the current wide-ranging review of the regime for economic regulation of energy infrastructure. Advice has focussed in particular on the setting of the regulatory WACC and on the regime of financial incentives for capital expenditure efficiency, and included strategic and analytical advice, preparation of expert reports and assistance with ENA submissions.
- Review of the Australian electricity transmission framework (Client: Grid Australia, 2010-2013) – assisting the owners of electricity transmission assets to participate in the wide-ranging review of the framework for electricity transmission in the national electricity market, covering such matters as planning arrangements, the form of regulation for non-core services and generator capacity rights and charging. Has included analytical advice on policy choices, facilitation of industry positions and articulation of positions in submissions.
- Implications of greenhouse policy for the electricity and gas regulatory frameworks (Client: the Australian Energy Market Commission, 2008-2009) – Provided advice to the AEMC in its review of whether changes to the electricity and gas regulatory frameworks is warranted in light of the proposed introduction of a carbon permit trading scheme and an expanded renewables obligation. Issues addressed include the framework for electricity connections, the efficiency of the management of congestion and locational signals (including transmission pricing) for generators and the appropriate specification of a cost benefit test for transmission upgrades in light of the two policy initiatives.
- Economic incentives under the energy network regulatory regimes for demand side participation (Client: Australian Energy market Commission, 2006) – Provided advice to the AEMC on the incentives provided by the network regulatory regime for demand side participation, including the effect of the form of price control (price cap vs. revenue cap), the cost-efficiency arrangements, the treatment of losses and the regime for setting reliability standards.
- Implications of greenhouse policy for the electricity and gas regulatory frameworks (Client: the Australian Energy Market Commission, 2008) - Provided advice to the AEMC in its review of whether changes to the electricity and gas regulatory frameworks is warranted in light of the proposed introduction of a carbon permit trading scheme and an expanded renewables obligation. Issues addressed include the framework for electricity connections, the efficiency of the management of congestion and locational signals for generators and the appropriate specification of a cost benefit test for transmission upgrades in light of the two policy initiatives.
- Application of a 'total factor productivity' form of regulation (Client: the Victorian Department of Primary Industries, 2008) - Assisted the Department to develop a proposed amendment to the regulatory regime for electricity regulation to permit (but not mandate) a total factor productivity approach to setting price caps – that is, to reset prices to cost at the start of the new regulatory

period and to use total factor productivity as an input to set the rate of change in prices over the period.

- Expert Panel on Energy Access Pricing (Client: Ministerial Council on Energy, 2005 2006) - Assisted the Expert Panel in its review of the appropriate scope for commonality of access pricing regulation across the electricity and gas, transmission and distribution sectors. The report recommended best practice approaches to the appropriate forms of regulation, the principles to guide the development of detailed regulatory rules and regulatory assessments, the procedures for the conduct of regulatory reviews and information gathering powers.
- Productivity Commission Review of Airport Pricing (Client: Virgin Blue, 2006) - Prepared two reports for Virgin Blue for submission to the Commission's review, addressing the economic interpretation of the review principles, asset valuation, required rates of return for airports and the efficiency effects of airport charges and presented the findings to a public forum.
- AEMC Review of the Rules for Setting Transmission Prices (Client: Transmission Network Owners, 2005 2006) - Advised a coalition comprising all of the major electricity transmission network owners during the new Australian Energy Market Commission's review of the rules under which transmission prices are determined. Prepared advice on a number of issues and assisted the owners to draft their submissions to the AEMC's various papers.
- Advice on Energy Policy Reform Issues (Client: Victorian Department of Infrastructure/Primary Industries, 2003 ongoing) - advice to the Department regarding on issues relating to the transition to national energy market arrangements, cross ownership rules for the energy sector, the reform of the cost benefit test for electricity transmission investments and the scope for lighted handed regulation in gas transmission.
- Productivity Commission Review of the National Gas Code (Client: BHPBilliton, 2003 2004) - Produced two submissions to the review, with the important issues including the appropriate form of regulation for the monopoly gas transmission assets (including the role of incentive regulation), the requirement for ring fencing arrangements, and the presentation of evidence on the impact of regulation on the industry since the introduction of the Code.
- Development of the National Third Party Access Code for Natural Gas Pipeline Systems Code (Client: commenced while a Commonwealth Public Servant, after 1996 the Commonwealth Government, 1994-1997) - Was involved in the development of the new legal framework for the economic regulation of gas transmission and distribution systems, with advice spanning the overall form of regulation to apply to the infrastructure and the appropriate pricing principles (including the valuation of assets for regulatory purposes and the use of incentive regulation), ring fencing arrangements between monopoly and potentially contestable activities, and whether upstream infrastructure should be included within the regime.

Licencing / Franchise Bidding

- Competitive Tender for Gas Distribution and Retail in Tasmania (Client: the Office of the Tasmanian Energy Regulator, 2001 2002) - Economic adviser to the Office during its oversight of the use of a competitive tender process to select a gas distributor/retailer for Tasmania, and simultaneously to set the regulated charges for an initial period.
- Issuing of a Licence for Powercor Australia to Distribute Electricity in the Docklands (Client: the Office of the Regulator General, Vic, 1999) - Economic adviser to the Office during its assessment of whether a second distribution licence should be awarded for electricity distribution in the Docklands area (a distribution licence for the area was already held by CitiPower, and at that time, no area in the state had multiple licensees). The main issue concerned the scope for using

'competition for the market' to discipline the price and service offerings for an activity that would be a monopoly once the assets were installed.

Assessments of the degree and prospects for competition / need for regulation

- Transmission connection assets (Client: Grid Australia, 2012) – prepared an assessment of the degree of competition in the provision of transmission connection assets, which included advice on the market within which the service is provided and an assessment of the degree of rivalry (including the prospects for entry) in that market.
- South East network (Client: Kimberley Clarke, 2011) – advised whether the gas pipeline from which it is supplied would pass the threshold for regulation.
- Pilbara rail access (Client: BHP Billiton) – assisted in the preparation of expert evidence on whether the Pilbara rail infrastructure passed the test for declaration of essential infrastructure, with specific focus on the analysis of whether there would be a promotion of competition in other markets from the granting of access.
- Need for regulation of gas transmission pipelines (Client: SA Government) – advised as to whether the Moomba to Adelaide pipeline was likely to pass the threshold required for regulation under the Gas Code, focussing upon an assessment of the degree of competition for its services.

B. Pricing in non-infrastructure markets

Assessment of competition in energy retail markets

- Assessment of retail competition in Victoria and South Australia (Client: Australian Energy Market Commission) – assisted the Commission to quantity and interpret information on margins for retailers and to draw inferences about the level of competition. Also provided a peer review of the Commission's overall assessment of the level of competition, including the Commission's overall analytical framework and the other indicators it considered.

Default/transitional regulated prices for retail functions

- ACT transitional tariff review (Client: ICRC, ACT, 2010) – advised the regulator on an appropriate method to derive a benchmark wholesale electricity purchase cost for an electricity retailer, including the relationship between the wholesale cost and hedging strategy.
- South Australian default gas retail price review (Client: the Essential Services Commission, SA, (2007-2008) – derived estimates of the benchmark operating costs for a gas retailer and the margin that should be allowed. This latter exercise included a bottom-up estimate of the financing costs incurred by a gas retail business.
- South Australian default electricity retail price review (Client: the Essential Services Commission, SA, 2007) - estimated the wholesale electricity purchase cost for the default electricity retail supplier in South Australia. The project involved the development of a model for deriving an optimal portfolio of hedging contracts for a prudent and efficient retailer, and the estimate of the expected cost incurred with that portfolio.
- South Australian default gas retail price review (Client: the Essential Services Commission, SA, 2005) - As part of a team, advised the regulator on the cost of purchasing gas transmission services for a prudent and efficient SA gas retailer, where the transmission options included the use of the Moomba Adelaide Pipeline and SEAGas Pipeline, connecting a number of gas production sources.

Market Design

- Options for the Development of the Australian Gas Wholesale Market (Client: the Ministerial Committee on Energy, 2005) - As part of a team, assessed the relative merits of various options for enhancing the operation of the Australian gas wholesale markets, including by further dissemination of information (through the creation of bulletin boards) and the management of retailer imbalances and creation of price transparency (by creating short term trading markets for gas).
- Review of the Victorian Gas Market (Client: the Australian Gas Users Group, 2000 2001) - As part of a team, reviewed the merits (or otherwise) of the Victorian gas market. The main issues of contention included the costs associated with operating a centralised market compared to the potential benefits, and the potential long term cost associated with having a non-commercial system operator.
- Development of the Market and System Operation Rules for the Victorian Gas Market (Client: Gas and Fuel Corporation, 1960) - Assisted with the design of the 'market rules' for the Victorian gas market. The objective of the market rules was to create a spot market for trading in gas during a particular day, and to use that market to facilitate the efficient operation of the system.

Transfer pricing

- Application of a netback calculation for infrastructure under the Minerals Resource Rent Tax (Client: BHPB, 2011-13) – advised on how the arms-length price for the use of downstream infrastructure should be determined, including the valuation of assets, weighted average cost of capital and on the implications for the price of incentive compatible contracts.

Pricing strategy

- Pricing for telephone directory services (Sensis, 2012) – as part of a team, advised on how margins could be maximised for the telephone directory business in the context of falling print advertising and a very competitive digital market, informed by the application of econometric techniques.
- Effectiveness of promotional strategies (Target, 2011-12) – as part of a team, applied econometric techniques to assess the effectiveness of Target's promotional strategies, with tools developed for management to improve profitability.
- Optimal pricing (Client: Coles, 2011-12) – applied econometric techniques to assist Coles to set relativities of prices within "like" products and developed a method to test the effectiveness of promotional strategies.

C. Regulatory due diligence and other finance work

- Sale of the Sydney Desalination Plant (Client: a consortium of investors, 2011-12) – Prepared a regulatory due diligence report for potential acquirer of the asset, including a review of the financial modelling of future pricing decisions.
- Sale of the Abbot Point Coal Terminal port (Client: a consortium of investors / debt providers, 2010-11) – Prepared a regulatory due diligence report for potential acquirer of the asset, including a review of the financial modelling of future pricing decisions.
- Private Port Development (Client: Major Australian Bank, 2008) - Prepared a report on the relative merits of different governance and financing arrangements for a proposed major port development that would serve multiple port users.

- Sale of Allgas gas distribution network (Client: confidential, 2006) – Prepared a regulatory due diligence report for potential acquirer of the asset.
- Review of Capital Structure (Client: major Victorian water entity, 2003) - Prepared a report (for the Board) advising on the optimal capital structure for a particular Victorian water entity, taking account of the likely impact of cost based regulation.

D. Expert Witness Roles

- Abbot Point Coal Terminal Pricing Arbitration (Client: Adani, 2013) – Prepared a number of expert reports for the arbitration on economic issues arising from the application of the cost-based formula in the pricing agreement, including the economic meaning of key terms, the valuation of assets (and specifically the role and calculation of interest during construction), the quantification of transaction costs of raising finance and the calculation of the required rate of return (most notably, the benchmark cost of debt finance).
- New Zealand Input Methodologies (Clients: Powerco and Christchurch International Airport Limited, 2009-2012) – Prepared expert report for both clients on a range of economic issues, including the valuation of assets, weighted average cost of capital, cost allocation, the regulatory treatment of taxation and interpretation of the new purpose statement in the Commerce Act. Appeared as an expert before the Commerce Commission in the key conferences held during the review. Also assisted the clients in their subsequent merit reviews of the Commission's decision.
- Victorian gas market dispute resolution panel (Client: VENCorp, 2008) – Prepared a report and was cross examined in relation to the operation of the Victorian gas market in the presence of supply outages.
- Consultation on Major Airport Capital Expenditure Judicial Review (Client: Christchurch International Airport, 2008) - Prepared an affidavit for a judicial review on whether the airport consulted appropriately on its proposed terminal development. Addressed the rationale, from the point of view of economics, of separating the decision of 'what to build' from the question of 'how to price' in relation to new infrastructure.
- New Zealand Commerce Commission Draft Decision on Gas Distribution Charges (Client: Powerco, 2007 08) - Prepared an expert statement about the valuation of assets for regulatory purposes, with a focus on the treatment of revaluation gains, and a memorandum about the treatment of taxation for regulatory purposes and appeared before the Commerce Commission.
- Sydney Airport Domestic Landing Change Arbitration (Client: Virgin Blue, 2007) - Prepared two expert reports on the economic issues associated with the structure of landing charges (note: the evidence was filed, but the parties reached agreement before the case was heard).
- New Zealand Commerce Commission Gas Price Control Decision – Judicial Review to the High Court (Client: Powerco, 2006) - Provided four affidavits on the regulatory economic issues associated with the calculation of the allowance for taxation for a regulatory purpose, addressing in particular the need for consistency in assumptions across different regulatory calculations.
- Victorian Electricity Distribution Price Review – Appeal to the ESC Appeal Panel: Service Incentive Risk (Client: the Essential Services Commission, Vic, 2005 2006) - Prepared expert evidence on the workings of the ESC's service incentive scheme and the question of whether the scheme was likely to deliver a windfall gain or loss to the distributors (note: the evidence was filed, but the appellant withdrew this ground of appeal prior to the case being heard).
- Victorian Electricity Distribution Price Review – Appeal to the ESC Appeal Panel: Price Rebalancing (Client: the Essential Services Commission, Vic, 2005 2006) - Prepared expert

evidence on the workings of the ESC's tariff basket form of price control, with a particular focus on the ability of the electricity distributors to rebalance prices and the financial effect of the introduction of 'time of use' prices in this context (note: the evidence was filed, but the appellant withdrew this ground of appeal prior to the case being heard).

- New Zealand Commerce Commission Review of Information Provision and Asset Valuation (Client: Powerco New Zealand, 2005) - Appeared before the Commerce Commission for Powerco New Zealand on several matters related to the appropriate measurement of profit for regulatory purposes related to its electricity distribution business, most notably the treatment of taxation in the context of an incentive regulation regime.
- Duke Gas Pipeline (Qld) Access Arrangement Review – Appeal to the Australian Competition Tribunal (Client: the Australia Competition and Consumer Commission, 2002) - Prepared expert evidence on the question of whether concerns of economic efficiency are relevant to the non price terms and conditions of access (note: the evidence was not filed as the appellant withdrew its evidence prior to the case being heard).
- Victorian Electricity Distribution Price Review – Appeal to the ORG Appeal Panel: Rural Risk (Client: the Office of the Regulator General, Vic, 2000) - Provided expert evidence (written and oral) to the ORG Appeal Panel on the question of whether the distribution of electricity in the predominantly rural areas carried greater risk than the distribution of electricity in the predominantly urban areas.
- Victorian Electricity Distribution Price Review – Appeal to the ORG Appeal Panel: Inflation Risk (Client: the Office of the Regulator General, Vic, 2000) - Provided expert evidence (written and oral) to the ORG Appeal Panel on the implications of inflation risk for the cost of capital associated with the distribution activities.

Qualifications and memberships

- Bachelor Economics (First Class Honours) University of Adelaide
- CEDA National Prize for Economic Development