



# **Estimating the Cost of Equity under the CAPM**

Expert report of Gregory Houston  
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## Contents

1.	Introduction	1
1.1.	Scope of report	1
1.2.	Expertise	1
1.3.	Structure of report	2
1.4.	Declaration	2
2.	Context for this Report	3
2.1.	National gas rules	3
2.2.	CAPM explained	3
2.3.	AER's method for determining the risk free rate element	5
3.	Origin and Development of AER Methodology	6
3.1.	Victorian 1998 gas access arrangements review	6
3.2.	Adoption of similar methodologies	11
4.	Potential for Departures from the AER Method	18
4.1.	Principles governing potential departures	18
4.2.	Assessment of current market circumstances	20
4.3.	Conclusion	30
5.	Alternative Method for the Risk Free Rate	31
5.1.	Description and rationale	31
5.2.	Long term average method adopted by IPART	32
5.3.	Conclusion	34
6.	Consistency with Federal Court Testimony	36
6.1.	AER's misinterpretation of the Court	36
6.2.	Consistency with my evidence to the Court	37
	Annexure A. Instructions	39
	Annexure B. Curriculum Vitae	44
	Gregory Houston	45
	Annexure C. Houston-Lally report	73
	Mr Gregory Houston and Dr Martin Lally – Joint Report	74

## 1. Introduction

I have been asked to prepare this report by Johnson Winter & Slattery (JWS), on behalf of APA Group (APA), Envestra Limited (Envestra), Multinet Gas (BD No. 1) Pty Ltd and Multinet Gas (DB No. 2) Pty Ltd (together, Multinet) and SPI Networks (Gas) Pty Ltd (SP AusNet). The context for JWS's request is the Australian Energy Regulator's (AER's) review of each of APA's, Envestra's, Multinet's and SP AusNet's (together, the parties) access arrangements for the supply of gas transportation services in Victoria, over the period 2013-2017.

The terms and conditions upon which each of these parties provides access to their respective gas transportation networks are subject to five yearly review by the AER. The access arrangements review for the period 2013-2017 is presently under way and the AER issued its draft decision in relation to each of the parties on 11 September 2012 for SP AusNet<sup>1</sup> and APA Group, and on 24 September 2012 for Envestra and Multinet (draft decisions).

### 1.1. Scope of report

JWS has asked me to prepare this report on a particular element of the cost of equity component of the weighted average cost of capital (WACC), which is in turn used to determine the rate of return to be applied in the AER's review of the parties' proposed gas access arrangements. The cost of equity has been estimated by the parties using the capital asset pricing model (CAPM), a theoretical model of equity returns that is specifically referred to in Rule 87(2)(b) of the National Gas Rules (NGR).

The particular focus of my report is the origin and historic development of the methodology used by the AER for estimating the risk free rate component of the cost of equity under the CAPM. I have also been asked whether there is any reason why this methodology cannot be departed from, and whether an alternative of estimating the risk free rate element of the cost of equity by reference to its long term average would be an economically sound method.

JWS's instructions to me are attached as Annexure A.

### 1.2. Expertise

I am a director of the global firm of expert economists, NERA Economic Consulting (NERA), and head of its Australian operations, based in Sydney. Over a period of more than twenty years I have developed substantial expertise and experience in both the principles of regulatory economics and their application. I have developed this expertise in the course of advising regulators, businesses providing services by means of regulated infrastructure assets, upstream and downstream users of those services, as well as governments. My experience encompasses a range of policy, regulatory design and financial economics questions as well as detailed third party access and price setting matters arising in the electricity, gas, water, wastewater, telecommunications, ports, rail and airport industries.

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<sup>1</sup> AER, *Access arrangement draft decision SPI Networks (Gas) Pty Ltd 2013-2017*, 11 September 2012.

I have testified on these as well as competition economics matters on numerous occasions before arbitrators, appeal panels, regulators, the Federal Court of Australia, the Australian Competition Tribunal and other judicial or adjudicatory bodies. On proceedings concerning the estimation of the cost of capital, including application of the CAPM, I have provided expert reports and associated testimony on six separate occasions.

I hold a post-graduate, BSc (Hons) in economics from the University of Canterbury, which I was awarded with first class honours in 1983.

I attach a copy of my curriculum vitae as Annexure B.

### **1.3. Structure of report**

My report is structured as follows:

- section 2 sets out my understanding of the context for this report, with particular focus on the requirements of Rule 87(2) of the NGR and the AER's adoption and interpretation of the CAPM model cited in that Rule;
- section 3 provides an account of the origin and historical development of the determination of the risk free rate element of the cost of equity by Australian regulators with particular reference to the method that is currently adopted by the AER. I provide this account both from my direct professional experience and by reference to published decisions by regulatory bodies with which I am familiar;
- section 4 identifies circumstances under which, as a matter of principle, it may be appropriate to depart from the method for determination of the risk free rate element of the cost of equity developed by the AER. I also examine the current market circumstances by reference to those principles and conclude that they warrant such a departure;
- section 5 discusses the alternative of estimating the risk free rate element of the cost of equity by reference to a long term average, provide an account of those regulators in Australia and elsewhere that have adopted this method, and sets out my conclusion that this is an economically sound method in the current market circumstances;
- section 6 discusses the apparently contrary opinion attributed to me by the AER by way of reference to the judgment of the Federal Court in *ActewAGL Distribution v The Australian Energy Regulator* [2011] FCA 639. In that section I provide further, contemporaneous material that confirms that the AER has misconstrued the evidence I put before the court in that matter; and
- section 7 summarises my conclusions by reference to the particular questions that I have been asked to address.

### **1.4. Declaration**

I declare that I have read and understood the Federal Court's Practice Note CM 7, entitled "*Expert Witnesses in Proceedings in the Federal Court of Australia*", and that I have prepared this report in accordance with those guidelines. I confirm that I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance that I regard as relevant have, to my knowledge, been withheld from this report.

## 2. Context for this Report

This section sets out my understanding of the relevant context for the determination of the cost of equity to be applied in the parties' gas access arrangements. This includes the particular requirements of the NGR governing the rate of return element as well as the theoretical specification of the CAPM model cited in the NGR.

### 2.1. National gas rules

The AER must undertake its review by considering the terms and conditions proposed by each of the parties against criteria set out in the NGR. Rule 87 of the NGR concerns the rate of return that is to be applied in determining the return on the projected capital base for each year of the access arrangement period, with clause 87(1) providing that:

“The rate of return on capital is to be commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.”

Rule 87(2)(b) provides that, in determining a rate of return on capital:

“a well accepted approach that incorporates the cost of equity and debt, such as the Weighted Average Cost of Capital, is to be used; and a well accepted financial model, such as the Capital Asset Pricing Model, is to be used.”

The effect of Rule 87 and its predecessor, clauses 8.30 and 8.31 of the former National Third Party Access Code for Natural Gas Pipeline Systems, has been to establish the CAPM as the predominant theoretical financial model for determining the rate of return to be applied in gas access arrangement reviews since 1998.

### 2.2. CAPM explained

The CAPM is a widely known theoretical model that seeks to explain how the market determines the returns that it requires on assets.<sup>2</sup> The model flowed from the published research of William Sharpe and John Lintner in 1964 and 1965,<sup>3</sup> respectively. Sharpe and Lintner's insight was that the return investors require on an individual asset will be determined not by how risky that asset would be if held alone, but by the extent to which it contributes to the risk of a large diversified portfolio like the market portfolio. Their model became known as the Sharpe-Lintner CAPM, or often simply the CAPM.

The Sharpe-Lintner CAPM is normally expressed by the formula:

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<sup>2</sup> For a more fulsome discussion of the development of the CAPM and its theoretical underpinnings, see: NERA, *Cost of Equity – Fama French Three Factor Model*, A report prepared for Jemena Gas Networks (NSW), 12 August 2009, pages 9-10.

<sup>3</sup> Sharpe, William F., *Capital asset prices: A theory of market equilibrium under conditions of risk*, Journal of Finance 19, 1964, pages 425-442.

Lintner, John, *The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets*, Review of Economics and Statistics 47, 1965, pages 13-37.

$$E(R_j) = R_f + \beta_j[E(R_m) - R_f], \quad (1)$$

where:

$E(R_j)$  = is the expected return on asset  $j$ ;

$R_f$  = is the risk-free rate;

$\beta_j$  = measures the contribution of asset  $j$  to the risk, measured by standard deviation of return, of the market portfolio; and

$E(R_m)$  = is the expected return to the market portfolio of risky assets.

The above formulation makes clear that the CAPM is a forward-looking model of expected returns. It states that the expected rate of return on an asset is a function of the extent to which the asset contributes to the risk of an already well diversified portfolio (being the entire market for assets). This contribution is measured by the parameter beta. The expected return on an asset is also a function of the expected return on the market over and above that on a theoretical, risk free asset (the risk free rate).

Brealey and Meyers' seminal finance text explains the model in the following terms:

“The capital asset pricing model states that the expected risk premium on each investment is proportional to its beta. This means that each investment should lie on the sloping security market line connecting [US] Treasury bills and the market portfolio.”<sup>4</sup>

The principal subject of my report is the method for estimating the risk free rate ( $R_f$ ) component in the context of the above CAPM model. Given this focus, it is helpful to note that the  $R_f$  element appears twice in the CAPM formulation, ie:

- first, inside the bracketed term that is used to derive the market risk premium (being the expected return to the market over and above the risk free rate); and
- second, as the rate to which the expected, beta-adjusted market return should be added to give the total expected return on an asset.

By way of alternative, it is not uncommon<sup>5</sup> for the bracketed term above to be expressed simply as:

$$\beta_j[E(MRP)]$$

where:

$E(MRP)$  = is the expected market risk premium, being the expected return on the market portfolio [ $E(R_m)$ ] over and above the risk free rate, ( $R_f$ ).

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<sup>4</sup> Brealey R. and Myers S. (1996) *Principles of Corporate Finance* (5<sup>th</sup> edition), The McGraw-Hill Companies, p. 180

<sup>5</sup> For example, one of the four parties' access arrangement proposals (that of SPI Networks, at page 171) expressed the CAPM formulation in this shortened manner, while each of the other parties sets out the full formulation.



In my opinion, the theoretical formulation of the CAPM has two principal implications for its application in the context of regulatory decision-making:

- first, the CAPM is a model of *expected returns* and so, as a matter of principle, the objective of the estimation process is to obtain the *best estimate of the forward looking cost of equity* as at the date at which it is to be applied (or, as close as practicable to that date); and
- second, to the extent that one or more particular component parameters are estimated by reference to *historical data*, it is critical to ensure that such estimates are incorporated into the cost of equity estimation process in a way that is both *internally consistent* and which has regard to the potential for *changes in the relationship between different, market-based parameters over time*.

I note that in its discussion and assessment of the parties' proposed approaches in its draft decision and its own preferred methodology for determining the risk free rate, the AER does not anywhere set out its precise understanding or specification of the CAPM, or the potential implications of that specification for the risk free rate element.

### **2.3. AER's method for determining the risk free rate element**

In its draft decisions, the AER's discussion of its proposed methodology for determining the risk free rate in the context of deriving an estimated cost of equity is limited to the second element of the CAPM formula described above, ie, that to which the expected, beta-adjusted market risk premium should be added to give the total expected return on an asset.

The AER's preferred method is to take the yield to maturity on ten year Commonwealth government securities (CGS), measured over an averaging period of 10 to 40 business days. The particular days are established confidentially between it and each of the parties, but are set at a time as close as practicably possible to the commencement of the access arrangement period. For convenience, in subsequent sections of my report I refer variously to this methodology as either an 'on the day' methodology or 'the AER's methodology' for estimating the risk free rate.

Finally, I note that the AER does not explicitly discuss in its draft decisions the methodology it has adopted for determining the risk free rate element of the market risk premium element of the CAPM, ie, the ' $R_f$ ' in ' $E(R_m - R_f)$ '. Rather, the AER's discussion is largely presented in terms of the merits of different possible estimates of the market risk premium. In those places where the AER does refer to the risk free rate element of the market risk premium, in no case does it set out its method for determining that element.

### 3. Origin and Development of AER Methodology

In this section I provide an account of the origin and historical development of the methodology for determining the risk free rate element of the cost of equity by Australian regulators with particular reference to the method that is currently adopted by the AER. I have prepared my account of these developments by reference to direct professional experience as well as to published decisions by regulatory bodies with which I am familiar.

#### 3.1. Victorian 1998 gas access arrangements review

The 1998 regulatory review of the proposed access arrangements for the three Victorian gas distribution companies and their transmission counterpart was perhaps the single most significant influence on the present day framework for estimating the regulatory cost of capital. It represented the first in-depth assessment of the rate of return to be applied in determining maximum prices to be applied by regulated network service providers in Australia. The review was carried out in parallel by the Victorian Office of the Regulator-General (ORG) in the case of the three distribution companies and by the Australian Competition and Consumer Commission (ACCC) for the transmission entity.

I provided wide-ranging consulting advice to the Office of Regulator-General throughout the period of the review, including on its determination of the appropriate rate of return.

##### 3.1.1. Method for determining the risk free rate

A subject of significant contention in the course of that review was the question of how best to estimate the risk free rate element of the cost of equity, under the CAPM. The access arrangement for each of the distributors and the transmission entity was prepared by the Energy Projects Division (EPD) of the Department of Treasury and Finance Victoria. EPD proposed that the risk free rate be set at 8 per cent, which represented the sum of:

- the twelve month average yield on ten year CGS, with the averaging period<sup>6</sup> ending some months before the proposed access arrangements were submitted; and
- a 45 basis point premium, which reflected the average yield differential as between 30 and ten year US treasuries, by way of proxy for the interest rate that would apply to 30 year Australian bonds – said to represent the ideal form of debt finance for such assets, were they to exist.

For the purposes of this report, EPD's proposal gave rise to essentially two methodological questions that were canvassed extensively during the review process, ie:

- (i) whether or not to determine the risk free rate by reference to an average estimate that seeks to smooth perceived cycles in nominal or real interest rates; and

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<sup>6</sup> EPD proposed an averaging period spanning August 1996 to August 1997.

- (ii) if intending to adopt a prevailing measure of the risk free rate, how best to take account of day-to-day fluctuations distortions in CGS yields.

The ORG's final decision was to set the risk free rate at 6 per cent.<sup>7</sup> This reflected the rate on ten year CGS yields prevailing at the time of its decision, measured over a two month prior period.<sup>8</sup>

In discussing its methodology for determining the risk free rate, the ORG recognised that this CAPM parameter was not an end in itself, but rather was an element in its determination of the cost of equity (as well as debt), stating that:

“All else being equal, if the assumed risk-free rate is increased (reduced), the assessed cost of equity and debt increases (reduces).”<sup>9</sup>

In keeping with its obligation to determine both the debt and equity elements of the rate of return, the ORG also tested the ‘end result’ of applying its risk free rate methodology in combination with the MRP and beta elements of CAPM, and satisfied itself as to the reasonableness of the cost of equity outcome, ie:

“Based on the views of market practitioners, investors and customers regarding the acceptable cost of capital (refer to section C.12 of Attachment C) the Office is satisfied that its pre-tax WACC decision is consistent with a post-tax return on equity within the plausible range of 12 per cent to 13 per cent sought by the market.”<sup>10</sup>

In the following two sections, I elaborate on the ORG's approach to both the MRP element and its cost of equity cross check.

### **3.1.2. Market risk premium**

The ORG's approach to the determination of the market risk premium component of the cost of equity gave strong emphasis to the need to determine a current, *ex ante* MRP. For example, in a staff paper on rate of return matters,<sup>11</sup> more than half of the ORG's five page discussion of the MRP was devoted to considerations potentially affecting its present day, forward-looking value, relative to estimates derived by reference to long term, historical averages.

The ORG was also careful to identify the relevance and qualifications that apply to the use of historical data on returns to the market portfolio, over and above the risk free rate. In its staff paper, the ORG stated that:

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<sup>7</sup> CGS interest rates were subject to a material downward shift during the more than twelve month period that elapsed between the access arrangement proposal first being submitted and the completion of the ORG and ACCC reviews.

<sup>8</sup> Office of the Regulator-General, Victoria, *Access Arrangements for Multinet, Westar and Stratus, Final Decision*, October 1998, page 201

<sup>9</sup> *Ibid*, page 73

<sup>10</sup> *Ibid*, page 78

<sup>11</sup> Office of the Regulator-General, Victoria, *Weighted average cost of capital for revenue determination: gas distribution, Staff Paper Number 1*, 28 May 1998, pages 24-27

“Historical data are relevant in so far as they provide an indication of the pricing of risk by investors in the past.”<sup>12</sup>

The ORG also commissioned a report from Professor Kevin Davis, in which he examined the applicability of historic measures of the market risk premium by reference to forward looking dividend growth model (DGM) estimates of the return to the market as a whole. Davis found that:

“Historical measures of the risk premium may not be particularly appropriate since the risk premium in the CAPM is a forward looking concept - the return investors expect to receive from a current investment in the market over that received on risk free securities. An alternative approach is to apply a valuation technique such as the dividend growth model to the market as a whole to derive the implied required rate of return... [This approach] gives an ex ante market risk premium of between 4.5% and 7% with figures at the lower end of that range probably more applicable.”<sup>13</sup>

The Office referred to both this work as well as its own estimates of a forward looking MRP<sup>14</sup> in presenting its staff paper on the subject, stating that:

“It is possible to construct combinations of plausible assumptions in relation to future franked dividend yields, economic growth rates and inflation to estimate an ex-ante MRP in the range of 4.5% to 7%. This contrasts with long term average measures of the actual MRP in the range of 6% to 7%. It should be noted however that there is uncertainty associated with estimating an ex-ante MRP.”<sup>15</sup>

In drawing both its preliminary conclusion and in its final decision to determine an MRP of 6 per cent (a decision that was confirmed in its final decision), the ORG cited by way of reasoning that:

“There is no reason to suggest that the underlying riskiness (and therefore pricing) of equity has changed materially.”<sup>16</sup>

And then:

“In view of all these factors, it is considered that reasonable weight should be given to the historic data.”<sup>17</sup>

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<sup>12</sup> *Ibid*, page 27

<sup>13</sup> Professor Kevin Davis, *The Weighted Average Cost of Capital for the Gas Industry*, a report prepared at the request of the ACCC and the Office of the Regulator-General, 18 March 1998, page 14

<sup>14</sup> Office of the Regulator-General, Victoria, *Weighted average cost of capital for revenue determination: gas distribution, Staff Paper Number 1*, 28 May 1998, page 26

<sup>15</sup> *Ibid*, page 27

<sup>16</sup> Office of the Regulator-General, Victoria, *Weighted average cost of capital for revenue determination: gas distribution, Staff Paper Number 1*, 28 May 1998, page 27

Office of the Regulator-General, Victoria, *Access Arrangements for Multinet, Westar and Stratus, Final Decision*, October 1998, page 202

Consistent with this reasoning, in its final decision the ORG determined an MRP of 6 per cent, which it believed to lie at the mid-point of the reasonable range.<sup>18</sup>

### **3.1.3. Cost of equity outcome**

The ORG was careful to satisfy itself as to the reasonableness of the end result of its deliberations on the risk free rate and the market risk premium, in combination with its equity beta decision (1.2, for gearing of 60 per cent) by calculating the resultant nominal cost of equity.

In one of those cross checks, the ORG appeared to draw comfort from evidence provided to it by a US-based expert on the regulatory cost of capital, Dr Jeff Makhholm, stating in the section of its final decision discussing risk and the determination of an appropriate beta that:

“Dr Jeff Makhholm (on behalf of BHP Petroleum) submitted advice consistent with sworn testimony he has given on behalf of regulated utilities in the United States. He stated: “The Office proposes a WACC that includes a cost of equity consistent with what I find for gas distribution in the U.S.”<sup>19</sup>”

In making its own assessment of this same question, the ORG stated in its final decision that:

“Having determined the pre-tax real WACC of 7.75 per cent for purposes of calculating the target revenues in the Access Arrangements, the Office has made an assessment of the post-tax nominal return on equity that is implied by its decision.”<sup>20</sup>

In citing that estimate, the ORG stated:

“While there is necessarily some judgement and estimation required in an assessment of the post-tax nominal return on equity implied by the Office’s pre- tax real WACC decision of 7.75 per cent, these different methods of assessment indicate that the post-tax nominal equity returns would be in the range of 12.5 per cent to 14.0 per cent. The Office considers that range to be well within the requirements of financial market realities and the range suggested by financial market practitioners.”<sup>21</sup>

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<sup>17</sup> Office of the Regulator-General, Victoria, *Weighted average cost of capital for revenue determination: gas distribution, Staff Paper Number 1*, 28 May 1998, page 27

Office of the Regulator-General, Victoria, *Access Arrangements for Multinet, Westar and Stratus, Final Decision*, October 1998, page 202

<sup>18</sup> Office of the Regulator-General, Victoria, *Access Arrangements for Multinet, Westar and Stratus, Final Decision*, October 1998, page 203, 215

<sup>19</sup> *Ibid*, page 208

<sup>20</sup> *Ibid*, page 217

<sup>21</sup> *Ibid*, page 219

### 3.1.4. Summary

The outcome of the ORG's review (much of which was replicated by the ACCC's parallel process)<sup>22</sup> laid the foundations for estimating both the risk free rate and other elements of a CAPM-determined cost of equity. The essential features of this methodology have since been applied by most (although, not all) regulators in Australia, and involve:

- estimating the risk free rate by reference to the latest available CGS yields, averaged over a period generally in the range of 10-40 business days; and
- combining this with a market risk premium estimated by reference to a long term average of observed historical returns to the market net of the risk free rate, a process that has generally led to a value of 6 per cent.

Regulators such as the ORG and its successor body the Essential Services Commission of Victoria have also ensured that the 'end result' of applying this methodology for determining the cost of equity was consistent with other market evidence. Such end result tests have included:

- as explained above the ESC (and some other regulators, including the ACCC) has generally undertaken a DGM based estimate of the forward looking market return, using current dividend yields in combination with a long term dividend growth rate assumption, such as that derived from an estimate of the long term sustainable growth rate of GDP; and
- in some instances, regulators have undertaken comparisons of the (nominal) cost of equity determined by US regulators, who frequently develop a utility-specific DGM estimate – the Queensland Competition Authority (QCA) has considered such estimates, which have at times been developed and put before it in the context of the appropriate beta estimate.

However, the context – indeed, conditionality – applying to these decisions is critical for understanding and interpreting the methodology for the risk free rate that has become established. The crucial elements of that conditionality include:

- a clear recognition that the 'other' element of any cost of equity estimate determined by reference to the CAPM model – the market risk premium – is also a forward looking variable that, for consistency within the theoretical CAPM model, must also be estimated consistently with the risk free rate;
- that the MRP element has consistently been estimated by reference to long term average observations of equity returns, on the basis that the historical average value for the MRP was the best proxy for its present day, forward looking value; and

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<sup>22</sup> ACCC, Final Decision, *Access Arrangement by Transmission Pipelines Australia Pty Ltd and Transmission Pipelines Australia (Assets) Pty Ltd for the Principal Transmission System, Access Arrangement by Transmission Pipelines Australia Pty Ltd and Transmission Pipelines Australia (Assets) Pty Ltd for the Western Transmission System, Access Arrangement by Victorian Energy Networks Corporation for the Principal Transmission System*, 6 October 1998

- often, such as was the case in the ORG’s final decision, this method has been accompanied by an explicit assumption to the effect that there was no reason to believe that the resulting, historically-based estimate of the resulting cost of equity was materially different from any current, forward-looking direct estimate of the cost of equity.

## 3.2. Adoption of similar methodologies

The methodology for determining the risk free rate element of the cost of equity adopted by both the ORG and ACCC soon became the norm in decisions made by these two regulators in other contexts, and by other Australian jurisdictional regulators. I illustrate this development below, with particular emphasis on its qualifying assumptions and/or dependencies.

### 3.2.1. ACCC’s draft statement of principles

Little more than six months after the 1998 review of the Victorian gas access arrangements, the ACCC published as a draft for consultation its Statement of Principles for the Regulation of Transmission Revenues (the draft statement).<sup>23</sup> The draft statement remained in draft form for more than four years and during that time stood as a reference point for ACCC decisions made under the then National Electricity Code on allowed revenues for transmission service providers.

The ACCC’s intended approach to rate of return matters occupied a significant proportion of its draft statement. Consistent with sentiments expressed by both itself and the ORG in 1998, the draft statement confirmed the role of the CAPM as the principal framework for addressing rate of return matters, and that the purpose of applying the CAPM was to estimate the cost of equity:

“post-tax rates of return directly available from the CAPM benchmarks should be used as the basis for assessing the necessary revenue streams to support the return on equity.”<sup>24</sup>

On the risk free rate element, the ACCC essentially adopted the same methodology it had developed in conjunction with the ORG:

“While it is theoretically correct to use the ‘on the day’ rate under CAPM, the Commission acknowledges a practical difficulty in that use of the ‘on the day’ rate introduces a degree of short term variability at times of market uncertainty. Therefore, the Commission considers it appropriate to adopt an average over a relatively short period to smooth daily variations. The Commission also understands the benchmark of a [sic] has a degree of acceptance in financial markets. In conclusion the Commission will adopt a 40 day moving average of the ‘on the day’ five year government bond rate.”<sup>25</sup>

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<sup>23</sup> ACCC, Draft, *Statement of Principles for the Regulation of Transmission Revenues*, 27 May 1999

<sup>24</sup> *Ibid*, page 75

<sup>25</sup> *Ibid*, page 78

The ACCC was also clear that, together with the MRP and beta, the purpose of the risk free rate element was to determine the expected return on equity:

“The MRP is a parameter in the CAPM which, together with the risk free rate and firm specific beta, determines the expected return on equity in the business.”<sup>26</sup>

The ACCC also recognised that the applicable MRP was a forward looking estimate, and that historical estimates of this parameter may be contentious in a context where current, forward looking estimates of that parameter may have departed from their observed historical value (with the then presumption being that the forward-looking MRP may have been below its long term average):

“Theoretically the market risk premium is an ex-ante premium based on a forward view of the market. However, for practical reasons much of the analysis of its value has relied on the premium historically achieved, as a proxy measure. Historical estimates are contentious as, for example, the more stable inflationary environment now prevailing may mean that the relevant market risk premium is less than has been observed over recent years.”<sup>27</sup>

“In summary, the market risk premium is an inherently poorly defined parameter with considerable uncertainty associated with its estimation. Ways to measure the market risk premium are evolving, and there is an ongoing debate. The Commission will use its judgment in setting the market risk premium, noting the views of market participants as to its value are just as important as its statistically determined value.”<sup>28</sup>

The ACCC also confirmed the primacy of the end result of combining the risk free rate, the MRP and beta into an estimate of the cost of equity, stating that:

“The basic rate of return critical to the regulatory framework is the expected nominal post-tax return on equity for the business since that is what determines whether investors will be willing to advance equity to finance the capital infrastructure required to provide network services.”<sup>29</sup>

### **3.2.2. QCA’s regulation of electricity distribution**

Soon after it became the jurisdictional regulator for electricity distribution network services in December 2000, the QCA commenced a process of determining prices to apply to those services from 1 July 2001. The QCA also adopted essentially the same methodology for determining the cost of equity and its risk free rate element as the ORG and ACCC before it, giving emphasis to the CAPM model:

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<sup>26</sup> *Ibid*, page 78

<sup>27</sup> *Ibid*, page 78

<sup>28</sup> *Ibid*, page 79

<sup>29</sup> *Ibid*, page 83



“Therefore, given the risk-free rate, the equity beta of an asset and the overall market risk premium, the CAPM estimates the expected cost of equity funds for those assets.”<sup>30</sup>

On the risk free rate element of the cost of equity, the QCA stated:

“The Authority has decided to use the 10 year Commonwealth Government bond rate measured at the time of deciding the rate of return for this draft report.”<sup>31</sup>

This methodology was subsequently confirmed in the QCA’s final decision.<sup>32</sup>

The QCA was clear that the MRP element of the CAPM also needed to be determined on a forward-looking basis, and it acknowledged there was a range of methods available for making such an estimate:

“In theory, the CAPM requires that a forward-looking market risk premium be based on a time frame corresponding to the period of the analysis (that is, the life of the asset). However, in practice this data does not exist. Alternative methods are suggested in the literature to estimate the market risk premium such as:

- surveys;
- the calculation of an implied risk premium based on a discounted dividend growth model or based on accounting data;
- consumption based modelling; and
- use of historical data.

Most regulators have preferred the use of an equity market risk premium proxied from historical data.”<sup>33</sup>

The QCA also recognised that the MRP fluctuates over time, and took this phenomenon into account in its final decision, which it described in the following terms:

“The findings of Australian academic studies and regulatory decisions suggest that the market risk premium has ranged from 6 to 8 per cent. There is also a general view that this historical range may be too high, though as yet the evidence is inconclusive. In correspondence with the QCA, Professor Officer has indicated that he supports a range of 5 to 7 per cent for the current market risk premium.”<sup>34</sup>

And then:

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<sup>30</sup> QCA, Final Determination, *Regulation of Electricity Distribution*, May 2001, page 69

<sup>31</sup> QCA, Draft Determination, *Regulation of Electricity Distribution*, December 2000, page 72.

<sup>32</sup> QCA, Final Determination, *Regulation of Electricity Distribution*, May 2001, page 11

<sup>33</sup> *Ibid*, page 90

<sup>34</sup> *Ibid*, page 92

“Following consideration of the submissions, recent regulatory trends and research undertaken by the QCA, the Authority has decided that an appropriate and conservative estimate for the market risk premium is currently 6.00 per cent.”<sup>35</sup>

### **3.2.3. ACCC’s final statement of principles**

The ACCC finalised its Statement of Principles for the Regulation of Transmission Revenues<sup>36</sup> (final statement) in late 2004, and confirmed the framework and estimation methodology for the cost of equity, the risk free rate and other components that it had identified in 1999.

“The cost of equity is a forward looking concept, and measures the perceived opportunity cost of the investor purchasing equity in the firm, taking account of the risks involved.”<sup>37</sup>

The ACCC formally adopted the CAPM as its preferred model of the cost of equity and noted that:

“The cost of equity capital can be calculated using historical input data as a proxy for ex-ante returns due in part to the subjective nature of future estimates. Historical outcomes data are commonly used as the basis of estimates because methods used to derive forward looking estimates are generally perceived as being too subjective or imprecise.”<sup>38</sup>

Further, in canvassing the CAPM components of cost of equity, the ACCC recognised the potential interdependence of its different elements, stating in a discussion paper preceding its final statement that:

“There is evidence that the MRP moves inversely with government interest rates suggesting that in times of low inflation and expected inflation (reflected by lower long term interest rates), the MRP is higher.”<sup>39</sup>

Notwithstanding this observation, the ACCC confirmed its by now established methodology for determining the risk free rate, ie:

“In determining the risk free rate to apply to the WACC calculation it is theoretically correct to use the on-the-day rate as it fully reveals the latest information available.”<sup>40</sup>

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<sup>35</sup> *Ibid*, page 92

<sup>36</sup> ACCC, Decision, *Statement of principles for the regulation of electricity transmission revenues — background paper*, 8 December 2004

<sup>37</sup> *Ibid*, page 92

<sup>38</sup> *Ibid*, page 93

<sup>39</sup> ACCC, Discussion Paper, *Review of the Draft Statement of Principles for the Regulation of Transmission Revenues*, August 2003, page 74

<sup>40</sup> ACCC, Decision, *Statement of principles for the regulation of electricity transmission revenues — background paper*, 8 December 2004, page 96

In its assessment of the appropriate approach to the MRP element of the cost of equity, the ACCC stated explicitly that:

“The rationale for using historical data as a measure of the expected MRP is that investors’ expectations will be framed on the basis of their experience.”<sup>41</sup>

The ACCC also acknowledged that regulators in other jurisdictions were inclined towards the use of explicit *ex ante* estimates of the MRP:

“The ACCC notes the UK regulators appear to use a forward looking MRP based on an ex-ante (supply side) approach. The ex-ante approach estimates the MRP as the sum of the expected dividend yield and the expected capital gain from shares. The MRP estimates from an ex-ante approach are generally lower than historic estimates of MRP. Australian applications of similar ex-ante approaches have arrived at an estimate of 4–5.7 per cent.<sup>49</sup> A major part of the differential appears to be driven by the Australian assumption of a significantly higher long run growth in gross domestic product.

Most of the research on the ex-ante approach has been undertaken in the USA market. Given the relatively limited research on the Australian application of the ex-ante approach, the ACCC considers caution must accompany the interpretation of these results. Therefore the ACCC considers it is not appropriate to rely exclusively on the ex-ante approach for the purpose of estimating a MRP.”<sup>42</sup>

In concluding its assessment of the appropriate method for estimating the MRP element, the ACCC concluded that:

“The ACCC considers that....6 per cent is an appropriate balance of the available evidence on the MRP. Although historical premiums typically suggest a higher MRP than 6 per cent, further estimates of the MRP over more recent periods and forward looking estimates typically suggest a lower MRP than 6 per cent. Therefore, the ACCC will use its current estimate of 6 per cent for the MRP but will continue to monitor the available research.”<sup>43</sup>

### **3.2.4. AER’s 2009 review of WACC parameters**

Finally, under the now prevailing National Electricity Rules (NER, or the rules), in 2009 the AER undertook a review of certain WACC parameters applying under the CAPM framework that is now prescribed by the rules.

In this review, the AER was clear that its role in reviewing both its methodology for determining the risk free rate as well as the MRP, the focus was both forward looking and on the estimation of the cost of equity:

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<sup>41</sup> *Ibid*, page 99

<sup>42</sup> *Ibid*, page 100

<sup>43</sup> *Ibid*, page 101

“The NER state that in undertaking a review of the WACC parameters (including the cost of equity parameters) the AER must have regard to the need for the rate of return to be a forward looking rate of return that is commensurate with prevailing conditions in the market for funds... Accordingly, the AER should determine each parameter, including the MRP, in such a way as it is relevant for a 10 year perspective (consistent with the term of the risk-free rate) from the commencement of the next regulatory control period for each service provider affected by this review.”<sup>44</sup>

In discussing its approach to determining the MRP to be applied over the period covered by the review, the AER acknowledged the role of historical estimates as involving an assumption that investor expectations over the relevant period will reflect this historical experience:

“Estimates based on historical averages are the most common proxy of the MRP. Historical estimates, though strictly not forward looking, have predominantly been used to estimate the MRP on the assumption that investors base forward looking expectations on past experience.”<sup>45</sup>

In an acknowledgement of the effect of the global financial crisis (GFC) on investor expectations from 2008 onwards, the AER concluded that:

“...the use of historical estimates should be considered in light on the additional uncertainty caused by the global economic and financial crisis.”<sup>46</sup>

Notwithstanding, the AER opted to give primary weight to past regulatory practice and so the use of historical estimates of the MRP:

“Consistent with past regulatory practice,...primary weight should continue to be placed on long term historical estimates of the MRP.”<sup>47</sup>

And:

“Accordingly, the AER considers that a MRP of 6.5 per cent is reasonable, at this time, and is an estimate of a forward looking long term MRP commensurate with the conditions in the market for funds that are likely to prevail at the time of the reset determinations to which this review applies.”<sup>48</sup>

Nevertheless, the AER acknowledged the likely inverse relationship between the risk free rate and MRP components of the cost of equity, and the challenges presented by this

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<sup>44</sup> AER, Final Decision, *Electricity Transmission and Distribution Network Service Providers Review of the Weighted Average Cost of Capital (WACC) Parameters*, May 2009, pages 37-38

<sup>45</sup> *Ibid*, page 191

<sup>46</sup> *Ibid*, page 237

<sup>47</sup> *Ibid*, page 237

<sup>48</sup> *Ibid*, page 238

relationship in the context of the ready ability to take account of up-to-date information on the risk free rate but not in relation to the MRP element, stating:

“For parameters such as the nominal risk-free rate, the adoption of a method (rather than a value), enables this parameter to be updated at the time of the reset determination and produce a rate which reflects the forward looking expectations prevailing at the time of the reset determination.....

Similarly, it may be reasonable to consider that the MRP is not stable over time either, but varies with different economic conditions. For example, CEG consider there is academic literature supporting an inverse relationship between the MRP and the yield on government bonds (which are the proxy for the risk-free rate). As CGS yields are currently at historically low levels, this would suggest the current MRP is above the forward looking long term MRP.”<sup>49</sup>

The AER also rejected a suggestion that it was appropriate to take this into account when estimating the equity beta. Notwithstanding, the AER did not take up the challenge presented by the phenomenon of negative correlation between these two elements of the cost of equity, concluding that, within the confines of its review of specified WACC parameters:

“Further, the view of the AER and the JIA’s advisers (Professor Officer and Dr Bishop) is that there is no adequate method to ‘automatically’ update the MRP at the time of each determination, like there is for the nominal risk-free rate.”<sup>50</sup>

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<sup>49</sup> *Ibid*, page 235-6

<sup>50</sup> *Ibid*, page 236

## 4. Potential for Departures from the AER Method

This section identifies circumstances under which, as a matter of principle, it may be appropriate to depart from the method for determination of the risk free rate element of the cost of equity developed by the AER. I also examine the current market circumstances by reference to those principles and assess whether they now warrant such a departure.

### 4.1. Principles governing potential departures

The circumstances under which it may be appropriate to depart from the method for determining the risk free rate element of the cost of equity adopted by the AER in its draft decisions of 11 and 24 September 2012 flow directly from the principles underpinning the origin and historical development of the method that I identified in section 3.

The relevant principles have each been endorsed by the ORG/ACCC, in their collaborative role as instigators of the method, and affirmed by the ACCC in its subsequent articulation of its preferred approach to rate of return matters in the context of its transmission revenue determination role. They can be summarised as follows.

First, the fundamental purpose of the CAPM framework is to estimate the applicable forward-looking cost of equity, as at the date of the determination. The ACCC recognised this in the course of its contribution to the development of the current AER methodology when it stated:

“The basic rate of return critical to the regulatory framework is the expected nominal post-tax return on equity for the business since that is what determines whether investors will be willing to advance equity to finance the capital infrastructure required to provide network services.”<sup>51</sup>

Second, the risk free rate is but one of three CAPM elements that, in combination, deliver an estimated cost of equity. Any method for determining the risk free rate must be internally consistent with that applied for estimating the two other elements. Significantly, in certain circumstances the risk free rate element has an inverse relationship with the forward looking MRP element. Such circumstances arise from the likelihood that investors’ appetite for holding risky assets will fluctuate from time to time, causing the relative demand for risky – as distinct from risk free – assets to shift as aggregate investor sentiment changes. Again, the ACCC has also recognised this inverse relationship in the course of its contribution to the development of the current AER methodology, stating:

“There is evidence that the MRP moves inversely with government interest rates suggesting that in times of low inflation and expected inflation (reflected by lower long term interest rates), the MRP is higher.”<sup>52</sup>

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<sup>51</sup> ACCC, Draft, *Statement of Principles for the Regulation of Transmission Revenues*, 27 May 1999, page 83

<sup>52</sup> ACCC, Discussion Paper, *Review of the Draft Statement of Principles for the Regulation of Transmission Revenue*, August 2003, page 74

A critical consequence of this inverse relationship is that adoption of an ‘on the day’ rate for one component is not theoretically correct unless the same approach is adopted for the other. The ‘theoretically correct’ approach is the estimation of a cost of equity on the day. Given the interrelationship between the different elements of the cost of equity, it may not be theoretically correct to adopt an ‘on the day’ method for one unless there is a high degree of confidence that the same principle has been applied to the other element.

Third, consistent with the second principle above, the placing of any significant weight on estimates of the MRP determined by reference to long term historical average involves the conditional assumption that, at the time of each determination, investors’ forward-looking MRP will not be significantly different from an historic average MRP estimated over a significant period of time. Again, the ACCC recognised this conditionality in the course of its contribution to the development of the current AER methodology, stating:

“Historical estimates, though strictly not forward looking, have predominantly been used to estimate the MRP on the assumption that investors base forward looking expectations on past experience.”<sup>53</sup>

This same conditionality was also clearly expressed by the ORG in 1998, when it stated in support of its decision to give reasonable weight to historic data:

“There is no reason to suggest that the underlying riskiness (and therefore pricing) of equity has changed materially.”<sup>54</sup>

It follows that where there is evidence that investors’ expectations as to the MRP may have departed from their long term average, and there is either reluctance or insufficient confidence to draw on one of the various potential means for estimating a forward looking MRP, there is a case for departure from the AER methodology for determining the risk free rate.

Indeed, not to depart from a prevailing measure of the risk free rate in such circumstances will cause the resulting cost of equity estimate to be biased. In particular, *if*:

- the risk free rate element is set ‘on the day’, while the MRP element is set by reference to its historical value; and
- the risk free rate has fallen substantially without any apparent reduction in inflation or the expectation of it; and
- there is good reason to believe that investors’ risk appetite has departed from its long term average,

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<sup>53</sup> AER, Final Decision, *Electricity Transmission and Distribution Network Service Providers Review of the Weighted Average Cost of Capital (WACC) Parameters*, May 2009, page 191

<sup>54</sup> Office of the Regulator-General, Victoria, *Weighted average cost of capital for revenue determination: gas distribution, Staff Paper Number 1*, 28 May 1998, page 27

Office of the Regulator-General, Victoria, *Access Arrangements for Multinet, Westar and Stratus, Final Decision*, October 1998, page 202

then:

- determination of the risk free rate element by reference to the prevailing rate involves the inconsistent use of the CAPM elements, and will deliver a biased estimate of the cost of equity, as compared with an alternative, internally consistent methodology that takes this risk of bias into account.

Finally, taking account of the first principle I identify above, the nature and potential extent of such potential bias can be gauged by reference to information of direct relevance to investor expectations of the cost of equity itself. This amounts to a ‘cross check’ on the end result of applying the CAPM, a process that has also been endorsed as a relevant consideration by both the ORG and ACCC.<sup>55</sup>

## 4.2. Assessment of current market circumstances

I have undertaken an assessment of current market circumstances by reference to the principles I describe above drawing on three distinct sources. They are:

- the observations of respected academic/expert commentators;
- Australian market data for both risk free assets as well as the equity market; and
- data from United States regulatory decisions that illustrate the relationship between forward looking returns on equity and the return on risk free assets.

### 4.2.1. Respected academic/expert commentators

Many respected commentators have observed that a material shift in investor risk preferences took place in conjunction with the onset of the global financial crisis, and that the reduction in investors’ appetite for risk remains a continuing if not deepening phenomenon.

By way of example, observations to this effect have been made by Professors Julian Franks and Stewart Myers of London Business School and the MIT Sloan School of Management, respectively, and Associate Professor Martin Lally, of Victoria University of Wellington (the experts) in a 2010 report for the New Zealand Commerce Commission. In that report, the experts agreed that:

“Professor Franks, Dr Lally and Professor Myers, hereafter collectively referred to as the Expert Panel, are in agreement that, as a result of the recent GFC, the market risk premium is likely to have increased at least temporarily. This is because of increased levels of financial market volatility and investors’ perception of the world as a much riskier place.”<sup>56</sup>

The experts further agreed that:

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<sup>55</sup> See sections 3.1.3 and 3.2.3.

<sup>56</sup> Franks, Julian, Lally, M and Myers, S, “*Recommendation to the New Zealand Commerce Commission on whether or not it should change its previous estimate of the tax adjusted market risk premium as a result of the recent global financial crisis*”, 14 April 2012, page 7



“They agreed that historical (backwards-looking) estimation techniques, like Ibbotson,<sup>12</sup> do not pick up short-term shocks very quickly, and to the extent that they do recognise them, they will (wrongly) result in lower estimates of the market risk premium as a result of the GFC.”<sup>57</sup>

The principle that the risk free rate and the MRP are inversely related as investors’ alter their appetite for risk was one of the relevant matters agreed between the experts in the 2011 proceedings before the Federal Court (the Court) involving ActewAGL and the AER (the ActewAGL proceedings).<sup>58</sup> In a report prepared jointly by myself (who gave evidence on behalf of ActewAGL) and Associate Professor Martin Lally (who gave evidence on behalf of the AER) at the request of the Court (the Houston-Lally report), it was stated that:

“The risk free rate and the MRP tend to move inversely with each other as investors’ appetite for or aversion to risk fluctuates in line with macroeconomic circumstances. For example, during the global financial crisis, the market risk premium very likely increased (as investor [sic] became more risk averse and market volatility increased), while the risk free rate clearly reduced (as investors created a flight to safety and quality).”<sup>59</sup>

I attach a copy of the complete Houston-Lally report as Annexure C.

Earlier this year, the Assistant Governor (Financial Markets) of the Reserve Bank of the Australia, Guy Debelle, stated in a letter responding to a number of questions posed in relation to the CGS market by the ACCC that:

“In recent years, changes in investors’ risk preferences and/or their perceptions of risk have seen a significant increase in demand for risk free assets, such as CGS, globally. ... As a result, there has been a widening in the spreads between CGS yields and those on other Australian dollar-denominated debt securities. This widening indeed confirms the market’s assessment of the risk-free nature of CGS and reflects a general increase in risk premia on other assets.

....

..market risk premia are unlikely to be stable through time. While it is a reasonably simple matter to infer changes in debt risk premia from market prices, it is less straightforward to do so for equity premia. In making use of the risk-free rate to estimate the cost of capital, it is important to be mindful of how the resulting relativity between the cost of debt and that of equity can change over time and whether that is reasonable.”<sup>60</sup>

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<sup>57</sup> *Ibid*, page 22

<sup>58</sup> ActewAGL Distribution v The Australian Energy Regulator [2011] FCA 639

<sup>59</sup> Houston, G and Lally, M, *Mr Gregory Houston and Dr Martin Lally – Joint Report, Prepared in the context of proceedings between ActewAGL and the Australian Energy Regulator*, 16 March 2011, page 1

<sup>60</sup> Letter by Guy Debelle (Assistant Governor of the RBA) to Mr Dimasi (Commissioner of the ACCC) entitled, *The Commonwealth Government Securities Market*, dated 16 July 2012.

## 4.2.2. Australian market data

There is a variety of empirical evidence that is consistent with the above observations of respected academic/expert commentators. First, the simple observation of time series data for ten year CGS yields suggests that these instruments have been the subject of a material increase in the demand for risk free assets since around the onset of the global financial crisis (GFC) in the third quarter of 2008.<sup>61</sup>

Of course, the examination of CGS time series data for the purpose of identifying potentially significant shifts in demand for such assets raises the question of the appropriate commencement date for such a series. Although it is desirable to review as long a time series as possible, long term CGS yields are strongly affected by expectations as to the future rate of consumer price inflation. This is because a component of the yield has the function of compensating investors for the anticipated loss of purchasing power of the capital sum over the life of the bond.

I have selected September 1996 as the commencement date for the time series presented below, since that is the first month following the joint announcement of the then Treasurer and the Governor (designate) of the Reserve Bank of Australia (RBA) on the independence of the RBA. In this statement the government formally recognised the independence of the RBA and its responsibility for monetary policy matters, and stated that it intended to respect the Bank's independence as provided by statute.<sup>62</sup>

Formal recognition of RBA independence in monetary policy matters followed more than three years after the RBA adopted a target for consumer price inflation of 2-3 per cent per annum, a development that itself was likely to have clarified investors' inflation expectations.<sup>63</sup> However, for some years prior to the RBA's adoption of an inflation target in 1993, outturn CPI inflation was often at levels substantially in excess of the target range.

Understandably, given the prior history of relatively high consumer price inflation, implied expectations of inflation – as estimated by the differential between nominal ten year CGS yields and those on CPI index-linked CGS of the same maturity – exceeded the RBA target range for three years beyond 1993. However, by the third quarter of 1996 CGS indexed linked yields were consistent with inflation expectations being within the RBA target range, as indeed was the outturn rate of CPI inflation.

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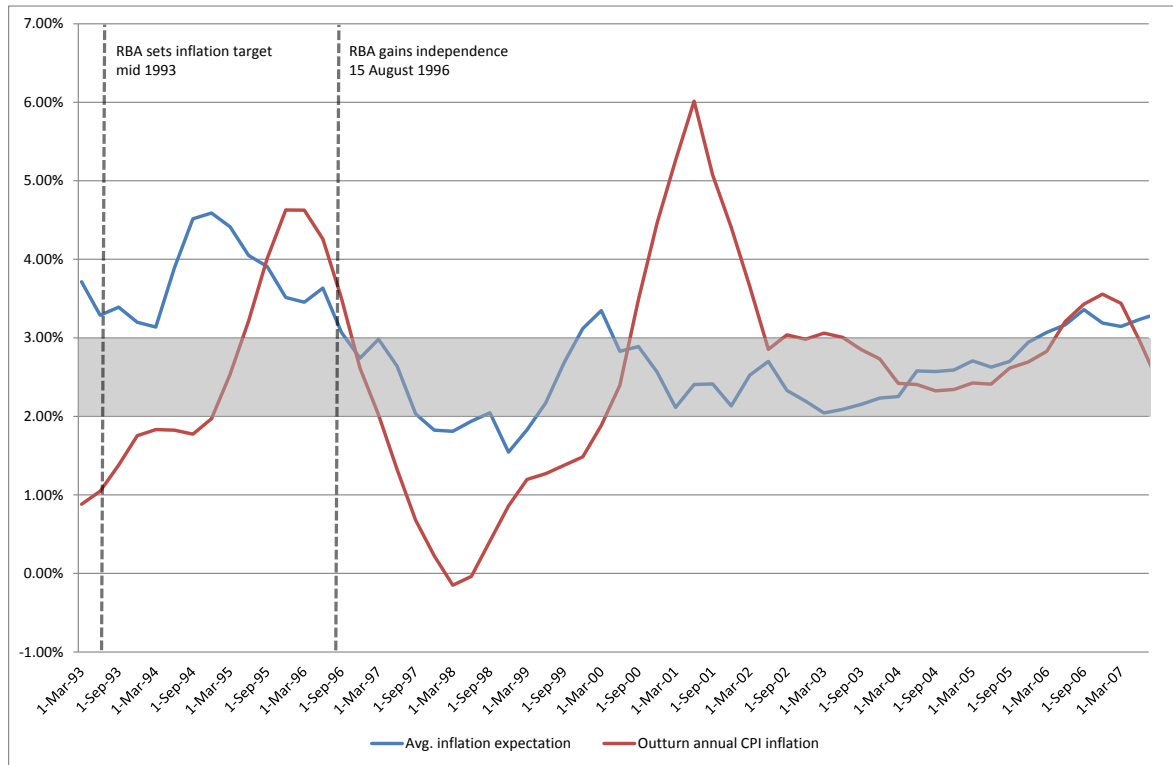
<sup>61</sup> On Sunday 7 September 2008 'Fannie Mae' and 'Freddie Mac' (the two largest buyers and securitisers of US mortgages) were placed in conservatorship. On 14 September 2008 the bankruptcy of investment bank Lehman Brothers and the sale of Merrill Lynch to Bank of America were announced. On 16 September 2008 it was announced that the US Government would provide an \$85 billion credit facility to American Insurance Group (AIG) in exchange for 80 per cent of the equity in the world's largest insurance group.

<sup>62</sup> Australian Government and Reserve Bank of Australia, *Statement on the Conduct of Monetary Policy*, 14 August 1996. See: <http://www.rba.gov.au/monetary-policy/framework/stmt-conduct-mp-1-14081996.html>

<sup>63</sup> Reserve Bank of Australia, *About Monetary Policy, What are the Objectives of Monetary Policy?* See: <http://www.rba.gov.au/monetary-policy/about.html>, accessed 7 November 2012

Chart 4.1 presents quarterly average data for both expectations of inflation – as measured by the yield differential on index-linked CGS – over the period early 1993 to mid-1997<sup>64</sup> as well as a quarterly series for outturn annual CPI inflation.

**Chart 4.1**  
**Outturn and Expected Inflation, and the RBA’s Inflation Target**



Outturn inflation during the 16 year period since RBA independence has averaged 2.6 per cent per annum, which is very close to the mid-point of its target range. In my opinion, this period can fairly be described as one exhibiting relatively stable macroeconomic conditions, particularly as they relate to consumer price inflation and expectations of it.

Chart 4.2 below therefore depicts the daily yield to maturity on ten year CGS for the 16 year period since September 1996.

<sup>64</sup> I note that by early 2006 the yields on index-linked CGS had risen so as to imply expectations of inflation that exceed the RBA’s inflation target. This development has been attributed by the RBA to as period of insufficient supply and relative illiquidity of index linked CGS, and so the break even yields as compared with nominal CGS were at that time not thought to provide an accurate reading of inflation expectations. However, this development is of no consequence for my choice of commencement date for a time series comparison of nominal CGS yields. See: [http://www.aer.gov.au/sites/default/files/RBA%20-%20Letter%20to%20ACCC%20-%20Bias%20in%20CGS%20yields%20\(9%20August%202007\).pdf](http://www.aer.gov.au/sites/default/files/RBA%20-%20Letter%20to%20ACCC%20-%20Bias%20in%20CGS%20yields%20(9%20August%202007).pdf)

**Chart 4.2**  
**Yield to Maturity, Ten Year CGS**



Notwithstanding this period of relative macroeconomic stability, chart 4.2 shows that CGS yields have fallen sharply since the onset of the GFC in the third quarter of 2008. In my opinion, such a fall is difficult to explain on a basis that excludes a material increase in investors' appetite for risk free assets. Given the absence of any apparent change in inflation expectations during this period, such a demand shift will surely have been accompanied by an offsetting reduction in investors' willingness to hold risky assets.

Second, the simple observation of time series data for the average dividend yield of all entities comprising the ASX All Ordinaries suggests that investors' appetite for risky assets has also reduced since around the onset of the GFC. In its simplest form the DGM is an equivalence condition that links the current dividend yield to the future growth in dividends and future returns. Practical application of the DGM typically assumes that long-run dividend per share growth is constant and delivers the single internal rate of return that discounts all future expected dividends back to the current market price.

It follows from the DGM that if one observes a material rise in the dividend yield on the market, this can only be explained by one or other (or a combination) of two possibilities, ie:

- investors' appetite for holding risky assets has reduced; and/or
- investors' expectations of market-wide dividend growth has reduced.

A change in expectations of the market-wide rate of future dividend growth would generally only be consistent with a reduction in the long term expected rate of GDP growth.

Chart 4.3 below depicts the dividend yield on the ASX All Ordinaries, as measured by the cash dividend paid on each stock over the previous year as a percentage of its 30 June closing price, for the period 1997 to 2012. A commencement date of 1997 allows ten years' of dividend yield observations prior to the period when markets began to be affected by the GFC or the prospect of it (arguably, in the course of 1998). For the post-GFC period, in my opinion the most appropriate historic dividend yield observations are those for 2009 to 2012. This is because the dividend yield on the market is derived by reference to dividends paid over the previous year, and will inevitably be distorted during a period of rapid change in both equity prices and the level of dividends being paid. Observations of this metric as at 30 June 2008 and 30 June 2009 therefore warrant little or no weight, other than in their role as indicators of potential structural change in market conditions.

**Chart 4.3**  
**Dividend Yield – All Ordinaries DS Dividend**

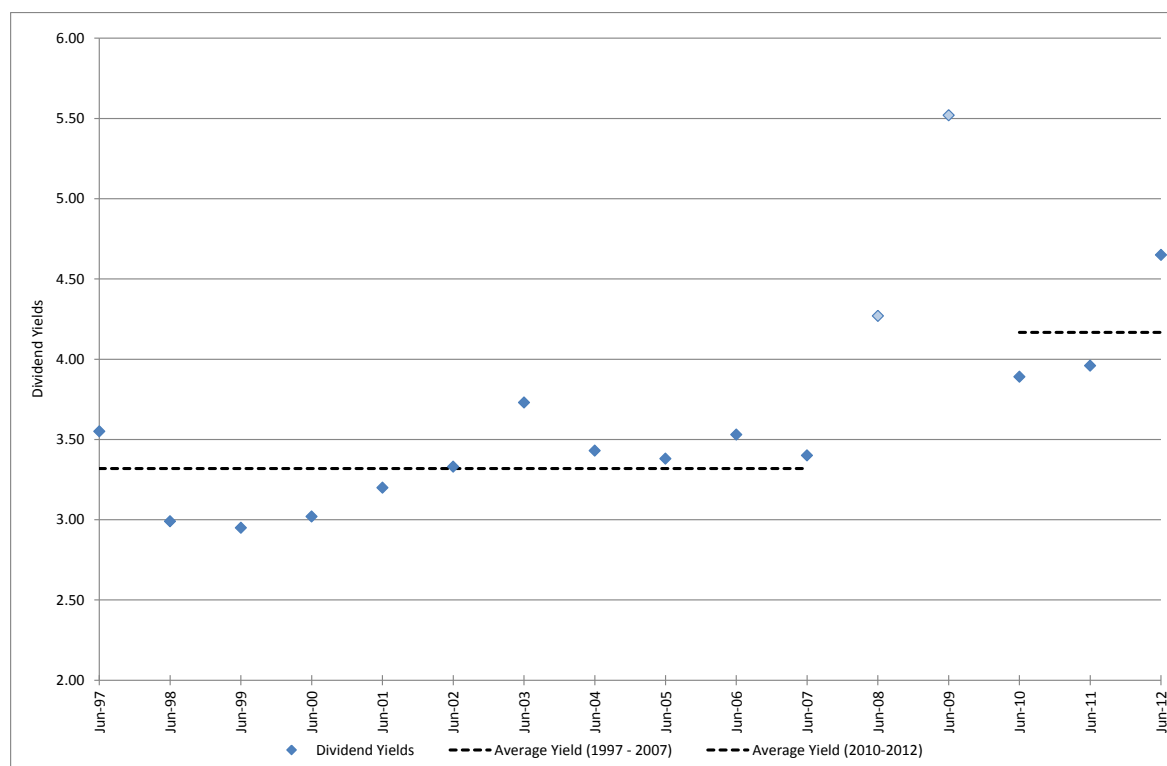


Chart 4.2 also depicts the average of the dividend yield on the market for the two periods of interest, ie, the ten year period prior to the GFC and the three years of ‘clean’ observations available following its onset in 2008. These two averages show that the market-wide dividend yield has increased from 3.3 per cent prior to the onset of the GFC to 4.2 per cent in the following period.

In the absence of any reason to believe that the long term productive potential of the Australian economy has fallen by almost one per cent per annum since 2007, these data also suggest there has been a material reduction in investors’ appetite to hold risky assets.

Finally, the observed increase in the dividend yield on the market is also inconsistent with the substantial fall in the estimated cost of equity that is implied by the AER’s methodology of

combining a current measure of the risk free rate with a long term average estimate of the MRP.

### **4.2.3. Evidence from US regulatory decisions**

The AER and all other Australian regulators have generally approached the task of estimating the regulatory cost of capital with primary reference to Australian domestic financial market data. Nevertheless, Australia's position as a relatively small, open economy operating a structural current account deficit<sup>65</sup> with the rest of the world implies that its financial markets are inevitably affected by shifts in the preferences of international investors. It follows that evidence from major international capital markets as to shifts in the risk appetite of investors is relevant for assessing the question of whether Australian capital markets may also be experiencing a similar phenomenon.

In contrast to established Australian practice, United States' utility regulators typically estimate the forward looking equity returns that investors require by reference to an average of equity analysts' forecast dividend growth for peer entities. Under the DGM framework, when combined with the observed dividend yield, this allows a direct estimate of the cost of equity, without any need to distinguish the three elements (the risk free rate, MRP and beta), identified under the CAPM.

Table 4.1 and Table 4.2 present aggregated data on all readily available<sup>66</sup> decisions by US regulators in relation to the allowed return on equity for the period from 1998 through to the first quarter of 2012, for electricity and gas utilities respectively. In addition to the average return on equity for each year, the tables also show the average applicable capital structure, since material changes in capital structure can themselves be expected to affect the required return on equity.

For each year over the period 1998-2012, I have calculated the annual average risk free rate, as indicated by a US Treasury security of ten year maturity, which is the equivalent form of instrument used by the AER to measure the risk free rate in Australia. This is presented in the sixth column of each table.

Finally, I have deducted the risk free rate calculation in column six from the average return on equity (the second column) in order to derive the average implied market risk premium<sup>67</sup> across all regulatory decisions in each year (the seventh column).

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<sup>65</sup> A current account deficit, whereby imports of goods and services exceed exports, implies an ongoing need to attract an equivalent amount of foreign capital for investment in domestic assets.

<sup>66</sup> Regulatory Research Associates, *Regulatory Focus Major Rate Case Decisions – January-March 2012*, 5 April 2012, as obtained from the New York Power Authority website. See: <http://www.nypa.gov/TransmissionFiling/Exhibit%20PA-11%20-%20RRA%20Major%20Rate%20Case%20Decisions.pdf>, accessed 7 November 2012.

<sup>67</sup> I note that the CAPM 'market risk premium' implied by this calculation assumes that the average equity beta of the utilities captured in these data is one. In my experience, that is a reasonable assumption. To the extent the average beta was less (more) than one, the true MRP would be greater (less) than presented here. However, since the object of my analysis is to discern changes in the market risk premium over time rather than to draw conclusions as to its absolute value, my assumption has no significance for the conclusions I draw.

**Table 4.1**  
**US Return on Equity Decisions – Electricity Utilities**

<b>Year<sup>1</sup></b>	<b>Return on Equity (%)</b>	<b>Number of RoE Decisions</b>	<b>Equity Capital Structure (%)</b>	<b>Number of Capital Structure Observations</b>	<b>RiskFree Rate<sup>2</sup> (%)</b>	<b>Implied Equity Premium<sup>3</sup> (%)</b>
1998	11.66	10	46.14	8	5.26	6.40
1999	10.77	20	45.08	17	5.65	5.12
2000	11.43	12	48.85	12	6.03	5.40
2001	11.09	18	47.20	13	5.02	6.07
2002	11.16	22	46.27	19	4.61	6.55
2003	10.97	22	49.41	19	4.01	6.96
2004	10.75	19	46.84	17	4.27	6.48
2005	10.54	29	46.73	27	4.29	6.25
2006	10.36	26	48.67	23	4.80	5.56
2007	10.36	39	48.01	37	4.63	5.73
2008	10.46	37	48.41	33	3.66	6.80
2009	10.48	39	48.61	37	3.26	7.22
2010	10.34	59	48.45	54	3.22	7.12
2011	10.22	41	47.97	40	2.78	7.44
2012 Q1	10.84	12	50.20	10	2.04	8.80

*Notes: (1) Full year data for all years except 2012, which contains first quarter data only; (2) Average annual market yield to maturity on US Treasury securities of 10-year maturity. For 2012, the risk-free rate is the average for the first three months of 2012, as calculated using monthly market yields on U.S. Treasury securities of 10-year maturity, sourced from the US Federal Reserve, <http://www.federalreserve.gov/releases/h15/data.htm#fn13>; and (3) Calculated as the return on equity less the risk free rate.*

**Table 4.2**  
**US Return on Equity Decisions – Gas Utilities**

<b>Year<sup>1</sup></b>	<b>Return on Equity (%)</b>	<b>Number of Decisions</b>	<b>Equity Capital Structure (%)</b>	<b>Number of Decisions</b>	<b>Risk-Free Rate<sup>2</sup> (%)</b>	<b>Implied Equity Premium<sup>3</sup> (%)</b>
1998	11.51	10	49.50	10	5.26	6.25
1999	10.66	9	49.06	9	5.65	5.01
2000	11.39	12	48.59	12	6.03	5.36
2001	10.95	7	43.96	5	5.02	5.93
2002	11.03	21	48.29	18	4.61	6.42
2003	10.99	25	49.93	22	4.01	6.98
2004	10.59	20	45.90	20	4.27	6.32
2005	10.46	26	48.66	24	4.29	6.17
2006	10.43	16	47.43	16	4.80	5.63
2007	10.24	37	48.37	30	4.63	5.61
2008	10.37	30	50.47	30	3.66	6.71
2009	10.19	29	48.72	28	3.26	6.93
2010	10.08	37	48.56	38	3.22	6.86
2011	9.92	16	48.04	13	2.78	7.14
2012 Q1	9.63	5	51.40	5	2.04	7.59

*Notes: (1) Full year data for all years except 2012, which contains first quarter data only; (2) Average annual market yield on US Treasury securities of 10-year maturity. For 2012, the risk-free rate is the average for the first three months of 2012, as calculated using monthly market yields on US Treasury securities of 10-year maturity, sourced from the US Federal Reserve, <http://www.federalreserve.gov/releases/h15/data.htm#fn13>; and (3) Calculated as return on equity less the risk free rate.*

Tables 4.3 and 4.4 below present a summary of the return on equity and implied market risk premium data set out in Tables 4.1 and 4.2, distinguishing between the average for the entire period as a whole (1998-2012), and those before (1998-2007) and after (2009-2012) the onset of the GFC in 2008.<sup>68</sup> These summaries are presented as averages for each period, weighted by the number of regulatory decisions sampled in each year as a proportion of the total number of regulatory decisions available for the period as a whole.

<sup>68</sup> I have excluded the year 1998 from my presentation of pre- and post-GFC data, since the data from this calendar year do not clearly fall into one or other of these periods.



**Table 4.3**  
**US Return on Equity Decisions**

<b>Period</b>	<b>Electricity – Weighted Average Return on Equity (%)<sup>1</sup></b>	<b>Gas – Weighted Average Return on Equity (%)<sup>1</sup></b>
1998-2012	10.60	10.49
1998-2007	10.78	10.71
2009-2012	10.38	10.06

*Notes: (1) Calculated as an average of the return on equity data presented at Table 4.1 and Table 4.2, weighted by the number of decisions in each year.*

**Table 4.4**  
**Implied Equity Premium from US Decisions**

<b>Period</b>	<b>Electricity – Weighted Average Equity Premium (%)<sup>1</sup></b>	<b>Gas – Weighted Equity Premium (%)<sup>1</sup></b>
1998-2012	6.60	6.38
1998-2007	6.04	6.05
2009-2012	7.37	6.98

*Notes: (1) Calculated as an average of the implied equity premium data presented at Table 4.1 and Table 4.2, weighted by the number of decisions in each year.*

The information presented in tables 4.1, 4.2 and the summary data presented in table 4.3 shows that the average cost of equity (estimated using the DGM) has remained within a relatively narrow range over the 14 year period for which observations are readily available, ie, between 10.22 and 11.66 per cent for electricity and between 9.63 and 11.51 per cent for gas utilities.

Similarly, the average estimated cost of equity for both electricity and gas utilities has fallen only modestly – by 40 and 65 basis points, respectively – between the periods prior and then subsequent to the onset of the GFC, while the most recent available estimate for electricity utilities – that for the first quarter of 2012 – has risen above the post-GFC average.

Of greater significance for the assessment of current market circumstances by reference to the principles I describe in section 4.1, tables 4.1 and 4.2 and the summary data presented in table 4.4 show that the implied equity premium has increased materially since the pre-GFC period, largely offsetting the fall in the risk free rate over this same period.

For electricity utilities, the average equity premium has increased from 6.04 per cent in the period prior to the GFC to 7.37 per cent in the post-GFC period, a 133 basis point shift. For gas utilities, the implied equity premium has increased from 6.05 to 6.98 per cent (93 basis points) over the same two periods.

These data strongly support the conclusion that:

- the forward looking cost of equity as determined by US regulators has not significantly changed since the onset of the GFC, despite substantial reductions in US Treasury or risk free yields; and

- the equity premium (ie, the margin between the 10-year US Treasury yields and the cost of equity) has increased significantly, thereby largely offsetting the reduction in the risk free rate.

These findings directly contradict the outcomes of the AER methodology for estimating the cost of equity. By contrast to the outcomes sanctioned by the AER in its draft decision on the parties' gas access arrangements, estimates of the return on equity required by investors in US utilities have not followed the risk free rate down over the period since the onset of the GFC. Rather, the implied equity premium has increased – an outcome that can only be consistent with a shift in investors' appetite for risky assets, as compared with historic norms.

### **4.3. Conclusion**

In my opinion, taking into account the principles I set out in section 4.1, and the observations by respected commentators and market evidence that I set out in section 4.2, current market circumstances give rise to considerable doubt that the acknowledged pre-condition for safe application of the AER's methodology for determining the risk free rate is satisfied.

It follows that the AER's method of estimating the risk free rate by reference to a date as close as practicable to the commencement of the regulatory period is not, in fact, 'theoretically correct' in a context where there is evidence suggesting a material change in investors' risk appetite and where significant weight is to be placed on historical estimates of the MRP for determining the cost of equity. Rather, the consequence of my analysis is that a departure from the AER methodology for determining the risk free rate component of the cost of equity is warranted.

## 5. Alternative Method for the Risk Free Rate

This section discusses the alternative of estimating the risk free rate element of the cost of equity by reference to a long term average, provides an account of those regulators in Australia and elsewhere that have adopted this method, and sets out my conclusion that this is an economically sound method in the current market circumstances.

### 5.1. Description and rationale

I concluded in section 4 that the potential for shifts in investor risk preferences to cause inversely-related movements in the risk free rate and the MRP elements of the cost of equity means that the adoption of an ‘on the day’ rate for the risk free rate will not be theoretically correct unless the same ‘on the day’ principle has been applied to the MRP element.

I also concluded that current market evidence suggests there has been a material change in investors’ risk appetite and, in circumstances where any significant weight is to be placed on historical estimates of the MRP, a departure from the AER methodology for determining the risk free rate component of the cost of equity is warranted.

Given the AER’s draft decision in relation to each of the parties to adopt an MRP value that is consistent with its long term historical average, my analysis shows that adopting a long term average for the risk free rate is more likely to result in an unbiased estimate of the forward looking cost of equity. The use of a risk free rate established by reference to its long term average is strongly preferable to the continued mis-match of a long term average for the MRP and a risk free rate set as close as practicable to the commencement of the regulatory period.

The economic rationale for such an approach arises from the analysis and reasoning I set out at section 4. To summarise, combining an ‘on the day’ measure of the risk free rate with an estimate of the MRP based on its historic average, in circumstances where there investors’ risk preferences appear to have departed from their long term average, amounts to an inconsistent application of the CAPM model.

Rather, given evidence that market conditions have departed from long term average norms (for both the risk free rate and the MRP elements), consistent application of the CAPM requires the adoption of *either*:

- the best estimate of a forward looking MRP (without regard to its long term average value) in combination with the prevailing risk free rate; *or*
- long term average estimates for both the risk free rate and MRP parameters.

It follows from the reluctance expressed by the AER to place significant weight on any forward-looking estimate of the MRP that the most economically sound methodology for the risk free rate is to adopt a long term average.

This conclusion gives rise to the question of the period over which a long term average for the risk free rate should be derived. I recognise that there is no uniquely correct answer to this question, although that itself is not a distinguishing characteristic amongst the many aspects to estimating the regulatory cost of capital. Nevertheless, the analysis I present in section

4.2.2 and its accompanying chart 4.2 indicates that the yield to maturity on ten year CGS has averaged around 6 per cent during the 16 year period since the RBA's independence was formalised in late 1996. In my opinion, an averaging period that spanned the majority of this timeframe, and avoided giving undue weight to either the relatively high observations in the early years or to the relatively low observations in the more recent years, would be consistent with the long term stability implied by the adoption of a 6 per cent value for the MRP.

## 5.2. Long term average method adopted by IPART

Over the past year, a long term average estimate of the risk free rate used in conjunction with an MRP estimated by reference to long term observed historical returns has become the Independent Pricing and Regulatory Tribunal's (IPART) preferred means for applying the CAPM. IPART's reasoning for adopting such a long term average estimate of the risk free rate is essentially the same as that which I set out above.

### 5.2.1. Sydney desalination plant

In December 2011 IPART published its final report following a review of the prices to apply for water supplied by Sydney Desalination Plant Pty Limited (SDP). That review involved the determination of a regulatory rate of return, for which IPART applied the CAPM framework.<sup>69</sup> In its final report, IPART gave explicit attention to each of the four principles that I described in section 4.1. I set out below a number of extracts from IPART's final decision that illustrate these principles.

IPART was clear that its adoption of the CAPM was for the purpose of estimating the cost of equity to be applied to SDP. For example, it stated that:

“Our method of calculating the cost of equity is based on the domestic Capital Asset Pricing Model (CAPM).”<sup>70</sup>

And in testing the end result of its cost of equity decision, IPART stated:

“We note that our decision on the WACC implies a nominal post-tax cost of equity of between 8.8% and 9.1%. Under SFG's strict international cost of equity, the post-tax cost of equity is 8.8%. It is clear that the cost of equity is greater than the cost of debt, and our estimate is internally consistent.”<sup>71</sup>

IPART also acknowledged evidence as to the inverse relationship between the MRP and risk free rate, stating:

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<sup>69</sup> I note that in each of the decisions discussed in this section, IPART adopted a real, pre-tax form of the WACC, the end result of which is not readily comparable with the post tax, vanilla form of WACC adopted by the AER.

<sup>70</sup> IPART, Final report, *Review of water prices for Sydney Desalination Plant Pty Limited*, December 2011, page 79

<sup>71</sup> *Ibid*, page 95

“In the current market circumstances, there is some evidence, as SDP noted, to support the view that expectations for the market risk premium have risen as bond yields have fallen.”<sup>72</sup>

Evidence that investors’ expectations have departed from their long term average was also cited by IPART, with it stating that:

“These parameters, particularly the risk free rate and debt margin, have been affected by the market volatility and prolonged weak market following the credit crisis of 2008. The change in these factors has potentially created a disconnect between the risk free rate and the debt margin for which we use short term averages, and the market risk premium, for which we use a long term average.”<sup>73</sup>

The potential for inconsistency or bias when combining an ‘on the day’ measure of the risk free rate while the MRP element is set by reference to its long term value was also explicitly canvassed by IPART:

“We recognise stakeholders’ concerns about the inconsistency in using short term data in estimating some parameters and long term data in estimating others. We also recognise there is considerable uncertainty over the market risk premium, due to recent market instability. These factors influenced our decision to set SDP’s WACC towards the top of the possible range, and we are satisfied that this decision adequately addresses stakeholders’ concerns.”<sup>74</sup>

IPART’s response to these considerations was to estimate a long term average for the risk free rate and include this within the range of WACC estimates that it derived. IPART then determined a WACC estimate towards the top end of the possible range, which was the midpoint of the range it had established by reference to its long term average approach. IPART explained its decision as follows:

“Therefore, to guide our decision-making on the point estimate for the WACC, we estimated the long term averages of the risk free rate, inflation rate and the market risk premium. We found that using these long term averages, the WACC range would be 5.9% to 7.8% with a midpoint of 6.7% (Table 9.5). This midpoint is 80 basis points higher than the midpoint of the range we determined for the WACC using short term averages for these parameters, but still within this range.

In light of this, we consider it appropriate to use a WACC of 6.7% in setting prices for SDP for the next 5 years.”<sup>75</sup>

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<sup>72</sup> *Ibid*, page 94

<sup>73</sup> *Ibid*, page 84

<sup>74</sup> *Ibid*, page 91

<sup>75</sup> *Ibid*, page 94

### 5.2.2. *Water and retail electricity prices*

Subsequent to its SDP decision, in June this year IPART made regulatory determinations involving an allowed rate of return for services provided by Sydney Water Corporation, Sydney Catchment Authority and in relation to changes in regulated electricity retail prices. In each instance, IPART adopted a WACC value at the upper end of the range of plausible estimates, but in line with the mid-point of estimates established using long term averages of the risk free rate, debt margin, inflation adjustment and the market risk premium.

The nature and form of each of these decisions was very similar, and reinforced the themes that IPART established in its SPD decision. Drawing for illustrative purposes from its decision in relation to Sydney Water, IPART explained its preference for long term average estimates of the risk free rate and other CAPM parameters as follows:

“The risk free rate has been affected by market volatility and prolonged weak market conditions. The change in these factors has potentially created a disparity between the risk free rate (for which we use short-term average data) and the market risk premium (for which we use long-term average data). In the current market circumstances, there is some evidence to support the view that expectations for the market risk premium have risen as bond yields have fallen. However, it is difficult to measure these short-term variations in expectations for the market risk premium.

To guide our decision making on the point estimate for the WACC we estimated the long-term averages of the risk free rate, debt margin, inflation adjustment and the market risk premium. We found that using these long-term averages, the WACC would have a midpoint of 5.6%. This midpoint is 100 basis points higher than the midpoint of the range we estimated for the WACC.

In light of this, we consider it appropriate to use the upper bound of our WACC range, 5.6%, in setting prices for Sydney Water for the next 4 years. We consider that this WACC addresses the higher level of market uncertainty at this time, and stakeholders’ concerns in relation to the way that market parameters are estimated.”<sup>76</sup>

### 5.3. **Conclusion**

Given the current market circumstances, the use of a long term average estimate of the risk free rate for estimating the cost of equity by reference to the CAPM is an economically superior alternative to the ‘on the day’ methodology adopted hitherto by the AER.

My reasoning for this conclusion is set out in section 4. In summary, combining an ‘on the day’ measure of the risk free rate with an estimate of the MRP based on its historic average, in circumstances where there investors’ risk preferences appear to have departed from their long term average, amounts to an inconsistent application of the CAPM model. It follows from the reluctance expressed by the AER to place significant weight on any forward-looking

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<sup>76</sup> IPART, Final report, *Review of prices for Sydney Water Corporation’s water, sewerage, stormwater drainage and other services*, June 2012, page 198-199

estimate of the MRP that the most economically sound methodology for the risk free rate is to adopt a long term average.

This conclusion gives rise to the question of the period over which a long term average for the risk free rate should be derived. In my opinion, an averaging period that spanned the majority of the 16 year period since the RBA's independence was formalised in late 1996, and which avoided giving undue weight to either the relatively high observations in the early years or to the relatively low observations in the more recent years, would be consistent with the long term stability implied by the adoption of a 6 per cent value for the MRP.

## 6. Consistency with Federal Court Testimony

This section discusses the apparently contrary opinion attributed to me by the AER by way of reference to the judgment of the Federal Court in *ActewAGL Distribution v The Australian Energy Regulator* [2011] FCA 639. I demonstrate the consistency in the opinion I provided to the court in those proceedings and that I set out above by reference to further, contemporaneous material that confirms that the AER has misconstrued the evidence I put before the court.

### 6.1. AER's misinterpretation of the Court

In its final decision in relation to the access arrangements for the Roma to Brisbane Pipeline, and in the context of a discussion as to the consistency of the MRP and the risk free rate, the AER describes a particular matter as having been agreed between Associate Professor Lally and me. In particular, the AER states:

“The AER’s estimation of both the risk free rate and MRP occurs in the context of their application within the CAPM. Both Associate Professor Lally and Greg Houston of NERA, in their expert evidence before the Federal Court in the *ActewAGL* matter agreed on the best approach that is consistent with the CAPM theory:

There was no dispute between the experts that the CAPM theory "suggests that, ideally, the nominal risk-free rate input will be calculated on the day of the final determination". The AER believed that applying an averaging period that is closely aligned to the date of the final determination provides an unbiased rate of return that is consistent with the market conditions at the time of the final determination.”<sup>188</sup>

Accordingly, the AER’s estimation of the risk free rate is consistent with the requirements of the CAPM.”<sup>77</sup>

The AER cites a similar opinion attributed to me by way of support for its most recent draft decision to calculate the risk free rate by reference to the yield on ten year CGS bonds sampled over a period as close as practicable possible to the commencement of the access arrangement period. In that context, the AER states that:

“The use of prevailing CGS yields is consistent with the use of the CAPM. In the *ActewAGL* matter, both the expert for the AER (Associate Professor Lally) and the expert for the service provider (Greg Houston) agreed on this point.”<sup>78</sup>

I have reviewed both the judgment of the Court cited by the AER, all of the reports prepared by me and filed with the Court in those proceedings, and the transcript of my testimony. That review confirms that the inference the AER draws from its citation of the judgment of the Court is incorrect.

<sup>77</sup> AER, Final decision, *APT Petroleum Pipeline Pty Ltd, Access arrangement final decision, Roma to Brisbane Pipeline 2012–13 to 2016–17*, August 2012, page 81

<sup>78</sup> AER, Draft decision, *Access arrangement draft decision SPI Networks (Gas) Pty Ltd 2013-2017*, 11 September 2012, page 39



First, the opinion that the AER attributes to me is not an accurate reflection of the particular passage it cites from the judgment. The AER’s suggestion that Associate Professor Lally and I “agreed on the best approach that is consistent with CAPM theory” is self-evidently different from what the Court said was agreed between us. Further, the AER’s interpretation of this aspect of the judgment also appears not to recognise the qualified nature of the statement with which we are said to have agreed, in the form of the word “ideally,...”.

Second, the AER appears to have overlooked the basis for this qualification, which is explained elsewhere in the judgment where it states:

“Indeed, the AER’s position was endorsed by Dr Lally and Mr Houston agreed it was consistent with economic theory. Mr Houston departed from Dr Lally’s position only because it was his view that the theory was inapplicable where the legislation set some, but not all, of the parameters in the [CAPM] equation.”<sup>79</sup>

Further, both the reports I submitted to the Court and the transcript of proceedings provide a more thorough account of the matters that were and were not agreed between Associate Professor Lally and me. On the particular point as to the ‘ideal’ application of the CAPM and its qualifications, the transcript reads as follows:

“...the theoretical proposition is ideally you want the rate on the day for the end result, but if you’re fixing one on a long-term average there’s no theoretical backing to say if one is fixed on a long term average, you should still take the on-the-day rate for the other.”<sup>80</sup>

And then on the following page of the transcript:

“...in short theory says yes, the result [a cost of equity estimate] should be an on-the-day estimate, but it doesn’t say that one component [of a cost of equity estimate] should be on the other [sic] day if the other components are not on the day.”<sup>81</sup>

This material shows that there is no basis for the interpretation that the AER seeks to derive from the either the evidence I put before the Court or the judgment itself.

## 6.2. Consistency with my evidence to the Court

My conclusion in section 5 that it is not theoretically correct to adopt the AER’s methodology in the current market circumstances is also consistent with the evidence I presented to the Court in the ActewAGL proceedings. In the Houston-Lally report I stated that:

“...there is no published economic or finance literature supporting the contention that the risk free rate component [of the cost of equity, under the CAPM] should be an ‘on

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<sup>79</sup> Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator* [2011] FCA 639, 8 June 2011, paragraph 154

<sup>80</sup> Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator, Transcript*, 17 March 2011, page 99

<sup>81</sup> *Ibid*, page 99

the day' rate (or the best proxy for an 'on the day' rate), in circumstances where the estimation of other components (the MRP and beta, in particular) is restricted to those established by reference to long term averages."<sup>82</sup>

In response to a question as to whether or not he agreed with my statement as to the economic theory, Associate Professor Martin Lally testified that:

"The situation we are in is one in which one of these parameters – the market-risk premium – is legislatively prescribed. What does economic theory – that is to say an established body of literature say in that situation? Well, nothing actually, because the situation we're in is fairly recent and as yet there is no published literature on this question. So if economic theory means the established body of published literature, then it has nothing yet to say on this question."<sup>83</sup>

In the Houston-Lally report to the Court, I also stated that:

"...it does not follow as a matter of economic and financial theory or logic that employing an 'on the day' estimate for one component of the cost of equity will produce a more accurate estimate of the 'on the day' cost of equity as a whole."<sup>84</sup>  
[emphasis in original]

In the same report Associate Professor Lally acknowledged that combining a long term average estimate of the MRP with a prevailing risk free rate would be likely to lead to estimates of the cost of equity over individual regulatory periods that are sometimes 'too low', ie:

"...I favour always determining the risk free rate in accordance with the rate prevailing at the beginning of the regulatory period in conjunction with the legislatively prescribed values for the MRP and beta.... This is likely to lead to estimates of the cost of equity that are sometimes too low (because the true MRP at that time is above the prescribed value of 6%) and sometimes too high (when the true MRP is below the prescribed value of 6%). However these errors will tend to offset over time. Furthermore, regulated businesses are primarily concerned with the average MRP allowed over time relative to the average true value rather than with differences over individual regulatory periods."<sup>85</sup>

On this point of principle, Associate Professor Lally and I appear to differ only on the question of whether or not it is appropriate to accept a cost of equity estimate that is likely to be 'too low' in one regulatory period, on the basis that in some future regulatory period it is likely to be 'too high'. Associate Professor Lally stated that he favours such an approach, whereas I do not share that opinion.

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<sup>82</sup> Houston-Lally report, page 2

<sup>83</sup> Federal Court of Australia, *ActewAGL Distribution v The Australian Energy Regulator*, Transcript, 17 March 2011, page 100

<sup>84</sup> Houston-Lally report, page 2

<sup>85</sup> Ibid, page 3

## Annexure A. Instructions

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5 November 2012

Mr Greg Houston  
Director  
NERA Economic Consulting  
Darling Park Tower 3  
201 Sussex Street  
SYDNEY NSW 2000

**BY EMAIL**

Dear Sir

**Victorian Gas Access Arrangement Review 2013-2017: Envestra, Multinet and SP AusNet**

We act for Envestra Limited (**Envestra**), Multinet Gas (DB No. 1) Pty Ltd and Multinet Gas (DB No. 2) Pty Ltd (together, **Multinet**) and SPI Networks (Gas) Pty Ltd (**SP AusNet**) in relation to the Australian Energy Regulator's (**AER**) review of the Gas Access Arrangements for Victoria.

Envestra, Multinet and SP AusNet as well as APA GasNet (Operations) Australia Pty Ltd (together the **Gas Businesses**) wish to jointly engage you to prepare an expert report in connection with the AER's review of the Victorian Access Arrangements. The report will also be used by Envestra for the AER's review of Envestra's Access Arrangement for its Albury Distribution Network.

This letter sets out the matters which the Gas Businesses wish you to address in your report and the requirements with which the report must comply.

***Terms of Reference***

The terms and conditions upon which each of the Gas Businesses provides access to their respective networks are subject to five yearly reviews by the AER.

The AER undertakes that review by considering the terms and conditions proposed by each of the Gas Businesses against criteria set out in the *National Gas Law* and *National Gas Rules*.

Rule 76 of the *National Gas Rules* provides that the Gas Businesses' total revenue for each regulatory year is to be determined using the building block approach, in which one of the building blocks is a return on the projected capital base for the year.

Rule 87(1) provides that the rate of return on capital is to be commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services. Rule 87(2) provides that a well accepted approach that incorporating the cost of equity and debt (such as the Weighted Average Cost of Capital (**WACC**)) is to be used along with a well accepted financial model (such as the Capital Asset Pricing Model (**CAPM**)) in determining the rate of return on capital.

The Gas Businesses are seeking expert assistance in respect of their proposed estimates of the cost of equity to be used in the calculation of the WACC (through the CAPM) and the approach of the AER in the recent Draft Decisions published for each of the Gas Businesses..

In this context the Gas Businesses wish to engage you to prepare an expert report which provides:

- (a) evidence and an explanation of the origin and historical development of the methodology (adopted and used historically by the AER and other regulators) for estimating the risk free rate in the CAPM for the purposes of estimating the cost of equity;
- (b) your opinion on whether there is any reason why this methodology cannot be departed from and in what circumstances it could or should be departed from; and
- (c) your opinion as to whether the use of an alternative methodology of estimating the risk free rate adopting a long term average is an economically sound methodology for estimating the risk free rate for use in the CAPM.

In your report, you should also comment on the statements made by the AER in the Roma to Brisbane Pipeline decision and the recent Draft Decisions for the Gas Businesses about the views expressed by you on the methodology for estimating the risk free rate in the *ActewAGL* Federal Court matter.<sup>86</sup>

### ***Use of Report***

It is intended that your report will be included by each of the Gas Businesses in their respective responses to the AER's Draft Decisions in respect of their access arrangement revision proposals for their Victorian networks (and in the case of Envestra, Albury network) for the access arrangement period from 1 January 2013 to 31 December 2017. The report may be provided by the AER to its own advisers. The report must be expressed so that it may be relied upon both by the Gas Businesses and by the AER.

The AER may ask queries in respect of the report and you will be required to assist each of the Gas Businesses in answering these queries. The AER may choose to interview you and if so, you will be required to participate in any such interviews.

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<sup>86</sup> See page 81 of the AER's Final Decision, Roma to Brisbane Pipeline 2012-13 to 2016-17; Rate of Return Attachment and page 100 of Attachment 4 to the SP AusNet Draft Decision..

The report will be reviewed by the Gas Businesses' legal advisers and will be used by them to provide legal advice to the Gas Businesses as to their respective rights and obligations under the *National Gas Law* and *National Gas Rules*. You will be required to work with these legal advisers and the Gas Businesses' personnel to assist them to prepare the Gas Businesses' respective responses to the Draft Decisions and submissions in response to the Final Decisions made by the AER.

If any of the Gas Businesses choose to challenge any decision made by the AER, that appeal will be made to the Australian Competition Tribunal and the report will be considered by the Tribunal. The Gas Businesses may also seek review by a court and the report would be subject to consideration by such court. You should therefore be conscious that the report may be used in the resolution of a dispute between the AER and any or all of the Gas Businesses as to the appropriate level of the respective Distributor's distribution tariffs. Due to this, the report will need to comply with the Federal Court requirements for expert reports, which are outlined below.

You must ensure you are available to assist the Gas Businesses until such time as the Access Arrangement Review and any subsequent appeal is finalised.

### ***Timeframe***

The AER's Draft Decisions in respect of the Gas Businesses' respective access arrangement revision proposals have now been released. The Gas Businesses have until 9 November 2012 to respond to the Draft Decisions (including the provision of any expert reports).

### ***Compliance with the Code of Conduct for Expert Witnesses***

Attached is a copy of the Federal Court's Practice Note CM 7, entitled "*Expert Witnesses in Proceedings in the Federal Court of Australia*", which comprises the guidelines for expert witnesses in the Federal Court of Australia (**Expert Witness Guidelines**).

Please read and familiarise yourself with the Expert Witness Guidelines and comply with them at all times in the course of your engagement by the Gas Businesses.

In particular, your report prepared for the Gas Businesses should contain a statement at the beginning of the report to the effect that the author of the report has read, understood and complied with the Expert Witness Guidelines.

Your report must also:

- 1 contain particulars of the training, study or experience by which the expert has acquired specialised knowledge;
- 2 identify the questions that the expert has been asked to address;
- 3 set out separately each of the factual findings or assumptions on which the expert's opinion is based;
- 4 set out each of the expert's opinions separately from the factual findings or assumptions;
- 5 set out the reasons for each of the expert's opinions; and
- 6 otherwise comply with the Expert Witness Guidelines.

The expert is also required to state that each of the expert's opinions is wholly or substantially based on the expert's specialised knowledge.

It is also a requirement that the report be signed by the expert and include a declaration that “[the expert] has made all the inquiries that [the expert] believes are desirable and appropriate and that no matters of significance that [the expert] regards as relevant have, to [the expert's] knowledge, been withheld from the report”.

Please also attach a copy of these terms of reference to the report.

***Terms of Engagement***

Your contract for the provision of the report will be directly with the Gas Businesses. You should forward to each of the Gas Businesses any terms you propose govern that contract as well as your fee proposal.

Please sign a counterpart of this letter and forward it to each of the Gas Businesses to confirm your acceptance of the engagement by the Gas Businesses.

Yours faithfully

*Johnson Winter & Slattery*

**Enc: Federal Court of Australia Practice Note CM 7, “Expert Witnesses in Proceedings in the Federal Court of Australia”**

.....

Signed and acknowledged by Greg Houston

Date .....

## Annexure B. Curriculum Vitae



## Gregory Houston

Director

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E-mail: [greg.houston@nera.com](mailto:greg.houston@nera.com)  
Website: [www.nera.com](http://www.nera.com)



### Overview

Greg Houston has twenty five years' experience in the economic analysis of markets and the provision of expert advice in litigation, business strategy, and policy contexts. His career as a consulting economist was preceded by periods working in a financial institution and for government.

Greg has directed a wide range of competition, regulatory and financial economics assignments since joining NERA in 1989. His work in the Asia Pacific region principally revolves around the activities of the enforcement and regulatory agencies responsible for these areas, many of whom also number amongst his clients. Greg has deep experience of access matters, having advised policy makers, corporations, regulators and industry associations on all facets of the economic regulation of infrastructure services for more than two decades. On competition and antitrust matters he has advised clients on merger clearance processes, competition proceedings involving allegations of anticompetitive conduct ranging from predatory pricing, anti-competitive agreements, anti-competitive bundling and price fixing. In his securities and finance work Greg has advised clients on a number of securities class action, market manipulation and insider trading proceedings, as well as on cost of capital estimation.

Greg's industry experience spans the aviation, beverages, building products, cement, e-commerce, electricity and gas, forest products, grains, medical waste, mining, payments networks, petroleum, ports, rail transport, retailing, scrap metal, securities markets, steel, telecommunications, thoroughbred racing, waste processing and water sectors.

Greg has acted as expert witness in valuation, antitrust and regulatory proceedings before the courts, in various arbitration and mediation processes, and before regulatory and judicial bodies in Australia, Fiji, New Zealand, the Philippines, Singapore, the United Kingdom and the United States. In December 2005 Greg was appointed by the Hon Ian Macfarlane, then Minister for Industry, Tourism and Resources, to an Expert Panel to advise the Ministerial Council on Energy on achieving harmonisation of the approach to regulation of electricity and gas transmission and distribution infrastructure in Australia.



- 2010-11**                      **Transnet Corporation, South Africa**  
**Regulatory and competition policy**  
Retained to advise on the preparation of a white paper on future policy and institutional reforms to the competitive and regulatory environment applying to the ports, rail and oil and gas pipeline sectors of South Africa.
- 2010-11**                      **Minter Ellison/UNELCO, Vanuatu**  
**Arbitral review of decision by the Vanuatu regulator**  
Expert report and evidence before arbitrators on a range of matters arising from the Vanuatu regulator's decision on the base price to apply under four electricity concession contracts entered into by UNELCO and the Vanuatu government. These included the estimation of the allowed rate of return including its country risk component, and the decision retrospectively to bring to account events from the prior regulatory period.
- 2002-12**                      **Orion New Zealand Ltd, New Zealand**  
**Electricity lines regulation**  
Advisor on all regulatory and economic aspects of the implementation by the Commerce Commission of the evolving regimes for the regulation of New Zealand electricity lines businesses. This role has included assistance with the drafting submissions, the provision of expert reports, and the giving of expert evidence before the Commerce Commission.
- 1999-2004,**  
**2010-11**                      **Sydney Airports Corporation**  
**Aeronautical pricing notification**  
Wide ranging advice on regulatory matters. This includes advice and expert reports in relation to SACL's notification to the ACCC of substantial reforms to aeronautical charges at Sydney Airport in 2001. This involved the analysis and presentation of pricing principles and their detailed application, through to discussion of such matters at SACL's board, with the ACCC, and in public consultation forums. Subsequent advice on two Productivity Commission reviews of airport charging, and notifications to the ACCC on revised charges for regional airlines.
- 2010**                              **Industry Funds Management/Queensland Investment Corporation**  
**Due diligence, Port of Brisbane**  
Retained to advise on regulatory and competition matters likely to affect the future financial and business performance of the Port of Brisbane, in the context of its sale by the Queensland government.

- 2010-12**                    **QR National**  
**Regulatory and competition policy**  
Advisor on the competition and regulatory implications of various potential structural options arising in the context of the privatisation of QR National's coal and freight haulage businesses, and particularly those arising in the context of a 'club ownership model' proposed by a group of major coal mine owners.
- 2009-10**                    **New Zealand Electricity Industry Working Group, New Zealand**  
**Transmission pricing project**  
Advice to a working group comprising representatives from lines companies, generators, major users and Transpower on potential improvements to the efficiency of New Zealand's electricity transmission pricing arrangements.
- 2007-09**                    **GDSE, Macau**  
**Electricity tariff reform**  
Advice to the regulator of electricity tariffs in Macau on a series of potential reforms to the structure of electricity supply tariffs.
- 2007-11**                    **Powerco/CitiPower**  
**Regulatory advice**  
Wide ranging advice on matters arising under the national electricity law and rules, such as the framework for reviewing electricity distribution price caps, the treatment of related party outsourcing arrangements, an expert report on application of the AER's efficiency benefit sharing scheme, the potential application of total factor productivity measures in CPI-X regulation, and arrangements for the state-wide roll out of advanced metering infrastructure.
- 2001-09**                    **Auckland International Airport Limited, New Zealand**  
**Aeronautical price regulation**  
Advice and various expert reports in relation to: the review by the Commerce Commission of the case for introducing price control at Auckland airport; a fundamental review of airport charges implemented in 2007; and the modified provisions of Part IV of the Commerce Act concerning the economic regulation of airports and other infrastructure service providers.
- 2008**                         **Western Power**  
**Optimal treatment and application of capital contributions**  
Advice on the optimal regulatory treatment of capital contributions, taking into account the effect of alternative approaches on tariffs, regulatory asset values, and network connection by new customers.

- 2000-12**                      **TransGrid**  
**National electricity market and revenue cap reset**  
 Regulatory advisor to TransGrid on a range of issues arising in the context of the national electricity market (NEM), including: the economics of transmission pricing and investment and its integration with the wholesale energy market, regulatory asset valuation, the cost of capital and TransGrid's revenue cap resets by the ACCC and AER.
- 2007**                         **Johnson Winter & Slattery/Multinet**  
**Review of outsourced asset management contracts**  
 Expert report developing a framework for assessing the prudence of outsourcing contracts in the context of the Gas Code, and evaluating the arrangements between Multinet and Alinta Asset Management by reference to that framework.
- 2007**                         **Ministerial Council on Energy**  
**Review of Chapter 5 of the National Electricity Rules**  
 Advice on the development of a national framework for connection applications and capital contributions in the context of the National Electricity Rules.
- 2006-07**                    **Ministerial Council on Energy**  
**Demand side response and distributed generation incentives**  
 Conducted a review of the MCE's proposed initial national electricity distribution network revenue and pricing rules to identify the implications for the efficient use of demand side response and distributed generation by electricity network owners and customers.
- 2006**                        **Ministerial Council on Energy**  
**Electricity network pricing rules**  
 Advice on the framework for the development of the initial national electricity distribution network pricing rules, in the context of the transition to a single, national economic regulator.
- 2005-06**                    **Australian Energy Markets Commission**  
**Transmission pricing regime**  
 Advice to the AEMC on its review of the transmission revenue and pricing rules as required by the new National Electricity Law.

- 1998-2006**                      **Essential Services Commission of Victoria**  
**Price cap reviews**  
 Wide ranging advice to the Essential Services Commission (formerly the Office of the Regulator-General), on regulatory, financial and strategic issues arising in the context of five separate reviews of price controls/access arrangements applying in the electricity, gas distribution, ports, rail and water sectors in Victoria. This work encompassed advice on the development of the Commission's work program and public consultation strategy for each review, direct assistance with the drafting of papers for public consultation, the provision of internal papers and analysis on specific aspects of the review, drafting of decision documents, and acting as expert witness in hearings before the Appeal Panel and Victorian Supreme Court.
- 2004-05**                      **Ministerial Council of Energy**  
**Reform of the National Electricity Law**  
 Retained in two separate advisory roles in relation to the reform of the institutions and legal framework underpinning the national energy markets. These roles include the appropriate specification of the objectives and rule making test for the national electricity market, and the development of a harmonised framework for distribution and retail regulation.
- 2004-05**                      **Johnson Winter Slattery, ETSA Utilities**  
**Price determination**  
 Advice on a wide range of economic and financial issues in the context of ETSA Utilities' application for review of ESCOSA's determination of a five year electricity distribution price cap.
- 2004**                              **Deacons/ACCC**  
**Implementation of DORC valuation**  
 Prepared a report on the implementation of a cost-based DORC valuation, for submission to the Australian Competition Tribunal in connection with proceedings on the appropriate gas transportation tariffs for the Moomba to Sydney gas pipeline.
- 2003-04**                      **Natural Gas Corporation, New Zealand**  
**Gas pipeline regulation**  
 Advisor in relation to the inquiry by the Commerce Commission into the case for formal economic regulation of gas pipelines. This role included assistance with the drafting of submissions, the provision of expert reports, and the giving of evidence before the Commerce Commission.

- 2001-03**                    **Rail Infrastructure Corporation**  
**Preparation of access undertaking**  
 Advised on all economic aspects arising in the preparation of an access undertaking for the New South Wales rail network. Issues arising included: pricing principles under a 'negotiate and arbitrate' framework, asset valuation, efficient costs, capacity allocation and trading, and cost of capital.
- 2002**                      **Clayton Utz/TransGrid**  
**National Electricity Tribunal hearing**  
 Retained as the principal economic expert in the appeal brought by Murraylink Transmission Company of NEMMCO's decision that TransGrid's proposed South Australia to New South Wales Electricity Interconnector was justified under the national electricity code's 'regulatory test'.
- 2001-02**                **SPI PowerNet**  
**Revenue cap reset**  
 Advisor on all regulatory and economic aspects of SPI PowerNet's application to the ACCC for review of its revenue cap applying from January 2003. This included assistance on regulatory strategy, asset valuation in the context of the transitional provisions of the national electricity code, drafting and editorial support for the application document, and the conduct of a 'devil's advocate' review.
- 2002**                      **Corrs Chambers Westgarth/Ofgar**  
**Economic interpretation of the gas code**  
 Provision of expert report and sworn testimony in the matter of Epic Energy v Office of the Independent Gas Access Regulator, before the Supreme Court of Western Australia, on the economic interpretation of certain phrases in the natural gas pipelines access code.
- 2001**                      **ACCC**  
**Determination of local call resale prices**  
 Advised the ACCC regarding the determination of local call resale prices from Telstra's fixed line network. This included providing advice on how the cost of community service obligations should be allocated to competitors with wholesale access to local calls.
- 2000**                      **Gilbert + Tobin/AGL**  
**Vesting contract terms**  
 Advised AGL SA in connection with its application to the ACCC for revocation and substitution of both vesting contract terms and network pricing provisions for the retail supply of electricity in South Australia.

- 1998, 2000**                      **Rail Access Corporation**  
**Regulatory and pricing strategy**  
 Advisor on regulatory and financial issues arising in the context of the 1998/99 IPART review of the NSW rail access regime. Subsequently, prepared two board papers on, first, the principles for commercially sustainable pricing in the context of the NSW access regime and, second, on issues and options for addressing the growing imbalance between costs and revenues, including the probable need to finance a significant increase in capital expenditure.
- 1998-99**                         **MWSS Regulatory Office, Philippines**  
**Regulation by concession**  
 Advised the MWSS Regulatory Office on its response to applications for “extraordinary price adjustments” under the terms of the two, twenty five-year, water and wastewater concession agreements. This involved an assessment of the grounds for the applications, the associated financial impact, and the appropriate rate of return to be applied in determining the consequent price adjustment. Subsequently, provided expert testimony in the arbitration of one applicant’s appeal of the Regulatory Office’s decision.
- Competition and Mergers**
- 2010-12**                         **Mallesons/APA**  
**Merger clearance**  
 Expert reports submitted to the ACCC on the competitive implications of the proposed acquisition of the gas pipeline assets of Hastings Diversified Utilities Fund by APA Group.
- 2011-12**                         **Australian Electricity Market Commission**  
**Market power assessment**  
 Expert reports describing the economic concepts of competition, market power, the role and relevance of market definition, and how those concepts apply to wholesale electricity generation markets.
- 2011-12**                         **Gilbert & Tobin/Caltex Australia**  
**Access to bottleneck facilities**  
 Expert reports submitted to the National Competition Council on the application for declaration of the Caltex jet fuel pipeline serving Sydney airport.
- 2010-11**                         **Johnson Winter & Slattery/ATC and ARB**  
**Competitive effects of agreement**  
 Expert reports and testimony in Federal Court proceedings concerning the competitive effects of restrictions on the use of artificial breeding techniques in the breeding of thoroughbred horses for racing.



- 2010-11**                    **Victorian Government Solicitor/State of Victoria**  
**Competitive effects of agreement**  
 Expert report prepared for the State of Victoria on the effects of certain restrictions applying to the trading of water rights on inter-state trade in the context of a constitutional challenge brought against the state of Victoria by the state of South Australia.
- 2010**                        **Australian Competition and Consumer Commission**  
**NBN Points of Interconnection**  
 Report and advice on the competition implications in the markets for both telecommunications backhaul and retail broadband services of different choices as to the number of ‘points of interconnection’ in the proposed architecture of the national broadband network.
- 2010**                        **JWS, Gilbert & Tobin/Jetset Travelworld, Stella Travel Services**  
**Merger clearance**  
 Advice on the competitive implications of the merger between Jetset Travelworld and Stella Travel Services.
- 2009-11**                    **Arnold + Porter/Visa Inc, Mastercard Inc and others**  
**Payment card markets**  
 Expert reports and deposition testimony on behalf of defendants in the United States Re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation, on the effects of regulatory interventions in the Australian payment cards sector.
- 2009-10**                    **Australian Government Solicitor/ACCC**  
**Misuse of market power**  
 Expert report and testimony in the context of Federal Court proceedings brought by the ACCC against Cement Australia in relation to conduct alleged to have breached sections 45, 46 and 47 of the Trade Practices Act.
- 2008-10**                    **Gilbert & Tobin/Confidential**  
**Merger assessment**  
 Advice on the competitive implications of the then proposed merger and then subsequently the proposed iron ore production joint venture between BHP Billiton and Rio Tinto.
- 2009**                        **State Solicitor’s Office/Forest Products Commission**  
**Alleged breach of s46**  
 Expert advice in the context of Federal Court proceedings alleging breaches of section 46 of the Trade Practices Act.
- 2009**                        **Clayton Utz/Confidential Client**  
**Joint venture arrangement**  
 Reviewed the competitive implications under s50 of the Trade Practices Act of a proposed joint venture transaction in the rail industry.



- 2008**                      **Australian Competition and Consumer Commission**  
**Exemption from access undertaking**  
‘Peer review’ report of the ACCCs draft decision on applications by Telstra for exemption from its standard access obligations (SAOs) for the supply by resale of the local carriage service (LCS) and wholesale line rental (WLR) in 387 exchange service areas in metropolitan Australia.
- 2008**                      **Deacons/eBay**  
**Exclusive dealing notification**  
Expert report submitted to the ACCC analysing the competitive effects of eBay’s proposal that users of its online marketplace be required to settle transactions using eBay’s associated entity, PayPal
- 2008-10**                    **Allens Arthur Robinson/Ancor**  
**Cartel damages assessment**  
Advice and preparation of an expert report on the approach to and quantification of economic loss in the context of two separate actions seeking damages arising from alleged cartel conduct.
- 2007-08**                    **Australian Energy Market Commission**  
**Wholesale gas and electricity markets, and implications for retail competition**  
Retained to provide an overview of the operation and structure of the wholesale gas and electricity markets within the National Electricity Market (NEM) jurisdictions and to identify the issues that the AEMC should consider when assessing the influence of the wholesale markets on competition within the retail gas market in each jurisdiction.
- 2006-07**                    **Essential Services Commission of South Australia Competition assessment**  
Directed the preparation of a comprehensive report analysing the effectiveness of competition in retail electricity and gas markets in South Australia.
- 2006-07**                    **Allens Arthur Robinson/Confidential Client**  
**Merger clearance**  
Retained to provide advice on competition issues arising in the context of s50 clearance of a proposed merger in the board packaging industry.
- 2006-07**                    **Johnson Winter & Slattery/Confidential Client**  
**Damages assessment**  
Advice on the quantification of damages arising from alleged cartel conduct in the electricity transformer sector.

- 2006**                      **Minter Ellison/Confidential Client**  
**Misuse of market power**  
 Expert economic advice in relation to market definition, market power and taking advantage in the context of an alleged price squeeze between wholesale and retail prices for fixed line telecommunications services, for proceedings brought under section 46 of the Trade Practices Act. The proceedings were withdrawn following regulatory amendments by the ACCC.
- 2006**                      **DLA Phillips Fox/Donhad**  
**Merger clearance**  
 Preparation of an expert report on competition issues arising in the context of s50 clearance for the proposed Smorgon/One Steel merger.
- 2006**                      **Johnson Winter & Slattery/Qantas Airways**  
**Competition effects of proposed price fixing agreement**  
 Assessed the competition effects of the proposed trans-Tasman networks agreement between Air New Zealand and Qantas Airways.
- 2006**                      **Phillips Fox/ACCC**  
**Vertical foreclosure**  
 Advice in the context of proceedings before the Federal Court concerning the acquisition of Patrick Corporation by Toll Holdings. The proceedings were subsequently withdrawn following a S87B undertaking made by Toll.
- 2006**                      **Gilbert + Tobin/AWB**  
**Arbitration, access to bottleneck facilities**  
 Expert report and testimony in an arbitration concerning the imposition of throughput fees for grain received at port and so bypassing the grain storage, handling and rail transport network in South Australia.
- 2006**                      **Qantas Airways, Australia/Singapore**  
**Assessment of single economic entity**  
 Advice in the context of Qantas' Application for Decision to the Competition Commission of Singapore that the agreement between it and Orangestar did not fall within the ambit of the price-fixing and market sharing provisions of the Singapore Competition Act.
- 2005-06**                      **Qantas Airways, Australia/Singapore**  
**Competition effects of price fixing agreement**  
 Expert report submitted to the Competition Commission of Singapore evaluating the net economic benefits of a price fixing/market sharing agreement, in relation to an application for exemption from the section 34 prohibition in the Competition Act of Singapore.

- 2005-06**                    **Australian Competition Consumer Commission**  
**Electricity generation market competition**  
 Advice on the competition effects under S50 of the Trade Practices Act of three separate proposed transactions involving the merger of generation plant operating in the national electricity market.
- 2005**                        **Gilbert + Tobin/Hong Kong Government, Hong Kong**  
**Petrol market competition**  
 Directed a NERA team working with Gilbert + Tobin that investigated the effectiveness of competition in the auto-fuel retailing market in Hong Kong.
- 2005**                        **Phillips Fox/National Competition Council**  
**Access and competition in gas production and retail markets**  
 Retained as expert witness in the appeal before the WA Gas Review Board of the decision to revoke coverage under the gas code of the Goldfields pipeline. Proceedings brought by the pipeline operator were subsequently withdrawn.
- 2004-05**                    **Gilbert + Tobin/APCA**  
**Competition and access to Eftpos system**  
 Economic advisor to the Australian Payments Clearing Association in connection with the development of an access regime for the debit card/Eftpos system, so as to address a range of competition concerns expressed by the Reserve Bank of Australia and the ACCC. This work included an expert report examining barriers to entry to Eftpos and the extent to which these could be overcome by an access regime.
- 2003-05**                    **Phillips Fox/Austrac**  
**Misuse of market power**  
 Retained to assist with all economic aspects of a potential Federal Court action under s46 of the Trade Practices Act alleging misuse of market power in the rail freight market.
- 2004**                        **Clayton Utz/Sydney Water Corporation**  
**Competition in sewage treatment**  
 Retained to assist with Sydney Water's response to the application to have Sydney's waste water reticulation network declared under Part IIIa of the Trade Practices Act.
- 2004**                        **Blake Dawson Waldron/Boral**  
**Competition analysis of cement market**  
 Advice on Boral's proposed acquisition of Adelaide Brighton Ltd, a cement industry merger opposed in Federal Court proceedings by the ACCC. Boral subsequently decided not to proceed with the transaction.

- 2004**                    **Minter Ellison/Singapore Power**  
**Merger clearance**  
 Advice on competition issues arising from the proposed acquisition of TXU's Australian energy sector assets by Singapore Power. This included the submission of an expert report to the ACCC.
- 2004**                    **Mallesons/Orica**  
**Competition in gas production and retail markets**  
 Retained as expert witness in the appeal by Orica against the Minister's decision to revoke coverage under the gas code of the substantial part of the Moomba to Sydney gas pipeline. The case was subsequently settled.
- 2004**                    **Courts, Fiji**  
**Merger clearance, abuse of market power**  
 Prepared a report for submission to the Fijian Commerce Commission on the competition implications of the Courts' acquisition of the former Burns Philip retailing business, and related allegations of abuse of market power. The Commission subsequently cleared Courts of all competition concerns.
- 2003-04**                **Mallesons/Sydney Airport Corporation**  
**Competition in air travel market**  
 Expert report and testimony before the Australian Competition Tribunal on economic aspects of the application by Virgin Blue for declaration of airside facilities at Sydney Airport under Part IIIa of the Trade Practices Act.
- 2003-04**                **Bartier Perry/ DM Faulkner**  
**Alleged collusive conduct**  
 Submitted an expert report to the Federal Court in connection with allegations under s45 of the Trade Practices Act of collusive conduct leading to the substantial lessening of competition in the market for scrap metal. The 'substantial lessening of competition' element of this case was subsequently withdrawn.
- 2002-04**                **Essential Services Commission**  
**Effectiveness of competition**  
 Advisor on six separate reviews of the effectiveness of competition and the impact of existing or proposed measures designed to enhance competition in the markets for wholesale gas supply, port channel access services, liquid petroleum gas, retail electricity and gas supplies, and port services.



- 2001**                    **Gilbert + Tobin/AGL**  
**Gas market competition**  
 Advised counsel for AGL in connection with the application by Duke Energy to the Australian Competition Tribunal for review of the decision by the National Competition Council to recommend that the eastern gas pipeline should be subject to price regulation under the national gas code.
- 2000**                    **One.Tel**  
**Competitive aspects of Mobile Number Portability**  
 Advised on the competitive aspects of proposed procedures for Mobile Number Portability and whether these arrangements breached the Trade Practices Act in relation to substantial lessening of competition.
- 2000**                    **Baker & McKenzie/Scottish Power**  
**Impact of consolidation on competition**  
 Expert report on the extent to which the acquisition of the Victorian electricity distribution and retail business, Powercor by an entity with interests in the national electricity market may lead to a 'substantial lessening of competition' in a relevant market.
- Securities and Finance**
- 2012**                    **HWL Ebsworth/Confidential client**  
**Insider trading**  
 Advice and pending expert report in the context of criminal proceedings alleging insider trading in certain ASX-listed securities.
- 2011-12**                **Freehills/Confidential client**  
**Shareholder damages assessment**  
 Expert advice in connection with representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2011**                    **Barringer Leather /Confidential client**  
**Market manipulation**  
 Expert report prepared in the context of criminal proceedings brought in the Supreme Court of NSW alleging market manipulation in the trading of certain ASX-listed securities.
- 2010-11**                **Wotton Kearney/Confidential client**  
**Misleading and deceptive conduct**  
 Expert report and analysis in light of investor claims and pending litigation following the freezing of withdrawals from two fixed interest investment trusts that primarily held US-denominated collateralised debt obligations (CDOs).



- 2010-11 Slater & Gordon/Confidential client**  
**Shareholder damages assessment**  
 Expert report for use in connection with representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2010-11 Maurice Blackburn/Confidential client**  
**Shareholder damages assessment**  
 Analysis and pending expert report for use in connection with representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2010-11 Mallesons /ActewAGL**  
**Judicial review of rate of return determination**  
 Expert report and testimony in Federal Court proceedings seeking judicial review of a decision by the Australian Energy Regulator of its determination of the risk free rate of interest in its price setting determination for electricity distribution services.
- 2009-11 William Roberts/Clime Capital (Credit Corp)**  
**Shareholder damages assessment**  
 Preparation of two expert reports in representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2009 Jemena Limited**  
**Cost of equity estimation**  
 Co-authored an expert report on the application of a domestic Fama-French three-factor model to estimate the cost of equity for regulated gas distribution businesses.
- 2009 Minter Ellison/Confidential client**  
**Misleading and deceptive conduct**  
 Expert report in light of investor claims and pending litigation following the freezing of withdrawals from a fixed interest investment trust that primarily held US-denominated collateralised debt obligations (CDOs), as offered by a major Australian financial institution. Analysis undertaken included the extent to which the investment risks were adequately described in the fund documents, and the quantum of any potential damages arising.
- 2008-09 Clayton Utz/Fortescue Metals Group**  
**Materiality of share price response**  
 Preparation of expert report and testimony before the WA division of the Federal Court addressing alleged breaches of the ASX continuous disclosure obligations and the associated effect on the price of FMG securities arising from statements made by it in 2004.

- 2008-09**                    **Energy Trade Associations – APIA, ENA and Grid Australia**  
**Value of tax imputation credits**  
 Preparation of expert report on the value to investors in Australian equities of tax imputation credits, for submission to the Australian Energy Regulator.
- 2008-09**                    **Freehills/Centro**  
**Shareholder damages assessment**  
 Assistance in the estimation of potential damages arising from then anticipated representative proceedings concerning accounting misstatements and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2008**                        **Slater & Gordon/Boyd (Downer)**  
**Shareholder damages assessment**  
 Preparation of an expert report for submission to a mediation on the damages arising in representative proceedings before the Federal Court alleging accounting misstatements and/or breach of the continuous disclosure obligations of an ASX-listed entity.
- 2007-08**                    **Maurice Blackburn/Watson (AWB)**  
**Shareholder damages assessment**  
 Preparation of advice estimating the damages arising in representative proceedings before the Federal Court alleging accounting misstatements and/or breach of the continuous disclosure obligation by the ASX-listed entity, AWB Limited.
- 2007**                        **Freehills/Telstra Corporation**  
**Shareholder damages assessment**  
 Advice and assistance in the preparation of the expert report of Dr Fred Dunbar submitted to the Federal Court in the context of proceedings alleging breaches of the continuous disclosure obligations by Telstra. The principal subject of this work was the assessment of the extent to which of material alleged not to have been disclosed was already known and incorporated in Telstra's stock price.
- 2006-07**                    **Maurice Blackburn/Dorajay (Aristocrat)**  
**Shareholder damages assessment**  
 Advice and assistance in the preparation of the expert report of Dr Fred Dunbar submitted to the Federal Court in the context of proceedings between Dorajay and Aristocrat Leisure. The principal subject of this work was the assessment of the extent and duration of share price inflation arising from various accounting misstatements and alleged breaches of the continuous disclosure obligations.

- 1999-2001**                      **Australian Competition and Consumer Commission**  
**Cost of capital**  
 Various assignments in relation the cost of debt and equity capital for regulated businesses. These included: an analysis of the approach taken by regulators overseas in relation to the treatment of taxation in estimating the WACC, and the use of pre-tax versus post-tax WACC formulations in regulation; and, a survey of regulatory decisions in relation to the cost of capital across a range of international jurisdictions. Two reports have been published by the ACCC.
- Valuation and Damages Analysis**
- 2011**                              **Kelly & Co/Cooper Basin Producers**  
**Wharfage dues agreement arbitration**  
 Expert report and testimony in arbitration proceedings to determine the ‘normal wharfage dues’ to be paid for use of a facility that assists the transfer of petroleum products to tanker ships from a processing terminal in South Australia.
- 2010**                              **Barclays Capital/Confidential Client**  
**Due diligence, Alinta Energy**  
 Retained to advise on the key industry related risks and issues facing Alinta Energy’s gas and electricity assets during the due diligence process associated with its recapitalisation and sale.
- 2009**                              **Freehills/Santos**  
**Gas supply agreement arbitration**  
 Analysis and advice on factors influencing the market price of gas in eastern Australia, to be determined in a potential arbitration concerning the terms of a substantial long term gas supply agreement.
- 2008-09**                         **Clayton Utz/Origin Energy**  
**Gas supply agreement arbitration**  
 Expert reports and testimony in an arbitration concerning the market price of gas, which was determined and applied in a substantial long term gas supply agreement.
- 2008-09**                         **Minter Ellison/Confidential client**  
**Treatment of past capital contributions**  
 Expert report and evidence given in arbitration proceedings on the extent to which a discount should apply under a long term water supply contract, in recognition of a capital contribution made at the outset of the agreement.
- 2008**                              **Freehills/Tenix Toll**  
**Logistics contract arbitration**  
 Advice on the appropriate methodology for adjusting prices under a long term logistics contract in light of changing fuel costs.

- 2008**                      **BG plc**  
**Market analysis**  
 Advise on economic aspects of the operation of the east Australian wholesale gas market in the context of the potential development of coal seam gas for use in LNG production and export.
- 2008**                      **Gilbert + Tobin/Waste Services NSW**  
**Damages estimation**  
 Damages assessment in the context of a Federal Court finding of misleading and deceptive conduct in relation to the extent of environmental compliance in the provision of waste services.
- 2007**                      **Meerkin & Apel/SteriCorp**  
**Damages assessment**  
 Expert report and testimony in the context of an international arbitration on commercial damages arising from alleged non-performance of a medical waste processing plant.
- 2006-07**                      **Middletons/Confidential Client**  
**Damages assessment**  
 Retained to provide an expert report on the methodological framework for assessing alleged damages arising from contractual non-performance and associated forecast for demand and supply conditions and prices for natural gas and ethane prices and over a ten year period.
- 2006**                      **Confidential Client/Australia**  
**Valuation of digital copyright**  
 Advice in relation to the negotiation for a licence for digital copyright. This included the discussion of the matters that should be considered in determining fees for a digital copyright licence, including the extent to which digital material should be valued differently from print material and whether the charging mechanism for print is appropriate for digital copyright.
- 2006**                      **Minter Ellison/Australian Hotels Association**  
**Valuation of copyright material**  
 Expert report in the context of proceedings before the Copyright Tribunal concerning the appropriate valuation of the rights to play recorded music in nightclubs and other late night venues.
- 2005-06**                      **Minter Ellison and Freehills/Santos**  
**Gas supply agreement arbitrations**  
 Principal economic expert in two separate arbitrations of the price to apply following review of two substantial gas supply agreements between the South West Queensland gas producers and, respectively, a large industrial customer and major gas retailer.

- 2002-03**                    **ActewAGL**  
**Consumer willingness to pay**  
 Directed a one year study of consumers' willingness to pay for a range of attributes for electricity, gas and water services in the ACT. This study involved the use of focus groups, the development of a pilot survey and then the implementation of a stated preference choice modelling survey of household and commercial customer segments for each utility service.
- 2002-03**                    **National Electricity Market Management Co**  
**Participant fee determination**  
 Advice to NEMMCO in the context of its 2003 Determination of the structure of Participant Fees, for the recovery of NEMMCO and NECA's costs from participants in the national electricity market.
- 2001-03**                    **Minter Ellison/Optus Networks**  
**Arbitration of market lease fee**  
 Expert evidence in the mediation and then arbitration between Optus Networks and United Energy on the appropriate annual market fee for leasing electricity pole space for the attachment of HFC coaxial cable.
- 2002**                        **Screenrights**  
**Non-market valuation methods**  
 Advice on the range and suitability of revealed preference and stated preference survey methodologies for valuing the retransmission of free to air television broadcasts for the purposes of determining the 'equitable remuneration' to be paid for retransmission of copyright material contained in free-to-air television broadcasts.
- 2001**                        **Gilbert & Tobin/One.Tel**  
**Arbitration on the local loop service**  
 Advice on the pricing of Telstra's unconditioned local loop service (ULLS) for use in arbitration.
- 2001**                        **Department of Natural Resources and Environment**  
**Efficient pricing of water services**  
 Prepared a report setting out the principles for efficient pricing of urban water services, an evaluation of the structure of existing wholesale and retail water tariffs in metropolitan Melbourne, and recommended reforms.

**1998-2000****TransGrid and Energy Australia****Cost effectiveness study of transmission capacity augmentation**

Directed a NERA team that conducted a cost effectiveness analysis of alternative options for augmenting transmission capacity to the Sydney CBD area. This included identification and evaluation of alternative transmission, generation and demand side management options, and application of the 'regulatory test', as defined in the then national electricity code.

**Institutional and Regulatory Reform****2008-11****Department of Sustainability and Environment****Management of bulk water supply**

Various advice on the concept and merits of establishing market based arrangements to guide both the day-to-day operation of the bulk water supply system in metropolitan Melbourne, as well as the trading of rights to water between the metropolitan water supply system and those throughout the state of Victoria.

**2008****Department of Treasury and Finance****Access regime for water networks**

Prepared a report on the principles that should be applied in developing a state-wide third party access regime for water supply networks.

**2007****Economic Regulatory Authority****Options for competitive supply bulk water**

Prepared a report on institutional and structural reforms necessary to encourage the development of options for the procurement of alternative water supplies from third parties.

**2006****Bulk Entitlement Management Committee****Development of urban water market**

Prepared a report for the four Melbourne water businesses on options for devolution of the management of water entitlements from collective to individual responsibility, including the development of associated arrangements for oversight and co-ordination of the decentralised management and trading of water rights.

**2003-05****Goldman Sachs/Airport Authority, Hong Kong****Framework for economic regulation**

Lead a team advising on the options and detailed design of the economic regulatory arrangements needed to support the forthcoming privatisation of Hong Kong Airport.

- 2003-04**                    **Ministry of Finance, Thailand**  
**Framework for economic regulation**  
 Lead a team advising on the detailed design and implementation of a framework for the economic regulation of the Thai water sector in order to support the proposed corporatisation and then privatisation of the Metropolitan Water Authority of Bangkok.
- 2003**                        **Metrowater and Auckland City, New Zealand**  
**Water industry reform options**  
 Report on alternative business models for the Auckland City water services supplier, Metrowater, in the context of proposals for structural reform elsewhere in the industry. This work examined the long term drivers of water industry efficiency and the costs and benefits of alternative structural reform options.

### **Sworn Testimony, Transcribed Evidence<sup>87</sup>**

- 2011**                        **Expert evidence before the Federal Court on behalf of the Australian Turf Club and Australian Racing Board in the matter of Bruce McHugh v ATC and Others**  
 Expert report, transcribed evidence, Sydney, 12 and 14 October 2011
- Expert evidence in arbitration proceedings before J von Doussa, QC, on behalf of Santos in the matter of Santos and Others v Government of South Australia**  
 Expert report, transcribed evidence, Adelaide, 13-15 September 2011
- Expert evidence before a panel of arbitrators on behalf of UNELCO in the matter of UNELCO v Government of Vanuatu**  
 Expert report, transcribed evidence, Melbourne, 23 March and 21 April 2011
- Expert evidence before the Federal Court on behalf of ActewAGL in the matter of ActewAGL v Australian Energy Regulator**  
 Expert report, sworn evidence, Sydney, 17 March 2011
- Deposition Testimony in Re Payment Care Interchange and Merchant Discount Litigation, in the United States District Court for the Eastern District of New York**  
 Deposition testimony, District of Columbia, 18 January 2011

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<sup>87</sup> Past ten years.

- 2010**
- Expert evidence before the Federal Court in behalf of the Australia Competition and Consumer Commission in the matter of ACCC v Cement Australia and others**  
Expert report, sworn evidence, Brisbane, 19-21 October 2010
- Expert evidence on behalf of Orion NZ, at the Commerce Commission’s Conference on its Input Methodologies Emerging View Paper**  
Transcribed evidence, public hearings, Wellington, 24 February 2010
- Deposition Testimony in *Re Payment Card Interchange and Merchant Discount Antitrust Litigation*, in the United States District Court for the Eastern District of New York**  
Deposition Testimony, District of Columbia, 18 February 2010
- 2009**
- Expert evidence before the Australian Competition Tribunal on behalf of Fortescue Metals Group Ltd, in the matter of Application for Review of Decision in Relation to Declaration of Services Provided by the Robe, Hamersley, Mt Newman and Goldsworthy Railways**  
Expert report, sworn evidence, Melbourne, 12-13 October and 5-6 November 2009
- Expert evidence on behalf of Orion NZ, at the Commerce Commission’s Conference on its Input Methodologies Discussion Paper**  
Transcribed evidence, public hearings, Wellington, 16 September 2009
- Expert evidence before the Federal Court on behalf of Fortescue Metals Group Ltd, in the matter of ASIC v Fortescue Metals Group and Andrew Forrest**  
Expert report, sworn evidence, Perth, 29 April–1 May 2009
- Expert report and evidence in arbitration proceedings before Hon Michael McHugh, AC QC, and Roger Gyles, QC, between Origin Energy and AGL**  
Expert report, sworn evidence, Sydney, 19-24 March 2009
- 2008**
- Expert evidence on behalf of Orion NZ, at the Commerce Commission’s Conference on its Draft Decision on Authorisation for the Control of Natural Gas Pipeline Services**  
Transcribed evidence, public hearings, Wellington, 21 February 2008
- 2007**
- Expert report and evidence in arbitration proceedings before Sir Daryl Dawson between SteriCorp and Stericycle Inc.**  
Expert report, sworn evidence, 11 July 2007



- 2006**
- Expert report and evidence in arbitration proceedings before Sir Daryl Dawson and David Jackson, QC, between Santos and others, and AGL**  
Expert report, sworn evidence, November 2006
- Expert report and evidence before the Federal Court on behalf of Fortescue Metals Group in the matter of BHP Billiton v National Competition Council and Others**  
Expert report, sworn evidence, November 2006
- Expert report and evidence in arbitration proceedings before Sir Daryl Dawson and David Jackson, QC, between Santos and Others, and Xstrata Queensland**  
Expert report, sworn evidence, September 2006
- Expert report and evidence before the Copyright Tribunal on behalf of the Australian Hotels Association and others in the matter of PPCA v AHA and Others**  
Expert report, sworn evidence, May 2006
- Expert report and evidence in arbitration proceedings before Hon Michael McHugh, AC QC, on the matter of AWB Limited v ABB Grain Limited**  
Expert report, sworn evidence, 24 May 2006
- Expert report and evidence to Victorian Appeal Panel, in the matter of the appeal by United Energy Distribution of the Electricity Price Determination of the Essential Services Commission**  
Expert report, sworn evidence, 10 February 2006
- 2005**
- Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on its Notice of Intention to Declare Control of Unison Networks**  
Transcribed evidence, public hearings, Wellington, 17 November 2005
- Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on Asset Valuation choice and the electricity industry disclosure regime**  
Transcribed evidence, public hearings, Wellington, 11 April 2005
- 2004**
- Expert report and evidence to the Australian Competition Tribunal, in the matter of Virgin Blue Airlines v Sydney Airport Corporation**  
Expert reports, sworn evidence, 19-20 October 2004

- Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on the ODV Handbook for electricity lines businesses**  
Transcribed evidence, public hearings, Wellington, 26 April 2004
- 2003**
- Expert evidence on behalf of Orion NZ, in response to the Commerce Commission's draft decision on re-setting the price path threshold for electricity lines businesses**  
Transcribed evidence, public hearings, Wellington, 5 November 2003
- Expert evidence on behalf of NGC Holdings, in response to the Commerce Commission's draft framework paper for the gas control inquiry.**  
Transcribed evidence, public hearings, 3 September 2003
- Affidavit submitted to the Federal Court, in the matter of ACCC v DM Faulkner and Others**  
Expert report, Federal Court of Australia, May 2003
- Expert evidence on behalf of Orion NZ, in response to the Commerce Commission's draft decision on a targeted control regime for electricity lines businesses**  
Transcribed evidence, public hearings, Wellington, 25 March 2003
- 2002**
- Expert evidence on behalf of Orion NZ, in the Commerce Commission's review of asset valuation methodologies for electricity lines businesses**  
Transcribed evidence, public hearings, Wellington, 25 November 2002
- Expert report and evidence on behalf of Optus Networks and Optus Vision Ltd, in the matter of an arbitration with United Energy Ltd**  
Expert report, prior to settlement, 18 October 2002
- Expert report and evidence on behalf of TransGrid before the National Electricity Tribunal, in the matter of Murraylink Transmission Company v NEMMCO, TransGrid, and others**  
Sworn Testimony, National Electricity Tribunal, Melbourne, 26 August 2002
- Expert evidence on behalf of Orion NZ, in the Commerce Commission's review of control regimes for electricity lines businesses**  
Transcribed evidence, public hearings, Wellington, 21 August 2002

**Affidavit and testimony before the Supreme Court of Western Australia, in the matter of Epic Energy v Dr Ken Michael – Independent Gas Access Regulator**

Sworn testimony, Supreme Court of Western Australia, November 2002

**2001**

**Expert evidence on behalf of Auckland International Airport, in the Commerce Commission’s review of airfield price control**

Transcribed evidence, public hearings, Wellington, 4-5 September 2001

**Expert evidence on behalf of Optus Networks, in the matter of Optus Networks v United Energy**

Mediation before Trevor Morling QC, Sydney, August and September 2001

**Expert evidence on behalf of Sydney Airports Corporation in the Productivity Commission’s review of airport regulation**

Transcribed evidence, public hearings, Melbourne, 3 April 2001

**Affidavit submitted to Supreme Court of Victoria, in the matter of TXU v Office of the Regulator-General**

Sworn testimony, Supreme Court of Victoria, 23-26 March 2001

**Speeches and Publications<sup>88</sup>**

**2011**

**Law Council of Australia - Competition Workshop**

Coordinated effects in merger assessments  
Speech, Gold Coast, 27 August 2011

**ACCC Regulatory Conference**

Adapting Energy Markets to a Low Carbon Future  
Speech, Brisbane, 28 July 2011

**2010**

**IPART Efficiency and Competition in Infrastructure**

Improving Performance Incentives for GTE’s  
Speech, Sydney, 7 May 2010

Law and Economics Association of New Zealand  
Shareholder Class Actions – A Rising Trend in Australia  
Speeches, Auckland and Wellington, 15-16 November 2010

**2009**

**ACCC Regulatory Conference**

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<sup>88</sup> Past five years

Substitutes and Complements for Traditional Regulation  
Speech, Gold Coast, 30 July 2009

**Minter Ellison Shareholder Class Action Seminar**

Investor Class Actions – Economic Evidence  
Speech, Sydney, 18 March 2009

**Competition Law and Regulation Conference**

Commerce Amendment Act: Impact on Electricity Lines Businesses  
Speech, Wellington, 27 February 2009

**2008**

**Non-Executive Directors**

Shareholder Class Actions in Australia  
Speech, Sydney, 28 July 2008

**Mergers & Acquisitions: Strategies 2008**

Competition Law Implications for Mergers & Acquisitions  
Speech, Sydney, 27 May 2008

**Institute for Study of Competition and Regulation**

Role of Merits Review under Part 4 and Part 4A of the Commerce Act  
Speech, Wellington, 20 February 2008

**2007**

**Law Council of Australia - Trade Practices Workshop**

**Hypothetical breach of s46**

Economic expert in mock trial, 20 October 2007

**Assessing the Merits of Early Termination Fees, *Economics of Antitrust: Complex Issues in a Dynamic Economy*, Wu, Lawrence (Ed)**

NERA Economic Consulting 2007

**Assessing the Impact of Competition Policy Reforms on Infrastructure Performance**

**ACCC Regulation Conference**

Speech, Gold Coast, 27 July 2007

**2006**

**Trade Practices Workshop**

**Access to Monopoly Infrastructure Under the Trade Practices Act: Current Issues with Part IIIa and Section 46**

Conference Paper Co-Author, Canberra, 22 July 2006

## Annexure C. Houston-Lally report

## Mr Gregory Houston and Dr Martin Lally – Joint Report

Prepared in the context of proceedings between  
ActewAGL and the Australian Energy Regulator

### 1. Matters of Agreement

Economic theory says that the required rate of return to be used in valuing an investment decision is the forward looking rate estimated as at the date of that decision.

In applying the above principle to the determination of allowed revenues for a regulated service provider, the relevant required rate of return is the forward looking rate estimated as at the commencement of the regulatory period.

The required rate of return is a weighted average of the rates of return required by the providers of equity and debt capital.

The Capital Asset Pricing Model (CAPM) is a suitable model for estimating the required rate of return to the providers of equity capital (the ‘return on equity’).

Under the CAPM, the required return on equity comprises the risk free rate plus a risk premium. This risk premium is the product of the risk premium for the market as a whole (the market risk premium or ‘MRP’) and a risk measure particular to the equity investment in question (known as ‘beta’).

The risk free rate and the MRP tend to move inversely with each other as investors’ appetite for or aversion to risk fluctuates in line with macroeconomic circumstances. For example, during the global financial crisis, the market risk premium very likely increased (as investor became more risk averse and market volatility increased), while the risk free rate clearly reduced (as investors created a flight to safety and quality).

We understand the transitional provisions at Chapter 11 of the National Electricity Rules (NERs) to prescribe particular values for the MRP (6%) and beta (1.0) components of the cost of equity,<sup>89</sup> and to prescribe a process for measuring the risk free rate component.<sup>90</sup>

The true forward looking values of the MRP and beta fluctuate over time and are difficult to estimate. By contrast, at any particular time, the forward looking risk free rate can be measured with a high degree of precision.

We understand that the transitional rules at Chapter 11 of the NER prescribe values for the MRP and beta that are estimates of the long run average values for these parameters.

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<sup>89</sup> See section 6.5.2 (b)

<sup>90</sup> See section 6.5.2 (c)

## 2. Mr Houston's Opinions

### 2.1 No theoretical support for 'on the day' risk free rate estimate

The AER was incorrect to interpret the economics and financial literature as requiring that the averaging period for the risk free rate be as closely aligned as possible to the commencement of the next regulatory control period.

Economic theory says that the applicable required rate of return is a forward looking rate estimated at the start of the next regulatory control period. However, there is no published economic or finance literature supporting the contention that the risk free rate component should be an 'on the day' rate (or the best proxy for an 'on the day' rate), in circumstances where the estimation of other components (the MRP and beta, in particular) is restricted to those established by reference to long term averages. In other words, it does not follow as a matter of economic and financial theory or logic that employing an 'on the day' estimate for *one component* of the cost of equity will produce a more accurate estimate of the 'on the day' cost of equity *as a whole*.

The significance of this distinction is heightened because the AER's decision in relation to the risk free rate averaging period for ActewAGL coincided with the period in which the global financial crisis was most intense.

### 2.2 Incorrect data and method for assessing bias

The yield curve data upon which the AER relied in making its decision to accept or reject ActewAGL's revised proposed averaging period was not an economically valid consideration for that decision. This is because the period to which that data related (June 2008) coincided neither with ActewAGL's revised proposed averaging period (11 August 2008 to 5 September 2008) nor with the AER's specified averaging period (2 – 27 February 2009).

Even if the yield curve data had corresponded with the periods being compared in the AER's assessment of ActewAGL's revised averaging period decision and its specified averaging period, such data would not have been sufficient to draw any economically sound conclusions as to the expected future ten-year CGS yield. Rather, an inquiry as to the extent of bias (in estimating the 'on the day' risk free rate) as between one averaging period and another would have required an analysis of yield curves in order to derive implied forward interest rates.

### 2.3 Incorrect interpretation of regulatory precedent

In discussing the consistency of its decision with regulatory precedent, the AER was incorrect to state that "*previous jurisdictional regulators' determinations, all.....apply a nominal risk free rate averaging period considerably closer to the final determination date.*"<sup>91</sup>

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<sup>91</sup> AER, Letter to ActewAGL entitled *ActewAGL's proposed nominal risk free rate averaging period for the 2009-2014 regulatory control period*, dated 8 July 2008.

The Electricity Pricing Order in South Australia, which governed the regulation of electricity distribution prices in that state for several years from 1999 (like the transitional chapter of the NER), prescribed values for the MRP and equity beta, as well as requiring that the risk free rate be estimated using 10-year CGS yields averaged over a five year period.

Longer term averages of the risk free rate have also been applied on a number of occasions by United Kingdom economic regulators, particularly where current yields are thought to be affected by financial and economic abnormalities.

### 3. Dr Lally's Opinions

Dr Lally considers that there are a number of significant disadvantages to using an estimate of the long-term average risk free rate under some conditions, as follows. Firstly, judgements as to when to invoke an estimate of the long-term average risk free rate (as opposed to using the rate prevailing at the beginning of the regulatory period) are highly subjective as is the question of which historical period to use in this exercise; should one use the last ten years to determine the long-term average or the last twenty years or even the last 100 years?

Secondly, using an estimate of the long-term average risk free rate only when the prevailing rate at the beginning of the regulatory period is unusually low but not when it is unusually high will impart an upward bias to the estimated cost of equity capital over a long period. Thus, if the long-term average risk free rate is used when the prevailing value is unusually low, it should also be applied when the prevailing value is unusually high and this would aggravate the inherent subjectivity of such a process.

Thirdly, using an estimate of the long-term average risk free rate under some conditions in respect of the cost of equity capital raises the question of whether it should also be used for the cost of debt. If the same policy is not applied to the cost of debt, an apparent inconsistency applies. If the same policy is applied, the underlying rationale is absent for the cost of debt because the risk premium on debt capital can be estimated with a high degree of precision and is not legislatively prescribed.

In view of these concerns, I favour always determining the risk free rate in accordance with the rate prevailing at the beginning of the regulatory period in conjunction with the legislatively prescribed values for the MRP and beta. This approach avoids all of the problems with Mr Houston's approach. This is likely to lead to estimates of the cost of equity that are sometimes too low (because the true MRP at that time is above the legislatively prescribed value of 6%) and sometimes too high (when the true MRP is below the prescribed value of 6%). However these errors will tend to offset over time. Furthermore, regulated businesses are primarily concerned with the average MRP allowed over time relative to the average true value rather than with differences over individual regulatory periods. Finally, even in the absence of a legislatively prescribed value for the MRP, the MRP values adopted by Australian regulators have exhibited a high degree of stability over time. Given that the true values fluctuate over time, estimation errors in the MRP and therefore the cost of equity capital are still present.



Gregory Houston

Martin Lally

16 March 2011

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