21 June 2006

Mr. Mike Buckley
General Manager, Access Branch
Australian Energy Regulator
P O Box 1199
Dickson ACT 2602

Dear Mr. Buckley,

Comments on Queensland Transmission Network Revenue Proposal, 1 July 2007 to 30 June 2012

I attach a submission prepared on behalf of a number of major energy users in Queensland.

Powerlink is a well-operated and successful transmission company. It has a highly regarded reputation for technical and operational efficiency. Yet, despite this, Powerlink's Revenue Proposal offers limited information on its efficiency and productivity gains during the current and new regulatory periods. This is the surprising feature of Powerlink's Revenue Proposal.

Another surprising feature is the inconsistency between, on the one hand, concerns about the constraining external factors, and on the other, proposals to undertake massive increases in new capital expenditures in the new regulatory period.

Finally, Powerlink's Revenue Proposal is short on relevant information, particularly the aligning of cause and effects. Thus, there is no direct alignment between the various capex and opex claims with demand growth projects, nor is there information on the timing of projects.

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Powerlink's Revenue Proposal will raise average transmission charges steeply, over the new regulatory period and by 15% in the first year of the new regulatory period. This is a 'price shock' in any term and the AER needs to apply very close scrutiny on the massive capex and opex claims from Powerlink.

Yours sincerely

Bob Lim
On behalf of major energy users

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Queensland Transmission Network

Revenue Proposal

1 July 2007 to 30 June 2012

Submission

On behalf of a number of

Major Energy users in Queensland

June 2006

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Comments on Queensland Transmission Network Revenue Proposal, 1 July 2007 to 30 June 2012

1. Introduction

This submission has been prepared on behalf of a number of major industrial users of electricity in Queensland.

Powerlink is a highly regarded transmission network company and has a high reputation for technical efficiency. In this regard, we applaud the following statement of Powerlink's intentions:-

> "Powerlink is, and as this Proposal demonstrates, plans to remain, the most cost effective electricity transmission entity in the National Electricity Market." (Queensland Transmission Network Revenue Proposal Page 6)

However, we have strong difficulties with many aspects of this Proposal and consider that the AER would need to ensure that the claims for expenditure and costs increases are fully justified and are efficient.

It is not sufficient for Powerlink to imply that delivering a high level of reliability necessarily means consumers would, regardless, accept unjustifiable price increases ("reasonable" prices in Powerlink's terminology).

There is no natural law of relationship that states that high reliability requires high capex and opex, which equate to high prices. Efficiency and productivity gains need to be exploited before expenditure and cost increases are accepted. In this regard, the AER's review acts as a proxy for exerting 'competitive' pressure on what is a natural monopoly network business. In this regard the AER should bear in mind that all competitive businesses exploit efficiency and productivity gains to maintain or grow market share or to respond to cost pressures, as there is little or no scope to pass on unjustifiable costs to customers.

The standard feature in Powerlink's Revenue Proposal is that it has not fully justified its claims that it is operating in "an environment of sustained high input costs – material such as steel and aluminium, increasingly scarce skilled labour, and healthy contractor margins……" (Page 6). Nor has Powerlink provided details of mandated reliability obligations 'listing' these obligations is a necessary but insufficient step in justifying costs claims.

2. Demand Growth

Powerlink points to population growth, increased use of air conditioning, an expansion and development of coal mines (with some $3.5 billion of projects underway), and increased infrastructure development, as driving demand growth. Demand projections are provided for the period between 2006/07 to 2011/12, but nowhere are these projections directly linked to capex and opex claims.

There is also an apparent inconsistency in the magnitude of mining projects committed. In Powerlink's Proposal a figure of $3.5 billion of projects is said to be underway. However, in the recent AER Public Conference, the Powerlink presentation referred to $5 billion in mining projects. These two sets of figures need to be reconciled, and certainly the appropriate amounts need to be certified by the AER and linked to Powerlink's specific expenditure claims.

Powerlink points to relatively robust peak summer demand forecasts over the next 10 years and to the challenges it faces in ensuring uninterrupted supply, in part reflecting mandated reliability of supply obligations. However, in the face of these challenges, Powerlink's approach appears to be simply based on increasing its networks. There is apparently no efficiency or productivity gains being sought from existing assets. There is no demand management mechanisms sought. There is no apparent collaboration or undertaking with distribution network businesses or retailers to reduce summer load pressures. There is no apparent information provided on the potential load curtailments on high demand days that many large industrial users are capable of undertaking (or have already implemented) or even that these users have implemented energy efficiency measures.

There appears to be a purely network augmentation strategy or mentality in Powerlink's approach to this Revenue Review.

3. External Factors Forcing Up Input Costs

Powerlink's Proposal includes the following external pressures:-

1. Labour costs
2. Construction costs
3. Equipment Material costs
4. Vegetation Management

The upward pressures in these areas are generally acknowledged. However, most businesses faced with such cost pressures would currently seek:-

1. increased capital and operational efficiency
2. increased productivity gains through innovation
3. increased competitive out-sourcing
4. increased competitive pressures on suppliers
5. increased risk management

As Powerlink is regarded very highly as a transmission company, we would expect it to have implemented such management items, just like any successful business. Unfortunately Powerlink has not provided such information in its Revenue Proposal, and we urge that the AER investigates this issue, as consumers would want to share in such efficiency gains.

Interestingly, the Powerlink Proposal does not carry any of the information presented at the AER public conference on Powerlink's expected electrical equipment cost increases. At that conference, attention was drawn to the important (major?) price

increases of 1 to 10 % per cent for electrical equipment. Questions were raised at the conference on the median price increases expected, and on the currency used to source these and other inputs. These issues need to be investigated to test the veracity of cost claims by Powerlink.

For ease of reference, the following questions were raised and the responses obtained:

- "Mr Lim asked Powerlink for more details on the median price increase used for its costing based on Areva's estimated range of 1 to 10 per cent price increases for electrical equipment. Mr Jardine responded by saying that the information could be used by suppliers if it was released. Mr Jardine further commented that conservative assumptions on costings were used due to an ex-ante framework being applied.

- Mr Lim also questioned the currency used to source electric equipment supplies and other inputs, asking whether this was in US dollars and whether price increases were therefore less in Australian dollars. Mr Jardine replied by stating that the input prices paid would depend on where they are sourced from. Areva is based in Europe but Powerlink has also sourced materials from the US and low cost countries in the past."

In our view, the AER should assess these issues carefully. It is worth recalling that Powerlink had previously publicly referred to its successful hedging and other techniques implemented to reduce its raw material and equipment costs when it was constructing the Queensland leg of the QNI.

4. Past Capital Expenditure

We note that Powerlink's actual capital expenditure in real terms is $1.274 billion during the current regulatory period, a significant 21% over the capex approved by the ACCC at the beginning of the current regulatory period.

Powerlink has attributed the excess capex to:-

- Strong growth in demand
- Recent input costs increases
- Mandated reliability obligations

We note, also, that most of the excess capex was actually incurred in the latter part of the current regulatory period.

No doubt the AER will apply its prudency (and efficiency) test over the additional capex. However, it is worth observing that Powerlink appears not to have been constrained in implementing its additional capex in such a short time frame. This may be suggestive that it may not have experienced the degree of shortages of skilled labour as claimed. Furthermore, how is Powerlink's additional capex likely to meet a rigorous AER prudency and efficiency test if it can be so readily implemented despite Powerlink's claims of significant cost increases arising from construction materials and equipment costs?

Nowhere in Powerlink's documentation with respect to past capex does it draw attention to any efficiency and productivity savings (bar one example) sought or obtained in the face of claimed significant cost increases and labour shortages.

It is imperative that the AER does not perpetuate a cost-plus mentality by accepting Powerlink's additional capex claims without Powerlink clearly demonstrating that it had sought and achieved efficiency and productivity savings (for which it has successful track record) to nullify the significant cost increases that would need to be passed on to consumers.

5. Capex Efficiency Savings

The AER should challenge Powerlink's statement:

> "That the total actual capex is above the allowance can be directly attributed to higher than forecast demand growth and higher input costs – both of which are outside the control of Powerlink" (our underling) (Page 32).

There are many avenues open to Powerlink to minimise actual capex. These include working with other industry participants and users to establish demand management programmes, providing educational programmes to enhance energy-use efficiencies, undertaking hedging activities to protect against imported price increases for equipment and exchange rate fluctuations, etc. Powerlink, like other businesses faced with such external developments, can be expected to implement strategies to minimise business risks. To deny that there is scope to minimise business risks is difficult to accept (especially bearing in mind the excellent reputation of Powerlink as a well–managed business) and in the light of the following example.

Indeed, Powerlink, itself has drawn attention to the significant management-induced efficiencies with respect to the reinforcement of supply to the Gold Coast, where a saving of some $38.4 million was effected.

Given such an excellent example of management-induced efficiency, it is difficult to accept that no other efficiency savings have been possible with respect to other additional capex or opex!

6. Regulatory Asset Base

Users remain perplexed about the AER's decision on Regulatory Accounting Methodologies, such as the treatment of capital expenditure from "as commissioned" to "as incurred", which has the effect of contributing to a 10% price increase (out of an overall 15%) in 2007/08. The inclusion of depreciation of assets under construction in the calculation of the MAR is just as perplexing. Even Powerlink has noted that this practice does not comply with Australian and international accounting standards.

Users are also opposed to the automatic inflation-indexation of the RAB. No business in the competitive environment makes such adjustments to its asset base.

7. Cost of Capital

We have strong reservations with the use of a Market Risk Premium of 6% and an Equity beta of 1 in calculating the WACC for Powerlink. Rather than retrace the arguments that have been consistently used by users that regulators have been overly generous to network service providers, we draw attention to (the South Australian Minister for Energy) the Hon. Patrick Conlon's letter of 4 April 2006 to Dr. John Tamblyn, Chairman, Australian Energy Market Commission, on the subject of the Market Risk Premium and Equity Beta:

> "On the subject of parameters to be used in the calculation of WACC, the State Government notes that the Draft Rule proposes that an equity beta of 1.0 be codified in the Rules. Professor Martin Lally of the Victoria University of Wellington, New Zealand, has previously advised the South Australian Government that there was evidence to suggest that the use of an equity beta of no more than 0.8 was justified based on his analysis of equity betas of regulated monopolies, including gas distribution businesses. Some studies of recent market data suggests that an equity beta for Australian utilities of substantially lower than 1 (possibly as low as 0.5) may be reasonable.
>
> The equity beta of 1.0 appears to be based on the *Statement of principles for the regulation of electricity transmission revenues – background paper* (page 108) published by the Australian Competition and Consumer Commission (ACCC) in 2004.
>
> It needs to be recognised that the ACCC's decision to adopt an equity beta of 1.0 in the near term was clearly qualified. The ACCC indicated that it would continue to exercise judgement in the application of empirical market evidence and would undertake further work in this area. The Draft Rule does not allow for any flexibility or further consideration and would appear to apply for a much longer period than originally envisaged (until 1 July 2011). The codification of an equity beta of 1.0 limits the discretion of the regulator to revise the decision, even in the face of strong market evidence.
>
> The Draft Rule also proposes the market risk premium be deemed to be 6%. Recent work undertaken by the South Australian Centre for Economic Studies concluded that a market risk premium in the region of 4.5% to 5% was more appropriate."

The AER must take great care in not over-rewarding network service providers by granting excessively generous WACC parameters, on top of overly generous treatment of the RAB, by using the new accounting methodologies.

8. Future Capital Expenditure

Powerlink is proposing new capex requirement totalling $2,449 million for the new regulatory period, or 63% of its RAB. This is over 220% of the amount of capex spent in the current regulatory period! This is a very substantial increase and raises

important questions about the ability of Powerlink to implement its total capex programme, especially in the light of the claimed external constraining factors (such as skilled labour shortages, construction material cost increases, etc.).

We believe that there must be a detailed assessment of Powerlink's proposed capex programme in the light of the AER's use of the ex-ant framework. Powerlink's capex programme must be assessed within the Regulatory Test framework and be consistent with the prudency (and efficiency) test.
We highlight that as demonstrated in numerous revenue determinations, proposed expenditures by network service providers have tended to significantly overestimate actual expenditures and they have subsequently underspent on regulators' efficient expenditure allowances. In other words, consumers pay for services that have never been provided!

The AER's assessment of Powerlink's proposed capex programme must also establish and align individual projects (including timing of the projects) with the projected demand growth and appropriate cost allocators are developed. In the latter regard, it is noted that Powerlink has made much of load growth due to growth in the use of air-conditioners by households.

9. Historical Operational Expenditure

We note that Powerlink's historical opex spent in the current regulatory period exceeds the ACCC allowance by some $36 million, with the gap between the two increasing during the period.

We expect that the AER would not be automatically accepting Powerlink's additional opex claims without determining an appropriate efficiency and productivity dividend. After all, Powerlink has a reputation as a well-managed business and therefore capable of delivery of such savings and sharing these with consumers. This is consistent with our understanding of incentive regulation.

10. Future Operational Expenditure

Powerlink has forecast that its average annual future opex is $156.78 million versus an average annual actual opex (in the current regulatory period) of $85.08 million. Clearly, this is a steep increase in cost and the AER must ensure that it carefully scrutinises these cost increases. In particular, the AER needs to determine and apply a savings factor to Powerlink's opex claims.

Given such a large capex programme, we would expect a corresponding efficiency saving in opex costs, but this has not been acknowledged by Powerlink. Again, the AER would need to apply a saving factor.

11. Regulatory Depreciation

We have attached a monograph[1] on regulatory depreciation to illustrate that regulators have been applying a flawed approach to depreciation which has meant that consumers have been paying for massive windfall gains to network businesses.

> "Depreciation is a non-cash item in the financial accounts. The regulated business would declare its annual financial figures based on the DAC approach. By doing this it would declare depreciation for the asset at $1,000 over its 40 year life. The concept is that at the end of the asset life the accumulated depreciation is used to replace the asset with a new one. This works well when there is no inflation but in practice, the DORC approaches allow the businesses a major increase in depreciation accrued compared to the initial investment.
>
> However when the asset is to be replaced, the regulator permits its replacement within the approved capex, at its **current cost**. The purpose of depreciation (the repayment/recovery "of capital") is to provide a fund for the costs resulting from the replacement of the asset when the original asset is no longer useful. By regulators allowing in the approved capex the full replacement value of the asset, this provides a **massive windfall** benefit to regulated businesses as the regulated business is able to retain all of the depreciation accumulated during the life of the asset, as any depreciation allowance (less the initial investment) in both regulatory and business financial accounts can be taken by the business as a profit without suffering any adverse consequences.
>
> This monograph provides evidence as to why the Utilities sector has so clearly out performed the market average. It also explains why regulated businesses are able successfully to trade with a balance sheet which might otherwise suggest that trading was close to financial limits."

We would expect the AER to have a careful look at regulatory depreciation to ensure that consumers do not pay additional costs arising from the AER's proposed treatment of depreciation.

12. Total Revenue

Powerlink's Proposal estimates total revenue requirements for 2007/08 to 2011/12 of $3,238.7 million. This is equivalent to average TUOS charges of $10.22/MWh or a 15 % increase in TUOS charges in the first year of the new regulatory period. This compares with a growth in forecast demand of some 4% in the first year. In other words, unit costs are rising steeply. We note that at least 10% of the 15% increase in TUOS charges is due to accounting changes to be applied by the AER.

The impact of such a price increase (or price shock) on consumers would be very negative. For industrial customers, the impact would be quite adverse for international competitiveness. In this regard the AER would need to apply 'competitive pressures' on Powerlink, as regulation is a proxy for competition with respect to monopoly network businesses.

[1] AEMC Review of Electricity Transmission Revenue and Pricing Rules – Regulatory asset values depreciation and financial performance – Comments on the Revenue Requirements Proposed Draft Rules by Headberry Partners P/L and Bob Lim & Co. P/L, June 2006

APPENDIX 1

Australian Energy Markets Commission

Review of the Electricity Transmission

Revenue and Pricing Rules

Regulatory asset values, depreciation and financial performance

Comments on the Revenue Requirements

Proposed Draft Rules

by

Headberry Partners P/L and Bob Lim & Co P/L

June 2006

The content and conclusions reached are entirely the work of Headberry Partners Pty Ltd and Bob Lim & Co Pty Ltd.

The input (DORC option 2) by the Essential Services Commission of Victoria to the original draft of this monograph is gratefully acknowledged by the authors

1. The Proposition

This monograph was initiated by an observation that regulated businesses are demonstrating an out performance against the market benchmark (ASX 200), despite the expectation that the lower risk faced by regulated businesses and should provide a return less than the market benchmark[2].

This monograph addresses a key concern regarding the benefit regulatory depreciation provides to regulated businesses. It addresses the following proposition:-

1. The regulated business provides an asset for use by consumers.
2. Over time consumers pay for the use of the asset (calculated as real WACC*regulated asset base)
3. Over time consumers pay for the recovery of the regulated asset (investment) via depreciation (calculated as depreciation rate*depreciated asset base).
4. At the end of the depreciation period, the asset is scrapped.
5. The service performed by the asset is still required so the regulator permits the business to replace the asset at its current cost.

The principle of depreciation is that an amount is paid each year to provide funds to purchase a replacement when the current asset is scrapped. If consumers have paid for the depreciation on the asset, effectively they have funded the purchase of it. They are also required to pay a return on the use of that part of the asset they haven't funded.

Analysis of the approach shows that:-

- Assets provided by the business are funded by consumers at a rate which equals or exceeds the rate for funds which can be accessed for similar purposes.
- Depreciation paid for by consumers should reflect industry standards and therefore should not exceed the initial investment made by the business.
- The amount of accumulated regulatory depreciation paid by consumers is greater than the initial investment made by the business.
- The surplus of the accumulated depreciation above the value of the initial investment is not netted against the cost of the replacement asset.
- As consumers fund the cost of the replacement asset, the depreciation paid by consumers which is surplus to the value of the initial investment, can be taken by the business as a profit.

[2] See Appendix 1

2. The "Roll Forward" anomaly

Over time the assets used in providing the regulated service are determined to be no longer appropriate for use and the regulator permits the assets to be fully replaced. In making its decision at a pricing review, the regulator sets a period for the economic life of the different assets and at the end of this period the asset is deemed to be no longer "used and useful" and is to be replaced by a new asset performing the same service. To accomplish this, new capex is included in the regulatory decision to enable this to occur. At the same time the asset base is increased by the cost of the new capex needed for the replacement at the current cost for the asset and the old asset is assumed to have a zero value.

Current regulatory practice is that each year the regulated asset base is valued at its replacement cost depreciated using its economic life and this amount is automatically rolled forward to the next year. This method of regulatory asset base valuation has been used because it reflects the current cost of the asset involved. Using a current cost for assets is seen to be an appropriate method to ensure that a competitor to the regulated business would not be commercially disadvantaged if it installed a new asset which competed with the incumbent asset owner. As both the Gas Code and Electricity Rules specifically point to the need to ensure that unnecessary duplication of existing assets is avoided, this argument in support of using a replacement cost methodology loses its fundamental basis.

This regulatory method is referred to as the depreciated optimized replacement cost (DORC) method of valuation but the regulatory approach is that the asset is seldom if ever optimized (following the practice used by a number of jurisdictional regulators to reduce regulatory risk for the businesses) and so in reality the approach is more appropriately designated the depreciated replacement cost (DRC)[3] method of valuation. There are potentially two methods which could be utilized to achieve this goal – the first is to add the value of a new asset into the regulated asset base (RAB) and for that element to be depreciated at the agreed rate as part of the RAB. The second method is to allocate the new asset to a unique depreciation schedule and for the amount of depreciation applying to it, to be escalated by CPI. This monograph addresses the respective outcomes of these two approaches as DORC options 1 and DORC option 2.

These processes are different to those used by competitive businesses in that normally the actual cost of an investment is depreciated over time so that at the end of the economic life of the asset, the book value for the asset is zero. This is referred to as the depreciated actual cost (DAC) method for asset valuation.

3. Comparisons between the various approaches

[3] The current review of the electricity Rules by AEMC actually codifies this approach by excluding the ex post optimizing of an asset due to regulatory risk concerns.

In the following examples it has been assumed that there has been an investment of $1,000 made in 1969. This amount has been adjusted annually using the CPI over the past 36 years as published by the Reserve Bank of Australia with the final years (that for the next regulatory period) having been extrapolated assuming a forward estimate of CPI of 2.75% for these years, just as a regulator would do.

The asset is assumed to have an economic life of 40 years (this is the average of most electricity assets in a portfolio) although some regulated assets are allocated longer lives than this. At the end of the 40 years the asset is removed as it is no longer useful, and a new asset is installed at its current value.

Depreciation is assumed to be linear over the 40 years so the depreciation allowance is 2.5% of the residual value of the asset at any point in time.

The payment for use of the asset is the depreciated value multiplied by a WACC derived as in a regulatory decision using the 10 year bond rate plus 3.5%[4]. This would be the notional rate; to generate a "real" WACC, CPI is deducted. Actual bond rates for the last 36 years are used and extrapolated over the last four years at 5.30%, again as a regulator would do.

Over the period, the arithmetic averages for the bond rate and CPI are 8.8% and 5.9% respectively. As there are a number of different cash flows generated, the cash flows are converted to a net present value using a discount rate of 8.8%, being the average 10 year bond rate over the period.

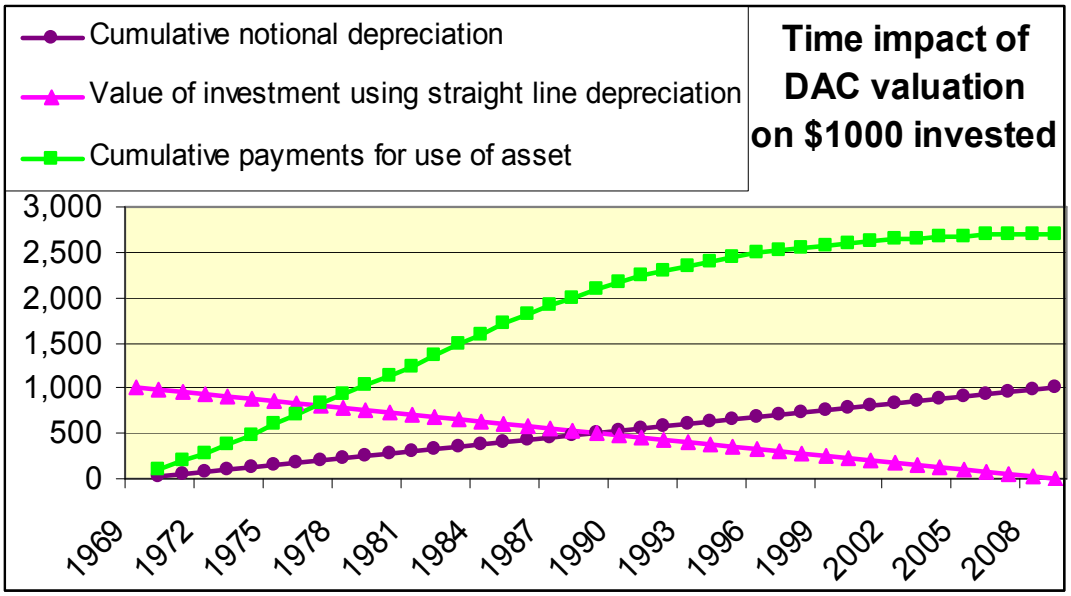
3.1 The DAC approach to depreciation

Depreciation is set at the 2.5% per annum, and the initial investment amount is reduced each year by the fixed amount of depreciation to give an asset value for each year.

The payment for the use of the asset is calculated at the notional WACC as there is no CPI increase in the RAB unlike that used in the DORC approach.

Plotting the changes over the years, the value of the asset in the regulatory accounts following this approach would be seen as the pink line, the amount paid as depreciation is the purple line, and the amount paid for use of the asset is the green line.

[4] This is the average of the mark up used by ESCoSA in the Envestra Draft Decision



This graph shows that consumers would have returned to the investor $1,000 for depreciation and $2,700 for use of the asset, giving a total payment of $3,700 over the 40 year period. There is no residual value for the asset at the end of the 40 years.

This payment cash flow is equivalent to an NPV of $1,302.

At the end of the useful life the business will purchase a replacement asset costing some $9,816[5]

This is the traditional accounting approach used by most businesses and used by the tax office.

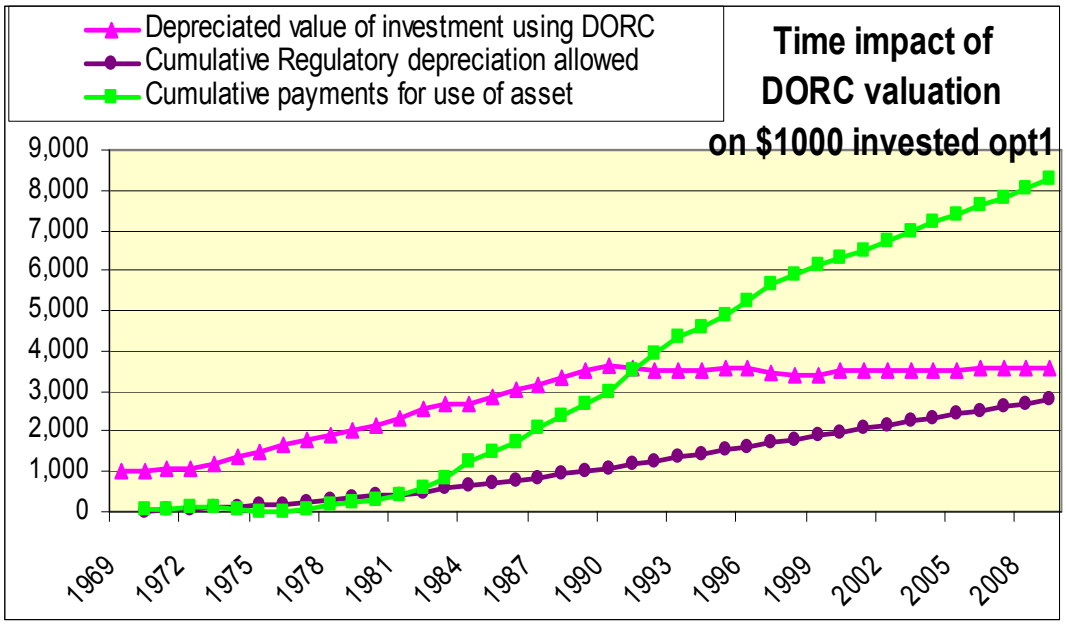
3.2 The DORC approach option 1

The DORC approach option 1 assumes that the amount invested is rolled into the RAB and depreciated with the RAB itself. The RAB is increased by $1,000 and escalated to a replacement value (ie increased by CPI) and the whole is then depreciated by 2.5% each year.

As the asset value is increased by CPI, a “real” WACC is used to provide a payment for the use of the asset. This follows the regulatory approach.

As with the above graph the value of the asset in the regulatory accounts following this approach would be seen as the pink line, the amount paid as depreciation is the purple line, and the amount paid for use of the asset is the green line.

[5] This is $1000 escalated at the CPI occurring over the 40 years.



This method shows that there is a residual value of $3,566 for an asset that is no longer useful. The amount paid for the use of the asset (ie RAB*WACC) is $8,264, and the amount paid in depreciation is $2,774. This means that the user would have paid $11,038 for the asset over the 40 years. Writing off the residual book value of the asset at the end of the useful life, increases the total payment to $14,604.

This payment cash flow has an NPV of $1,958.

As per the DAC approach the replacement asset installed would cost $9,816.

3.3 The DORC approach option 2

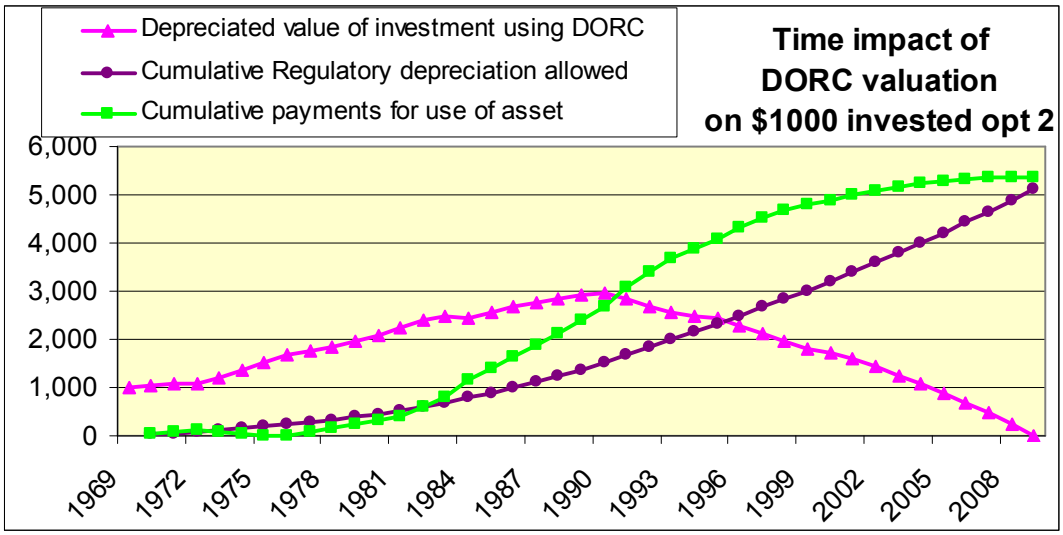
The DORC approach option 2 assumes that the amount invested is kept segregated and that the amount of depreciation (in this example $25 in year 1[6]) is escalated each year by CPI. The depreciated investment value is increased by CPI and the escalated depreciation is deducted each year from the depreciated escalated value of the investment. The outcome of this approach is that at year 40 there is no residual value for the asset.[7]

[6] This is the amount taking 2.5% of $1000 for year 1

[7] This approach results in a very extensive spreadsheet, requiring all assets to be allocated to a depreciation rate group (there would have to be at least 8+ depreciation rate groups), and then have all assets allocated to subgroups for each of their individual investment start times which might contain as many as 60+ investment durations as the longest asset life is at least 60 years (in SA, SAIPAR assumed some assets had a life of >100 years).
It also creates a challenge as to how this approach might have been applied to all existing assets at the time of the introduction of the new regulatory approach (ie the amount that was defined as being the RAB when the new regulatory process commenced). This would require

As the asset value is increased by CPI, a "real" WACC is used to provide a cost for the use of the asset. This follows the regulatory approach.

As with the above examples the value of the asset in the regulatory accounts following this approach would be seen as the pink line, the amount paid as depreciation is the purple line, and the amount paid for use of the asset is the green line.



This method shows that there is no residual value for an asset that is no longer useful but the payments made by users have been incurred earlier in the regulatory period. The amount paid for the use of the asset (ie RAB* WACC) is $5,365, and the amount paid in depreciation is $5,131. This means that the user would have paid $10,496 for the asset over the 40 years.

This payment cash flow has an NPV of $1,835.

As per the earlier examples the replacement asset installed would cost $9,816.

3.4 Home equity option

The Home Equity option assumes that $1,000 is borrowed at the start of the period to purchase an asset (an investment loan) and repayments are made at the end of each year, with the original loan rolled over each year. Interest rates used in this example are those published by the Reserve Bank each year for housing loans (ie are nominal). The arithmetic average of home loan interest rates over the period was 9.63%

The home loan interest rate is converted to a WACC with a debt to equity of 60:40, with debt having a premium of 1.5% points and equity having a

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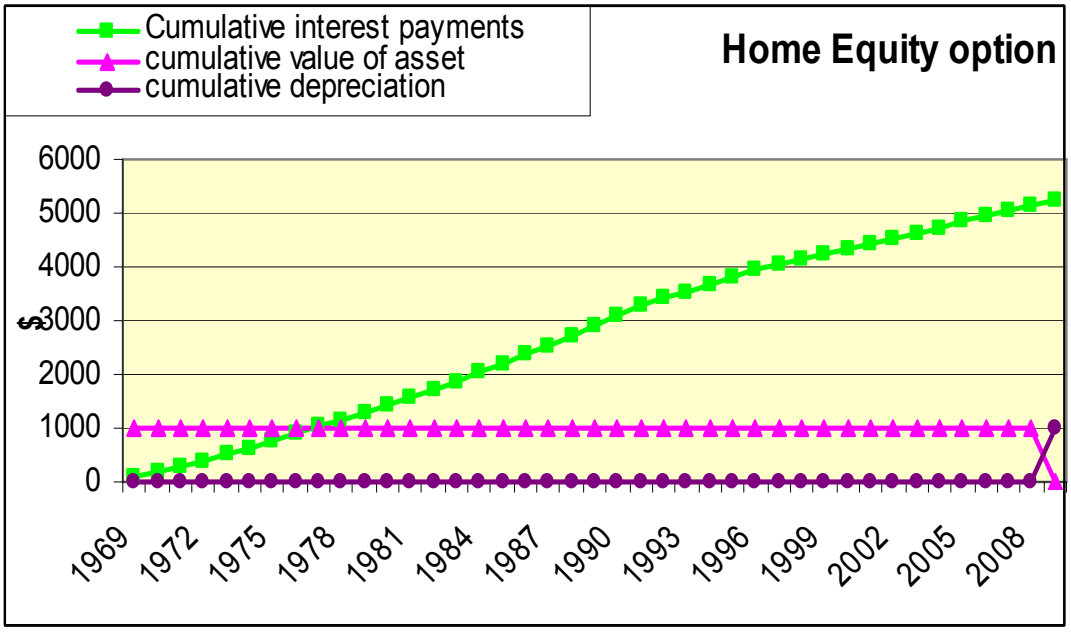
the start date of every individual investment to be defined and then the inflation applicable included back to the oldest asset installed.

premium of 6% points, following the standard regulatory approach. It is appreciated that this approach has its drawbacks, but the underlying principle still applies. Using the home loan rates as the basis for WACC calculation recognizes that depreciation of the asset purchased by the investment loan occurs, but the investment is secured by the property asset.

The average WACC used as derived from the bank interest rates is 12.8% whereas the notional average WACC over the period using CAPM is 12.3%. The payment for the use of the asset is calculated at the notional WACC as there is no CPI increase in the loan as used in the DORC approach.

At the end of the term the loan is paid out. There is no depreciation of the original loan until the end of the term, and the interest is paid on the full amount (un-depreciated) each year.



This method shows that the residual value for an asset that is no longer useful is paid out at the end of the term. The amount paid for the use of the asset (ie RAB*WACC) is $5,260, and the amount paid in depreciation is $1,000. This means that the user would have paid $6,260 for the asset over the 40 years.

This payment cash flow has an NPV of $1,413.

If a new asset is required it would cost $9,816 as for the other options.

3.5 Outcomes

Regardless of which of the two DORC option approaches is used, the outcome is **similar** on an NPV comparison.

Under the different scenarios, consumers are required to pay:

	DAC approach	DORC option 1	DORC option 2	Home Equity option
Initial investment	$1,000	$1,000	$1,000	$1,000
Period of investment	40 years	40 years	40 years	40 years
Depreciation rate	2.5%	2.5%	2.5%	0%
Payment for depreciation (recovery of investment)	$1,000	$2,774	$5,131	$0
Residual value of investment	$0	$3,566	$0	$1,000
Payment for use of investment	$2,700	$8,264	$5,365	$5,260
Total payment for use and recovery of the investment	$3,700	$14,604	$10,495	$6,260
Required annual fixed payment for use of $1000 investment	$93	$365	$262	$156
Effective interest rate[8]	9.0%	36.5%	26.2%	15.6%
NPV of all payments @ 8.8%	$1,302[9]	$1,958	$1,835	$1,061

Both of the DORC approaches reward the regulated business with significantly increased depreciation amounts which are included in the regulated revenue.

In other words consumers pay the regulated business 5-6 times the value of the initial investment in depreciation courtesy of the regulator!

Because the assets are valued at replacement cost (this is the essential element of DORC) consumers are required to pay a return on the escalated asset value. However, the rate of return has been calculated from the implied returns investors get from the stock market (this is an essential element of the CAPM) yet these companies use a depreciation method based on the DAC approach. There is an apparent inconsistency in this. Comparing the costs of the two DORC regulatory approaches to a loan for use of funds which must be paid back at the end of the term (eg. an investment loan) implies interest rates of 26-36%, which compares extremely favorably to a 30 year bond rate which returns less than 6-8%[10].

In other words consumers are paying effective interest on investments made by regulated businesses at rates ~3 times the long term bond rates and the high interest rates are being applied to assets with a relatively high degree of security!

[8] This is the interest rate that would be paid for use of funds when the principle is paid back at the end of the period.

[9] The high inflation and low bond rates occurring in the early part of the 1970s has a significant on this NPV calculation

[10] Interpolated from US long term bond rates and the Australian 10 year bond rate

As the regulators permit the full value of the replacement asset to be included in the regulatory capex, the regulated businesses are permitted to retain the full value of the regulatory depreciation included in the regulatory revenue. Under both DORC approaches, the businesses are reimbursed some $5,000-6,000 of depreciation for an asset valued at $1,000. This is over half the cost of the replacement asset.

Under the DORC approaches, the accumulated depreciation paid by consumers is over half the value of the replacement asset, yet the regulated businesses are able to retain this and consumers are subsequently charged additional costs for providing an asset valued at the full replacement cost.

4. Conclusions

The purpose of this monograph has been to identify one of the reasons why the Utilities index has outperformed the ASX benchmark (ASX 200) over the past five years[11]. This analysis provides one major reason.

Depreciation is a non-cash item in the financial accounts. The regulated business would declare its annual financial figures based on the DAC approach. By doing this it would declare depreciation for the asset at $1,000 over its 40 year life. The concept is that at the end of the asset life the accumulated depreciation is used to replace the asset with a new one. This works well when there is no inflation but in practice, the DORC approaches allow the businesses a major increase in depreciation accrued compared to the initial investment.

However when the asset is to be replaced, the regulator permits its replacement within the approved capex, at its **current cost**. The purpose of depreciation (the repayment/recovery "of capital") is to provide a fund for the costs resulting from the replacement of the asset when the original asset is no longer useful. By regulators allowing in the approved capex the full replacement value of the asset, this provides a **massive windfall** benefit to regulated businesses as the regulated business is able to retain all of the depreciation accumulated during the life of the asset, as any depreciation allowance (less the initial investment) in both regulatory and business financial accounts can be taken by the business as a profit without suffering any adverse consequences.

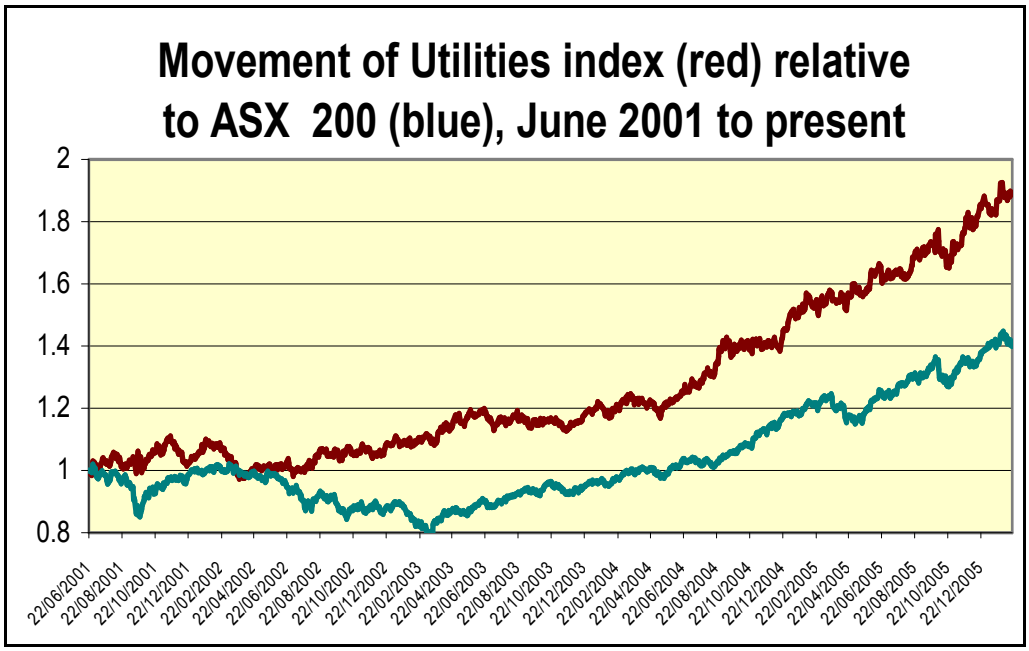
This monograph provides evidence as to why the Utilities sector has so clearly out performed the market average. It also explains why regulated businesses are able successfully to trade with a balance sheet which might otherwise suggest that trading was close to financial limits.

[11] See appendix 1.

Appendix1

The Performance of the Utilities sector

The following graph shows the Utilities sector share performance over the past five years compared to the share average as defined by the ASX 200.



Source: Commonwealth Securities

The ASX 200 has been recognized to be particularly buoyant in the past 2-3 years as a direct result of the "China resources" boom. This should not have impacted on the Utilities index yet despite the China resources boom impacting the ASX 200 companies but not the Utilities sector, the Utilities index has significantly outperformed the market average overall, but particularly even during the China boom period. This shows that the companies within the Utilities index are seen as extremely profitable businesses, compared to risk.

A review of the companies comprising the index shows that DUET, Hastings, Alinta, AGL, APT, Envestra, GasNet, SPI AusNet, Spark Infrastructure are all in the index and between them, they comprise over 90% of the index capitalization – supporting the following assessment.

Analyzing the figures provided by Commonwealth Securities (CommSec) shows that the ASX 200 demonstrates that market risk premium (MRP) for the sector for the past five years is 6.05%, about the long term average, rising from an MRP of between 3-4% observed for the past 30 years. This would be expected as the ASX 200 has been recognized to have been heavily influenced by the China resources boom. CommSec has calculated an equity

beta for this sector[12] at 1.08, again about the average for the long term market average.

In comparison, analyzing the figures provided by CommSec shows that the Utilities index demonstrates an MRP of 11% for the sector for the past five years. This is despite the fact that regulators have been setting an MRP of 6% in all regulatory decisions made during the same period, as well as for the five years before. CommSec has calculated an equity beta for this sector at 0.31, less than one third of the value used in all regulatory decisions up to late 2004.

[12] See appendix 2 which provides a listing of equity betas and sector and subsector dividend yields for each market sector. This data was sourced from Commonwealth Securities.

Appendix 2

Data sourced from Commonwealth Securities Web site

Sector	Sub-sector	ASX code of typical company	Beta 27Feb06	Sector dividend yield 27Feb06
All ordinaries			**1.08**	**4.3**
Consumer discretionary				
	Automobiles and components	OEC	1.02	6.2
	consumer durables and apparel	GUD	1.75	5.3
	consumer services	TAH	0.93	4.3
	Media	PBL	1.51	4.5
	Retailing	HVN	1.18	4.6
Consumer staples				
	Food and drug retailing	WOW	0.62	3.8
	Food beverage and tobacco	LNN	0.58	4.3
Energy			**0.96**	**3**
	Energy Equipment and services	HZN		
	Oil and Gas	ORG		
Financials ex property				
	Banks	CBA	0.86	4.3
	Diversified financials - resources	BNB	1.19	3.5
	Diversified financials - holdings	SOL	1.19	3.5
	Insurance	AMP	1.58	4.2
Property Trusts			**1**	**6.9**
	Investment trusts	WDC	1	6.9
	management and development	CEQ	1	6.9

Sector	Sub-sector	ASX code of	Beta 27Feb06	Sector dividend

		typical company		yield 27Feb06
Health Care				
	Equipment and services	SHL	1.19	2.8
	Pharma & Biotech	SIP	1.81	2.3
Industrials				
	Capital goods	COA	1.11	4
	Commercial services and supplies	BIL	1.11	4
	Transportation	ADZ	0.9	4.7
Info Tech				
	Software and services	CPU	1.82	4.6
	hardware and equipment	KYC	1.15	4.4
	Semiconductors	LGD	1.15	0
Materials			**1.39**	**3.1**
	Chemicals	ORI		
	Construction materials	ABC		
	Containers and packaging	AMC		
	Aluminium	AWC		
	Diversified metals and mining	BHP		
	Gold	NCM		
	Precious metals and minerals	ERA		
	Steel	BSL		
	paper and forest products	PPX		
Telecommunications			**0.44**	**5.7**
	Diversified	ENG		
	Wireless	HTA		
Utilities			**0.31**	**5.2**
	Electric	HDF		
	gas	ALN		
	Multi	SPN		
Unclassified		BQF	**1**	**6.9**