Submission to the Economic Regulation Authority

Re The Issue of the Risk Free Rate

AlintaGas Networks
ABN 90 089 531 975

Submitted by: AlintaGas Networks Pty Ltd

The Quadrant
1 William Street
Perth WA 6846

Phone: 08 9486 3156

Fax: 08 9486 3030

Contact: Justin Scotchbrook

Date: 22 April 2005

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1 Introduction and Summary

This paper assesses the implications for using prevailing yields in setting regulated rates of return by examining whether these yields provide a reliable indication of future rates. Regulators use long term government bond rates as a proxy for the risk free rate which is a variable required for use in the Capital Asset Pricing Model that is used to set regulated prices.

One of the unusual events in long term bond markets (at least in the USA, UK and Australia) has been the recent reduction in such bonds to historic lows. The fall in Australian long-term bonds is graphically shown in Appendix One. The question that is required for regulatory purposes is whether the prevailing rates provide a reliable indicator of future rates.

In addition there have been major changes to Australian long-term bond markets over recent years. This has involved a change from a highly liquid market to a much smaller 'managed' market. This change has been the result of a major reduction in Australian government debt and the associated reductions in the need to finance that debt. The Australian index-linked debt however has always been a relatively small part of the government bond market.[1] Small markets are likely to be subject to greater volatility than more liquid markets.

Long-term real bond rates equate the desired level of saving to the planned level of investment and are largely determined by the supply and demand for global funds. Possible reasons for such falls in real long-term bonds need to be considered in light of changes in global saving and investment and the role of financial intermediaries. This also requires assessment as to whether any changes are cyclical or secular in nature.

The Bank of England[2] and other institutions have reviewed the likely causes of the declines in risk free rates in terms of:

- Investment rates
- Saving rates
- Demographic changes
- Market factors
- Monetary growth rates

[1] A major reason for the review was that the index linked debt had become a proportionally larger part of the portfolio as gross nominal debt has fallen, increasing the importance of examining the way the indexed debt was treated in the portfolio. See B Comley and D Rurvey, Treasury Working Paper, Debt management in a Low Debt Environment: The Australian Government's Debt Management Framework, 2005–02, p.2

[2] Bank of England, Quarterly Bulletin, Spring 2005

The Bank has concluded that such declines are probably temporary in nature and are likely to be reversed over coming years.

In light of these issues AlintaGas Networks Pty Ltd (AGN) considers that to take a short term average of the risk free rate as represented by the 10-year Australian government indexed bond would lead to an unacceptable level of interest rate risk.

The UK regulator (Ofgem) considered that all these above factors will affect the demand for gilts to varying degrees and has therefore increased the risk free rate range by arbitrarily adding an adjustment to reflect the likely increase in rates over the next regulatory pricing period for UK electricity distributors.

It has therefore been proposed that the Economic Regulation Authority (ERA) should take a five-year average of the risk free rate to ensure that current uncertainties do not lead to unacceptable regulatory risk rather than make arbitrary adjustments to the risk free rate. AGN notes the regulatory precedent in South Australia for electricity regulation for such an average is for a five-year period.

2 Bond Markets in Australia and Overseas

2.1 World Bond Markets

There have been major changes to world financial markets in the last two decades as a result of three key developments. Firstly, the dismantling of barriers to international capital flows and the development of globalisation have resulted in a massive increase in the volume of cross-border financial transactions. Secondly, the functional integration of previously discrete areas of financial activity has led to the emergence of financial conglomerates combining traditional banking with securities operations and other non-bank business. Finally, financial innovation has produced a vast new market in derivative products that simply did not exist fifteen years ago. This has resulted in one key commentator arguing:

> These developments have no doubt raised the efficiency of financial markets. But they have also greatly complicated the task of regulatory authorities by increasing the potential for financial instability. The new global markets offer fresh channels for the transmission of financial shocks – both across borders and across market sectors.
>
> Furthermore, given the speed at which today's markets react to adverse news, the response time available to regulators in an emergency is drastically reduced. Finally, because financial institutions can adjust their risk exposures so easily, it is no longer possible for market participants to assess the risk characteristics of those with whom they deal – a problem of opacity that undermines the capacity of financial institutions to police each other.[3]

The choice of the risk free rate for regulatory purposes involves three issues; the asset used to proxy the risk free rate, the term of the rate used, and the period of averaging. In

3 Professor Richard Dale, Regulating the New Financial Markets. Accessed from http://www.rba.gov.au/PublicationsandResearch/conferences/1996/Dale.pdf

respect of the first and second issues, the rate is generally proxied by the yield on 10-year Australian index linked government bonds.

Economic theory provides no guidance on the appropriate period of averaging of the risk free rate and most regulators have used an average of 20 – 40 days to attempt to provide an unbiased estimate of the risk free rate by lessening the impact of any short term volatility. However, such an adjustment does not take account of longer-term issues with the risk free rate.

2.1.1 Assessment of the Likely Causes of Long Term Bond Declines

Such an assessment of the likely causes of the decline in long-term bonds needs to consider the supply and demand issue surrounding bond markets including:

- Saving rates
- Investment rates
- Demographic changes
- Market factors
- Monetary growth rates

2.1.2 Saving Rates

Saving rates in developing countries, especially in Asia, have continued to increase in recent years and this has led to increasing demand for USA government debt, particularly US bonds.[4] Such demand for US bonds have also been going on for some time as pointed out by the Queensland Treasury Corporation:

> "Global pension funds are growing and diversifying, increasing their exposure to US Treasury bonds. At the same time, most, if not all, central banks hold a significant proportion of reserves in US Treasury bonds. Accordingly, there is diminishing supply of US Treasury bonds with increasing demand. Eventually global pension funds and central banks will widen mandates to increase exposure to bonds by other issuers. However, in the meantime there is a prolonged adjustment process that has artificially reduced and restrained the yield on US Treasury bonds. Bond markets are also viewed as an indicator of growth expectations. The question could be asked as to whether artificially low US bond yields have compounded fears of a US recession, thus leading to even lower yields. Australian bond yields generally have a high correlation to US bond yields."[5]

Private sector saving rates in some European countries, such as Germany and Italy, have recently risen and the Bank of England argues:

> This could reflect demographic factors – the generation that was born in the 'baby boom' after the Second World War have reached the age in their life cycle when they may be

[4] Bank of England, Quarterly Bulletin, Spring 2005, p. 12.

[5] QTC, Interest Rate Consequences of the Regulatory Regime, A Submission in Response to the December 2000 Draft Determination for the DNSPs in Queensland by the QCA, February 2001, p.6

saving most actively. But in other countries, such as the United States, household saving rates have been falling. Furthermore, fiscal positions in a number of developed economies have deteriorated over the past few years, which would act to reduce national saving rates in those countries. On balance, the evidence on current saving is mixed.[6]

However, financial markets may have responded to the likelihood of increased saving rates in the future:

That is, the recent falls in long-term real interest rates might have reflected higher *expected* global saving. As life expectancies rise, households and companies will typically need to save more to fund retirement costs. And institutional demand for long-dated fixed income securities may have increased in anticipation of the effects of ageing populations on funds' future liabilities. Indeed, insurance companies, and to a lesser extent pension funds, in the United Kingdom and other major economies have been switching their investments towards greater holdings of bonds and away from equities to match better their assets with liabilities.[7]

However, given that demographic changes are slow–moving and highly predictable, why should the switch from equities to bonds have become more pronounced recently?

It is possible that life insurance companies or pension fund sponsors have become less willing to bear the risks of mismatches in their assets and liabilities. The weakness in stock markets between 2000 and 2003 and lower long-term interest rates increased institutions' awareness of potential shortfalls in asset valuations. At the same time, changes to regulation may have prompted institutions to accelerate the adjustment towards fixed-income securities. For example, in the United Kingdom, the FSA recently published details of capital regulations for life insurance companies. Similarly, in a number of European countries, regulatory changes have recently been introduced that aim to improve the solvency positions of pension funds and insurance companies, and these could have boosted demand for bonds.[8]

The Minutes of the UK Monetary Policy Committee held on the 12-13 January 2005 also supported this position:

The low level of long-term real forward risk-free market interest rates was equally puzzling, especially given rising government indebtedness in most of the major economies. Demographic change might have been part of the explanation if savings had risen or if market participants had re-evaluated the implications for long-term savings. Other possible factors included the effect of the recent relatively rapid official purchases of government bonds, particularly of US government bonds.[9]

Given the slow moving nature of demographic changes it is likely that this is not a major reason for the recent decline in long term bonds to historical lows. A more likely reason

6 op cit Bank of England, Spring 2005, p. 12

7 ibid, p. 12-13. In the UK there are the minimum funding requirement (MFR) for pension funds and the health of public finances (resulting in a relatively low supply of government bonds).

8 Ibid, p. 13.

9 Bank of England, Minutes of Monetary Policy Committee Meeting, 12 and 13 January 2005, p.7.

is the significant demand for US government bonds by other governments for foreign exchange holding purposes.

The UK government is considering removing the requirement of superannuation funds to compulsory hold government bonds and hence UK bond yields may start to rise as such funds rebalance portfolios.[10] In addition the appetite for US government bonds may reduce as central governments see bond yields falling and move to hold other assets for security, which will also cause US yields to start to rise.

2.1.3 Investment Rates

Outside the United States, investment growth in major developed economies has been quite sluggish over the past year;

> If this reflected a fall in the *trend* rate of productivity growth in these countries, the decline in long-term real interest rates might indicate a fall in the long-run equilibrium rate of return on capital. However, it seems more likely to reflect temporary factors, perhaps associated with uncertainty about the strength and sustainability of the global recovery. Such cyclical influences on investment would not be expected to affect long-horizon real forward rates which are determined by the supply and demand for saving when all cyclical influences have been fully unwound.
>
> Moreover, the impact of new information and communication technologies in the late 1990s may have boosted productivity growth, which, other things equal, would argue for higher long-term equilibrium real interest rates. So weak investment does not appear to have been the reason for the recent falls in long-term interest rates.[11]

The Bank of England rejects the lack of investment as a potential reason for the declines in international long-term bond rates and sees such declines as being temporary in nature.

2.1.4 Market Factors

Hedge Funds

An important recent trend in market intermediaries has been the rise of the US hedge funds which can increase volatility in markets:

> But market contacts reported that some speculative traders had been buying long-dated government bonds with the aim of profiting from expected future institutional flows, and this activity may have contributed to the falls in long-term yields.[12]

The futures market enables hedge funds to establish underlying positions far in excess of available capital. The leveraged participants first came to prominence in the Australian debt market in 1994 and tend to exacerbate the extremes of the interest rate cycle taking advantage of the wavering positions of other market participants.

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10 op cit, Ofgem, p.5

11 op cit Bank of England, Spring 2005, p. 12

12 ibid, p.13.

The low interest rate environment may also have encouraged a shift in investments towards hedge funds as, in the past, hedge funds have achieved higher average returns than traditionally managed investments, albeit in exchange for greater risk.

> Hedge fund assets under management have almost doubled over the past five years and are now estimated to be almost US$1 000 billion. There are signs, however, that the recent large inflows into hedge funds have changed the risk/return characteristics of the industry. Hedge funds appear to be having trouble maintaining their rate of return, as their typical investment plays have become 'crowded'. This in turn has caused some hedge funds to seek a wider range of investment opportunities and to take on more risk.
>
> With policy rates increasing in a number of countries, the investment positions put in place over the past couple of years in response to low interest rates are likely to be unwound, particularly as the scope for low-cost funding of these investment strategies will diminish. If circumstances allow the unwinding of these positions to occur in an orderly fashion – e.g. if global inflationary pressures remain subdued and rises in official interest rates take place at a measured pace – the unwinding process is unlikely to put large stresses on financial markets. On the other hand, were an economic shock to cause a faster-than-anticipated rise in global policy rates, these positions could be reversed very sharply, causing dislocation in financial markets. [13]

Money Supply

In addition to these trends the Bank of England also point to growth in significant growth in the money supplies of key countries:

> At the same time, the fall in long-term interest rates might have reflected the broader effects on asset prices of continued monetary accommodation, reflected in robust broad money growth. Annual M4 growth in the United Kingdom was 8.6% in December 2004. Euro-area M3 rose by 6.4% in the year to December 2004, up from 5.5% in August 2004, and US broad money rose by 5.9% in the year to January 2005. To the extent that the build-up in money balances has led to 'excess' liquidity, it could have prompted investors to move into other asset classes, including long-term government bonds. [14]

Economic Cycle

The issue of the economic cycle also needs to be considered in terms of the bond market over a five-year regulatory period in light of utility refinancing risks. The Reserve Bank implements monetary policy via changes in the official cash rate that has flow on effects to the rest of the yield curve and the real economy. The impacts on the real economy tend to operate with a lag and it is likely that the recent increase in cash rates in Australia will factor through to the yield curve within some two years, which is within the next regulatory pricing period. The Queensland Treasury Corporation argues that:

> "Hence, after the beginning of a new interest rate cycle, it may be a long time before it will be obvious that the RBA has implemented sufficient change to the cash rate (or that the market has reflected a sufficient implied prospective change to the cash rate) to slow the

13 Reserve Bank of Australia, Statement of Monetary Policy , 7 February 2005, p. 25-26

14 ibid, p.13.

economy. During this period of uncertainty markets tend to 'overshoot' as participants have differing beliefs of the fair value.

Theoretically, a ten-year bond rate should not be affected by changes in economic and monetary policy settings. However, there can be periods of considerable disagreement about where fair value should settle. For example, at one stage in 1994, the debt markets had moved to reflect an expectation of the cash rate moving to in excess of 10%. Ultimately the cash rate peaked at 7.50% in December 1994. Accordingly for a period, the market was "wrong" by more than 2.5%. Gradually the market regained some composure and yields eventually fell. However, had the regulator been sampling over this period a vast range of possible risk free rate selections would have been possible."[15]

The International Monetary Fund argues that adjustments are likely soon:

Low nominal bond yields in part reflect easy monetary conditions and the gradual expected pace of tightening made possible by the high level of monetary credibility. In contrast to earlier periods of monetary tightening, expectations of future inflation have remained well anchored even as markets project a slow withdrawal of monetary stimulus, partly reflecting a significant level of economic slack that has limited inflationary pressures. The more recent rise in long term yields can be largely be attributed to a partial reversion of these forces due to some increase in inflationary concerns as well as expectations of a less gradual tightening. Markets expect the short term federal funds rate to rise from 2.25% currently to some 4% by end -2005. As long term rates reflect the expected future path of short term rates (plus a liquidity premium) the slow pace of anticipated tightening helps keep long term rates down – the yield curve implies that 10-year interest rates would rise by 50 basis points over this period. However this would still leave nominal and real rates well below historical averages, which Chairman Greenspan has described as a "conundrum".[16]

The review by the International Monetary Fund also found that while current markets may be simply mispricing yields, low yields could also reflect a range of factors including economic fundamentals, structural considerations and cyclical dynamics:

Economic fundamentals appear unlikely to help explain the remaining gap in long term yields. The US government is projected to continue to run sizable budget deficits over the next few years implying significant issuance of government bonds that will tend to raise real returns.

Structural factors could be playing a role in depressing long-term yields. Greater risk aversion induced a flight to quality after the equity market decline of 2000, increasing demand for government bonds and moderating yields.

Cyclical factors, in the form of an ample supply of loanable funds, are also likely depressing long-term real interest rates…. The resulting increase in the supply of funds has more than offset the rapid rise in borrowing by the government over the same period, helping to put downward pressure on real rates. [17]

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[15] ibid, p.6.

[16] International Monetary Fund, World Economic Outlook, Globalisation and External Imbalances, April 2005, p.18.

[17] Ibid, p.19

Rising short term interest rates in the USA and Australia may lead to a reduction in the demand for long term bonds and this may result in rising long term yields. In addition, it is clear that once adjustments take place markets can be distorted especially with the actions of hedge funds.

2.2 Conclusion on the Reasons for Long Term Bond Declines

The International Monetary Fund (IMF) argues that the historical current low long term rates are a dangerous indication that adjustments are likely:

> Low short term rates and low volatility are encouraging investors to move out along the risk spectrum in their search for relative value. The incentive to use leverage to boost returns is still strong. The premiums for inflation and credit risk appear compressed. There is little cushion for bad news regarding asset valuations if expectations for continued favourable fundamentals change. [18]

In conclusion the review by the Bank of England and the IMF of world bond markets suggest that yields are likely to rise in the near future as:

- the requirement in the UK for superannuation funds to hold a certain proportion of government debt is removed;
- accommodating monetary growth in the USA, Europe and the UK is eliminated as inflation concerns rise and economies improve;
- the likelihood that governments will diversify foreign exchange holdings away from US government bonds as yields are at historical lows and exchange rate risk arises;
- rising short term interest rates in the USA and Australia may lead to rises in long term rates;
- a reduction in the net supply of funds from the rest of the world to the USA form concerns about the value of the dollar leading to higher US yields and higher Australian yields;
- a spike in USA inflation resulting form unanticipated inflation pressure or a reduction in the large foreign portfolio inflows into the US fixed income markets; and
- the unwinding of hedge fund positions given the likely low point in bond yields have been reached and this may lead to substantial instability in bond markets with higher yields.

UK regulators have responded to these issues by arbitrarily adjusting the risk free rate.

The UK regulator (Ofgem) considered that all these factors will affect the demand for gilts (albeit to different degrees) and hence might continue the downward pressure on interest rates in the UK. Ofgem widened the risk free rate range by adding an additional

[18] International Monetary Fund, Financial Stability Review, 2005, p. 8.

0.25 percent, which gives a range for the risk-free rate of 2.25 percent to 3.00 percent. Ofgem concluded:

> The cost of capital is very sensitive to the risk-free rate with the risk-free rate being an important input both in the cost of debt and the cost of equity. Given this sensitivity and given the considerable uncertainty surrounding the *expected* risk-free rate, it seems appropriate to adopt a cautious approach and hence a relatively wide range at this stage.[19]

2.3 Australian Government Bond Markets

In recent years, the Australian Government debt management program has been conducted within a policy of reducing Australian government net debt. Australian Government general government net debt fell from almost 20 percent of GDP to less than three per cent of GDP between 1996 and 2004. Over the same period, Treasury bonds on issue have fallen from 15 percent of GDP to six percent of GDP as shown in the diagram below.

As a result of the reduction in net debt, and concerns raised by key financial market stakeholders, the Government undertook a Review of the Commonwealth Government Securities (CGS) market in 2002. This Review set out to determine whether there was a case, on financial market efficiency grounds or other policy objectives, for the Government to continue to issue debt despite its strong fiscal position.

The Government announced in the 2003 Budget that it would maintain sufficient CGS on issue to support the Treasury bond futures market.

The review of debt management operations by the Australian Office of Financial Management also established the operations of the new managed Australian government bond market. The new market had two objectives — to contribute to financial market efficiency and to achieve an appropriate balance between cost and risk for the Government. Two instruments are used to achieve the objectives. Physical bonds are issued to promote financial market efficiency and interest rate swaps are designed to achieving a balance between cost and risk for the Government. A review of Australia's new debt market concluded that:

> "The portfolio benchmark represents a trade-off between risk and cost minimisation. The benchmark entails lowering the duration of the portfolio below what it would be in the absence of interest rate swaps in order to reduce expected debt servicing costs. This reduced cost is achieved at the risk of slightly higher potential volatility in interest costs. However, reducing portfolio duration also serves to reduce the volatility of the market value of outstanding debt, an important point given that a budget aggregate regularly referred to is net debt."[20]

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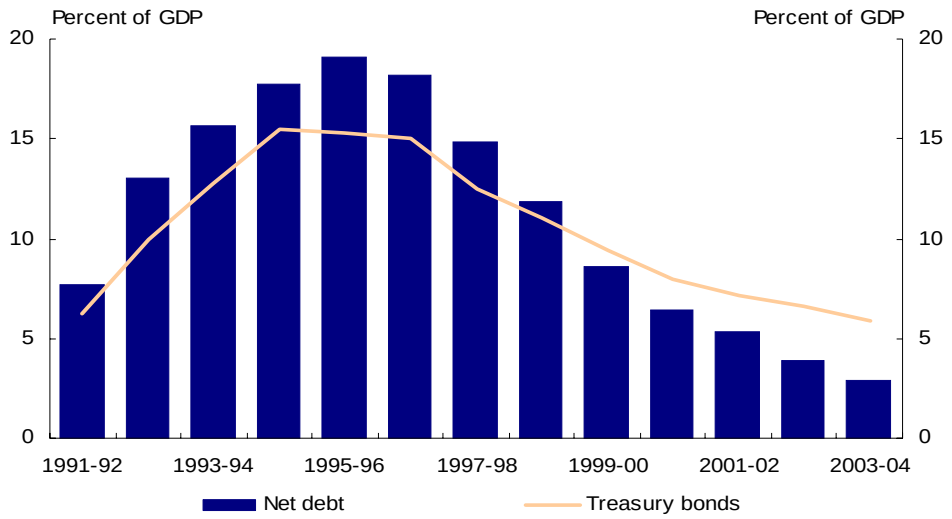
[19] Ofgem, Electricity Distribution Price Review, Background information on the cost of capital, March 2004 , p. 13

[20] op cit, Treasury Working Paper, pp. 2-3.

2.4 Australian Government general government net debt and Treasury Bonds on Issue



Source: Treasury Working Paper, Debt Management in a Low Debt Environment: The Australian Governments Debt Management Framework, 2005 –02, p.5.

It is expected that the transition to the new benchmark parameters will take up to three years, and should be complete by around June 2006.

The transition arrangements and the relatively small size of the Australian Government bond market add some uncertainty into the use of these statistics until mid-2006 when the transition is complete. In addition the trade offs referred to above could also increase volatility in the market. The above changes have meant the Australian government bond market has moved from a highly liquid market to a managed ill-liquid market.

In addition, there have been major changes to the operations of superannuation funds in Australia that will impact on the government bond market. Funds under management in superannuation, a key investor in risk-free debt, have risen from about $300 billion to $600 billion since the mid –1990's. Indeed, some parties already argue that the market is already too small and less liquid than is desirable.[21] Moreover, the indexed link bond market in Australia is tiny by comparison (around $10 billion worth of bonds in total are on issue).

The bond market in Australia is subject to numerous impacts that could cause significant volatility in the near future including:

[21] Skeffington, Business Review Weekly, 'Australia's illiquid bond market has its supporters, but others want it abolished, 18 July 2002, page 38.

- given the close association with US bonds the Australian bonds will rise if US bond yields increase;
- the position of hedge funds in the small Australian bond market may destabilise the market, as positions are unwound near the end of a cycle;
- the market is managed, relatively small and in transition and this could increase volatility.

The review of the world bond market and the Australian bond market has indicated to uncertainties in such markets and supports the need for a longer-term average of the risk free rate to reduce likely volatility.

2.5 Conclusion

The uncertainties with the Australian bond market as set out above suggest that to rely on a short term average of the risk free rate will substantially increase the interest rate risk to AGN.

It has therefore been proposed that the ERA should take a five-year average of the risk free rate to ensure that current uncertainties do not lead to unacceptable regulatory risk rather than make arbitrary adjustments to the risk free rate. AGN notes the regulatory precedent in South Australia for electricity regulation for such an average is for a five-year period.

APPENDIX ONE