

**Australian Energy Regulator
Refinancing, Debt Markets and
Liquidity**

12 November 2008

Mr Blair Burkitt
Director
Network Regulation South
Australian Energy Regulator
Level 35, The Tower
360 Elizabeth Street
Melbourne Central
Melbourne VIC 3000

12 November 2008

Dear Blair

Re: Refinancing, Debt Markets and Liquidity

Please find enclosed our report which contains our advice on the questions raised relating to refinancing risk and debt market liquidity, liquidity premium on long term bonds and debt portfolio's in the energy network sector (both currently and historically).

Our advice on these matters is based on relevant market information available and our knowledge of the market. To the extent possible we have surveyed key market makers and participants and reported any consensus market views on liquidity of debt, refinancing and hedge facilities.

Our report also includes an Executive Summary outlining the background, objectives and key findings.

If you have any questions regarding the report, we would be pleased to discuss them with you.

Yours sincerely
DELOITTE TOUCHE TOHMATSU



John Kidd
Partner

Contents

1	Executive Summary	4
	1.1 Purpose	4
	1.2 Background	4
	1.3 Key Findings	5
	1.4 BBB+ Bond Yields	6
2	Current Debt Markets	7
	2.1 Current Outstanding CGS Issuances	7
	2.2 Current Outstanding Corporate Debt BBB+	7
	2.3 Potential Market Issuances and Liquidity 2009-19	8
3	Market Trends, Future Issuances and Liquidity	10
4	Refinancing, Bond Markets and Liquidity	12
5	Liquidity of Hedge Facilities and Instruments	13
	5.1 OTC Markets	13
	5.2 Exchange Traded Markets	14
6	Liquidity Risk Premium	15
	6.1 Market Yields	15
	6.2 Liquidity Risk Premium	18
	6.3 Yields and Liquidity in the CGS Market	19
	6.4 Yields and Liquidity in the Corporate Bond Market	22
7	Liquidity for Return on Equity and Cost of Debt	25
	7.1 Weighted average cost of capital	25
	7.2 Return on Equity	25
	7.3 Cost of debt	26
8	Debt Portfolio's in the Energy Network Sector	27

1 Executive Summary

1.1 Purpose

Deloitte was requested by the Australian Energy Regulator (AER) to provide advice on specific questions raised in respect to refinancing risk and debt market liquidity, liquidity premium on long term bonds and debt portfolio's in the energy network sector (both currently and historically). We have repeated the questions raised in the body of this report. Our advice on these matters is based on relevant market information available and our knowledge of the market. To the extent possible we have surveyed key market makers and participants and reported any consensus market views on liquidity of debt, refinancing and hedge facilities.

1.2 Background

The National Electricity Rules (NER) provide that the Australian Energy Regulator (AER) may review the weighted average cost of capital (WACC) parameters to be adopted in determinations for electricity transmission and distribution network service providers (TNSPs and DNSPs). Reviews are to be conducted every five years with the first review concluded by 31 March 2009, at which time the AER will release a final decision for both transmission and distribution.

The AER will release a statement of regulatory intent (SRI) as part of its final decision for electricity distribution. The WACC parameters in the SRI will apply to all distribution determinations where the regulatory proposal is submitted after 31 March 2009 and before 1 April 2014, unless there is persuasive evidence provided in individual distribution proposals that justify a departure from the WACC values or methodologies set out in the SRI.

The AER's review is limited to the individual WACC parameters rather than a review of the overarching framework in which the WACC is applied.

The Queensland Government made a submission commenting on the WACC parameters to be adopted for the determinations for TNSP's and DNSP's. Their comments focussed on the ability for large regulated businesses to recover the assumed cost of debt used in the regulated WACC and the inherent risks in attempting to replicate how the regulated cost of debt is currently determined (in particular liquidity issues and the 5-40 days funding period).

As part of this review, AER have requested more analysis and market data around the risk free rate input and the potential impact of using a 5 year vs. a 10 year rate. Key parameters into the WACC formula include the cost of debt which is made up of the risk free rate and the debt risk premium. Our engagement covers market liquidity and the impact of current market conditions in calculating the cost of debt input, the ability to raise debt, refinancing options, hedging and liquidity.

1.3 Key Findings

The key findings to come out of our analysis, based on market data and the consensus market views of market makers are:

- The market for non-financial institution corporate bonds, similar to the assumed BBB+ grade used in the WACC model, effectively vanished from capital markets in the first half of 2008 against a total of \$6.5 billion for the whole of 2007.
- The Australian Government have announced that government bond issues (CGS) will continue in order to maintain a liquid bond market to be used as a basis for pricing in the futures market, with the government looking to maintain outstanding debt of around \$50 billion.
- The small volume of corporate bond issues that has taken place in 2008 has been in the main restricted to large financial institutions, and credits spreads have increased significantly.
- The average maturity of corporate debt facilities has shortened, to around three years compared to 5 plus years previously. In the past, 5 and 10 year bonds were widely issued, but in the current market, the little volume that is being issued is primarily 3 year bank debt, with very little liquidity in 5 year facilities.
- Expectations are for the domestic corporate bond market to remain illiquid, possibly into 2010 and beyond.
- In the current market it would be difficult (if not impossible) to attempt to refinance billions of dollars of debt in a 5-40 day. It was thought it would take at least 6-8 weeks to refinance large amounts of debt, and the current market would be limited in any one year with a threshold of anywhere between \$50-250 million. Prudence would dictate that companies spread the refinancing of debt over as long a term as possible. It is not uncommon for companies to commence refinancing discussions one year or more in advance of the maturity date.
- Liquidity in the over-the-counter (OTC) swap market and the exchange traded futures market is still reasonably strong to enable a regulated energy network business to fix interest rate risk, but there is currently significant volatility in the swap markets, making timing risk a significant factor. In addition the margin on interest rate swaps has increased considerably compared to prior years.
- The return on equity based on a 5 year CGS would be similar to the return on equity based on a 10 year CGS.
- When comparing the long term yield of a ten year ACGS bond to a 5 year ACGS bond, over time the ten year bond typically has carried a 23 to 52 bps (basis points) premium, however over the past 2 years there has been a discount of 11 bps.
- During the period July 2005 – October 2007, it was found there is an 11 bps liquidity premium on the 5 year corporate bond over the 10 year corporate bond. This is offset by a greater credit spread on the 10 year corporate bond as compared to the 5 year corporate bond.
- It is common for regulated businesses to borrow actual or synthetic floating rate debt over a spread of maturities and then fix the interest rate for the term of the regulatory period using interest rate swaps.
- Privately owned businesses use debt with a range of maturities, with terms varying both shorter and longer than the 10 year benchmark. This is consistent with AER issues paper. It is expected that average maturities will drop rapidly given the current state of markets.

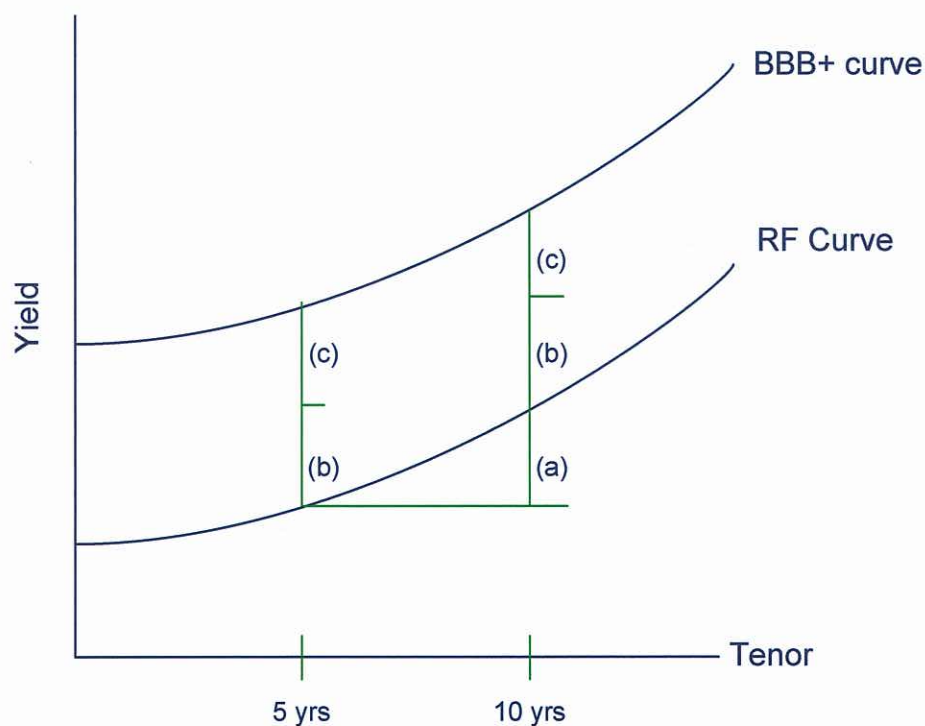
- Government owned network businesses mainly depend on a single source of financing, State Treasury Corporations, with a substantial portion of the borrowings' average maturities from 1-5 years.

1.4 BBB+ Bond Yields

To determine the different components to the interest cost of 5 and 10 year bonds, it is important to understand the source of the differences.

The 5 and 10 year BBB+ yield is a combination of:

- The risk free rate (a) (typically the ACGS rate)
- The credit margin (b), and
- The liquidity spread (c)



The risk free rate between the 5 and 10 year bonds will differ due to the shape of the interest rate curve. The difference between the 5 and 10 year risk free rate (a) can be positive or negative depending on the shape of the interest rate curve.

The credit margin (b) is always positive to compensate investors for the risk of lending.

The liquidity premium (c) is a function of supply and demand for the bond and accordingly can be positive or negative.

2 Current Debt Markets

2.1 Current Outstanding CGS Issuances

1. Examine data on the term-to-maturity of Commonwealth Government Securities (CGS) currently on issue consistent with Tables 3 and 4 provided in Officer & Bishop's submission and report on the proportion of outstanding CGS for different terms-to-maturity (i.e. secondary market data).

Table 1. CGS issuances are timed to maintain a consistent maturity curve and ensure liquidity in the 3 and 10 yr futures bond market. As at 30 September 2008, the following CGS were outstanding:

Issuer	Coupon	Amount Outstanding	Start Date	Maturity	Term (yrs)	Yrs to maturity
Aust. Gov't	7.50%	5,709,049,000	15/09/1996	15/09/2009	13.0	1.0
Aust. Gov't	5.25%	5,001,500,000	15/08/2004	15/08/2010	6.0	1.9
Aust. Gov't	5.75%	6,098,687,000	15/06/1998	15/06/2011	13.0	2.7
Aust. Gov't	5.75%	5,152,000,000	15/10/2006	15/04/2012	5.5	3.5
Aust. Gov't	6.50%	5,399,399,000	15/05/2000	15/05/2013	13.0	4.6
Aust. Gov't	6.25%	1,350,000,000	15/06/2008	15/06/2014	6.0	5.7
Aust. Gov't	6.25%	5,298,000,000	15/04/2002	15/04/2015	13.0	6.5
Aust. Gov't	6.00%	5,147,000,000	15/02/2004	15/02/2017	13.0	8.4
Aust. Gov't	5.25%	4,966,500,000	15/09/2005	15/03/2019	13.5	10.5
Aust. Gov't	5.75%	3,802,000,000	15/05/2007	15/05/2021	14.0	12.6

Source: Bloomberg

2.2 Current Outstanding Corporate Debt BBB+

2. Examine data of corporate debt markets (i.e. primary and secondary market) with a credit rating of BBB+, both currently and historically and report on the proportion of outstanding corporate bonds for different terms-to-maturity.

Table 2. As at 30 September 2008, the maturity profile and amount outstanding of Australian BBB+ Corporate bonds were:

Years to Maturity	Issuer	# Issues	Amount Outstanding
Less than 1 Year	Aust BBB ⁺ Corporates	10	1,997,000,000
1 to 2 Years	Aust BBB ⁺ Corporates	8	1,239,000,000
2 to 3 Years	Aust BBB ⁺ Corporates	10	909,000,000
3 to 4 Years	Aust BBB ⁺ Corporates	7	1,950,000,000
4 to 5 Years	Aust BBB ⁺ Corporates	3	223,000,000
5 to 10 Years	Aust BBB ⁺ Corporates	7	1,250,000,000
10 to 20 Years	Aust BBB ⁺ Corporates	7	1,230,000,000
20 to 30 Years	Aust BBB ⁺ Corporates	2	300,000,000
More than 30 Years	Aust BBB ⁺ Corporates	2	1,310,000,000

Source: Bloomberg

2.3 Potential Market Issuances and Liquidity 2009-2019

3. Discuss with market makers any views on potential market issuances and liquidity over the period 2009 to 2019, including maturity of upcoming CGS treasury bond releases.

2.3.1 Australian Government Bond Issuances

The Australian Government has released its planned December Quarter 2008 Treasury Bond Issuances. The following table details planned issuance of the June 2014 and May 2021 Treasury Bond lines in the December quarter 2008, and the proposed FY2009 issuances as per the Governments' May 2008 announcement:

Table 3. Treasury Bond Issuances

Tender Date	Maturity Date	Face Value (\$m)
8 October 2008	May 2021	400
29 October 2008	June 2014	450
19 November 2008	May 2021	400
10 December 2008	June 2014	400
20 January 2009	June 2014	600
10 February 2009	June 2014	400
24 February 2009	June 2014	400
24 March 2009	June 2014	400
21 April 2009	June 2014	400
16 June 2009	June 2014	300
	Total	4,150

Issuance of other bond lines is expected to total around \$1.5 billion in the December quarter. This issuance will be targeted at lines that are in relatively short supply in the market, while steadily augmenting the total volume of bonds on issue.

The May 2021 Treasury Bonds support the 10-year futures contracts, while the June 2014 Treasury Bonds will be available to support the 3-yr futures contracts.

2.3.2 Corporate Debt Issuances

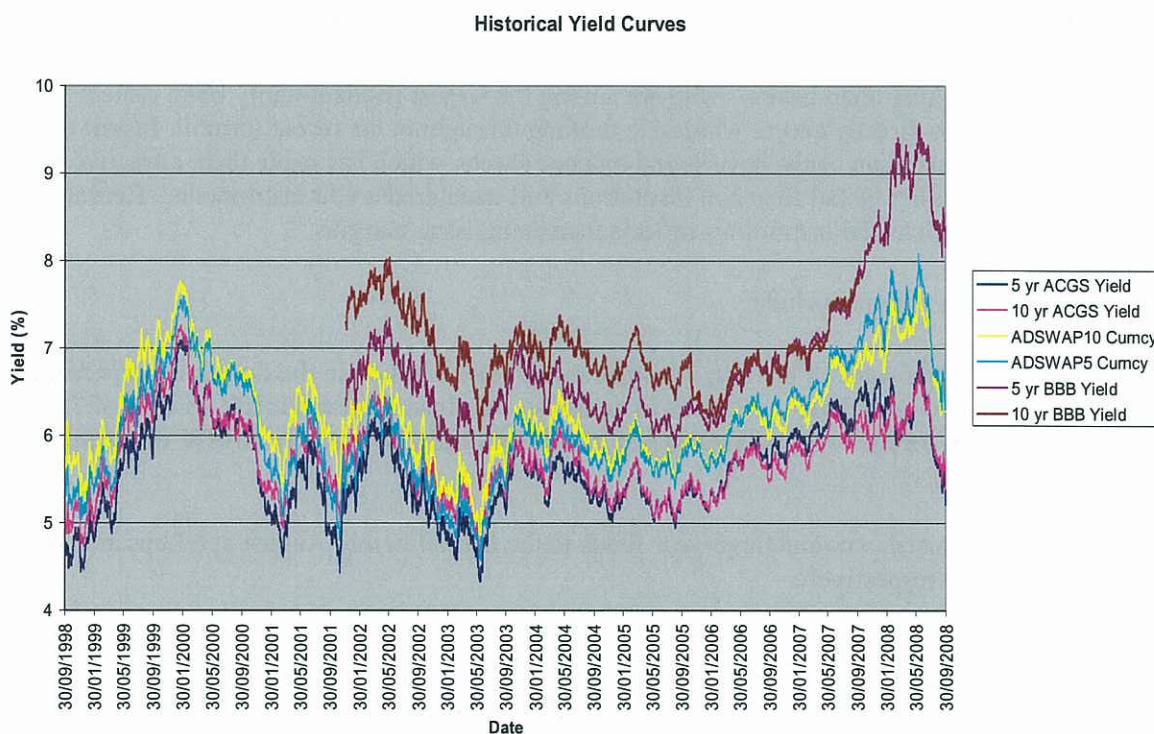
The Australian bond market has been affected by the global financial crisis to the extent that corporate bond issuance has been almost non-existent. However, corporate debt has continued to grow, with businesses turning to the banking sector for funds.

Reuters data shows non-banking Issued Corporate bonds effectively vanished from capital markets in the first half of 2008 against total corporate bond debt on issue of \$6.5 billion for the whole of 2007. As per discussions with Market Makers, the small volume of corporate bond issues that has taken place in 2008 has been only by large financial institutions, and we have witnessed spreads widen significantly, as per graph 1. At the same time, the average maturity of bonds at issuance has also shortened, to around two years compared to an historical average maturity of 4½ years previously. In the past 5 year and 10 year bonds were widely issued. Larger credit wrapped issuances in the US market were also possible, reflecting some of the long term debt positions held currently by regulated businesses.

With the weakened state of the monoline insurers in the US market, such bond issuances are no longer possible, and market makers noted that the bond market in the US is more expensive than the bank debt market in Australia. Hence, in the absence of monoline insurers illiquid and expensive US and Australian bond markets, it is expected that BBB+ corporates will need to raise finance via bank debt.

In the current market, finance for BBB+ corporates is primarily 3 year bank debt, with very little liquidity in 5 yr bank debt, and a significant tenor premium from 3 to 5 years of around 45-50 bps. Whilst some banks may take maturity positions of up to 7 years – at a considerable premium, it is more likely that for large issuances a syndicated debt facility would be required. As there must be consensus in the syndicated group it is likely this would only be achieved for a 3 year term.

Graph 1. Historical Yield Curves (ACGS, AUDSwap, BBB Corporate Bonds)



Source: Bloomberg. 10 year BBB yield curve discontinued Sep 07 due to liquidity.

From published research and discussions with market makers, the expectations are for the domestic corporate bond market to remain illiquid, possibly into 2010 and beyond. Given the historic events in credit markets, market makers were reticent to make any predictions and caveated their comments with the uncertainty surrounding markets generally. Their expectations are for the corporate bond market to have a very slow recovery, particularly for BBB+ issuances. For the time being bank debt and syndicated bank debt are the only available AUD source of refinancing and funding for domestic corporates’.

3 Market Trends, Future Issuances and Liquidity

4. Provide analysis of historical corporate and CGS bond issuances to assess impact of credit markets and any issues and trends in liquidity over different terms-to-maturity. Discuss likely drivers of bond market liquidity (both CGS and corporate bonds), for different terms-to-maturity.

Treasury Bond issuance is undertaken with the objective of maintaining liquid and efficient Treasury Bond and Treasury Bond futures markets. The volume and timing of Treasury Bond issuance accordingly takes account of the need to have an appropriate range of Treasury Bonds available for inclusion in the bond baskets for Treasury Bond futures contracts. As such, we see a consistent maturity curve over the next 12 years, and debt will be issued in coming years to ensure the outstanding volume of debt is around \$50 billion dollars.¹ Market makers were of the belief that CGS issuances may increase if the domestic corporate bond market remains illiquid.

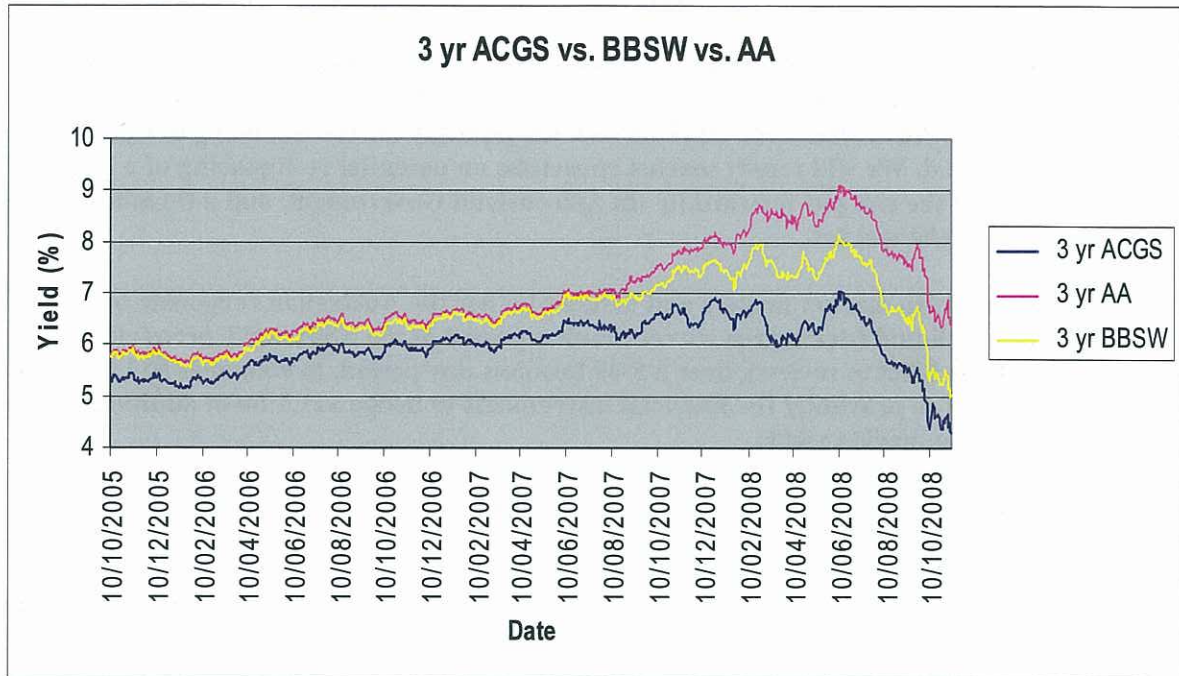
The major Australian banks – who are among the largest resident-entity bond issuers – have continued to directly access wholesale funding throughout the recent turmoil. In part this reflects the fact that Australian banks have sound balance sheets, which has made them attractive to investors, relative to other global financial institutions and structured credit instruments. Recent corporate bond activity by financial institutions reflects increasing issue margins.

Recent transactions include:

- In the first week of October Westpac raised A\$1.5 billion in the domestic corporate bond market with two- and three-year terms to maturity. Westpac achieved credit spreads of 75 bps over BBSW for the two year funds (A\$830 million) and 100 bps over BBSW for three years (A\$664 million).
- ANZ raised two- and three-year funds in the market in mid August at 63 bps and 90 bps over BBSW respectively.

As illustrated in graph 2 below, spreads for 3 year AA rated companies (like many large financial institutions) vs. CGS AAA rated bonds have increased from 50 bps 2 years ago, to over 200 bps in October 2008.

¹ Australian Office of Financial Management

Graph 2. Spread of 3 yr ACGS vs. BBSW vs. AA bonds

Source: Bloomberg

As per discussions with Market Makers there is currently no liquidity in the domestic corporate bond market, and international banks and fund managers are withdrawing funds from the market, restricting the size of the pool of money available to invest. Fund Managers and Financial Institutions have a range of investment choices, with higher returns available than current bond market indicators. BBB+ bonds are trading around 300 bps above CGS, and higher rated subordinated debt is trading at 180 bps over CGS. Bank debt is currently the primary source of funding for Australian corporates. Bank debt is available, primarily 3 years, with indicative pricing for BBB+ of BBSW + 165 bps. In addition establishment fees for bank facilities have increased significantly to 50-80bp. Underwriting, if available at all, is limited to perhaps 4 weeks pre the issuance and is at a considerable premium.

Bank loans have become increasingly attractive because they offer; a) potentially the only available market and b) significantly lower rates than bonds, despite a sharp increase since the credit crisis as banks themselves face higher funding costs. Bank loans offer greater certainty based on relationships, but currently have limited terms of typically 3 years.

Market makers estimate a gap of at least 200 bps between borrowing five-year money in the US bond market and accessing funds via a syndicated bank loan. The increased demand for bank debt is attributable to the withdrawal of major international banks from the Australian Market and the effective closure of bond markets for BBB+ corporates in both Australia and the US.

4 Refinancing, Bond Markets and Liquidity

5. Assess with Market Makers the comment by the Queensland Government (p4 of its submission) which states that \$14 bn of capital expenditure will require refinancing in 2010, and that the Australian debt markets lack the liquidity for the financing of this size over a 5 – 40 day period. We will report market consensus on potential re-financing of a large debt portfolio of the size put forward by the Queensland Government, and a threshold of debt capacity in the market.

6. Discuss with market makers and assess whether the Australian corporate bond markets are sufficiently liquid (during the current review period of the NSW/ACT network businesses currently subject to review), over a 5-40 business day period, to refinance \$12.6 bn in existing debt as well as providing the financial instruments to hedge \$11.1 bn of additional future debt at prevailing market yields.

As discussed, the Australian Corporate Bond market currently has no liquidity, and is likely to remain that way for the next 1-2 years. Typically, in a liquid bond market, it would take approximately 30 business days to raise a bond issuance, but there has been no non-financial institution corporate bond issuance for the last 12 months in the Australian market. The amount of debt outstanding for corporate bond issuances in the past is primarily based on debt requirements and market appetite at the time of issuance. The key drivers of market appetite are rating and business of the issuer, yield and maturity of the bond. Non financial institution corporate bond issues typically range between \$200-500 million in issued bonds, but can vary significantly.

We discussed with Market Makers the potential to refinance large amounts of debt in the current financial markets, the timing required and any perceived threshold for the amount of debt issued. The consensus view was that in the current market it would be impossible to refinance billions of dollars of debt in such a short period of time. It was thought it would take at least 6-8 weeks to refinance large amounts of debt, and the current market would be limited in any one year with a threshold of anywhere between \$50-250 million. Mention was made of the current funding for the proposed desalination plant in Victoria for approximately \$3 bn as an example of the potential issues that entities face in the current market. Market makers suggested the process of refinancing should begin 6-12 months in advance of the required timing, as the process needs to be managed over a long period.

For network businesses to get necessary refinancing and bank debt, banks will need access to wholesale markets to meet the funding requirements. The banks will need to get comfort that revenue will exceed costs for the regulated network businesses, and that the regulated margins cover their costs of debt. Market makers perceive that there is still an appetite for investment in regulated businesses in the current market.

In terms of hedging, the consensus view was that through OTC and ETC markets there is still the capacity in the market to hedge large amounts of debt (up to \$11.1 billion) within a 5-40 day window. Spreads in the interest rate swap markets have increased, and are expecting to increase further, but there is still available capacity in both the swaps and futures markets.

5 Liquidity of Hedge Facilities and Instruments

7. Assess the availability of hedge facilities for interest rate hedging instruments in Australian ETC and OTC markets for the volumes of debt to be hedged by a typical network business and the impact of the current credit markets. Provide an indication of the cost of implicit in a hedge transaction historically and currently.

5.1 OTC Markets

The availability of hedge facilities for interest rate hedge instruments in Australian OTC markets is impacted by credit and volume requirements. From discussions with market makers a network business with a solid BBB+ rating and strong balance sheet, hedge facilities for large volumes should be available through the OTC market via the large banks. The cost of the facilities will be determined based on banking relationship and volume requirements.

In the past 12 months, due to tight market conditions and availability of credit, spreads in the swap market have increased considerably. Spreads on 5 year swaps have increased from 2-5 bps for BBB+ 12 months ago, to 14+ bps currently, and banks expect the possibility of those spreads doubling in the near future. Market makers indicated these spreads are on a per transaction basis, are strictly impacted by time to maturity, and are not impacted by swap notional volume.

8. Assess whether the liquidity in hedging instruments is sufficient enough to calculate the cost of debt for the five year period and is it reasonable to expect that the interest rate risk (both on current and future diversified debt portfolio) can be effectively managed using hedging instruments, given the regulatory regime allows an averaging period of 5-40 days (confidentially) prior to the commencement of the five year regulatory period.

Liquidity in the OTC swap market is still reasonably strong for a regulated energy network business, but there is currently huge volatility in the swap markets, making timing risk a significant factor. So this process is best managed over time to ensure the best available rates.

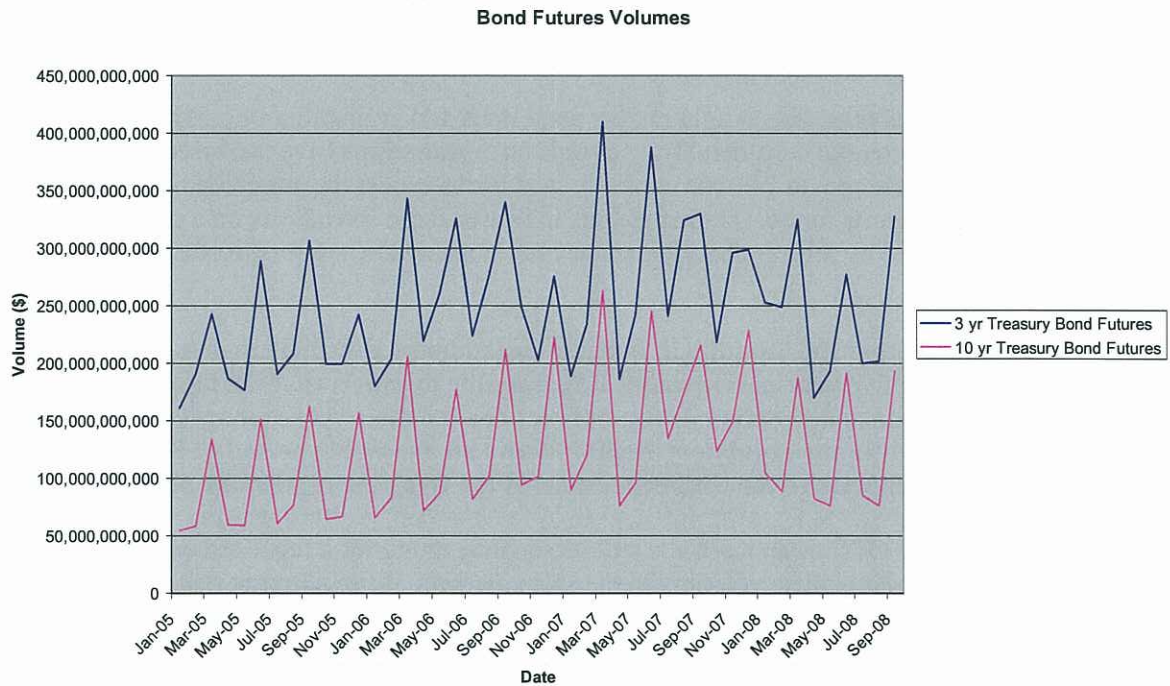
Different companies have different views on the appropriate debt/interest rate profile. Typically private companies borrow on the longest tenor available, and then convert the fixed rate debt into synthetic floating rate debt. This would then be hedged during the reset period via an interest rate swap for the duration of the regulatory period. In the absence of the long term bond market, corporates will typically borrow bank debt on the longest tenor available on a floating basis and then again hedge their interest rate risk to match the regulatory period.

A bank will then typically hedge that risk in the interbank swap market by entering into another 5 year interest rate swap, or in the futures market, with a combination of 3 and 10 year futures contracts.

5.2 Exchange Traded Markets

SFE's Australian 3 and 10 Year Bond Futures are the benchmark derivative products for the trading and hedging of medium to long-term AUD fixed interest securities and interest rate swaps. The Australian 3 Year Bond Futures contract is ranked amongst the 10 most traded interest rate futures products in the world today. The futures market has deep liquidity as shown by the graph below charting historical volumes. As evidenced below the 3 Year Bond Futures consistently have a higher volume (and is therefore more liquid) than the 10 Year Futures Market.

Graph 3. Monthly Futures Volumes



Source: SFE

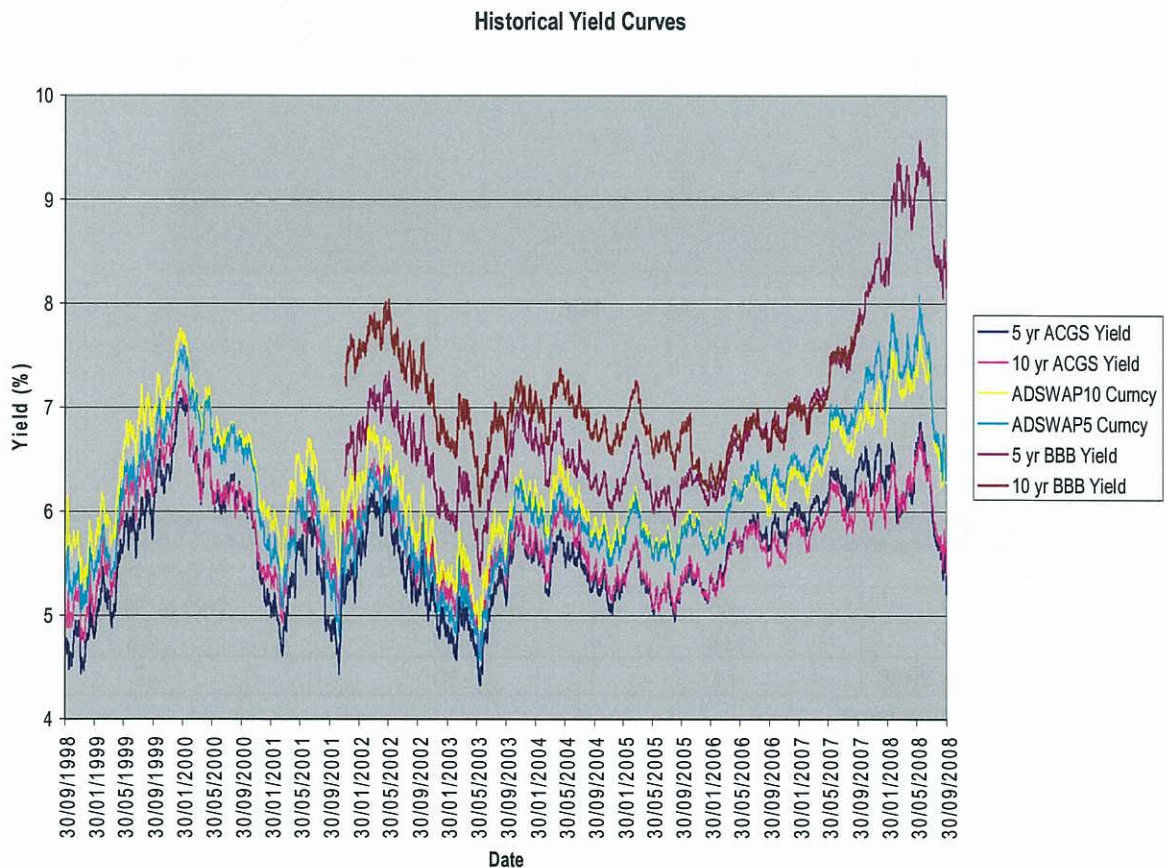
6 Liquidity Risk Premium

9. Examine the historical liquidity premium on ten year CGS relative to five year CGS, over the longest time series available, and using an appropriate averaging technique, compare the volatility of yields of five year CGS relative to ten year bonds.

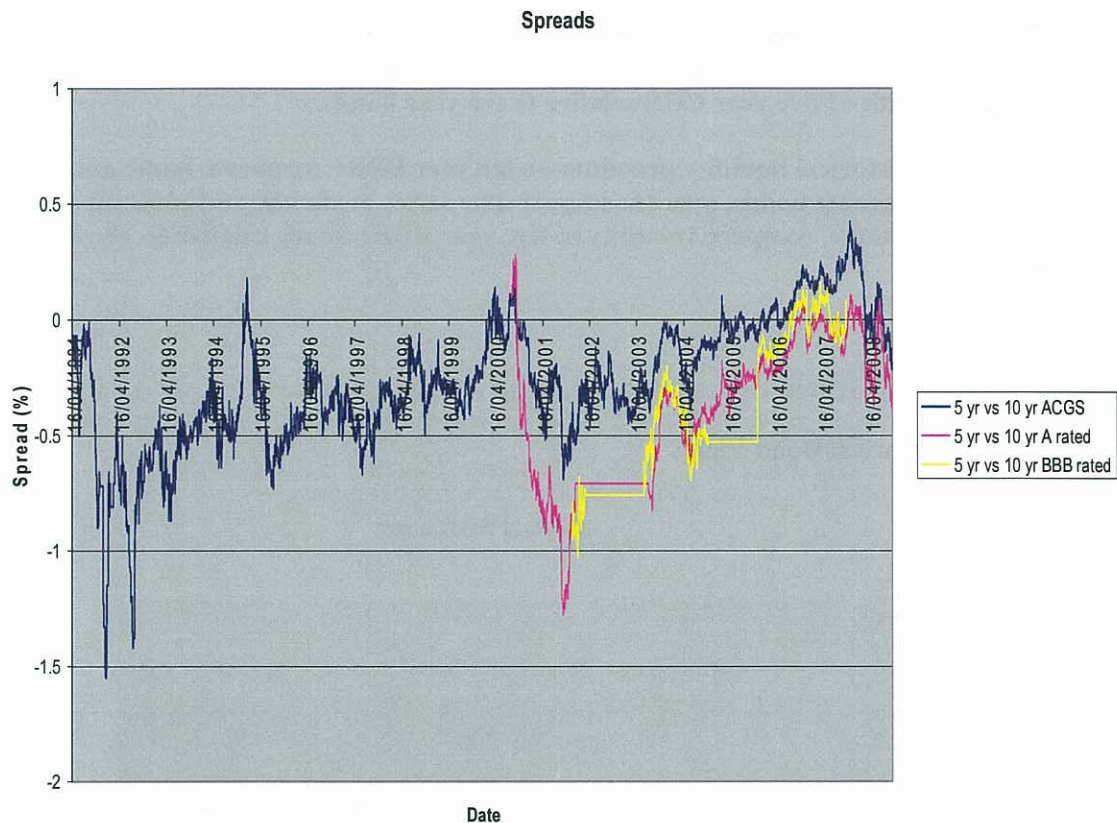
10. Examine historical liquidity premium on ten year BBB+ corporate bonds relative to five year BBB+ corporate bonds, over the longest time series available, and using an appropriate averaging technique, compare volatility of five year BBB+ bonds relative to 10 year BBB+ bonds.

6.1 Market Yields

Graph 4: Historical Bond Yields



Source: Bloomberg

Graph 5: Historical Bond Spreads

Source: Bloomberg

Table 4: Average Historical Bond Spreads (bps)

Date	5 yr vs 10 yr ACGS	5 yr vs 10 yr A rated	5 yr vs 10 yr BBB rated
1991-1995	-52	Not available	Not available
1996-2000	-28	Not available	Not available
2001-2005	-23	-58	-58
2006- Sep 2008	11	-10	-2

Source: Bloomberg

Table 4 above, shows the trend in bond yield spreads over time. In the table, the average yield for respective 5 year bonds is deducted from the average yield for 10 year bonds. From 1991 to 2005 the 10 year ACGS bond consistently had a higher yield than the 5 year ACGS bond, but since 2005 the 5 year ACGS has had a higher yield than the 10 year ACGS bond. With corporate bonds, both the A and BBB rated 10 year corporate bonds had higher yields than the 5 year bonds from 2001-2005, but in the past 2 years those spreads have tightened, and the 5 year corporate bond does not consistently have a negative spread vs. the 10 year bond.

The data implies that for a majority of the sample period, we had a normal upward sloping yield curve, with yields rising as maturity lengthens. From 2006 the interest rate curve has had periods where it is inverted, and short term yields have exceeded long term yields.

It should be noted that the difference in yields between the 5 and 10 year bond is frequently due to the shape of the forward interest rate curve and as such is not indicative of the liquidity premium associated with bonds of different tenor. Accordingly, to dissect the cause of the different yields we have provided further analysis in the following sections.

6.2 Liquidity Risk Premium

The concept of liquidity is very complex and the term liquidity means different things to different people. In the context of this report, we believe the focus should be on the following two dimensions of liquidity. These are:

1. In the primary market - liquidity is the ability to fund increases in assets and to meet obligations (including refinancing) as they come due.
2. In the secondary market - liquidity is the ability to buy or sell large quantities of an asset quickly and at reasonable prices.

The recent financial crisis demonstrates that in times of severe market conditions, liquidity in the primary and secondary markets can decline or even disappear. The lack of liquidity in the primary debt market implies business entities cannot raise finance via debt issuance without paying higher borrowing costs, since the demand for capital out-weighs the supply of capital in the market. On the other hand, the lack of liquidity in the secondary market implies capital providers in the primary market (investors) cannot convert debt securities to cash quickly at reasonable prices and hence would demand a higher rate of return from investments in the debt market. In both cases, the lack of liquidity will result in the addition of a liquidity premium to the investors required rate of return and hence will increase the costs of accessing debt.

There is a convergence of the view from the different market participants at the 2008 OECD Bond Market Forum that liquidity in the debt market is driven by:

1. Sound institutions and macro policies. These include the banking system, the exchanges, as well as macro-financial, debt management and fiscal policies.
2. An efficient and robust infrastructure. These include the architecture of electronic trading platforms, payment system, trading, settlement, and clearing.
3. A well-functioning repo market.
4. Adequate information flows which include disclosure requirements and valuation methods.
5. A diversified investor base.
6. The forces of demand and supply for debt markets in the primary and secondary market over different terms-to-maturity. These are likely to be affected by factors such as the financing needs of the issuers, the market timing by issuers and investors, investor's investment horizons and hedging horizons, etc.

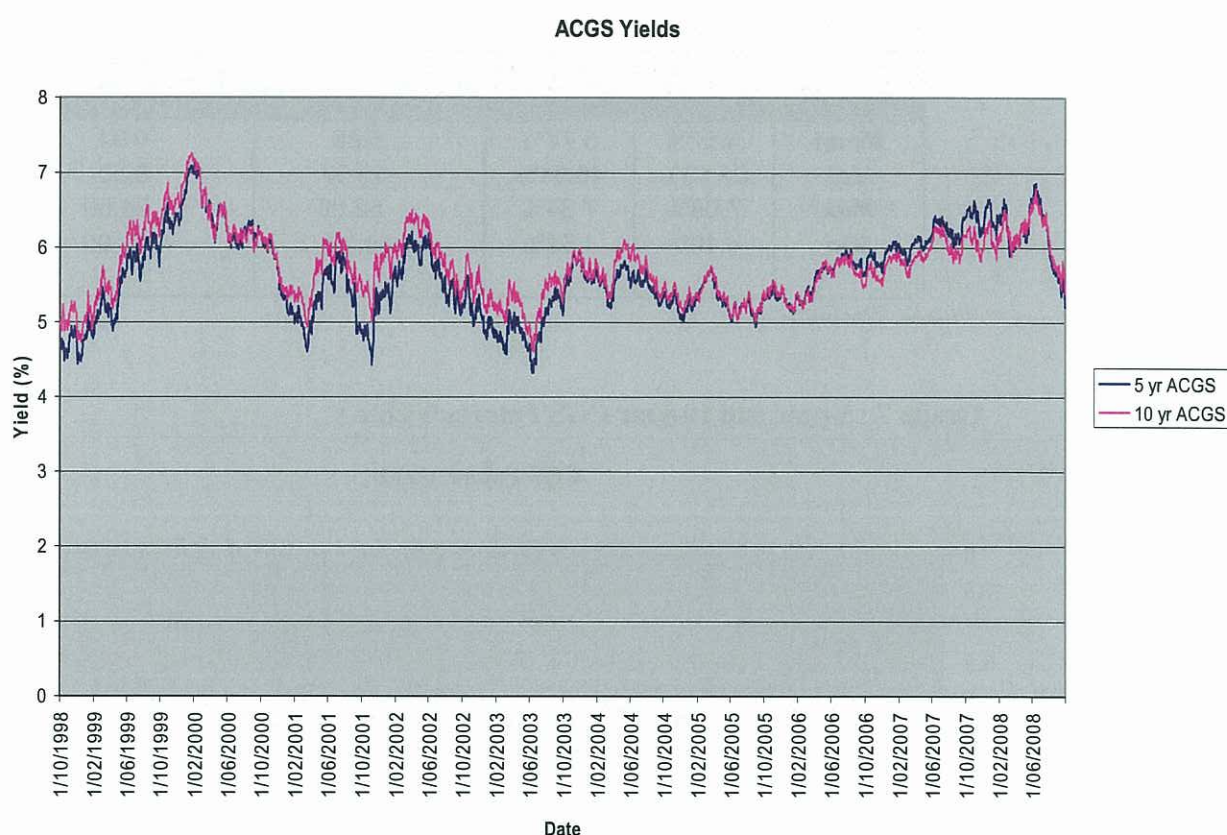
In addition to the key drivers of liquidity in the market mentioned above, the liquidity risk or the size of the liquidity risk premium associated with a particular issuance or issuer may also be affected by:

1. The concentration of issuance in critical tenors by the issuer. For example, the concentration of issuance by Australian CGS into a limited number of benchmark lines promotes market liquidity in the CGS.
2. The dispersion of the issuances by the same issuer over time. While some debt issuers follow opportunistic issuance, most debt financiers can lower borrowing costs by raising finance consistently from a broad investor base over time.
3. The size and issuer of the issuance.
4. The size and volume of the plain vanilla derivatives markets for a particular issuance which facilitate investor demand and price discovery.

6.3 Yields and Liquidity in the CGS Market

The sample period for the analysis of the yields for CGS bonds is from 1st October 1998 to 30th September 2008. The results are summarised in Graph 6. The yields for the 5-year and 10-year CGS move closely together, however they do not exhibit a clear consistent margin over the sample period. There was high volatility in the period prior to 2003.

Graph 6. CGS Yields



Source: Bloomberg

The liquidity premium implicit in the CGS yields is estimated by the difference between the yields in the spot and the futures markets. Both the future market and the spot markets give investor exposures to the CGS market risk. However, exposures via the derivatives market mean that investors do not have to own the CGS to earn the returns. This implies that more investors are able to “trade” the CGS in the futures market without paying the higher costs associated with the physical buying and selling of the assets. Consequently, we believe that the future prices/yields for CGS is less affected by liquidity risk relative to the spot prices/yields provided that the future contracts have a short time to maturity. CGS futures expire each year in December, March, June and September. The future prices/yields are based on the nearest maturity date and hence the maximum maturity date is 3 months.

In summary, we have assumed that the futures market is a highly liquid market and accordingly the difference between the futures market and the physical market reflects the liquidity premium.

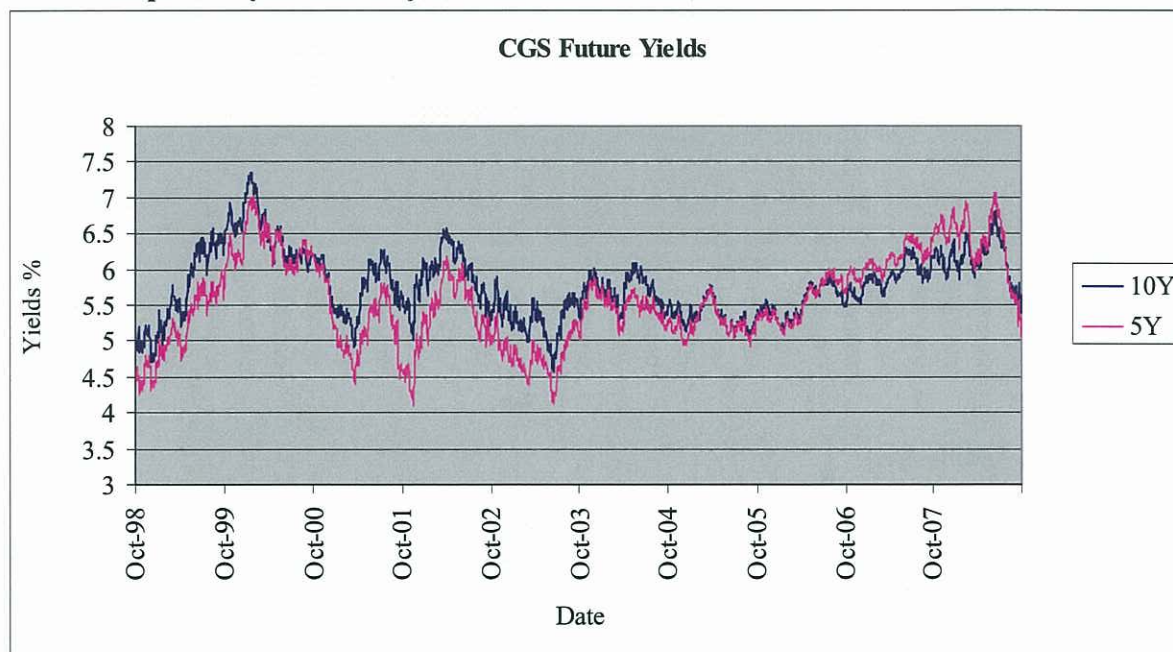
The analysis is based on CGS yields and futures market yields from the 1st October 1998 to 30th September 2008. We have used the futures yield for 3-year CGS as a proxy for the futures yield of 5-year CGS as the data for the latter is not available. The results for the CGS futures yield and the liquidity risk premium are summarised in Table 5. Graph 7 plots the 5-year and 10-year CGS future yields.

Table 5. Summary Statistics for CGS yields and Future Bond Yields

	Ft 5Y	Ft 10Y	Gov-Ft (5Y) (bp)	Gov-Ft (10Y) (bp)
Mean	5.57%	5.77%	6.85	- 0.94
Vol	61.13%	46.91%	13.37	8.60
Max	7.08%	7.34%	52.00	24.50
Min	4.10%	4.58%	- 48.32	- 31.00

Source: Bloomberg

Graph 7. 5-year and 10-year CGS Futures Yields



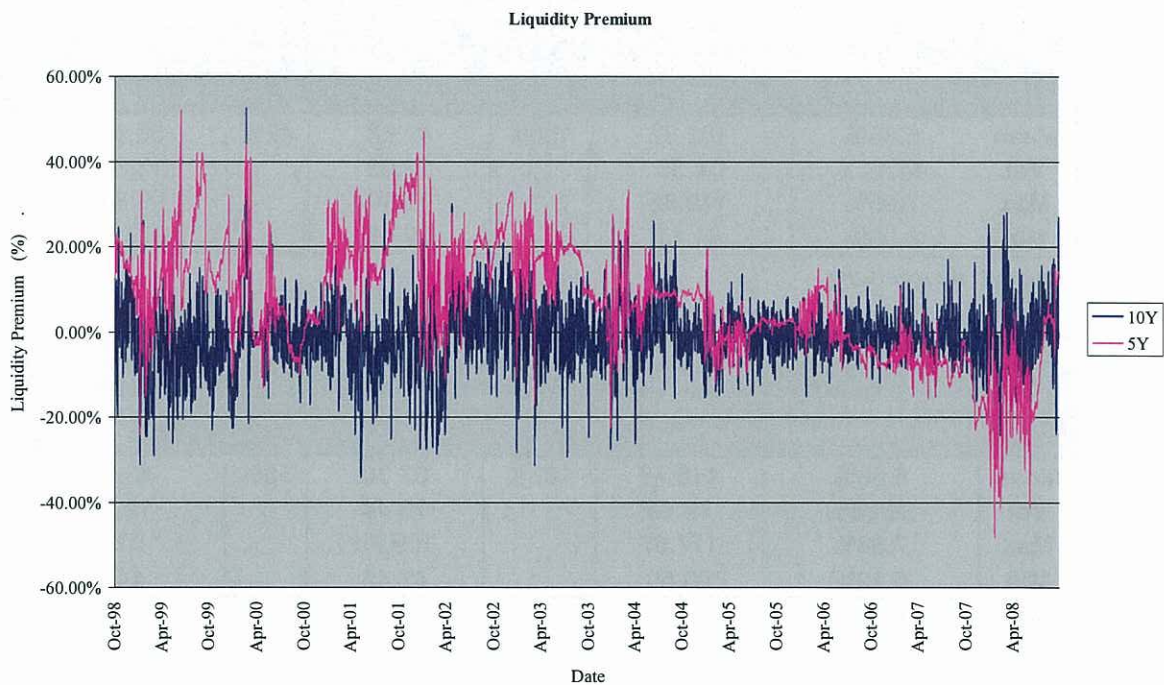
Source: Bloomberg

Similar to the findings in Table 5, the volatility of the 10-year yields in the futures market are lower than the volatility of the 5-year yields. For the period 1 October 1998 to 30 September 2008 the 10-year yields are 20 basis points higher than the yields in the 5-year term (proxied by the 3-year CGS futures yield) on average. The 10-year and 5-year yields in the futures markets reflect a similar trend as those in the spot market with the 10-year yields being less volatile over the same period.

The liquidity premium in the CGS yields is estimated as the difference between the CGS spot yield and the CGS future yield. From the last two columns in Table 5, we can see that the 5-year liquidity premium is positive on average while the 10-year liquidity premium is negative. The yield volatility is again higher for the 5-year term. From Graph 8, the liquidity premium for the 10-year term exhibit no upward nor downward trend while the liquidity for the 5-year term exhibit a downward trend since 2002 to the end of the sample period. The liquidity premium went from positive in 2002 to negative in 2008.

From the analysis, it is not hard to see that the liquidity estimates for the 10-year are more stable over time relative to the estimated liquidity premium for CGS with shorter a maturity. In addition, due to the mismatch in maturity date between the 5-year CGS and 3-year CGS future, the liquidity premium estimates for the 10-year term is considered to be more reliable.

Graph 8. ACGS Liquidity Risk Premium



Source: Bloomberg

6.4 Yields and Liquidity Premium in the Corporate Bond Market

The sample period is from the 5th July 2005 to 9th October 2007 for corporate bonds due to the lack of data from the CDS market prior to 2005 and the lack of data from the corporate bond market after 2007. The 10 year Corporate Bond index was discontinued in October 2007 due to lack of liquidity and data points. The corporate spreads are measured against the CGS yields with the same maturity. We estimate the liquidity risk premium by subtracting the CDS spreads from the corporate bond spreads². The corporate spread is the additional return required by investor for taking on credit risk as well as other non-credit risks such as liquidity risk. On the other hand, the CDS spread in theory is the additional return required by investors for taking on credit risk only. Thus, the difference between the corporate spread and the CDS spread must be the return required by investors for exposures to other forms of risks. Here we made the assumptions that the differences are due entirely or almost entirely to the liquidity risk of the BBB+ rated corporate bond.

Tables 6 and 7 summarised the results for the 5-year and 10-year corporate bonds, spreads and CDS spreads respectively. Graph 9 plots the corporate bond yields for the 5-year and 10-year term while Graph 10 plots the corporate spread measured against the CGS for the 5-year and 10-year durations as well as their corresponding CDS spreads.

Table 6. Summary Statistics of 5-year BBB+ rated Corporate Yields and Spreads

	Corporate Yield-5Y	Corporate Spreads-5Y (bp)		CDS Spreads-5Y(bp)		Residual-5Y (bp) (Liquidity)	
Mean	6.86%	102.32	100%	42.68	42%	59.65	58%
Vol	44.44%	14.38		12.93		13.84	
Max	7.95%	149.82		75.10		99.83	
Min	6.06%	81.11		29.13		27.40	

Source: Bloomberg

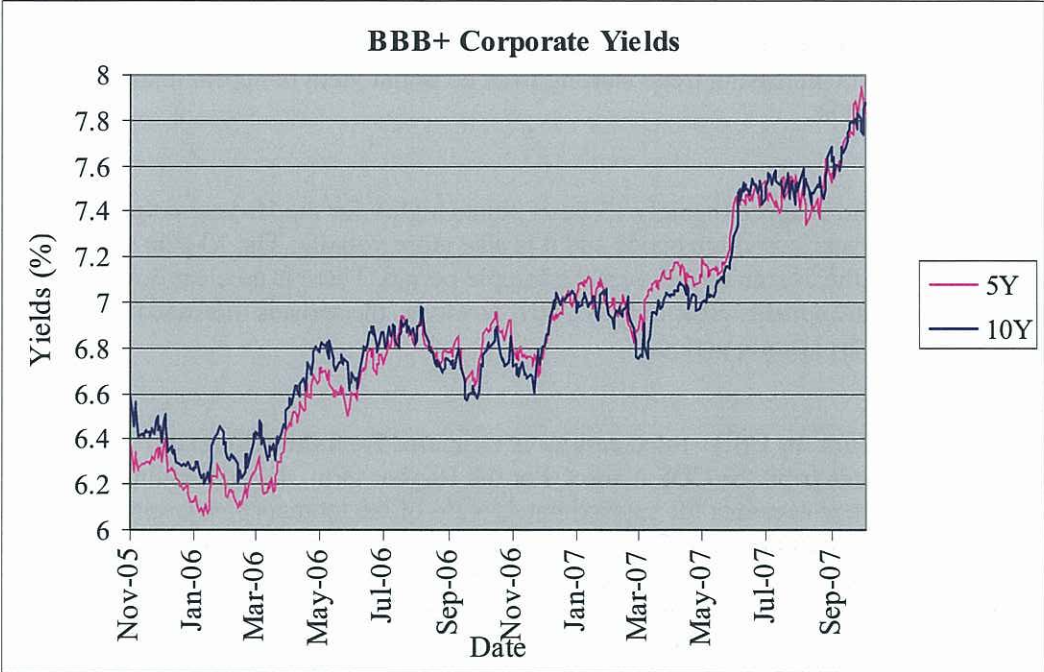
Table 7. Summary Statistics of 10-year BBB+ rated Corporate Yields and Spreads

	Corporate Yield-10Y (bp)	Corporate Spread-10Y (bp)		CDS Spreads-10Y (bp)		Residual-10Y (bp) (Liquidity)	
Mean	6.88%	115.78	100%	67.30	58%	48.48	42%
Vol	39.98%	18.15		19.44		19.74	
Max	7.88%	177.67		109.79		101.84	
Min	6.20%	98.60		47.43		4.29	

Source: Bloomberg

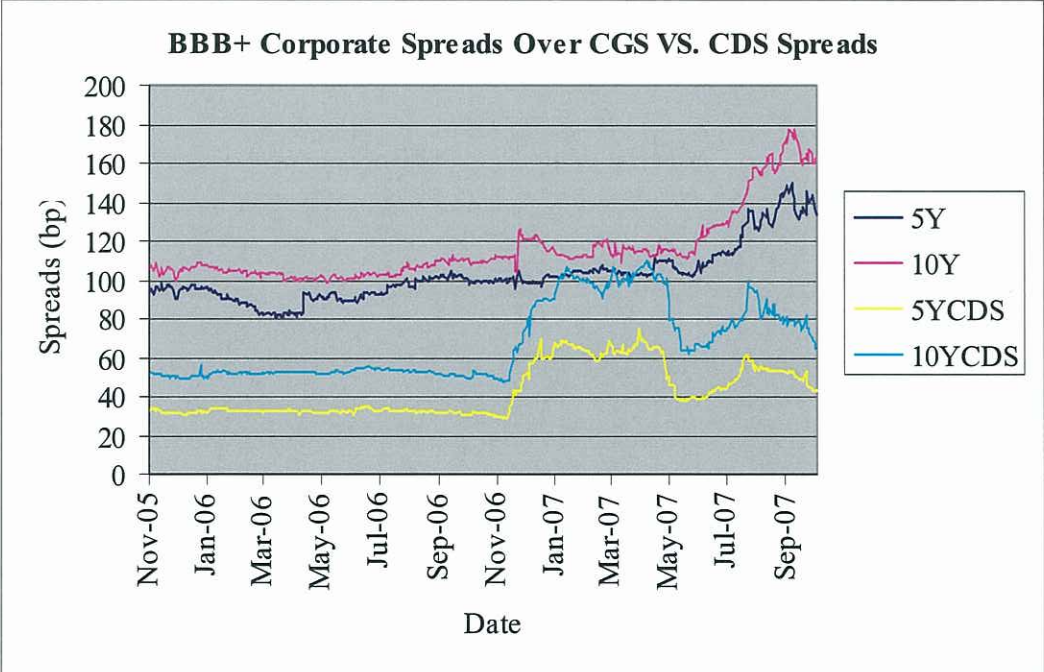
² CDS parcel was made up of all BBB+ rated Australian corporates with CDS pricing available on Bloomberg. This parcel may vary from Bloomberg BBB+ corporate bond yield index make up, as the corporate bonds included in this yield curve are unavailable.

Graph 9. BBB+ Corporate Bond Yields



Source: Bloomberg

Graph 10. 5-year and 10-year BBB+ Corporate Bond Spread



Source: Bloomberg

For BBB+ rated corporate bonds, the average 10-year yield is 2 basis points higher than the 5-year yield over the sample period. Similar to the CGS, the volatility of the 10-year corporate yields is lower than the 5-year yields. The 5-year and 10-year yields follow each other closely over the sample period and exhibit an increasing trend starting from an initial yield of approximately 6.5% to almost 8% in September 2008.

The corporate spread is approximately 13 basis points higher for the 10-year corporate bonds on average than the 5-year corporate bonds and it is also more volatile. The 10-year spread remained consistently above the 5-year spread over the sample period. There is no clear downward or upward trend in the corporate spreads prior to May 2007, however, the spreads increased rapidly from May 2007 to the end of the sample period.

The liquidity premium for BBB+ rated entities is estimated from the difference between the corporate yields and the spreads from the CDS market. For the 10-year term, the non-credit or liquidity component on average accounts for approximately 42% of the total corporate spreads whereas the non-credit or liquidity component on average accounts for approximately 58% of the total corporate spread for the 5-year term. Graph 10 highlights the liquidity risk premium or the non-credit component of the 5-year and 10-year BBB+ rated corporate bonds. The non-credit component is higher on average for the 5-year corporate spread and less volatile than the 10-year corporate spread over the sample period. The sudden deterioration in the CDS market and the slow adjustments in the corporate bond market may have caused the sharp fall in the non-credit component in January 2007. The liquidity risk premium subsequently climbed higher as the corporate bond market incorporates the higher default risk implied by the high CDS spreads and the higher liquidity risk as liquidity dried up in the corporate bond markets.

7 Liquidity Premium for Return on Equity and Cost of Debt

Based on the data in 9 and 10, comment on the liquidity premium provided on a ten year bond over a five year regulatory period – for both the return on equity (i.e. a ten year CGS as a proxy for the risk free rate in the CAPM equation) and the cost of debt (i.e. a ten year BBB+ corporate bond rate).

7.1 Weighted average cost of capital

The cost of capital is a weighted average of the cost of debt and the cost of equity. In general this weighted average cost of capital (WACC) can be expressed as:

$$WACC = \left(\frac{E}{V} * K_e \right) + \left(\frac{D}{V} * K_d (1 - t_c) \right)$$

The components of the formula are:

K_e	=	cost of equity capital
K_d	=	cost of debt
t_c	=	corporate tax rate
E/V	=	proportion of company funded by equity
D/V	=	proportion of company funded by debt

The cost of debt is usually estimated as a risk free rate plus a premium for risk, having regard to the credit rating of the target company, and the overall leverage assumed.

The cost of equity capital (K_e) under the Capital Asset Pricing Model (CAPM) is determined using the following formula:

$$K_e = R_f + \beta(R_m - R_f) + \alpha$$

The components of the formula are:

K_e	=	required return on equity
R_f	=	the risk free rate of return (i.e. return on a ten year CGS)
R_m	=	the expected return on the market portfolio
$(R_m - R_f)$	=	expected market risk premium (EMRP)
β	=	beta, the systematic risk of a stock
α	=	specific company risk premium.

7.2 Return on Equity

The EMRP is generally calculated by reference to return of a market portfolio compared to the returns on the 10 year CGS. The Centre for Research at the Australian Graduate School of Management (AGSM) calculates a number of estimates of the EMRP based on 10 year CGS.

Bloomberg calculates the EMRP with reference to the return on the market portfolio and the 10 year Australian Government Bond. The “Review of the weighted average cost of capital (WACC) parameters for electricity transmission and distribution” (August 2008) refers to a study by

Brailsford, Handley and Maheswaran³. Brailsford, Handley and Maheswaran examined the quality of Australian market return data and government bill and bond data over time, and present estimates of historical excess returns for various time periods. The study used a range of government bonds of varying maturities to estimate the risk free rate.

If the five year CGS is adopted as the risk free rate, for the sake of consistency, the EMRP should be estimated with reference to the five year CGS.

Overall we would expect that the use of a 5 year CGS would usually result in a lower risk free rate, which, assuming an equity beta of 1, would be largely offset by a higher EMRP. Therefore, we would expect the return on equity based on a 5 year CGS would be similar to the return on equity based on a 10 year CGS.

7.3 Cost of debt

The cost of debt is usually estimated as a benchmark risk free rate plus a premium for risk. The risk free rate should match the tenor of the debt.

If a five year CGS is adopted as the risk free rate, the selected premium for risk should be estimated with reference to the five year CGS.

Whilst the overall credit difference is 2 bps, tables 5 and 6 indicate there is an 11bps liquidity premium on the 5 year corporate bond over the 10 year corporate bond. This is offset by a greater credit spread on the 10 year corporate bond as compared to the 5 year corporate bond.

³ Brailsford, T., J.C.Handley, and K.Maheswaran (2008), 'Re-examination of this historical equity risk premium in Australia', Accounting and Finance, Vol.48, pp.73-97

8 Debt Portfolio's in the Energy Network Sector

12. Examine available data on a similar sample of energy network businesses as employed by the Joint Industry Association (p.69), including that for short term debt on issue (i.e. bank bills), to estimate a weighted average term of debt portfolios.

13. Examine government owned regulated network businesses balance sheets; to obtain an 'industry-wide' benchmark weighted average term of debt portfolios (i.e. including both public and privately owned network businesses).

The tables below provide the debt profile of energy network businesses. The data has been sourced from the published annual reports and the financial statements and shows the maturity profile and debt financing pattern of the listed companies.

There are limitations in data sourced from published annual reports and the financial statements of the listed companies. The limitations include:

- The maturity profile of debt portfolio either have been drawn up on the undiscounted cash flow of financial liabilities or at carrying value (based on the remaining earliest contractual maturities);
- Published financial statements of the some of the listed entities did not disclose the average term for variable interest rate borrowings; and
- Limited disclosures in the published financial statements on how the cash flow exposures resulting from variable interest rate borrowings are managed.
- Joint Industry Association Submission (page 69) shows the weighted average term of 11.4 Years. Published financial statements of private owned entities and Gov't owned entities disclose the debt portfolio spreading over < 1 Year, 1 to 5 Years and >5 years. The disclosures in the financial statements are not enough to calculate the weight average term of debt portfolio (precise term).

Table 8. Private Owned Energy Network Companies

Distribution	Ownership	Amount (\$M)	Average Term			
			Not disclosed#	<1 Year	1 to 5 Years	> 5 Years
CitiPower & Powercor	Non Gov't	4,604		1,013	1,763	1,828
ETSA Utilities	Non Gov't	4,098		331	1,912	1,855
SP Ausnet	Non Gov't	3,671		537	2,051	1,083
Envestra	Non Gov't	3,661		406	967	2,288
APA Group^	Non Gov't	4,297		364	2,175	1,758
Summary		20,331		2,651	8,868	8,812
% share		100%		13%	43%	44%

^ Now parent company of GasNet

Floating rate instruments, tenor not disclosed.

Source: 2007 Annual reports

Private owned network companies enters into interest rate swap contracts exchanging floating rate interest amounts for fixed rate interest amounts in order to reduce the floating cash flow exposure resulting from floating interest rate on borrowings. It is common for regulated

businesses to borrow actual or synthetic floating rate debt and then fix the interest rate for the term of the reset period using interest rate swaps.

For example:

- (i) SP AusNet - The debt portfolio of the Group consists of both floating rate debt and fixed rate debt. Interest rate derivatives are used in order to maintain the percentage of fixed rate debt to total debt at a level between 90 per cent and 100 per cent for the relevant business over the relevant regulatory period.
- (ii) ETSA – Interest rate swap contracts exchanging floating interest rate amounts for fixed rate interest amounts are designed as cash flow hedges in order to reduce the cash flow exposures resulting from variable interest rates on borrowings. The interest rate swaps and the interest payments on borrowings occur simultaneously.

Debt instruments used for funding requirements include bank loans, debentures, commercial paper, syndicated bank debts, domestic medium term notes and senior notes. Liquidity management policies ensure that the businesses have diversified portfolio of debt, in terms of maturity and source, which significantly reduces reliance on any one source of debt in any one particular year

Privately owned businesses use debt with a range of maturities, with terms varying both shorter and longer than the 10 year benchmark. This is consistent with AER issues paper.

Table 9. Govt Owned Energy Network Companies

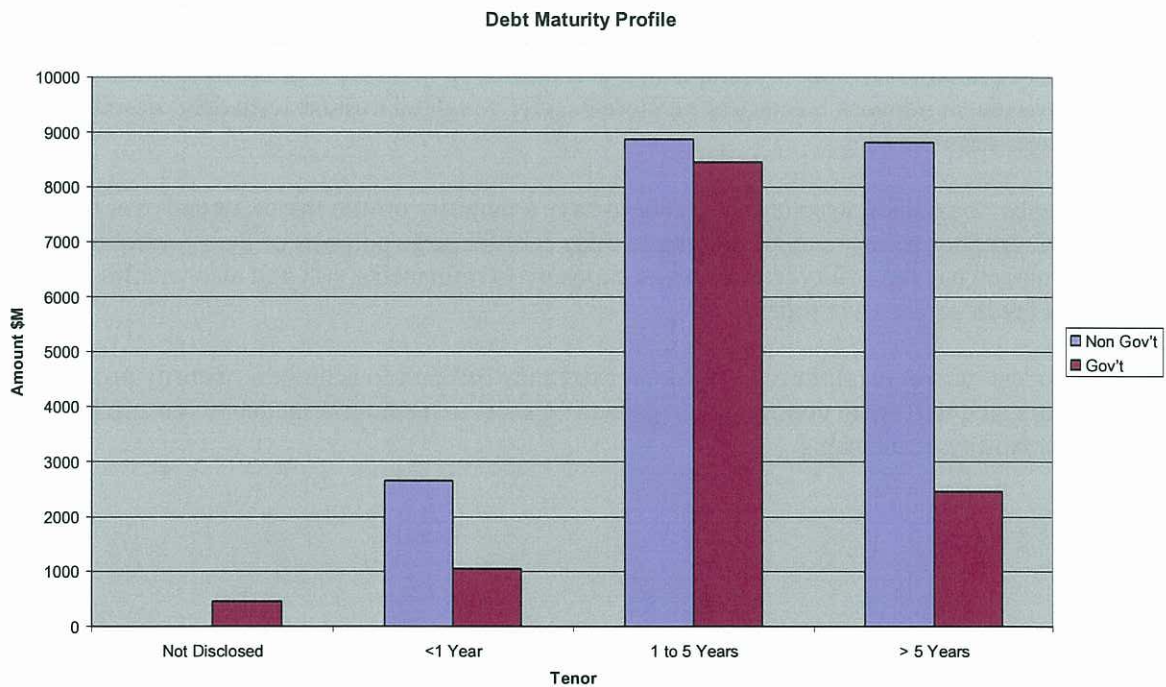
<u>Distribution and Transmission</u>	Ownership	Amount (\$M)	Not Disclosed#	Average Term		
				<1 Year	1 to 5 Years	> 5 Years
Energex	Gov't	3,265	218	-	3,045	2
Ergon	Gov't	2,535	50	91	2,394	-
Horizon Power	Gov't	132	-	38	51	43
Power and Water Corp	Gov't	349	-	10	47	292
Western Power	Gov't	2,552	173	510	1,072	797
Powerlink	Gov't	2,007	(59)	181	1,047	838
Transend Networks	Gov't	118	33	5	80	-
TransGrid	Gov't	1,454	-	254	717	483
Summary		12,411	453	1,051	8,452	2,455
% share		100%	4%	8%	68%	20%
Source:	2007 Annual reports					
#	Floating rate instruments, tenor not disclosed.					

State Treasury Corporations typically provide the funding requirements to Government owned entities and the substantial portion of the borrowings represent fixed rate loans. Interest rate risk management does not play significant role in Government owned entities since a substantial portion of the debt financing is fixed rate loans. In effect the government owned entities typically borrow fixed debt from the State Treasury Corporations. A substantial portion of the borrowings' have average maturities over 1 year to 5 years.

Table 10. Comparison of debt financing against industry average

Network Business	Not Disclosed	Average Term		
		<1 Year	1 to 5 Years	> 5 Years
Government	4%	8%	68%	20%
Non Government	0%	13%	44%	43%
Industry Average	1%	11%	53%	34%

Graph 11. Maturity Profile of Debt Portfolio's



Source: 2007 Annual Reports

The maturity profiles reflected in graph 11 should be typical of normal market conditions as the current credit crisis would likely have had minimal impact on entities debt structure in their 2007 annual reports.

14. Comment on the drivers for regulated energy network businesses to issue debt (i.e. bonds / bills) of differing maturities, and on any maturity mismatch for regulated network businesses relative to a five year reset date for regulatory returns.

Our analysis of government owned network businesses vs. publicly owned shows a similar debt maturity profile for both, but with non-government businesses having a significantly higher proportion of floating rate debt. These entities then enter into interest rate swaps to manage the interest rate risk on the debt portfolio, whereas government owned entities have the ability to pass the interest rate risk management back to the State Government Treasury Corporations. The shorter debt profile of government businesses most likely reflects the greater confidence of government entities to refinance closer to the reset period.

Historically, most energy regulated companies would try to achieve debt funding for as long as possible, 10-15 years, and hedge the interest rate risk to lock in a fixed rate for the regulatory term (5 years) using interest rate swaps. For example, a regulated publicly owned corporate may have issued a 15 year USD fixed interest bond. The corporate would use a cross currency interest rate swap to synthetically convert the USD bond into AUD floating rate debt. The corporate would then use an interest rate swap to fix the interest rate for the 5 year reset period.

However, in the current market, the corporate bond market is illiquid and syndicated debt facilities are the only option available for refinancing. In the current corporate debt market, financing is most likely available for only 3 years, which will mean over time we will see the maturity profiles of non-government network businesses be more heavily weighted to short term debt, despite their desire for longer term funding.

Ideally companies structure their debt to have a maturity profile that is spread over time, so at no one time are they refinancing or looking to raise debt for large portions of their portfolio. This ensures a company has the ability to manage its exposure to refinancing risk and also enables an averaging of the credit spread over time.

Current market conditions will make it extremely difficult to achieve a maturity profile out past 5 years, and will mean constant management of short to medium term debt to ensure liquidity, and availability of financing.

'Deloitte' refers to the Australian partnership of Deloitte Touche Tohmatsu and its subsidiaries. Deloitte, one of Australia's leading professional services firms, provides audit, tax, consulting, and financial advisory services through more than 4000 people across the country. Focused on the creation of value and growth, and known as an employer of choice for innovative human resources programs, we are dedicated to helping our clients and our people excel. For more information, please visit Deloitte's web site at www.deloitte.com.au.

Deloitte is a member of Deloitte Touche Tohmatsu (a Swiss Verein). As a Swiss Verein (association), neither Deloitte Touche Tohmatsu nor any of its member firms has any liability for each other's acts or omissions. Each of the member firms is a separate and independent legal entity operating under the names "Deloitte", "Deloitte & Touche", "Deloitte Touche Tohmatsu" or other, related names. Services are provided by the member firms or their subsidiaries and affiliates and not by the Deloitte Touche Tohmatsu Verein.

Liability limited by a scheme approved under Professional Standards Legislation.

Confidential - this document and the information contained in it are confidential and should not be used or disclosed in any way without our prior consent.

© Deloitte Touche Tohmatsu. November, 2008. All rights reserved.



Contact us

Deloitte

180 Lonsdale Street
Melbourne VIC 3000
GPO Box 78
Melbourne VIC 3001 Australia

Tel: +61 (0) 3 9208 7000
Fax: +61 (0) 3 9208 7001
www.deloitte.com.au