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5 October 2010

Dear Sirs,

Debt risk premium over the approved averaging period beginning 2 August 2010

1.   Introduction and summary of findings

Brief

You have requested that PricewaterhouseCoopers (PwC) provide expert advice on the estimated debt risk premium (DRP) for a BBB+ rated 10 year term Australian corporate bond over the approved averaging period.

The regulatory period currently applying to CitiPower and Powercor, and United Energy Distribution (the businesses) is due to expire on 31 December 2010 and the next regulatory period will commence on 1 January 2011. The businesses submitted their revised regulatory proposals for the regulatory period commencing 1 January 2010 to the Australian Energy Regulator (AER) for review, which included a letter setting out PwC's preferred methodology for the calculation of a debt risk premium.[1] The PwC DRP report which accompanied the revised regulatory proposals proposed a method for estimating the debt risk premium for a distribution network service provider in accordance with the National Electricity Rules.

The approved averaging period is the 20 business days between 2 August 2010 and 27 August 2010 inclusive (final decision averaging period). You have requested that the methodology by which PwC estimates the DRP should be consistent with the methodology set out in PwC's report that was attached with the businesses' revised revenue proposal titled *'Methodology for calculating debt risk premium';* and should also be consistent with the National Electricity Rules.

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[1]   PwC (19 July, 2010), *Methodology for the calculation of debt risk premium*, letter to Mark de Villiers of CitiPower and Powercor Australia.

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The specific Terms of Reference provided to us are set out in Appendix A. PwC and the signatory to this report have in the past been engaged by CitiPower and Powercor Australia to assess issues relating to the estimation of the debt risk premium in the context of regulatory processes.

We understand that this advice will be used by CitiPower and Powercor, and United Energy Distribution & Multinet Gas to assist them in preparing their revised regulatory proposals to the AER, and may be provided as a public report.

Summary of findings and conclusions

Our conclusions

We recommend a debt risk premium of **413 basis points** for an Australian BBB+ bond during the reference period covering 20 business days from 2 August to 27 August, 2010 inclusive. This estimate is based upon the estimate of the debt risk premium that is provided by the Bloomberg BBB band fair value curve at 6 years,[2] and then extended beyond that point using the change in the debt risk premium that was observed under the Bloomberg AAA fair value curve between 6 and 10 years. The Bloomberg BBB band fair value curve out to 6 years has been applied because that it is the limit to which the accuracy of that curve can be tested against the BBB+ Australian corporate bonds on issue at this time.

The approach we have adopted in this report was influenced by the methodology that was adopted by the AER in its draft decision for the Victorian electricity distributors, which was to compare the Bloomberg and CBASpectrum fair value curves against three sources of bond yield data (Bloomberg, CBASpectrum and UBS) for bonds with a greater than 2 year term to maturity. We raised concerns about the small sample of bonds that could be examined in this way, and suggested that a greater number of observations should be drawn from, the examination of bonds in other rating categories. We also suggested that there should be an examination of adjusted yields on floating rate bonds.[3] We recommended that if appropriate testing of Bloomberg's data integrity showed it to provide reasonable bond yield estimates that reflected market opinion, a reasonable estimate of

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[2]   We use the term 'BBB band' to refer to the fact that the Bloomberg service only provides a single yield curve for the whole of the BBB range of credit ratings for Australia. The rating within the BBB band to which the curve is most reflective depends on the corporate bonds on issue in the vicinity of the term to maturity for which the yield is being observed.

[3]   PwC (November, 2009), Methodology to Estimate the Debt Risk Premium, report to Victorian Distribution Businesses, pp.42-43.

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the debt risk premium could be obtained by a linear extrapolation of BBB rating band Bloomberg debt risk premiums for 5 and 7 year terms.[4]

We have applied extrapolation using the Bloomberg AAA fair value curve for consistency with the AER's preferred methodology. In our initial, November 2009, report on the design of a methodology to estimate a debt risk premium for a benchmark 10 year BBB+ rated corporate bond we recommended that a linear extrapolation has both empirical and theoretical support.[5] Standard and Poor's has found the probability of default to be linearly related to term, and we found an approximately linear relationship between the debt risk premium and term during the periods when Bloomberg provided a 10 year BBB fair value yield estimate. In an earlier period of heightened risk perceptions (2001-02), the debt risk premium was linear with term, and had a significantly higher rise (between 5 and 10 years) than it did during the subsequent period of low risk perceptions preceding the global financial crisis. Applying a linear extrapolation of the 5 and 7 year Bloomberg BBB debt risk premiums during the current reference period we derive a debt risk premium of 438 basis points at a 10 year term.

As in our previous report,[6] we have again applied a method for estimating the debt risk premium that draws heavily upon the method that is preferred by the AER, which is to posit three options for estimating the yield – namely the Bloomberg BBB band fair value curve, the CBASpectrum BBB+ fair value curve and an average of the two – and to test the accuracy of each curve by comparing the predicted yield to the actual yield for the sample of 'relevant' corporate bonds that are on issue. However, there are only a handful of bonds (4) that would be deemed relevant by the AER under its 'traditional' approach.[7] These are fixed coupon BBB+ rated corporate bonds of more than 2 years' term that have yields quoted by each of Bloomberg, CBASpectrum and UBS.

With only four market data points available, the results of the AER-type test are sensitive to whether all of the bonds are included in the sample. If the Dalrymple Bay Coal Terminal (DBCT) bond is included in the sample of bonds used to test the accuracy of the fair value curves, then the Bloomberg BBB band fair value curve is found to be a more accurate predictor of the estimates from different providers of the yields of Australian BBB+ corporate bonds than the alternatives that the AER offers (i.e. the CBASpectrum BBB+

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4   PwC (November, 2009), pp. 34-35.
5   PwC (November, 2009), pp.30-35.
6   PwC (19 July, 2010), Methodology for the calculation of debt risk premium, letter to Mark de Villiers of Citipower and Powercor Australia, pp.16 onwards.
7   The 'traditional' AER approach pre-dates the decision by the Australian Competition Tribunal in the matter of the appeal by ActewAGL (Application by ActewAGL Distribution [2010] ACompT).

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fair value curve and average of the Bloomberg BBB band and CBASpectrum curves). If the DBCT bond is excluded from the sample, the choice between the alternatives is relatively close, even though the resulting ten year debt risk premium is potentially markedly different depending on the choice that is made. We favour including the DBCT bond in the sample – most of the bonds in the AER's small sample have issues attached to them and the DBCT is not special in this regards and, with only four bonds in the sample, we would err strongly towards inclusion rather than exclusion.

Given the poor power of the AER's method of testing between the two curves, it is important to understand the wider context of the performance of these curves and to rely upon further information where possible, both to test the level of the curves out to the extent of term of the bonds on issue and to test what is a reasonable extrapolation of the premium out to 10 years. The shortcomings of the AER's 'traditional' methodology have been raised in the context of the Australian Competition Tribunal's (ACT) recent decision on ActewAGL Distribution. One of the ACT's key findings was that the AER should examine the quality of the data sources being used by alternative service providers.[8]

Given current concerns about the quality of bond yield data that have been raised by the Australian Competition Tribunal, we have again applied the tests derived in our November 2009 report for the internal integrity of the Bloomberg estimation. As in our 19 July report, we conclude that in general the problems that beset the Bloomberg service during the worst of the global financial crisis are no longer present. However, we did find an anomaly with respect to the test of whether there is such a significant divergence in market opinions on corporate bond yields that fair value curves may become unreliable indicators of market opinion. Bloomberg receives feeds for the DBCT bond from CBA and the Royal Bank of Scotland (RBS). The debt risk premium adopted by Bloomberg is close to the premium implied by the RBS feed (approximately 460 basis points), while the premium implied by CBA's feed is approximately 1060 basis points. We consider that Bloomberg's yield (following RBS) is closer to the weight of market opinion, since the UBS yield for DBCT is only 100 basis points higher (i.e. approximately 560 basis points). The inclusion of the CBA outlier observation caused a technical failure of our test, even though we are confident that this single observation has not distorted Bloomberg's estimate of the fair value curve.[9] Hence, we conclude that Bloomberg's fair value curve is likely to reveal a reasonable reflection of market opinion.

We have several concerns about the ability of the CBASpectrum fair value curve to provide an appropriate estimate of the debt risk premium for a 10 year BBB+ corporate

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[8]   ActewAGL Distribution [2010] ACompT, par.77.
[9]   We understand that the DBCT bond has traded very recently.

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bond for regulatory purposes. As in our 19 July report, we find that the CBASpectrum yield estimates for several bonds are some distance from the opinions of other financial institutions, which may cause a distortion in its curve relative to the market. In addition, we are concerned that the current 29 basis points rise in the CBASpectrum BBB+ curve between 5 and 10 years is anomalously low, particularly given the fact that the most recent Bloomberg AAA curve had a rise of 70 basis points, and the yield differential between A rated 5 and 10 year term Telstra bonds is currently approximately 56 basis points. We also note that on 8 September, 2010, CBASpectrum's website carried an announcement about the temporary cessation of its fair value curve service on grounds of data problems stemming from the global financial crisis. The announcement also expressed concern that the service was being applied for 'purposes other than relative value analysis.'[10]

Given current data limitations, it is inevitable that some compromises may need to be struck when extrapolating the Bloomberg BBB band debt risk premium curve. While we previously recommended extrapolating the debt risk premium curve from 7 years using the change between the 7 and 5 year premiums to derive the slope of the debt risk premium function, in our 19 July report we acknowledged that this makes the extrapolation sensitive to the exact shape of the Bloomberg BBB band fair value curve between the 5 and 7 year points. The AER's preferred method to extrapolate the debt risk premium beyond the 'useable' part of the relevant fair value curve is to rely upon the Bloomberg AAA fair value curve. However, Bloomberg suspended the publication of debt risk premium estimates out to 10 years on 22 June, 2010. Our 19 July report foreshadowed that if the Bloomberg AAA fair value curve is not available during a future relevant averaging period, then the latest available AAA curve (averaged over an appropriate period, for example 20 days) should be used to perform the extrapolation. While this is not ideal, we note that the implied change in the premium between 5 and 10 years for a BBB+ rated bond (70 basis points) is consistent with the observed increase of 56 basis points for the higher-rated (A) Telstra bond.

The methodology we used to reach our conclusions was based on the steps set out in our July, 2010 report:

- *Step one: test the integrity of the fair value curves to the extent possible* – we consider it important to test the integrity of the method and inputs underlying the construction of the Bloomberg and CBASpectrum fair value curves. This is an application of the tests we devised for our November 2009 report, which examined

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[10]   8 September, 2010, CBASpectrum website.

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whether the integrity of the data and method underlying the Bloomberg fair value curves was sufficiently robust as to allow reliance to be placed on the results.

- *Step two: test the predictive accuracy of the fair value curves* – we apply the average error test and the weighted sum of squared errors test, to examine whether the Bloomberg or CBA Spectrum fair value curves respectively provide estimates that are statistically unbiased, and represent a good fit to the underlying yield data.

- *Step three: test the extrapolation of the curve beyond the data points* – since there are no BBB+ Australian corporate bonds currently on issue that have a term beyond a term of 6 years (assuming the DBCT bond is included in the sample – 5 years otherwise), it is impossible to test the accuracy of any fair value curves beyond this point. It essential, therefore, to draw upon other information to test the reasonableness of the extrapolation of the fair value curve beyond this point, noting that the target of the exercise is a debt risk premium for 10 year BBB+ Australian corporate bonds.

- *Step four: draw on other information as a cross-*check – the final component of our methodology is to cross-check the results against other market evidence to the extent possible, which may include the yields on floating rate notes (adjusted to a fixed rate equivalent yield), evidence from other bond ratings and other estimates of fair value yield curves.

  Regarding alternative estimates of fair value curves, attached to this report (Appendix D) is an updated report from Mr. Terry Toohey who is the Managing Director of Australian Indices. Mr. Toohey routinely produces fair value curves for Australian corporate bonds, which he uses to advise investors (including financial institutions) with respect to the valuation of their bond portfolios. His data source comprises bond prices that are provided by five banks on a daily basis. Applying his methodology he has independently estimated the debt risk premium for BBB+ 10 year Australian corporate bond at **400 basis points**.

Structure of the remainder of the report

In the sections that follow we update the debt risk premium estimates in our 19 July report for the final averaging period beginning 2 August 2010 up to 27 August 2010 inclusive. Our approach is to follow the methodology set out in our 19 July report under the four steps outlined above (sections 2 to 5). In section 6 we draw together our results, and

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summarise our findings regarding the estimated debt risk premium for a 10 year BBB+ rated corporate bond.

2.   Tests of the integrity of data used by Bloomberg and CBA Spectrum

The Australian Competition Tribunal's recent decision on ActewAGL highlighted the need to test the quality of data inputs used by service providers in order to distinguish between competing curves.[11] This was a focus of PwC's November 2009 report, where the overall assessment of Bloomberg was comprised of the following three tests:[12]

- **Test 1** – was the data that Bloomberg relied upon, being the bond yield input feeds of a number of financial institutions, sufficiently uniform for Bloomberg to be able to derive a reasonable estimate of the market rate?[13]

- **Test 2** – was Bloomberg's own estimate of the yield of bonds in its sample a statistically unbiased reflection of the bank feeds provided to it?[14]

- **Test 3** – did Bloomberg's fair value curve pass through the centre of its own yield estimates?[15]

If Bloomberg's fair value curve passes the tests, then it can be expected to provide an appropriate benchmark yield on BBB Australian corporate bonds. We also applied tests 2 and 3 to the CBA Spectrum data base, for comparative purposes.[16] The results of these

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[11]   ActewAGL Distribution [2010] ACompT, par.77
[12]   PricewaterhouseCoopers (November, 2009), *Victorian distribution Businesses – Methodology to Estimate the Debt Risk Premium*, pp. 28-29.
[13]   We tested whether the coefficient of variation of bank feeds into Bloomberg for the Australian corporate bonds of greater than three years duration that are considered for Bloomberg's fair value curve exceeds 0.05?
[14]   We tested whether the average value of the difference between Bloomberg's BGN and the mean of bank feeds for the Australian corporate bonds used to construct Bloomberg's fair value curve, expressed as a percentage of the BGN, exceeds +/- 2.50 percent?
[15]   We tested whether the average value of the difference between Bloomberg's BGN and the corresponding point on the Bloomberg fair value curve, expressed as a percentage of the BGN, exceeds +/- 4.00 percent?
[16]   Although test 1 could not be applied directly to CBA Spectrum, as it relies on its own estimates of bond yields rather than a group of feeds from financial institutions as Bloomberg does, test 1 is also an implicit test of whether the CBASpectrum fair value curves can be relied upon.

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tests being applied to the 2 August 2010 to 27 August 2010 reference period are shown in Table 1 below.[17] We find that:

- Test 1 is failed if the DBCT bond is included, and is passed if the DBCT bond is excluded.

- Bloomberg passes tests 2 and 3.

- CBASpectrum fails Test 2 (that is, the test of whether the CBASpectrum bond yields are in line with market consensus) if the DBCT bond is included in the sample and passes the test if this bond is excluded.

Test 1 is a test of the extent to which the various financial institutions agree upon the yields for the bonds on issue, which in turn is a test of whether we can reliably infer a yield for those bonds. It is also an indirect test of the level of trade in bonds because material disagreement in the yield for bonds cannot exist if substantial trade (and hence a revelation of the true value of the bond) is occurring. As such, Test 1 is a test that is also relevant to the use of the CBA Spectrum curve, since it will be subject to the same market conditions of uncertainty if the dispersion of bank opinions on yields is high.

We investigated the tests set out above further and found that the reason for the failure of Test 1 and CBASpectrum's failure of Test 2 both stem from the high yield that CBA and CBASpectrum assume for the DBCT bond. In our original report for the Victorian Distribution Businesses on the methodology to estimate a debt risk premium, we noted that if there is a failure of tests, 'the Bloomberg methodology may nevertheless be correcting appropriately for aberrant events or observations'.[18] Applying the methodology we specified in our report for the Victorian Distribution Businesses, we are confident that the single DBCT observation has not distorted Bloomberg's estimate of the fair value curve from the weight of market opinion. Bloomberg receives feeds for the DBCT bond from both CBA and the Royal Bank of Scotland (RBS). However, the debt risk premium adopted by Bloomberg is close to the debt risk premium for the DBCT bond based on the RBS feed (approximately 460 basis points), while CBA's feed implies a debt risk premium

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[17] We found a data discrepancy in the feeds that Westpac provided to Bloomberg over the last few days of the averaging period. It appeared that margins rather than yields were being provided for three bonds, which made these observations unusable. We alerted Bloomberg, and Westpac subsequently updated the numbers for one day. We have therefore excluded the suspect data, but do not expect this exclusion to have any appreciable influence on our tests, as this was a small percentage of the total opinions, and Westpac's yield estimates for these bonds were relatively constant earlier in the averaging period. We do not expect the exclusion to have any appreciable influence on our tests because the Westpac observations comprise a small percentage of the total opinions.

[18] PricewaterhouseCoopers (November, 2009), *Methodology to Estimate the Debt Risk Premium*, report to Victorian Distribution Businesses, p.5.

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of approximately 1060 basis points. We believe that Bloomberg's yield (following RBS) is closer to the weight of market opinion, since the UBS yield for DBCT is only 100 basis points higher (i.e. approximately 560 basis points). Furthermore, the yield quoted by RBS is informed by an actual trade in the DBCT bond.[19]

Table 1: Data integrity tests – Bloomberg BBB and CBA Spectrum BBB+ curves

Test	DBCT bond included	DBCT bond excluded	DBCT bond included	DBCT bond excluded
Service	Bloomberg	Bloomberg	CBA Spectrum	CBA Spectrum
Test 1	9.94%	3.92%		
Test 2	-1.10%	0.20%	2.70%	-0.22%
Test 3	-2.97%	-2.42%	-3.23%	2.52%

Source: Bloomberg and CBASpectrum

3.   Results of the tests of the relative accuracy of the fair value curves

In order to test the predictive accuracy of alternative curves in the range of yield data availability, the AER has proposed the use of a weighted sum of squared errors test. This is a test of the goodness of fit relative to the yield data observations. Subsequently, PwC suggested that this test should be supplemented by an average error test, which measures the average difference between the points on the curves for a given bond term, and the bond yield observations. The average error test is a direct test of statistical bias, and is necessary because the goodness of fit test could result in the choice of a curve that provides a better fit to the data, but is systematically below the data points (i.e. biased downwards). This test was previously preferred by regulators, including the AER.[20]

As discussed in detail in our 19 July report, we consider the DBCT bond to be a valid observation, even though the AER has attempted to categorise it as an outlier. For this reason, we provide sensitivities including and excluding the DBCT bond, even though we

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[19]   In a telephone conversation with Royal Bank of Scotland on 17 June, 2010, we were informed that there was a trade in DBCT around September 2009, which was correlated with the marked downward revision in the bank's assessment of the DBCT yield.

[20]   See ERA (July, 2005) Final Decision on the Proposed Revisions to the Access Arrangement for the Mid-West and south-West gas Distribution Systems, Submitted by AlintaGas Networks Pty Ltd, p.223; Essential Services Commission of Victoria (2005), Electricity Distribution Price Review 2006-10, Final Decision Volume 1 – Statement of Purpose and Reasons, p.370; and Australian Energy Regulator (March, 2006), Directlink Joint Venturers' Application for Conversion and a Revenue Cap – Decision, pp.17-18.

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consider it to be a valid observation.[21] Our reasons for considering the DBCT bond not to be an outlier, which are drawn from our 19 July report, are set out in Appendix B. We consider that these reasons for including the DBCT bond are also relevant for the current averaging period (2 to 27 August inclusive).

The results of applying both the average error and weighted sum of squared errors tests for the 20 business days from 2 August, 2010 to 27 August, 2010 are provided in tables 2 to 5 below. Since our 19 July report the Coles Group Finance bond has fallen below the 2 year cut-off that has previously been applied by the AER, hence we provide sensitivity results for including and excluding this bond. We note that including the DBCT bond there are now only 4 BBB+ bonds with terms greater than 2 years (only 3 bonds excluding DBCT), making the results potentially highly sensitive to sample composition. The core sample of four bonds that meets all of the AER's requirements (and comments that we have received from market participants) is set out below:

- Snowy Hydro Limited (maturity 25/2/2013) – Has a very high yield in the CBASpectrum data base, and may be influenced by concerns about a Snowy Hydro floating rate bond that has been credit wrapped by a defaulting party (Syncora Guarantee Inc, formerly XL Capital Assurance Inc).

- Wesfarmers Limited (maturity 11/09/2014) – With a positive ratings outlook, it is possible that this bond is already trading at a lower yield as an A- rated bond.

- Santos Finance (maturity 23/09/2015) – No concerns were expressed about this bond.

- DBCT Finance (maturity 9/06/2016) – Has a very high yield in the CBASpectrum data base, and may be affected by the default of its credit wrapper (Syncora Guarantee Inc, formerly XL Capital Assurance Inc).

We have also calculated a sensitivity based on inclusion of the Coles Group Finance bond (maturity 25/07/2012), which is now maturing in less than two years, and therefore falls outside of the AER's two year term to maturity cut-off limit.

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[21] We note that during the last four days of the current reference period, Bloomberg included the DBCT bond in its estimate of the fair value curve, while for 16 days it was excluded. The Snowy Hydro bond was not included by Bloomberg in its estimate of the fair value curve on any day during the averaging period. The precise reasons for inclusion and exclusion of bonds by Bloomberg in this process are not known

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Another complication arises from the fact that during the 20 day averaging period, the Bloomberg and CBASpectrum debt risk premium curves crossed over. As shown in Figure 1 below, the cross-over occurred at a term of approximately 4.5 years, with the Bloomberg curve crossing from below. This cross-over of the curves makes it more difficult to interpret the average error test (or test for statistical bias), because neither curve will give higher or lower yield estimates than the other for all maturities beyond two years and so any assessment of bias needs to consider a particular maturity. Accordingly, in these circumstances the test of bias is considered secondary to the test of goodness of fit.

Figure 1: Bloomberg and CBASpectrum debt risk premium curves during the averaging period 2 August to 27 August, 2010
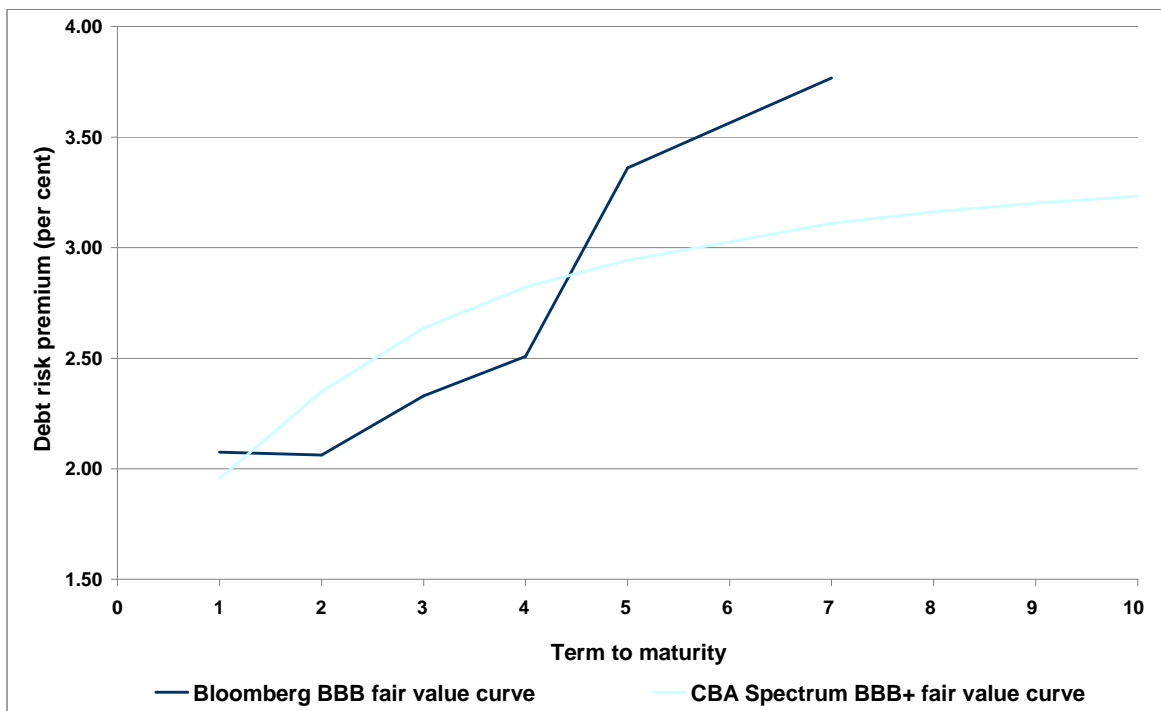
Source: Bloomberg and CBASpectrum

Table 2 shows that when the DBCT bond is included, the Bloomberg fair value or average curves provide a superior goodness of fit compared with the CBASpectrum curve. Overall, the Bloomberg curve is shown to provide a superior fit to the data when all three data

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sources are considered.[22] This is essentially the same result that we found in our 19 July report.

Table 2: Test of overall goodness of fit (2 August – 27 August) including DBCT

	Fair Value Source	Excluding Coles Group Finance N = 4			Including Coles Group Finance N = 5		
		Bloomberg	CBASpectrum	Average	Bloomberg	CBASpectrum	Average
Bond	Bloomberg	84	86	82	71	78	71
Yield	CBASpectrum	1550	1675	1616	1244	1349	1299
Source	UBS	217	246	230	177	206	190

Source: Bloomberg, CBA Spectrum and UBS

For the test of statistical bias (Table 3), the results are relatively close, but indicate an overall downward bias in the fair value curves. Excluding the Coles Group Finance bond, the CBASpectrum curve has a slightly greater degree of under-estimation of the bond yield observations. As discussed above, we place less weight on these results due to the cross-over of the curves.

Table 3: Test of bias (2 August – 27 August) – including DBCT

	Fair Value Source	Excluding Coles Group Finance N = 4			Including Coles Group Finance N = 5		
		Bloomberg	CBASpectrum	Average	Bloomberg	CBASpectrum	Average
Bond	Bloomberg	-29	-34	-33	-15	-14	-16
Yield	CBASpectrum	-232	-237	-236	-177	-176	-178
Source	UBS	-69	-74	-74	-47	-46	-48

Source: Bloomberg, CBA Spectrum and UBS

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[22] We also note that this comparison, which is part of the AER's methodology, accords equal weight to all three data sources, when UBS does not publish a fair value curve (and there are many alternatives to it), and Bloomberg is based on a consideration of more than one data source (i.e. the bank feeds it obtains daily).

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Tables 4 and 5 repeat the analysis presented above, but excluding the DBCT bond reiterating, however, that we do not consider the AER's exclusion of this bond can be justified. Table 4 shows the results of the weighted sum of squared errors test with the DBCT bond excluded. We find that irrespective of whether the Coles Group Finance bond is included or excluded, the CBASpectrum curve performs best within the area of data observations.

Table 4: Test of overall goodness of fit - (2 August – 27 August) excluding DBCT

		Excluding Coles Group Finance N = 3			Including Coles Group Finance N = 4		
	Fair Value Source	Bloomberg	CBASpectrum	Average	Bloomberg	CBASpectrum	Average
Bond	Bloomberg	89	62	72	71	57	61
Yield	CBASpectrum	373	312	341	284	245	263
Source	UBS	131	96	110	103	83	90

Source: Bloomberg, CBA Spectrum and UBS

Since the Bloomberg and CBA Spectrum fair value curves cross at a term of approximately 4.5 years, the average error test provides unreliable and confusing results, requiring a visual examination of the data. We therefore discount the results shown in Table 5.

Table 5: Test of bias - (2 August – 27 August) – excluding DBCT

		Excluding Coles Group Finance N = 3			Including Coles Group Finance N = 4		
	Fair Value Source	Bloomberg	CBASpectrum	Average	Bloomberg	CBASpectrum	Average
Bond	Bloomberg	-14	-5	-11	0	13	5
Yield	CBASpectrum	-72	-63	-69	-43	-30	-38
Source	UBS	-20	-11	-17	-4	9	1

Source: Bloomberg, CBA Spectrum and UBS

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Having reviewed these results, we find that the selection of the best performing fair value curve depends on the inclusion or exclusion of the DBCT bond, and that performance against different bond sources varies considerably. Since we consider the DBCT bond to be an appropriate comparator, and there is some doubt about outliers among the CBASpectrum data, we conclude that the Bloomberg service is likely to provide a better basis for estimating the debt risk premium for a BBB+ rated bond with a 10 year term. Although performing less well than the Bloomberg curve, we find that the average curve performs better than the CBASpectrum curve does on its own.

4.   Testing extrapolations of the curve beyond the data points

Extrapolating the Bloomberg BBB band curve

In a previous report we had recommended using a linear extrapolation of the Bloomberg BBB band curve.[23] However, we also concluded that an extrapolation produced by using the Bloomberg AAA curve was not materially different to the straight line extrapolation (i.e. giving rise to a variation in the vicinity of 10 to 15 basis points).

Extrapolation implied by the CBASpectrum curve

The AER's preferred method for testing between the Bloomberg and CBASpectrum fair value curves can only test the accuracy of the curve in the region where it is able to observe the yields for the corporate bonds on issue.[24] If DBCT is included, the data range is increased to 6 years, but if DBCT is excluded then the data range that is supported by observed bond yields is only 5 years. Hence, the reference term for extrapolation beyond the data depends on the bonds that are included in the analysis.[25]

CBASpectrum's fair value curve over the current 20 day reference period indicates an increase in the debt risk premium for BBB+ rated debt of 29 basis points as the term is increased from a 5 year term (the approximate limit of the AER's testing) to a 10 year term (the term that the AER has used). As in our 19 July report, we consider that this is an implausibly low change in the debt risk premium given the other market evidence.

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[23]   Specifically, the increase in the debt margin between 7 and 10 years was taken as the 7 year debt margin less the 5 year debt margin, with the result multiplied by 3/2.
[24]   PwC (19 July, 2010), pp.19-20.
[25]   While we understand that CBASpectrum's methodology determines the BBB+ fair value curve beyond the range of available data by reference to its relativity with other, higher rated, curves, we refer to this as an 'extrapolation' as the methodology does infer fair value yields for higher terms to maturity than are available within the BBB+ credit rating band.

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Again, we have cross-checked the plausibility of the 29 basis point increase in CBASpectrum's BBB+ debt risk premium between 5 and 10 year debt terms by reference to the rise in the debt risk premium observed for two A rated Telstra bonds. One of these has a term of approximately 5 years (maturing 15 April, 2015) and the other has a term of 10 years (maturing 15 July 2020). While the estimated debt risk premium rise (between the two Telstra bonds) of 56 to 84 basis points in our 19 July report was based on only a single day's debt risk premium, we have now been able to calculate this differential based on 20 days of data for the current reference period, which was:

- 56 basis points based on UBS yields; and

- 57 basis points based on Bloomberg yields.

This differential is approximately twice as large as the 29 basis points that CBASpectrum estimates for the 5 to 10 year debt risk premium rise during the reference period. Given that a longer term BBB+ rated bond would be expected to require a greater premium than that for an A rated bond, the 56 basis points rise must be considered a minimum estimate of the 5 to 10 year yield differential for a BBB+ bond.

Another cross-check is provided by the 70 basis points rise in the Bloomberg AAA debt risk premium between 5 and 10 years in the 20 day period up to 22 June 2010. Again, this should on average be a minimum value, since lower rated bonds like the BBB+ bond would be expected to require a higher debt risk premium than a AAA bond in order to attract investors to a bond for a longer term.

Thus, we conclude that, irrespective of whether CBASpectrum is found to provide a reasonable estimate of BBB+ bond yields where the data exists (i.e. up to 5 years), the change in the predicted debt margin beyond 5 years is implausibly low.

Hence, if the CBASpectrum service is judged to be most accurate under the tests referred to in section 3, it would only be reasonable to use the debt risk premiums from CBASpectrum out to the range of the bonds against which the curve was tested, and then extrapolate the debt risk premium risk premium from a 5 year value to a 10 year value using the change in the debt risk premium provided by the Bloomberg AAA curve between 5 and 10 years. This is because we have found the rise in the CBASpectrum BBB+ debt risk premium between 5 and 10 years to be implausibly low.

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The problems associated with the CBASpectrum service have been recognised in the recently announced temporary curtailment of its service. Its website currently states that:[26]

> Access to fair-value yield curves previously published on CBASpectrum has been suspended following a recent review of performance in the wake of the global financial crisis.
>
> Sparse and heterogenic data have always made it difficult to produce a broad range of reliable credit curves in Australia. CBASpectrum has sought to overcome this problem in the past through the use of a number of econometric variables and assumptions that take account of additional information such as implied default rates, sector composition, historical relativities and spread performance of other rating bands. However, disparity of the data has increased and many of these relationships have changed over the past few years, meaning that reliability of the models designed to indicate where various credits should trade has receded. Users have also tended to confuse these fair value estimates with alternative models estimating where generic credit curves have actually traded and used the data for purposes other than relative value analysis.
>
> Commonwealth Bank of Australia is currently conducting research and development into the identification of alternative methods that can group the Australian bond market according to systematic risk profiles. Additional, novel and unique features available in the forthcoming enhanced CBASpectrum product are expected to allow users to create fair value curves and analyse data using these new profiles.

Data quality issues caused by the global financial crisis were recognised in our November 2009 report, which established a framework for testing the quality of the data (i.e. the three tests discussed above).[27] Application of our methodology to the data used by Bloomberg gives us some confidence that the data are sufficiently robust for reliance to be placed on them to construct a fair value curve within the range of available data. However, we are concerned that the small number of yield observations, the current cross-over of the curves, and specific issues associated with most of these bonds, could potentially distort comparisons of the predictive accuracy of alternative curves.

PwC's recommended extrapolation methodology

One conclusion that we drew in our 19 July report was that the tests of the accuracy of the CBASpectrum and Bloomberg services can only claim (at best) to test the accuracy of the

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[26] CBASpectrum website, accessed 8 September, 2010.
[27] PwC (November, 2009), *Methodology to Estimate the Debt Risk Premium*, report to Victorian Distribution Businesses.

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curves out to the range of the data. If the DBCT bond is included in the sample (as we consider appropriate) then this is to a range of approximately 6 years and if the DBCT bond is excluded then this is to a range of approximately 5 years. Beyond this point, it is necessary to test the implied extrapolation (through its own internal method) of the CBASpectrum fair value curve, and for the Bloomberg service it is necessary to arrive at an extrapolation method.

In our 19 July report we recommended using the Bloomberg AAA curve more generally to extrapolate both the Bloomberg BBB band and CBASpectrum BBB+ curve beyond the range at which the curves can be tested.

Our previous report recommended including the DBCT bond in the sample that is used to test the accuracy of the fair value curves, and our updated results have found that the Bloomberg fair value curve provided a better fit of the available BBB+ bond yields than alternatives. Hence, we have used the Bloomberg BBB band curve out to 6 years[28] and then extrapolated the debt risk premium from a 6 year value to a 10 year value using the change in the debt risk premium provided by the Bloomberg AAA curve between 6 and 10 years, and have recommended that:

- if a Bloomberg AAA fair value curve is available during the relevant distribution business' averaging period then the AAA curve during the averaging period should be used to perform the extrapolation; but

- if the Bloomberg AAA fair value curve is not available during the relevant distribution business's averaging period, then the latest available AAA curve should be used to perform the extrapolation.

The results implied by the method discussed above are set out in section 6 of this report.

5. Having regard to a wider range of sources of information

In our 19 July report we recommended the use of alternative estimates of fair value curves. Hence, we have attached to this report (in Appendix D) a report from Mr. Terry Toohey who is the Managing Director of Australian Indices. Mr. Toohey routinely produces fair value curves for Australian corporate bonds, which he uses to advise investors (including financial institutions) with respect to the valuation of their bond portfolios. His

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[28] Bloomberg does not publish a 6 year fair value curve for the BBB or AAA, hence to estimate the 6 year debt risk premiums we recommend applying a linear interpolation of the debt risk premiums between the Bloomberg 5 and 7 year fair value curves.

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data source comprises bond prices that are provided by five banks on a daily basis. Applying his methodology he has independently estimated the debt risk premium for BBB+ 10 year Australian corporate bond at **400 basis points**.

6.   Summary of results

Our test of the accuracy of predictions (shown in section 3 above) resulted in the Bloomberg curve being selected. Therefore, we have:

- used the Bloomberg BBB band curve out to 6 years (being the limit of the curve that has been tested), and then

- added the change in the Bloomberg AAA debt risk premium between 6 and 10 year terms to the Bloomberg 6 year debt risk premium.

This results in a debt risk premium of a **413 basis points** over the reference period. <u>This is the value that we recommend for the reference period</u>. However, we note that if a straight line extrapolation of the 5 and 7 year Bloomberg BBB debt risk premiums for the BBB rating band were applied (as we recommended in our November 2009 report), a debt risk premium of **438 basis points** is indicated.

If the DBCT bond was to be excluded from the sample, then the alternatives are:

- *Bloomberg is selected* – in which case our reasoning above implies that the Bloomberg BBB band curve should be used to 5 years and then the Bloomberg AAA curve used to extrapolate the debt risk premium beyond that – this generates a debt risk premium over the reference period of **406 basis points**.

- *The average is selected* – this implies that the average of the Bloomberg BBB band curve and the CBASpectrum BBB+ curves should be used to 5 years and then the Bloomberg AAA curve be used to extrapolate the debt risk premium beyond that – this generates a debt risk premium over the reference period of **385 basis points**.

- *CBASpectrum is selected* – in which case our reasoning above implies that the CBASpectrum BBB+ curves should be used to 5 years and then the Bloomberg AAA curve used to extrapolate the debt risk premium beyond that – this generates a debt risk premium over the reference period of **364 basis points**.

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We note for completeness only that the CBASpectrum estimated debt risk premium for 10 year BBB+ Australian corporate bonds during the reference period was **323 basis points**.

The calculations underpinning the results above are set out in Appendix B.

* * *

This report has been prepared by us in our capacity as advisers to the Victorian electricity distribution businesses and as expert witnesses in this matter. Our credentials can be summarised as follows:

- **Jeff Balchin** – Jeff is an Economist and Executive Director in the PwC Economics team. Prior to joining PwC Jeff was a Director with the Allen Consulting Group, where he built a consulting practice with a strong specialisation in the economic regulation of price and service, with a particular emphasis on the application of incentive regulation to infrastructure and network industries. Jeff has experience across the electricity, gas, airports, rail, ports, water, telecommunications, post and banking industries in Australia and New Zealand. He has advised governments, regulators and major corporations on issues including regulatory price reviews, licensing and franchise bidding, market design and development of regulatory frameworks. Jeff has also undertaken a number of expert witness assignments. His detailed curriculum vitae was attached to our report of November 2009.

- **Matthew Santoro** – **Debt Markets (Second Executive Director Review).** Matthew has 20 years of banking experience in the debt markets, including over six years working in an advisory capacity. Matthew provides independent advice to clients in relation to their debt capital needs, including in relation to the cost of debt. His experience includes a focus on Utilities business, including advising in the context of regulatory frameworks

This report has been prepared with the assistance of the following PwC staff members:

- Michael Lawriwsky (Director – Economics & Policy); and

- Steven Hong (Senior Consultant – Economic & Policy).

As a professional services firm, PwC has an ongoing relationship with each of the Victorian electricity distribution businesses. This relationship includes advising on matters

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pertaining to the ongoing regulatory review; the subject of this report. Further details of PwC's relationship with the businesses can be provided if necessary.

We confirm that, in preparing this report, we have made all the inquiries that we believe are desirable and appropriate and that no matters of significance that we regard as relevant have, to our knowledge, been withheld. We have been provided with a copy of the Federal Court's "Guidelines for Expert Witnesses in Proceeding in the Federal Court of Australia" and this report has been prepared in accordance with those Guidelines.

Should you wish to discuss this report in any way, please do not hesitate to contact us on (03) 8603 4973 and (03) 8603 4707 respectively.

Yours sincerely

Jeff Balchin
Executive Director
Advisory

Matthew Santoro
Executive Director
Debt & Capital Markets

PricewaterhouseCoopers is committed to providing our clients with the very best service. We would appreciate your feedback or suggestions for improvement. You can provide this feedback by talking to your engagement partner, calling us within Australia on 1300 792 111 or visiting our website http://www.pwcfeedback.com.au/

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Appendix A

Terms of Reference

PwC Scoping Brief – Debt Risk Premium

1. Purpose

The purpose of this brief is to set out the nature, scope and purpose of work that CitiPower Pty and Powercor Australia Ltd, and United Energy Distribution & Multinet Gas **(the businesses)** are seeking PricewaterhouseCoopers Australia **(PwC)** to undertake in relation to debt risk premium.

2. Background

The businesses' current regulatory control period is due to expire on 31 December 2010 and the next regulatory control period will commence on 1 January 2011 and run until 31 December 2015. The businesses have submitted their revised regulatory proposals, for the upcoming regulatory control period, to the Australian Energy Regulator **(AER)**. The revised proposals include an attachment from PwC titled *'Methodology for calculating the debt risk premium'* **(the revised proposal PwC DRP report)** which proposes a method for the calculation of the debt risk premium in accordance with the National Electricity Rules.

The AER has approved a final decision averaging period for the businesses of the 20 business days commencing on 2 August 2010 and ending on 27 August 2010 inclusive **(the businesses' averaging period)**.

3. Scope of works for PwC

3.1. *Preparation of the Report*

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PwC should prepare a report which calculates the debt risk premium over the businesses' averaging period, which applies the methodology set out in the revised proposal PwC DRP report.

The report must contain the following:

- The terms of reference;

- The qualifications of the person preparing the report;

- Clearly and fully set out all the relevant facts;

- Explain the process of reasoning; and

- Reference any documents relied on.

The report prepared by PwC will be provided to the AER. Accordingly the report may become a public report.

3.2. *Expert Witness*

As noted, the businesses intend to provide a copy of PwC's report to the AER in support of their regulatory proposals. The person may be required to act as an expert witness in relation to the advice provided in the report.

3.3. *Contact*

Mark de Villiers will be the day to day contact for PwC in preparing its report. PwC should direct all of its queries to:

 (03) 9683 - 4907 or mdevilliers@powercor.com.au.

3.4. *Timing*

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A report should be provided by Wednesday 15 September 2010.

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Appendix B

The DBCT bond[29]

We consider the reasons that the AER provided in the DNSP Draft decision for the DBCT bond being an outlier are speculative and unreasonable. First, the AER advanced no direct evidence that the finance community considered the bond to be an outlier during the DNSP Draft averaging period. In contrast, Standard & Poor's confirmed its BBB+ credit rating for DBCT Finance in February 2010:[30]

> The 'BBB+/Stable' ratings on the $A1,789 million secured debt issued by DBCT Finance Pty Ltd (DBCT Finance, previously known as BBI (DBCT) Finance Pty Ltd) reflect our view of the stability and predictability of the cash flow derived from the Dalrymple Bay Coal Terminal (DBCT) project under 100% take-or-pay capacity-based throughput contracts with established coal-mining companies; the regulated nature of returns; and the full pass-through of operating costs to users.

and further:[31]

> We consider DBCT's financial profile aggressive, with gearing at about 72% (debt to RAB) and potentially increasing toward 80%. However, in our experience this is not inconsistent with other regulated assets.

Standard & Poor's comments also suggest that there is little basis for the AER's hypothesis that the problems in 2008 and 2009 affecting the owner of the DBCT asset (originally BBI) would have caused substantial uncertainty for market participants. Rather, Standard & Poor's noted that the financial ring fencing for the assets that were the subject of the bonds provided security for bond holders:[32]

> In November 2009 the ultimate owner of DBCT, Prime Infrastructure (Prime, formerly Babcock & Brown Infrastructure, not rated), completed a major recapitalization program. This involved Brookfield Asset Management Inc. (Brookfield) becoming a cornerstone investor in Prime and, at the same time, acquiring a 49.9% economic interest in DBCT. This change did not affect the ratings on DBCT

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[29] This exposition of our reasons for considering the DBCT bond not to be an outlier is taken from our 19 July report: PricewaterhouseCoopers (19 July, 2010), *Methodology for calculating the debt risk premium*, report for Citipower & Powercor Australia, pp. 11-13.

[30] Standard & Poor's (24 February, 2010), 'DBCT Finance Pty Ltd', Global Credit Portal – Ratings Direct, p.2.

[31] Standard & Poor's (24 February, 2010), 'DBCT Finance Pty Ltd', Global Credit Portal – Ratings Direct, p.7.

[32] Standard & Poor's (24 February, 2010), 'DBCT Finance Pty Ltd', Global Credit Portal – Ratings Direct, p.3.

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> Finance's senior secured debt because we believe that the financing package includes adequate ring-fencing through the security structure and cash flow waterfalls, and the regulated nature of the asset offers additional protection and restrictions. Prime has advised that the sale of the economic interest did not breach change-of-ownership clauses within the project documents.

Secondly, we note that one test that the AER has relied upon to discredit the DBCT bond is the 'Chow Test'. The Chow Test as applied by the AER is a test of whether the *historical* debt risk premium has changed by a statistically significant amount, which is irrelevant to the question of whether the DBCT could be considered an outlier *during the averaging period*. Indeed, we note that the AER's figures show that the UBS estimate of the yield on BBI reduced considerably from its previous level in about September 2009 (which was also reflected in the Royal Bank of Scotland – formerly ABN Amro – feed into Bloomberg). Far from reflecting uncertainty in the corporate bond market, our discussions with the Royal Bank of Scotland suggest that this realignment reflected the result of an *actual trade in the bond*.[33]

Thirdly, we note that the AER has also referred to formal statistical tests of whether the DBCT bond is an outlier, and suggests that the test has been undertaken against the other <u>six</u> BBB+ bonds in its sample and that the test was undertaken over the period from 2 January 2010 to 19 March 2010. While we have not examined the AER's formal tests in this regard, we reiterate that the question is whether the bond was an outlier during the relevant averaging period. We would also observe that there appear to be significant shortcomings in the AER's outlier testing. As there is no other Australian BBB+ corporate bond with a term as long as that of the DBCT bond, any assessment of whether the bond is an outlier requires a view of the relationship between the debt risk premium and the term to maturity of a BBB+ bond. There is no suggestion in the AER's analysis that it has sought to quantify this amount and made such an allowance. Moreover, the AER appears merely to have compared the *yield* on different BBB+ corporate bonds to that of the DBCT bond and so has not even made allowance for the fact that the risk free rate also rises with the term.

Fourthly, the AER has also observed that the divergence in the bond estimates provided by CBASpectrum and UBS is an indication that the underlying yield for this bond is unreliable. However, if the AER had investigated this matter further, it would have found that UBS and the Royal Bank of Scotland (and Bloomberg) were substantially in agreement about the yield of the DBCT bond during the DNSP Draft Decision averaging period, and that the outlier is not the bond but the CBASpectrum estimate of its prevailing

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[33]   Telephone conversation with Royal Bank of Scotland on 17 June, 2010.

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yield. The appropriate response in this case is not to eliminate the bond, but to disregard the CBASpectrum yield estimate for this case.

Relatively fewer financial institutions follow the DBCT bond compared to the other bonds in the AER's sample, however, without more evidence, this is not a ground for the exclusion of the DBCT bond. An important reason as to why the DBCT bond should be included is that it is another observation in a situation of few data points, and it is the longest term BBB+ bond. Whilst there may be fewer data sources reporting the DBCT bond, this should not of itself result in disqualification.

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Appendix C

Calculations

Table C.1 – Debt risk premium using the Bloomberg's 6 year DRP and Bloomberg's 6-10 year AAA curve

Details	Source	Average yield / DRP
(A) Yield on five year BBB rated bonds	Bloomberg	8.11%
(B) Yield on five year CGS	RBA	4.75%
(C) Yield on seven year BBB rated bonds	Bloomberg	8.68%
(D) Yield on seven year CGS	RBA	4.92%
(E) DRP of five year BBB rated bonds	Calc = (A) – (B)	3.36%
(F) DRP of seven year BBB rated bonds	Calc = (C) – (D)	3.77%
(G) DRP of six year BBB rated bonds	Calc = ((E)+(F))*0.5	3.56%
(H) Yield on five year AAA rated bonds*	Bloomberg	5.88%
(I) Yield on seven year AAA rated bonds*	Bloomberg	6.34%
(J) Yield on five year CGS 2*	RBA	5.08%
(K) Yield on seven year CGS 2*	RBA	5.28%
(L) DRP of five year AAA rated bonds*	Calc = (H) – (J)	0.80%
(M) DRP of seven year AAA rated bonds*	Calc = (I) – (K)	1.06%
(N) DRP of six year AAA rated bonds*	Calc = ((J)+(K))*0.5	0.93%
(O) Yield on ten year AAA rated bonds*	Bloomberg	6.94%

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Details	Source	Average yield / DRP
(P) Yield on ten year CGS 2*	RBA	5.44%
(Q) DRP of ten year AAA rated bonds	Calc = (M) – (N)	1.50%
(R) Proposed DRP on 10 year BBB+ rated bonds	Calc = (G) + (Q) – (N)	4.13%

*These values have been estimated using data from twenty business days to 22 June, 2010, the last day on which the Bloomberg AAA curve was last published. For non-asterisked values, the source data pertains to the Final Decision averaging period (the first twenty business days of August 2010).

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Table C.2 – Debt risk premium using Bloomberg's BBB 5 and 7 year DRP, and then extrapolating it out to 10 years using straight line extrapolation.

	Details	Source	Average yield / DRP
(A)	Yield on five year BBB rated bonds	Bloomberg	8.11%
(B)	Yield on five year CGS	RBA	4.75%
(C)	Yield on seven year BBB rated bonds	Bloomberg	8.68%
(D)	Yield on seven year CGS	RBA	4.92%
(E)	DRP of five year BBB rated bonds	Calc = (A) – (B)	3.36%
(F)	DRP of seven year BBB rated bonds	Calc = (C) – (D)	3.77%
(G)	DRP increase of five and seven year BBB rated bonds	Calc = (F)-(E)	0.41%
(H)	DRP increase of five and seven year BBB rated bonds per year	Calc = (G)*0.5	0.20%
(I)	DRP increase of three years	Calc = (H)*3	0.61%
(J)	Proposed DRP on 10 year BBB+ rated bonds	Calc = (F) + (I)	4.38%

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Table C.3 – Debt risk premium using the Bloomberg's 5 year DRP and Bloomberg's 5-10 year AAA curve

Details	Source	Average yield / DRP
(A) Yield on five year BBB rated bonds	Bloomberg	8.11%
(B) Yield on five year CGS	RBA	4.75%
(C) DRP of five year BBB rated bonds	Calc = (A) – (B)	3.36%
(D) Yield on five year AAA rated bonds*	Bloomberg	5.88%
(E) Yield on five year CGS 2*	RBA	5.08%
(F) DRP of five year AAA rated bonds*	Calc = (D) – (E)	0.80%
(G) Yield on ten year AAA rated bonds*	Bloomberg	6.94%
(H) Yield on ten year CGS 2*	RBA	5.44%
(I) DRP of ten year AAA rated bonds*	Calc = (F) – (G)	1.50%
(J) Proposed DRP on 10 year BBB+ rated bonds	Calc = (C) + (I) – (F)	4.06%

*These values have been estimated using data from twenty business days to 22 June, 2010, the last day on which the Bloomberg AAA curve was last published. For non-asterisked values, the source data pertains to the Final Decision averaging period (the first twenty business days of August 2010).

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Table C.4 – Debt risk premium using the average of the Bloomberg BBB and CBA Spectrum BBB+ 5 year DRP and Bloomberg's 5-10 year AAA curve

Details	Source	Average yield / DRP
(A) Yield on five year BBB rated bonds	Bloomberg	8.11%
(B) Yield on five year CGS	RBA	4.75%
(C) DRP of five year BBB rated bonds	Calc = (A) – (B)	3.36%
(D) Yield on five year BBB+ rated bonds	CBA Spectrum	7.69%
(E) DRP of five year BBB+ rated bonds	Calc = (D) – (B)	2.94%
(F) Average DRP of five year BBB+ rated bonds	Calc = ((E)+(C))*0.5	3.15%
(G) Yield on five year AAA rated bonds*	Bloomberg	5.88%
(H) Yield on five year CGS 2*	RBA	5.08%
(I) DRP of five year AAA rated bonds*	Calc = (G) – (B)	0.80%
(J) Yield on ten year AAA rated bonds*	Bloomberg	6.94%
(K) Yield on ten year CGS 2*	RBA	5.44%
(L) DRP of ten year AAA rated bonds*	Calc = (I) – (J)	1.50%
(M) Proposed DRP on 10 year BBB+ rated bonds	Calc = (F) + (L) – (I)	3.85%

*These values have been estimated using data from twenty business days to 22 June, 2010, the last day on which the Bloomberg AAA curve was last published. For non-asterisked values, the source data pertains to the Final Decision averaging period (the first twenty business days of August 2010).

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Table C.5 – Debt risk premium using the CBA Spectrum's 5 year BBB+ DRP and Bloomberg's 5-10 year AAA curve

	Details	Source	Average yield / DRP
(A)	Yield on five year BBB+ rated bonds	CBA Spectrum	7.69%
(B)	Yield on five year CGS	RBA	4.75%
(C)	DRP of five year BBB+ rated bonds	Calc = (A) – (B)	2.94%
(D)	Yield on five year AAA rated bonds*	Bloomberg	5.88%
(E)	Yield on five year CGS 2*	RBA	5.08%
(F)	DRP of five year AAA rated bonds	Calc = (D) – (B)	0.80%
(G)	Yield on ten year AAA rated bonds	Bloomberg	6.94%
(H)	Yield on ten year CGS 2*	RBA	5.44%
(I)	DRP of ten year AAA rated bonds	Calc = (F) – (G)	1.50%
(J)	Proposed DRP on 10 year BBB+ rated bonds	Calc = (C) + (E) – (H)	3.64%

*These values have been estimated using data from twenty business days to 22 June, 2010, the last day on which the Bloomberg AAA curve was last published. For non-asterisked values, the source data pertains to the Final Decision averaging period (the first twenty business days of August 2010).

Table C.6 – Debt risk premium using CBA Spectrum's 10 year BBB+ DRP

	Details	Source	Average yield / DRP
(A)	Yield on ten year BBB+ rated bonds	CBA Spectrum	8.31%
(B)	Yield on ten year CGS	RBA	5.07%
(C)	DRP of ten year BBB+ rated bonds	Calc = (A) – (B)	3.23%

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Appendix D

<u>Report of Mr. Terry Toohey of Australian Indices</u>
<u>Debt Risk Premium for a Benchmark Australian 10 year BBB+ Corporate Bond</u>

<u>Terms of reference</u>

The terms of reference for this report appear in Appendix D.1

<u>Qualifications and experience</u>

I have been employed in the financial markets since 1971, and have calculated Australian Indices since 1998. A full Resume is in Appendix D.2.

<u>Conflicts of Interest</u>

I have no pre-existing relationship with any Victorian electricity distribution business other than for the supply of household electricity.

I have been engaged previously by PricewaterhouseCoopers to undertake a report. PwC's client was Powercor and Citipower on that occasion.

<u>Report</u>

I have been asked to report on the debt risk premium (in basis points over Commonwealth Government Securities) for an Australian ten year term BBB+ corporate bond over the 20 business days from 2 August 2010 to 27 August 2010.

As 2 August 2010 was not a business day in NSW, I do not calculate values for that day. My analysis is therefore for the 19 business days from 3 August 2010 to 27 August 2010.

As was the case in my previous report I did a least squares regression analysis of the data that I collect from five banks each day. The banks are National, CBA, Citibank, Deutsche, and RBS.

My assumption is that credit spreads increase steadily with term to maturity. This relationship can be shown to exist by looking at the spreads of a single borrower with a number of issues for differing terms. The following graph shows the current spreads for the four Telstra issues which are rated A.

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Spread to Bond (Telstra Issues 27/8/2010)
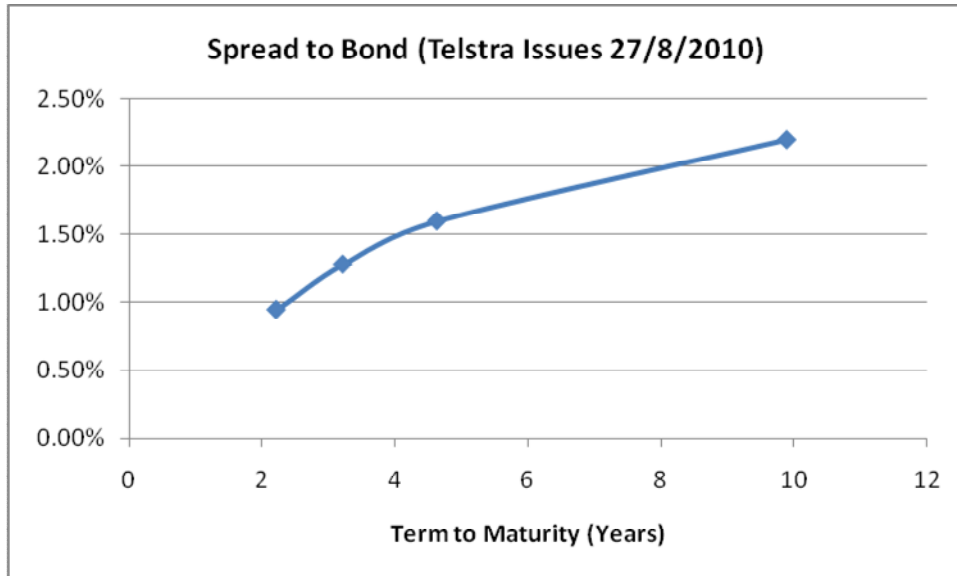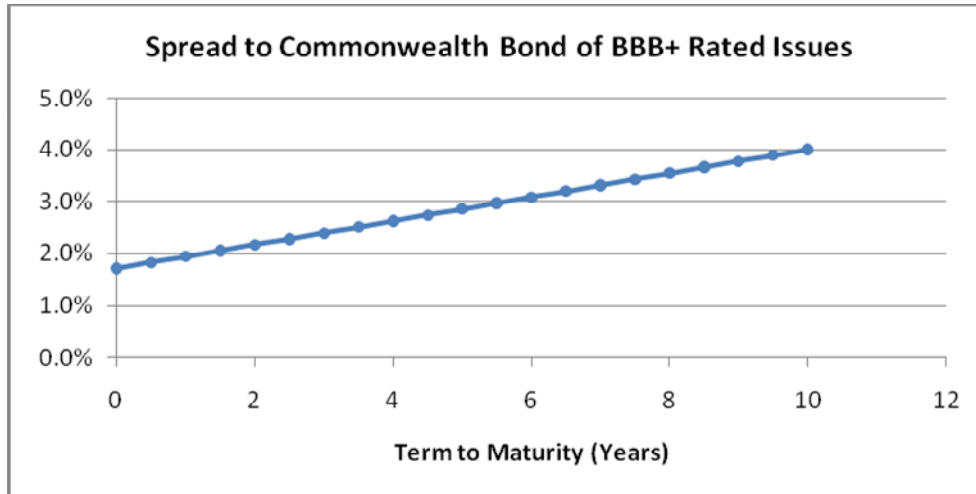

Source: Australian Indices

It shows a straight line after 5 years, with a slope of approximately 0.15% per annum. The spread to the Commonwealth Government Bond at the intercept (term of 0 years) is 0.73% when a regression line is fitted.

For BBB+ corporate bonds, I receive daily prices for a total of 12 bonds. Of these, I received prices from at least three banks for 11 bonds, and have calculated the median spread for each of these over the period. It is these 11 bonds that I used in my analysis. I give emphasis to those bonds where the yield observations have been provided by at least three banks.

The result of my calculations is that the average spread of a 10 year BBB+ bond was 4.00% over a 10 year Commonwealth Government Bond. The following graph shows the regression line which I produced. It shows a slope of 0.229% per annum. The spread to Commonwealth Government Bond at the intercept (term of 0 years) is 1.71%. This higher slope of 0.229% per annum is consistent with the observed lower slope of the better rated Telstra bond shown above.

Had I only used the 10 bonds that I had available in my previous report, then the spread would have been revealed as 4.58%. This result shows that individual spreads have generally increased since May. However, the new bond included was the Wesfarmers 4 year issue. This issue trades at a relatively lower spread than the Santos 5 year issue. The end result is a lower spread for a 10 year bond than the 4.05% produced in the May report.

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Spread to Commonwealth Bond of BBB+ Rated Issues

Source: Australian Indices

Calculations are shown in the attached Appendix D.4.

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to my knowledge, been withheld.

Guidelines for Expert Witnesses

I have been provided with a copy of the Federal Court's "Guidelines for Expert Witnesses in Proceeding in the Federal Court of Australia" and confirm that this Report has been prepared in accordance with those Guidelines. (Appendix D.3).

Signed

Terry Toohey   13/09 /2010

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Appendix D.1

Terms of Reference - debt risk premium for a benchmark Australian 10 year BBB+ corporate bond

Under these Terms of Reference, you are requested to:

Propose a value of the debt risk premium (in basis points over Commonwealth Government Securities) for an Australian ten year term BBB+ corporate bond over the 20 business days from 2 August 2010 to 27 August 2010.

Your assessment of the debt risk premium should be based on a debt risk premium that is likely to lead to:

- a rate of return that is forward looking and commensurate with prevailing conditions in the market for funds and the risk involved in providing standard control services; and

- a return on debt that reflects the current cost of borrowings for comparable debt.

You are requested to present the results of your analysis in the form of a Report that will:

- include the terms of reference

- include your qualifications and experience

- identify any pre-existing relationship that you have with the Victorian electricity distribution businesses and PwC

- clearly and fully set out all the relevant facts

- explain your process of reasoning

- reference any documents you relied on

- include specified wording at the end of the report stating that "I have made all the inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to my knowledge, been withheld", and

- state that you have been provided with a copy of the Federal Court's "Guidelines for Expert Witnesses in Proceeding in the Federal Court of Australia" and that the Report has been prepared in accordance with those Guidelines (see below).

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The report that you prepare will be provided to the AER in support of the Victorian DNSPs' revised regulatory proposals. Accordingly the report may become a public report.

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Appendix D.2

Terry Thomas Toohey

Born	Greensborough Vic 31/5/1950

Married to Anne 4/2/1971, 3 Children, 3 Grandchildren

Experience

1998–present Australian Indices - Managing Director
Developed Australian Fixed Interest Indices and Attribution
2005-present compiled Credit Spread Analysis for Australian Markets.

2005–present	Australian Financial Markets Association - Consultant
Compiled all data for the Australian Financial Markets Report

1996–1998   Financial Market Consultant
Sydney Futures Exchange.
Potter Partners
McIntosh Futures

1989–1992   Financial Market Consultant
Harlow Butler.
AMP
SEC Victoria

1984–1989   Westpac - Global Head – Fixed Interest
Arranged $370 million funding for Sydney Harbour Tunnel

1982–1984 Citibank	Senior Vice President
Managed CitiNational Money Market

1981–1982	National Discount Corporation - Managing Director
Member of the Council of Authorised Dealers

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1968–1981   National Mutual Life - Manager – Fixed Interest
Managed all cash and fixed interest portfolios from 1976
Director – National Mutual Building Society

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Appendix D.3

CM 7 - Expert Witnesses in Proceedings in the Federal Court of Australia

1.   Practitioners should give a copy of the following guidelines to any witness they propose to retain for the purpose of preparing a report or giving evidence in a proceeding as to an opinion held by the witness that is wholly or substantially based on the specialised knowledge of the witness (see **Part 3.3 - Opinion** of the *Evidence Act 1995* (Cth)).

2.   The guidelines are not intended to address all aspects of an expert witness's duties, but are intended to facilitate the admission of opinion evidence[1], and to assist experts to understand in general terms what the Court expects of them. Additionally, it is hoped that the guidelines will assist individual expert witnesses to avoid the criticism that is sometimes made (whether rightly or wrongly) that expert witnesses lack objectivity, or have coloured their evidence in favour of the party calling them.

Guidelines

1.   General Duty to the Court[2]
1.1   An expert witness has an overriding duty to assist the Court on matters relevant to the expert's area of expertise.
1.2   An expert witness is not an advocate for a party even when giving testimony that is necessarily evaluative rather than inferential[3].
1.3   An expert witness's paramount duty is to the Court and not to the person retaining the expert.

2.   The Form of the Expert Evidence[4]
2.1   An expert's written report must give details of the expert's qualifications and of the literature or other material used in making the report.
2.2   All assumptions of fact made by the expert should be clearly and fully stated.
2.3   The report should identify and state the qualifications of each person who carried out any tests or experiments upon which the expert relied in compiling the report.
2.4   Where several opinions are provided in the report, the expert should summarise them.
2.5   The expert should give the reasons for each opinion.
2.6   At the end of the report the expert should declare that "[the expert] has *made all the inquiries that* [the expert] *believes are desirable and appropriate and that no matters of significance that* [the expert] *regards as relevant have, to* [the expert's] *knowledge, been withheld from the Court*."
2.7   There should be included in or attached to the report: (i) a statement of the questions or issues that the expert was asked to address; (ii) the factual premises upon which the report proceeds; and (iii) the documents and other materials that the expert has been instructed to consider.
2.8   If, after exchange of reports or at any other stage, an expert witness changes a material opinion, having read another expert's report or for any other reason, the change should be communicated in a timely manner (through legal representatives) to each party to whom the expert witness's report has been provided and, when

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appropriate, to the Court[5].

2.9   If an expert's opinion is not fully researched because the expert considers that insufficient data are available, or for any other reason, this must be stated with an indication that the opinion is no more than a provisional one. Where an expert witness who has prepared a report believes that it may be incomplete or inaccurate without some qualification, that qualification must be stated in the report (see footnote 5).

2.10   The expert should make it clear when a particular question or issue falls outside the relevant field of expertise.

2.11   Where an expert's report refers to photographs, plans, calculations, analyses, measurements, survey reports or other extrinsic matter, these must be provided to the opposite party at the same time as the exchange of reports[6].

3.   Experts' Conference
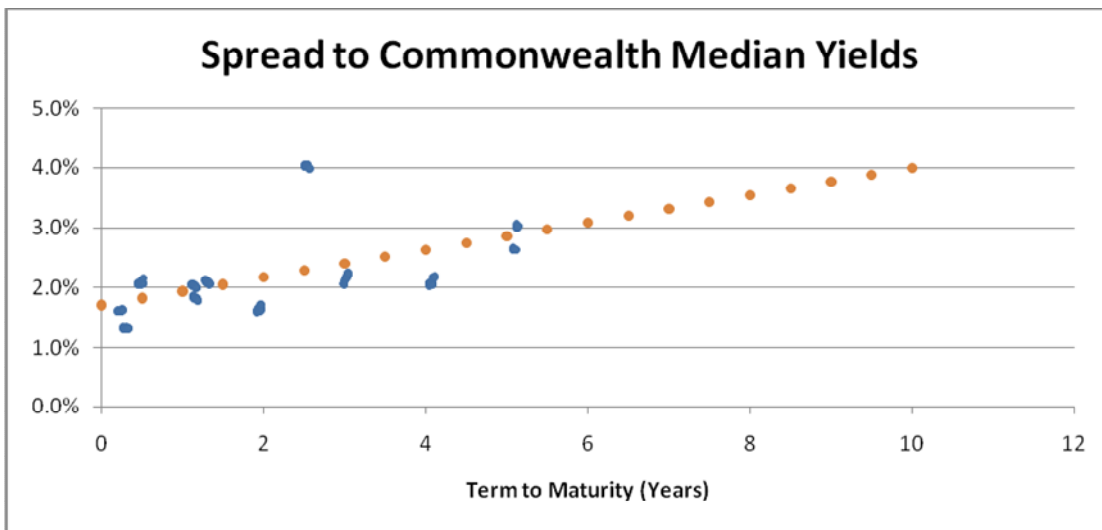
3.1   If experts retained by the parties meet at the direction of the Court, it would be improper for an expert to be given, or to accept, instructions not to reach agreement.   If, at a meeting directed by the Court, the experts cannot reach agreement about matters of expert opinion, they should specify their reasons for being unable to do so.

M E J BLACK
Chief Justice
25 September 2009
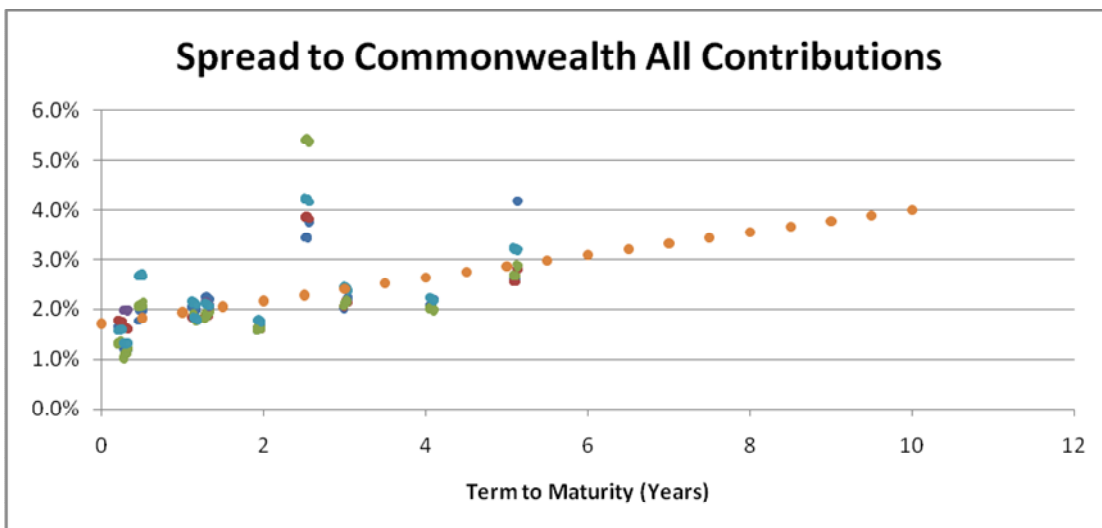
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Appendix D.4.

<u>Calculations</u>

Spread to Commonwealth Median Yields

Source: Australian Indices

Spread to Commonwealth All Contributions

Source: Australian Indices

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Median Yields

ISIN	AU3CB0010213	AU300BQ40434	AU300CML1014	AU300GPTC037
Name	AMEX	BOQ	COLES MYER	GPT
Coupon	6.5	6	6	6.25
Maturity	5/12/2011	2/12/2010	25/07/2012	7/11/2010
27/08/2010	6.48	5.80	5.97	6.09
26/08/2010	6.48	5.78	5.96	6.08
25/08/2010	6.47	5.77	5.96	6.07
24/08/2010	6.53	5.79	6.05	6.10
23/08/2010	6.57	5.80	6.11	6.11
20/08/2010	6.55	5.79	6.10	6.11
19/08/2010	6.57	5.79	6.15	6.11
18/08/2010	6.60	5.81	6.16	6.11
17/08/2010	6.63	5.82	6.18	6.13
16/08/2010	6.64	5.82	6.20	6.12
13/08/2010	6.66	5.82	6.23	6.12
12/08/2010	6.66	5.84	6.19	6.12
11/08/2010	6.66	5.84	6.27	6.13
10/08/2010	6.70	5.86	6.25	6.14
9/08/2010	6.71	5.86	6.37	6.18
6/08/2010	6.68	5.86	6.30	6.17
5/08/2010	6.68	5.84	6.30	6.16
4/08/2010	6.66	5.84	6.33	6.15
3/08/2010	6.65	5.85	6.33	6.14

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<u>**Median Yields**</u>

ISIN	AU300GPTM218	AU300ST50076	AU000SHL0034	AU300TPP0010
Name	GPT	SANTOS	Snowy Hydro	TABCORP
Coupon	6.5	6.25	6.5	6.5
Maturity	22/08/2013	23/09/2015	25/02/2013	13/10/2011
27/08/2010	6.46	7.21	8.42	6.22
26/08/2010	6.44	7.19	8.41	6.22
25/08/2010	6.44	7.20	8.40	6.21
24/08/2010	6.55	7.29	8.49	6.27
23/08/2010	6.64	7.34	8.54	6.30
20/08/2010	6.63	7.32	8.53	6.28
19/08/2010	6.65	7.33	8.55	6.32
18/08/2010	6.70	7.36	8.58	6.33
17/08/2010	6.72	7.37	8.60	6.36
16/08/2010	6.74	7.40	8.62	6.37
13/08/2010	6.82	7.45	8.66	6.39
12/08/2010	6.79	7.84	8.62	6.37
11/08/2010	6.82	7.82	8.64	6.39
10/08/2010	6.86	7.87	8.68	6.41
9/08/2010	6.94	7.89	8.69	6.43
6/08/2010	6.93	7.92	8.68	6.40
5/08/2010	6.93	7.92	8.67	6.40
4/08/2010	6.90	7.90	8.63	6.39
3/08/2010	6.90	7.91	8.62	6.38

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Median Yields

ISIN	AU3CB0016673	AU3CB0004117	AU3CB0126860
Name	DEXUS	ORIGIN	WESFARMER
Coupon	6.75	6.5	8.25
Maturity	8/02/2011	6/10/2011	11/09/2014
27/08/2010	6.51	6.41	6.52
26/08/2010	6.48	6.41	6.55
25/08/2010	6.50	6.40	6.55
24/08/2010	6.54	6.46	6.63
23/08/2010	6.55	6.50	6.68
20/08/2010	6.55	6.49	6.67
19/08/2010	6.58	6.53	6.68
18/08/2010	6.59	6.54	6.71
17/08/2010	6.60	6.56	6.72
16/08/2010	6.62	6.57	6.75
13/08/2010	6.64	6.60	6.80
12/08/2010	6.56	6.58	6.76
11/08/2010	6.61	6.60	6.78
10/08/2010	6.61	6.62	6.83
9/08/2010	6.66	6.64	6.96
6/08/2010	6.63	6.61	6.97
5/08/2010	6.63	6.62	6.97
4/08/2010	6.71	6.60	6.94
3/08/2010	6.70	6.59	6.95