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Cost of capital determination for customised price-quality path proposals made by electricity distribution businesses

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Associated documents

Publication date	Reference	Title
30 September 2015	ISSN 1178-2560	Cost of capital determination for customised price-quality proposals made by electricity businesses [2015] NZCC 23
30 September 2014	ISSN 1178-2560	Cost of capital determination for customised price-quality proposals made by electricity businesses [2014] NZCC 25
30 September 2013	ISBN 978-1-869453-26-8	Cost of capital determination for customised price-quality proposals made by electricity businesses [2013] NZCC 16
30 September 2012	ISBN 978-1-869452-15-5	Cost of capital determination for customised price-quality proposals made by electricity businesses [2012] NZCC 25

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Executive summary

1. This determination specifies weighted average cost of capital (WACC) estimates that will apply to any customised price-quality path (CPP) proposals made by electricity distribution businesses (EDBs) from the date of the determination.

2. Vanilla WACC estimates for CPP proposals made by EDBs are summarised in Table 1 below. The vanilla WACC is a weighted average of the pre-corporate tax cost of debt and the cost of equity.

Table 1: Summary of vanilla WACC estimates for EDB proposals (%)[1]

	Mid-point	67th percentile
Vanilla WACC (3 years)	4.83%	5.30%
Vanilla WACC (4 years)	4.85%	5.31%
Vanilla WACC (5 years)	4.85%	5.32%

3. 67th percentile estimates of vanilla WACC are used for CPPs. The WACCs are estimated as at 1 September 2016.

[1] The associated mid-point post-tax WACCs for five, four and three years are 4.37%, 4.36% and 4.35% respectively. The 67th percentile post-tax WACCs for five, four and three years are 4.84%, 4.83% and 4.82% respectively.

Introduction

4. This determination sets vanilla WACC estimates that will apply to any CPP proposals made by EDBs from the date of the determination.

5. Vanilla WACCs for CPP proposals made by EDBs are set under clauses 5.3.22 to 5.3.29 of the Electricity Distribution Services Input Methodologies Determination 2012 (EDS IM Determination). Consistent with our 2014 review of the WACC percentile for electricity lines and gas pipeline businesses, 67th percentile estimates of vanilla WACC are used for CPP proposals made by electricity distribution businesses.

6. The parameter values, estimates and information sources used for each WACC estimate are set out in this determination. Additional commentary on the estimation of the risk-free rate and the debt premium is also provided.

7. For example, this determination identifies the issuers and bonds that were analysed (including the credit rating and remaining term to maturity) when estimating the debt premium. The commentary also explains which debt premium estimates were given greater weight than other estimates.

8. A spreadsheet showing the calculations for the WACC estimates, debt premium and risk free rate has been published on our website.[2]

[2] See www.comcom.govt.nz/cost-of-capital. This spreadsheet includes calculations for the WACC estimates and risk-free rate.

Background

Changes in the risk-free rate and debt premium over time

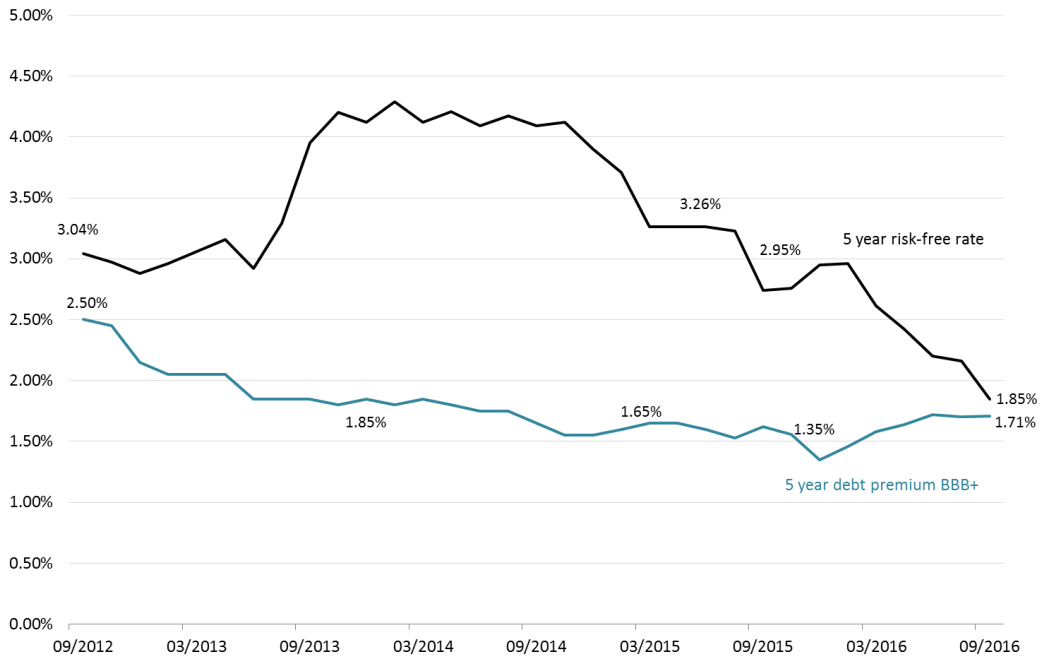
9. The cost of capital input methodologies for regulated services reflect that both the risk-free rate and the debt premium on bonds change over time.[3]

10. Changes in the risk-free rate and debt premium on bonds are illustrated below. Figure 1 shows, as at 1 September 2016, changes over time in the:

    10.1 five year risk-free rate; and

    10.2 debt premium on bonds rated BBB+ with a term of five years.

Figure 1: Changes in the risk-free rate and debt premium over time



Reasons for differences in WACC under the various cost of capital input methodologies determinations

11. Differences in the WACCs estimated under the various cost of capital input methodologies reflect differences in the:

    11.1 date of estimation for the WACCs, which results in different estimates of the risk-free rate and debt premium;

    11.2 periods in which the WACCs will apply;

[3] The risk-free rate is estimated based on an interpolation of bid yields on New Zealand government stock to a term to maturity of five years. The debt premium is estimated on publicly traded corporate bonds according to the methodology specified in the input methodologies determinations.

11.3 context in which the WACCs will be used;[4]

11.4 assessed risk of the various regulated services (electricity distribution businesses (EDBs) and Transpower have an asset beta of 0.34, gas pipeline businesses (GPBs) have an asset beta of 0.44 and airports have an asset beta of 0.60); and

11.5 value of leverage for airports (17%) and for EDBs, GPBs, and Transpower (44%).

WACC for CPP proposals made by EDBs

12. Under clause 5.3.28 of the EDS IM Determination, we have determined the following 67th percentile vanilla WACC estimates (as at 1 September 2016):

12.1 5.32% for a five year period;

12.2 5.31% for a four year period; and

12.3 5.30% for a three year period.

Parameters used to estimate the WACC

13. The above estimates of vanilla WACC reflect the parameters specified in the EDS IM Determination. The risk-free rate and debt premium are also estimated in accordance with the EDS IM Determination.

Summary of parameters

14. The parameters used to estimate the vanilla WACCs are summarised in Table 2 below.

[4] 67th percentile WACC estimates are used for the purposes of price-quality paths, while a mid-point and range is determined for information disclosure.

Table 2: Parameters used to calculate vanilla WACC for EDB CPP proposals

Parameter	3 year estimate	4 year estimate	5 year estimate
Risk-free rate	1.81%	1.82%	1.85%
Debt premium	1.49%	1.65%	1.71%
Leverage	44%	44%	44%
Equity beta	0.61	0.61	0.61
Tax adjusted market risk premium	7.0%	7.0%	7.0%
Average corporate tax rate	28%	28%	28%
Average investor tax rate	28%	28%	28%
Debt issuance costs	0.58%	0.44%	0.35%
Cost of debt	3.88%	3.89%	3.91%
Cost of equity	5.57%	5.58%	5.60%
Standard error of debt premium	0.0015	0.0015	0.0015
Standard error of WACC	0.011	0.011	0.011
Mid-point vanilla WACC	4.83%	4.85%	4.85%

Note: The cost of debt is calculated as the risk-free rate + debt premium + debt issuance costs. The cost of equity is calculated as the risk-free rate × (1- investor tax rate) + the equity beta × the tax adjustment market risk premium. The mid-point vanilla WACC is calculated as the cost of equity × (1 - leverage) + the cost of debt × leverage.

Risk-free rate

15. The risk-free rate reflects the linearly-interpolated, annualised, bid yield to maturity on New Zealand government bonds with a term to maturity of five, four and three years. The estimates use data reported by Bloomberg for the month of August 2016 in respect of the March 2019, April 2020, May 2021 and April 2023 maturity bonds. These bonds have simple average annualised bid yields to maturity of 1.81%, 1.82%, 1.83% and 1.94% respectively.

16. The daily data reported by Bloomberg is annualised (to reflect the six monthly payment of interest), averaged to give a monthly average, and linearly-interpolated to produce the following estimates of interest rates on New Zealand government bonds (as at 1 September 2016):

    16.1 1.85% with a five year term to maturity;

    16.2 1.82% with a four year term to maturity; and

    16.3 1.81% with a three year term to maturity.

Tax rates

17. The average corporate tax rate is the corporate tax rate of 28% for all years. The average investor tax rate is the investor tax rate of 28% for all years.

Standard error of the WACC

18. The standard error of the WACC is determined in accordance with the formula in the EDS IM Determinations, and is shown to three decimal places only in Table 2 above.

Debt premium

19. The methodology for determining the debt premium is set out in clause 5.3.25 of the EDS IM Determination.

20. Clause 5.3.25(3)(d) requires the Commission to estimate the debt premium that would reasonably be expected to apply to a vanilla NZ$ denominated bond that:

    20.1 is issued by an EDB or a GPB that is neither majority owned by the Crown nor a local authority;

    20.2 is publicly traded;

    20.3 has a qualifying rating of grade BBB+; and

    20.4 has a remaining term to maturity of five years (or four or three years, as applicable under clause 5.3.25(6) of the EDS IM Determination).

21. In estimating the debt premium, clause 5.3.25(4) of the EDS IM Determination provides that the Commission will have regard to:

21.1 bonds issued by an EDB or a GPB (that is neither majority owned by the Crown nor a local authority) with a rating of BBB+;

21.2 bonds issued by another entity (that is neither majority owned by the Crown nor a local authority) with a rating of BBB+;

21.3 bonds issued by an EDB or a GPB (that is neither majority owned by the Crown nor a local authority) with a rating other than BBB+;

21.4 bonds issued by another entity (that is neither majority owned by the Crown nor a local authority) with a rating other than BBB+; and

21.5 bonds issued by entities that are majority owned by the Crown or a local authority.

22. Clause 5.3.25(5)(a) provides that progressively lesser regard will ordinarily be given to the debt premium estimates in the order that the bonds are identified in clauses 5.3.25(4)(a) to (e).

23. The tables below show the debt premiums for terms of five, four and three years respectively, determined as at 1 September 2016. These tables include a summary of information on the investment grade rated bonds we considered in determining the debt premiums.

24. A spreadsheet showing the calculations for the debt premium (and the risk-free rate) is published on our website.[5]

[5] See www.comcom.govt.nz/cost-of-capital

Five year debt premium

25. Table 3 below shows the five year debt premium on an EDB/GPB-issued bond rated BBB+, as at 1 September 2016.

Table 3: Debt premium on bonds with a remaining term of five years, as at 1 September 2016[6]

			Industry	Rating	Remaining term to maturity	Debt premium	Comment
Determined debt premium			EDB/GPB	BBB+	5.0	1.71	WIAL is an exact match Regard to results of 4(d) and 4(e)
Subclause	**Issuer**	**Note ref.**	**Industry**	**Rating**	**Remaining term to maturity**	**Debt premium**	**Comment**
4(a)	-		-	-	-	-	No data on applicable bonds
4(b)	WIAL	1	Other	BBB+	5.0	1.71	Credit rating and term are an exact match
4(c)	-		-	-	-	-	No data on applicable bonds
4(d)	Spark	2	Other	A-	5.0	1.45	BBB+ debt premium would be higher
	AIAL	3	Other	A-	5.0	1.30	BBB+ debt premium would be higher
	Contact	4	Other	BBB	5.0	1.72	BBB+ debt premium would be lower
	Fonterra	5	Other	A-	5.0	1.69	BBB+ debt premium would be higher
	Chorus	6	Other	BBB	4.7	1.78	BBB+ debt premium would be lower
4(e)	Meridian	7	Other	BBB+	5.0	1.65	
	Genesis Energy	8	Other	BBB+	5.0	1.61	
	MRP	9	Other	BBB+	5.0	1.72	
	CIAL	10	Other	BBB+	5.0	1.71	
	Transpower	11	Other	AA-	5.0	1.16	

Notes on bonds analysed:

1 WIAL 6.25% bond maturing 15/05/2021; 4.25% bond maturing 12/05/2023.
2 Spark 5.25% bond maturing 25/10/2019; 4.5% bond maturing 25/03/2022.
3 AIAL 5.52% bond maturing 28/05/2021; 4.28% bond maturing 9/11/2022.
4 Contact Energy 5.28% bond maturing 27/05/2020; 4.40% bond maturing 15/11/2021.
5 Fonterra 5.52% bond maturing 25/02/2020; 4.33% bond maturing 20/10/2021.
6 Chorus 4.12% bond maturing 6/05/2021.
7 Meridian 7.55% bond maturing 16/03/2017; 4.53% bond maturing 14/03/2023.
8 Genesis Energy 8.3% bond maturing 23/06/2020; 4.14% bond maturing 18/03/2022.
9 MRP 8.21% bond maturing 11/02/2020; 5.79% bond maturing 6/03/2023.
10 CIAL 5.15% bond maturing 6/12/2019; 6.25% bond maturing 4/10/2021.
11 Transpower 6.95% bond maturing 10/06/2020; 4.3% bond maturing 30/06/2022.

6 The five-year debt premiums on the Wellington International Airport Limited, Spark, Auckland International Airport Limited, Contact Energy, Fonterra, Meridian, Genesis Energy, Mighty River Power, Christchurch International Airport Limited and Transpower bonds are calculated by linear interpolation with respect to maturity. The Meridian bonds are calculated by interpolated bid to bid spread between the bond and New Zealand Government Treasury Bills maturing 14 September 2016 and 19 July 2017.

26. As at 1 September 2016, the debt premium on the WIAL bonds was estimated at 1.71% with a remaining term to maturity of five years. These bonds are issued by an entity other than an EDB/GPB, are publicly traded and have a rating of BBB+. As the credit rating and remaining term to maturity are an exact match, we consider 1.71% to be an appropriate starting point for estimating the debt premium.[7]

27. We have also considered the estimated debt premium on bonds from a range of other issuers. The bonds outlined under 4(d) in Table 3 above have issuers which are not majority government owned, and a rating other than BBB+.[8] Although consistent with the starting point of 1.71%, these debt premiums were given less consideration due to their ownership and different credit rating to the BBB+ specified in clause 5.3.25(5)(a).[9]

28. The bonds listed under 4(e) of Table 3 above, are majority government owned issuer bonds. These debt premiums were given less consideration than the bonds outlined under 4(d) in Table 3 as the issuers are majority government owned. Even so, we consider that the premium on these bonds generally supports the view that the estimate of the debt premium should be around 1.71%.

29. Placing primary weight on the estimated debt premium on the WIAL bonds, while considering the debt premium on a range of other bonds, we have determined the debt premium on a publicly traded, EDB/GPB-issued bond, rated BBB+ with a remaining term of five years to be 1.71% as at 1 September 2016.

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7 Consistent with clauses 5.3.25(4) and 5.3.25(5)(a) of the EDS IM Determination.

8 In this determination government owned means owned by the Crown or a local authority as defined in the EDS IM Determination.

9 Consistent with clause 5.3.25(5)(a) of the EDS IM Determination.

Four year debt premium

30. Table 4 below shows the four year debt premium on an EDB/GPB-issued bond rated BBB+, as at 1 September 2016.

Table 4: Debt premium on bonds with a remaining term of four years, as at 1 September 2016[10]

	Industry	Rating	Remaining term to maturity	Debt premium	Comment
Determined debt premium	EDB/GPB	BBB+	4.0	1.65	Regard to results of 4(b), 4(d) and 4(e)

Subclause	Issuer	Note ref.	Industry	Rating	Remaining term to maturity	Debt premium	Comment
4(a)	-		-	-	-	-	No data on applicable bonds
4(b)	WIAL	1	Other	BBB+	3.8	1.60	Credit rating is an exact match; a bond with a four year maturity would be higher
4(c)	-		-	-	-	-	No data on applicable bonds
4(d)	Spark	2	Other	A-	4.0	1.30	BBB+ debt premium would be higher
	AIAL	3	Other	A-	4.0	1.16	BBB+ debt premium would be higher
	Contact	4	Other	BBB	4.0	1.73	BBB+ debt premium would be lower
	Fonterra	5	Other	A-	4.0	1.62	BBB+ debt premium would be higher
	Chorus	6	Other	BBB	4.7	1.78	BBB+ debt premium would be lower; four year debt premium would be lower
4(e)	Meridian	7	Other	BBB+	4.0	1.57	
	Genesis Energy	8	Other	BBB+	4.0	1.52	
	MRP	9	Other	BBB+	4.0	1.59	
	CIAL	10	Other	BBB+	4.0	1.51	
	Transpower	11	Other	AA-	4.0	1.08	

Notes on bonds analysed:

1 WIAL 5.27% bond maturing 11/06/2020; 6.25% bond maturing 15/05/2021.

2 Spark 5.25% bond maturing 25/10/2019; 4.5% bond maturing 25/03/2022.

3 AIAL 4.73% bond maturing 13/12/2019; 5.52% bond maturing 28/05/2021.

4 Contact Energy 5.28% bond maturing 25/05/2020; 4.4% bond maturing 15/11/2021.

5 Fonterra 5.52% bond maturing 25/02/2020; 4.33% bond maturing 20/10/2021.

6 Chorus 4.12% bond maturing 6/05/2021.

7 Meridian 7.55% bond maturing 16/03/2017; 4.53% bond maturing 14/03/2023.

8 Genesis Energy 8.3% bond maturing 23/06/2020; 4.14% bond maturing 18/03/2022.

9 MRP 8.21% bond maturing 11/02/2020; 5.79% bond maturing 6/3/2023.

10 CIAL 5.15% bond maturing 6/12/2019; 6.25% bond maturing 4/10/2021.

11 Transpower 6.95% bond maturing 10/06/2020; 4.3% bond maturing 30/06/2022.

[10] The four-year debt premiums on the WIAL, Spark, AIAL, Contact Energy, Fonterra, Meridian, Genesis Energy, Mighty River Power, CIAL and Transpower bonds are calculated by linear interpolation with respect to maturity. The Meridian bonds are calculated by interpolated bid to bid spread between the bond and New Zealand Government Treasury Bills maturing 14 September 2016 and 19 July 2017.

31. As at 1 September 2016, the debt premium on the WIAL bonds was estimated at 1.60% with a remaining term to maturity of 3.8 years. This bond was issued by an entity other than an EDB/GPB, is publicly traded and has a rating of BBB+. We consider 1.60% to be an appropriate starting point for estimating the debt premium because the credit rating is an exact match. However, a bond with a four year maturity would be slightly higher.

32. We have also considered the estimated debt premium on bonds from a range of other issuers. The bonds outlined in 4(d) of Table 4 above have issuers that are not majority government owned, and a rating other than BBB+. Although these debt premiums were given less weight due to their different credit ratings, they support a debt premium higher than 1.62% and lower than 1.73%.[11]

33. The bonds listed under 4(e) of Table 4 above, are majority government owned issuer bonds. These debt premiums were given less weight as the issuers are majority government owned. Taking into account the likely impact of Government ownership, the premiums on these bonds generally support the view that the estimate of the debt premium should be above 1.51%.

34. Placing primary weight on the estimated debt premium on the WIAL bonds, while considering the estimated debt premium on a range of other bonds, we have determined the debt premium on a publicly traded, EDB/GPB-issued bond, rated BBB+ with a remaining term of four years to be 1.65% as at 1 September 2016.

[11] Consistent with clause 5.3.25(5)(a) these debt premiums were given less weight as the issuers are not EDBs or GPBs, and the debt issues had different credit ratings than the BBB+ rating specified in clause 2.4.4(3)(d).

Three year debt premium

35. Table 5 below shows the three year debt premium on an EDB/GPB-issued bond rated BBB+, as at 1 September 2016.

Table 5: Debt premium on bonds with a remaining term of three years, as at 1 September 2016[12]

			Industry	Rating	Remaining term to maturity	Debt premium	Comment
Determined debt premium			EDB/GPB	BBB+	3.0	1.49	Regard to results 4(b)and 4(d) Generally consistent with 4(e)
Subclause	**Issuer**	**Note ref.**	**Industry**	**Rating**	**Remaining term to maturity**	**Debt premium**	**Comment**
4(a)	-		-	-	-	-	No data on applicable bonds
4(b)	WIAL	1	Other	BBB+	3.8	1.60	Three year debt premium would be lower
4(c)	-		-	-	-	-	No data on applicable bonds
4(d)	Spark	2	Other	A-	3.1	1.17	BBB+ debt premium would be higher; three year debt premium would be lower
	AIAL	3	Other	A-	3.0	1.01	BBB+ debt premium would be higher
	Contact	4	Other	BBB	3.0	1.55	BBB+ debt premium would be lower
	Fonterra	5	Other	A-	3.0	1.48	BBB+ debt premium would be higher
	Chorus	6	Other	BBB	4.7	1.78	BBB+ debt premium would be lower; three year debt premium would be lower
4(e)	Meridian	7	Other	BBB+	3.0	1.49	
	Genesis Energy	8	Other	BBB+	3.0	1.41	
	MRP	9	Other	BBB+	3.0	1.42	
	CIAL	10	Other	BBB+	3.3	1.35	
	Transpower	11	Other	AA-	3.0	0.94	

Notes on bonds analysed:

1 WIAL 5.27% bond maturing 11/06/2020.

2 Spark 5.25% bond maturing 25/10/2019.

3 AIAL 5.47% bond maturing 17/10/2017; 4.73% bond maturing 13/12/2019.

4 Contact Energy 5.8% bond maturing 15/05/2019; 5.28% bond maturing 27/05/2020.

5 Fonterra 4.6% bond maturing 24/10/2017; 5.52% bond maturing 25/02/2020.

6 Chorus 4.12% bond maturing 6/05/2021.

7 Meridian 7.55% bond maturing 16/03/2017; 4.53% bond maturing 14/03/2023.

8 Genesis Energy 7.185% bond maturing 15/09/2016; 5.205% bond maturing 1/11/2019.

9 MRP 5.029% bond maturing 6/3/2019; 8.21% bond maturing 11/02/2020.

10 CIAL 5.15% bond maturing 6/12/2019.

11 Transpower 5.14% bond maturing 30/11/2018, 4.65% bond maturing 06/09/2019.

[12] The three-year debt premiums on the AIAL, Contact Energy, Fonterra, Genesis Energy, MRP, Meridian and Transpower bonds are calculated by linear interpolation with respect to maturity. The AIAL and Fonterra bonds are calculated by interpolated bid to bid spread between the corporate bonds and a New Zealand Government Treasury Bill, maturing 26 April 2017. The Genesis bond maturing 15 September 2016 and the Meridian bond maturing 16 March 2017 are calculated by interpolated bid to bid spread between the bond and New Zealand Government Treasury Bills maturing 14 September 2016 and 19 July 2017.

36. We consider the estimated debt premium on the WIAL bonds to be an appropriate starting point for estimating the three year debt premium.[13] This bond is issued by an entity other than an EDB/GPB, is publicly traded and has a rating of BBB+. The WIAL bonds have a term to maturity of 3.8 years. This implies the debt premium on a bond with a term to maturity of exactly three years would be lower.

37. We have also had regard to the estimated debt premium on bonds from a range of other issuers. The bonds outlined in 4(d) of Table 5 have issuers that are not majority government owned and a rating other than BBB+. Although these debt premiums were given less weight due to their different credit ratings, these debt premiums are consistent with a debt premium above 1.48% and below 1.55%.[14]

38. The bonds listed under 4(e) of Table 5 above, are majority government owned issuer bonds. These debt premiums were given less weight as the issuers are majority government owned. Taking into account the likely impact of Government ownership, the premiums on these bonds generally support the view that the debt premium we use should be between 1.42 and 1.49%.

39. Placing initial weight on the estimated debt premium on the WIAL bond (which has a term longer than our benchmark term), while considering the estimated debt premium on a range of other bonds, we have determined the debt premium on a publicly traded, EDB/GPB-issued bond, rated BBB+ with a remaining term of three years to be 1.49% as at 1 September 2016.

[13] Consistent with clauses 5.3.25(4) and 5.3.25(5)(a) of the EDS IM Determination.

[14] Consistent with clause 5.3.25(5)(a) these were given less weight as the issuers are not EDBs or GPBs, and the debt issues had different credit ratings than the BBB+ rating specified in clause 5.3.25(3)(d).