

Cost of capital determination for information disclosure year 2016 for Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end)

[2016] NZCC 15

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Associated documents

Publication date	Reference	Title
31 July 2015	ISSN 1178-2560	Cost of capital determination for information disclosure year 2016 for Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end) [2015] NZCC 20
31 July 2014	ISSN 1178-2560	Cost of capital determination for information disclosure year 2015 for Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end) [2014] NZCC 19
31 July 2013	ISBN 978-1-869453-19-0	Cost of capital determination for information disclosure year 2014 for Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end) [2013] NZCC 12
30 July 2012	ISBN 978-1-869452-10-0	Cost of capital determination for information disclosure year 2013 for Transpower, gas pipeline businesses and specified airport services (with a June year-end) [2012] NZCC 20
8 July 2011	ISBN 978-1-869451-60-8	Determination of the Cost of Capital for Information Disclosure Year 2012 for Transpower New Zealand Limited, Suppliers of Gas Pipeline Services, and Suppliers of Specified Airport Services (June year-end) Decision Number 727

Executive summary

1. This determination specifies weighted average cost of capital (WACC) estimates to apply for information disclosure year 2017 for:¹
 - 1.1 Transpower New Zealand Limited (Transpower);
 - 1.2 gas pipeline businesses (GPBs) with a financial year ending in June (Vector and GasNet); and
 - 1.3 suppliers of specified airport services with a financial year ending in June (Auckland International Airport Limited (AIAL) and Christchurch International Airport Limited (CIAL)).
2. Vanilla and post-tax WACCs have been estimated for the five year period commencing on the first day of disclosure year 2017 (ie, 1 July 2016).² Mid-point, 25th percentile and 75th percentile WACC estimates have been determined in each case. Consistent with our 2014 review of the WACC percentile, 67th percentile estimates of vanilla and post-tax WACC are now included for Transpower's 2017 disclosure year.³
3. The WACC estimates are summarised in Table 1 below. The WACCs are estimated as at 1 July 2016.

¹ Disclosure year is the twelve month period 1 July 2016 to 30 June 2017.

² The vanilla WACC is a weighted average of the pre-corporate tax cost of debt and the post-tax cost of equity. The post-tax WACC is the weighted average of the post-corporate tax cost of debt and the post-tax cost of equity.

³ *Electricity Lines Services and Gas Pipeline Services Input Methodologies Determination Amendment (WACC percentile for information disclosure regulation) 2014* [2014] NZCC 38. The 67th percentile WACC estimate does not take effect for GPB information disclosure until the 2018 disclosure year.

Table 1: Summary of vanilla and post-tax WACC estimates (%)

	Mid-point	25th percentile	67th percentile	75th percentile
Transpower information disclosure year 2017				
Vanilla WACC	5.11	4.40	5.58	5.83
Post-tax WACC	4.60	3.88	5.06	5.31
GPB information disclosure year 2017 (Vector and GasNet)				
Vanilla WACC	5.82	5.01	-	6.63
Post-tax WACC	5.30	4.49	-	6.11
Specified airport services information disclosure year 2017 (AIAL and CIAL)				
Vanilla WACC	6.12	5.14	-	7.10
Post-tax WACC	5.94	4.96	-	6.92

Introduction

4. This determination specifies WACC estimates to apply for information disclosure year 2017 for:⁴
 - 4.1 Transpower;
 - 4.2 GPBs subject to regulation under Part 4 of the Commerce Act 1986 (the Act) with a financial year ending in June (Vector and GasNet); and
 - 4.3 suppliers of specified airport services (as defined in section 56A of the Act) with a financial year ending in June (AIAL and CIAL).
5. The WACC estimates are determined under:
 - 5.1 clauses 2.4.1 to 2.4.7 of the Transpower Input Methodologies Determination (the Transpower IM Determination);⁵
 - 5.2 clauses 2.4.1 to 2.4.7 of the Gas Distribution Services Input Methodologies Determination 2012 (the GDS IM Determination) and clauses 2.4.1 to 2.4.7 of the Gas Transmission Services Input Methodologies Determination 2012 (the GTS IM Determination);⁶ and
 - 5.3 clauses 5.1 to 5.7 of the Commerce Act (Specified Airport Services Input Methodologies) Determination 2010 (the Airports IM Determination).⁷
6. We have estimated both vanilla and post-tax WACCs. The vanilla WACC is a weighted average of the pre-corporate tax cost of debt and the post-tax cost of equity. The post-tax WACC is a weighted average of the post-corporate tax cost of debt and the post-tax cost of equity.
7. Consistent with our 2014 review of the WACC percentile for electricity lines and gas pipeline businesses, 67th percentile estimates of vanilla and post-tax WACC apply for Transpower and EDBs. The 67th percentile does not take effect for GPBs until the 2018 information disclosure year.⁸
8. The parameter values, estimates and information sources used for each estimate of the WACC are set out in this determination. Additional commentary on the estimation of the risk-free rate and the debt premium is also provided.

⁴ Disclosure year is the twelve month period 1 July 2016 to 30 June 2017.

⁵ *Transpower Input Methodologies Determination* [2012] NZCC 17, as subsequently amended.

⁶ *Gas Distribution Services Input Methodologies Determination 2012* [2012] NZCC 27 and *Gas Transmission Services Input Methodologies Determination 2012* [2012] NZCC 28, as subsequently amended.

⁷ *Commerce Act (Specified Airports Services Input Methodologies) Determination 2010* [2010] NZCC 709, as subsequently amended.

⁸ Commerce Commission “Amendments to the WACC percentile range for information disclosure regulation for electricity lines services and gas pipeline services – Reasons paper” (12 December 2014); and *Electricity Lines Services and Gas Pipeline Services Input Methodologies Determination Amendment (WACC percentile for information disclosure regulation) 2014* [2014] NZCC 38.

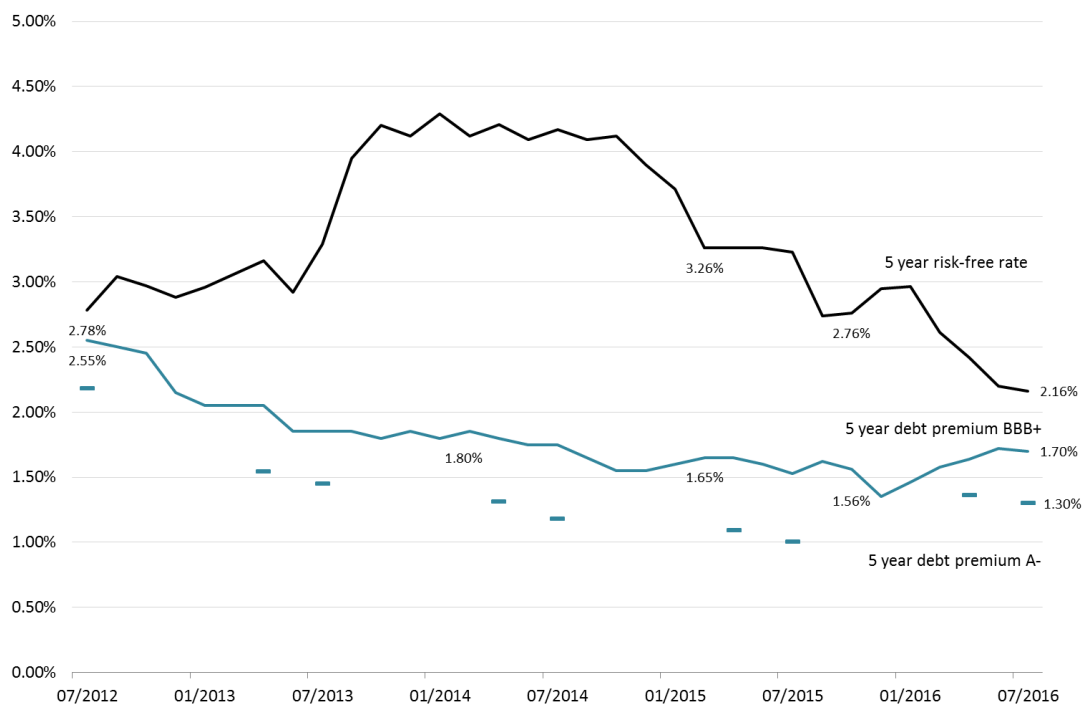
9. For example, this determination identifies the issuers and bonds that were analysed (including the credit rating and remaining term to maturity) when estimating the debt premium. The commentary also explains which debt premium estimates were given greater weight than other estimates.

Background

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

10. The cost of capital input methodologies for the regulated services reflect that both the risk-free rate and the debt premium on bonds change over time.⁹
11. Changes in the risk-free rate and debt premium on bonds are illustrated below. Figure 1 shows the changes over time in the:
- 11.1 five year risk-free rate;
 - 11.2 debt premium on bonds rated BBB+ with a term of five years; and
 - 11.3 debt premium on bonds rated A- with a term of five years.

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



⁹ 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 methodology determinations.

Reasons for differences in WACC under input methodologies determinations

12. Differences in the WACCs estimated under the various cost of capital input methodologies reflect differences in the:
 - 12.1 date of estimation for the WACCs, which results in different estimates of the risk-free rate and debt premium;
 - 12.2 periods in which the WACCs will apply;
 - 12.3 context in which the WACCs will be used (67th percentile WACC estimates are used for the purposes of price-quality paths, while a mid-point and range is determined for information disclosure);
 - 12.4 assessed risk of the various regulated services (electricity distribution businesses (EDBs) and Transpower have an asset beta of 0.34, GPBs have an asset beta of 0.44, and Airports have an asset beta of 0.60); and
 - 12.5 value of leverage for airports (17%) and for EDBs, GPBs, and Transpower (44%).

WACC for Transpower information disclosure year 2017

13. Under clause 2.4.1 of the Transpower IM Determination, we have determined the following vanilla and post-tax WACCs for information disclosure year 2017.
 - 13.1 A mid-point estimate of vanilla WACC of 5.11% for the five year period commencing on the first day of disclosure year 2017.¹⁰
 - 13.2 We have also determined a vanilla WACC range from 4.40% to 5.83%, where the endpoints are the 25th and 75th percentile estimates respectively. We have determined a 67th percentile estimate of vanilla WACC of 5.58%.¹¹
 - 13.3 A mid-point estimate of post-tax WACC of 4.60% for the five year period commencing on the first day of disclosure year 2017.
 - 13.4 We have also determined a post-tax WACC range from 3.88% to 5.31%, where the endpoints are the 25th and 75th percentile estimates respectively. We have also determined a 67th percentile estimate of post-tax WACC of 5.06%.¹²

Parameters used to estimate the WACC for Transpower

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

Summary of parameters

15. The parameters used to estimate the vanilla and post-tax WACCs for Transpower information disclosure year 2017 are summarised in Table 2 below.

¹⁰ The first day of the disclosure year is 1 July 2016.

¹¹ Under clause 2.4.7 of the Transpower IM Determination.

¹² Under clause 2.4.7 of the Transpower IM Determination.

Table 2: Parameters used to calculate WACC for Transpower 2017 disclosure year

Parameter	5 year estimate
Risk-free rate	2.16%
Debt premium	1.70%
Leverage	44%
Equity beta	0.61
Tax adjusted market risk premium	7.0%
Average corporate tax rate	28%
Average investor tax rate	28%
Debt issuance costs	0.35%
Cost of debt	4.21%
Cost of equity	5.82%
Standard error of debt premium	0.0015
Standard error of WACC	0.011
Mid-point vanilla WACC	5.11%
Mid-point post-tax WACC	4.60%

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 \times (1 - investor tax rate) + the equity beta \times the tax adjustment market risk premium. The mid-point vanilla WACC is calculated as the cost of equity \times (1 - leverage) + the cost of debt \times leverage. The mid-point post-tax WACC is calculated as the cost of debt \times (1 - corporate tax rate) \times leverage + cost of equity \times (1 - leverage).

Risk-free rate

- 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 years. The estimates use data reported by Bloomberg for the month of June 2016 in respect of the 15 May 2021 and 15 April 2023 maturity bonds. The May 2021 and April 2023 maturity bonds have simple average annualised bid yields to maturity of 2.16% and 2.21% respectively.

17. 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 estimate of a 2.16% interest rate on a New Zealand Government bond with a five year term to maturity as at 1 July 2016.

Tax rates

18. 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

19. The standard error of the WACC is determined in accordance with the formula in the Transpower IM Determination, and is shown to three decimal places only in the table above.

Debt premium

20. The methodology for determining the debt premium is set out in clause 2.4.4 of the Transpower IM Determination.
21. Clause 2.4.4(3)(d) requires the Commission to estimate the debt premium that would reasonably be expected to apply to a vanilla NZ\$ denominated bond that:
- 21.1 is issued by an EDB or a GPB that is neither majority owned by the Crown nor a local authority;
 - 21.2 is publicly traded;
 - 21.3 has a qualifying rating of grade BBB+; and
 - 21.4 has a remaining term to maturity of five years.
22. In estimating the debt premium, clause 2.4.4(4) of the Transpower IM Determination provides that the Commission will have regard to:
- 22.1 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+;
 - 22.2 bonds issued by another entity (that is neither majority owned by the Crown nor a local authority) with a rating of BBB+;
 - 22.3 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+;
 - 22.4 bonds issued by another entity (that is neither majority owned by the Crown nor a local authority) with a rating other than BBB+; and
 - 22.5 bonds that are investment grade credit rated and issued by an entity that is majority owned by the Crown or a local authority.

23. Clause 2.4.4(5)(a) provides that progressively less consideration will ordinarily be given to the debt premium estimates in the order that the bonds are identified in clauses 2.4.4(4)(a) to (e).
24. Table 3 below shows the debt premium we have determined as at 1 July 2016. This table includes a summary of information on the investment grade rated bonds we considered in determining the debt premium.
25. A spreadsheet showing the calculations for the debt premium (and the risk-free rate) is published on our website.¹³

Table 3: Five year debt premium on an EDB/GPB-issued bond rated BBB+¹⁴

	Industry	Rating	Remaining term to maturity	Debt premium	Comment		
Determined debt premium	EDB/GPB	BBB+	5.0	1.70	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+	5.0	1.70	Credit rating and term are an exact match
4(c)	-	-	-	-	-	-	No data on applicable bonds
4(d)	Spark	2	Other	A-	5.0	1.47	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	1.80	BBB+ debt premium would be lower
	Fonterra	5	Other	A-	5.0	1.73	BBB+ debt premium would be generally higher
4(e)	Meridian	6	Other	BBB+	5.0	1.61	
	Genesis Energy	7	Other	BBB+	5.0	1.58	
	MRP	8	Other	BBB+	5.0	1.70	
	CIAL	9	Other	BBB+	5.0	1.70	
	Transpower	10	Other	AA-	5.0	1.19	

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 Meridian 7.55% bond maturing 16/03/2017; 4.53% bond maturing 14/03/2023.
- 7 Genesis Energy 8.3% bond maturing 23/06/2020; 4.14% bond maturing 18/03/2022.
- 8 MRP 8.21% bond maturing 11/02/2020; 5.79% bond maturing 6/03/2023.
- 9 CIAL 5.15% bond maturing 6/12/2019; 6.25% bond maturing 4/10/2021.
- 10 Transpower 6.95% bond maturing 10/06/2020; 4.3% bond maturing 30/06/2022.

¹³ See www.comcom.govt.nz/cost-of-capital.

¹⁴ The five-year debt premiums on the Wellington International Airport Limited (WIAL), Spark, AIAL, Contact Energy, Fonterra, Meridian, Genesis Energy, Mighty River Power Limited (MRP), CIAL, and Transpower bonds are calculated by linear interpolation with respect to maturity.

26. As at 1 July 2016, the debt premium on the WIAL bonds was estimated at 1.70% with a remaining term to maturity of five years. These bonds are issued by an entity other than an EDB/GPB but are publicly traded and have a rating of BBB+. As the credit rating and remaining term to maturity are an exact match, we consider 1.70% to be an appropriate starting point for estimating the debt premium.¹⁵
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 that are not majority government owned, but have a rating other than BBB+ and are not EDBs or GPBs.¹⁶ Although consistent with the starting point of 1.70%, these debt premiums were given less consideration due to their sector and credit rating not being BBB+.¹⁷
28. The bonds listed under 4(e) of Table 3 above are majority government owned issuer bonds. These debt premiums were given less weight, as the issuers are majority government owned, but generally support the view that the estimate of the debt premium we use should be above 1.47% and below 1.80%.
29. We have placed primary weight on the estimated debt premium of the WIAL bonds, but considered 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 1.70% as at 1 July 2017.

¹⁵ Consistent with clauses 2.4.4(4) and 2.4.4(5)(a) of the Transpower IM Determination.

¹⁶ In this determination government owned means owned by the Crown or a local authority as defined in the Transpower IM Determination.

¹⁷ As specified in clause 2.4.4(3)(d) in the Transpower IM Determination. Telstra is not included in category 4(d) of Table 3 because it is not a New Zealand resident limited liability company (as required by the definition of “qualifying issuer” in the Transpower IM Determination).

WACC for GPB information disclosure year 2017

30. Under clause 2.4.1 of both the GDS and GTS IM Determinations, we have determined the following vanilla and post-tax WACCs for information disclosure year 2017.
- 30.1 A mid-point estimate of vanilla WACC of 5.82% for the five year period commencing on the first day of disclosure year 2017 (ie, 1 July 2016).
- 30.2 Under clause 2.4.7, we have also determined a vanilla WACC range from 5.01% to 6.63%, where the endpoints are the 25th and 75th percentile estimates respectively.
- 30.3 A mid-point estimate of post-tax WACC of 5.30% for the five year period commencing on the first day of disclosure year 2017 (ie, 1 July 2016).
- 30.4 Under clause 2.4.7, we have also determined a post-tax WACC range from 4.49% to 6.11%, where the endpoints are the 25th and 75th percentile estimates respectively.

Parameters used to estimate the WACC for GPBs

31. The above estimates of vanilla and post-tax WACC reflect the parameters specified in the GDS and GTS IM Determinations. The risk-free rate and debt premium are also estimated in accordance with the GDS and GTS IM Determinations.

Summary of parameters

32. The parameters used to estimate the vanilla and post-tax WACCs for information disclosure year 2017 for GPBs with a June year-end are summarised in Table 4 below.

Table 4: Parameters used to calculate WACC for GPB 2017 disclosure year

Parameter	5 year estimate
Risk-free rate	2.16%
Debt premium	1.70%
Leverage	44%
Equity beta	0.79
Tax adjusted market risk premium	7.0%
Average corporate tax rate	28%
Average investor tax rate	28%
Debt issuance costs	0.35%
Cost of debt	4.21%
Cost of equity	7.08%
Standard error of debt premium	0.0015
Standard error of WACC	0.012
Mid-point vanilla WACC	5.82%
Mid-point post-tax WACC	5.30%

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 \times (1 - investor tax rate) + the equity beta \times the tax adjustment market risk premium. The mid-point vanilla WACC is calculated as the cost of equity \times (1 - leverage) + the cost of debt \times leverage. The mid-point post-tax WACC is calculated as the cost of debt \times (1 - corporate tax rate) \times leverage + cost of equity \times (1 - leverage).

Risk-free rate

33. 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 years. The estimates use data reported by Bloomberg for the month of June 2016 in respect of the 15 May 2021 and 15 April 2023 maturity bonds. The May 2021 and April 2023 maturity bonds have simple average annualised bid yields to maturity of 2.16% and 2.21% respectively.

34. 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 estimate of a 2.16% interest rate on a New Zealand Government bond with a five year term to maturity as at 1 July 2016.

Tax rates

35. 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

36. The standard error of the WACC is determined in accordance with the formula in the GDS and GTS IM Determinations, and is shown to three decimal places only in the table above.

Debt premium

37. The methodology for determining the debt premium is set out in clause 2.4.4 of the GDS and GTS IM Determinations.
38. Clause 2.4.4(3)(d) requires the Commission to estimate the debt premium that would reasonably be expected to apply to a vanilla NZ\$ denominated bond that:
- 38.1 is issued by a GPB or an EDB that is neither majority owned by the Crown nor a local authority;
 - 38.2 is publicly traded;
 - 38.3 has a qualifying rating of grade BBB+; and
 - 38.4 has a remaining term to maturity of five years.
39. In estimating the debt premium, clause 2.4.4(4) of the GDS and GTS IM Determinations provides that the Commission will consider:
- 39.1 bonds issued by a GPB or an EDB (that is neither majority owned by the Crown nor a local authority) with a rating of BBB+;
 - 39.2 bonds issued by another entity (that is neither majority owned by the Crown nor a local authority) with a rating of BBB+;
 - 39.3 bonds issued by a GPB or an EDB (that is neither majority owned by the Crown nor a local authority) with a rating other than BBB+;
 - 39.4 bonds issued by another entity (that is neither majority owned by the Crown nor a local authority) with a rating other than BBB+; and
 - 39.5 bonds that are investment grade credit rated and issued by an entity that is majority owned by the Crown or a local authority.

40. Clause 2.4.4(5)(a) provides that progressively less consideration will ordinarily be given to the debt premium estimates in the order that the bonds are identified in clauses 2.4.4(4)(a) to (e).
41. Table 5 below shows the debt premium we have determined as at 1 July 2016. This table includes a summary of information on the investment grade rated bonds we considered in determining the debt premium.
42. A spreadsheet showing the calculations for the debt premium (and the risk-free rate) is published on our website.¹⁸

Table 5: Five year debt premium on an EDB/GPB-issued bond rated BBB+¹⁹

	Industry	Rating	Remaining term to maturity	Debt premium	Comment		
Determined debt premium	EDB/GPB	BBB+	5.0	1.70	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+	5.0	1.70	Credit rating and term are an exact match
4(c)	-	-	-	-	-	-	No data on applicable bonds
4(d)	Spark	2	Other	A-	5.0	1.47	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	1.80	BBB+ debt premium would be lower
	Fonterra	5	Other	A-	5.0	1.73	BBB+ debt premium would be generally higher
4(e)	Meridian	6	Other	BBB+	5.0	1.61	
	Genesis Energy	7	Other	BBB+	5.0	1.58	
	MRP	8	Other	BBB+	5.0	1.70	
	CIAL	9	Other	BBB+	5.0	1.70	
	Transpower	10	Other	AA-	5.0	1.19	

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 Meridian 7.55% bond maturing 16/03/2017; 4.53% bond maturing 14/03/2023.
- 7 Genesis Energy 8.3% bond maturing 23/06/2020; 4.14% bond maturing 18/03/2022.
- 8 MRP 8.21% bond maturing 11/02/2020; 5.79% bond maturing 6/03/2023.
- 9 CIAL 5.15% bond maturing 6/12/2019; 6.25% bond maturing 4/10/2021.
- 10 Transpower 6.95% bond maturing 10/06/2020; 4.3% bond maturing 30/06/2022.

¹⁸ See www.comcom.govt.nz/cost-of-capital.

¹⁹ The five-year debt premiums on the WIAL, Spark, AIAL, Contact Energy, Fonterra, Meridian, Genesis Energy, MRP, CIAL, and Transpower bonds are calculated by linear interpolation with respect to maturity.

43. As at 1 July 2016, the interpolated five year debt premium on the WIAL bonds is estimated at 1.70%. These bonds are issued by an entity other than an EDB/GPB but are publicly traded and have a rating of BBB+. As the credit rating and remaining term to maturity are an exact match, we consider 1.70% to be the appropriate starting point for estimating the debt premium.²⁰
44. We have also considered the estimated debt premium on bonds from a range of other issuers. The bonds outlined under 4(d) in Table 5 above have issuers that are not majority government owned, but have a rating other than BBB+ and are not EDBs or GPBs. Although consistent with the starting point of 1.70%, these debt premiums were given less consideration due to their sector and credit rating not being BBB+.²¹
45. 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, but generally support the view that the estimate of the debt premium we use should be above 1.47% and below 1.80%.
46. We have placed primary weight on the estimated debt premium of the WIAL bonds, but have considered 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 1.70% as at 1 July 2016.

²⁰ Consistent with clauses 2.4.4(4) and 2.4.4(5)(a) of the GDS and GTS IM Determinations.

²¹ As specified in clause 2.4.4(3)(d) of the GDS and GTS IM Determinations.

WACC for AIAL and CIAL information disclosure year 2017

47. Under clause 5.1 of the Airports IM Determination, we have determined the following vanilla and post-tax WACCs for information disclosure year 2017.
- 47.1 A mid-point estimate of vanilla WACC of 6.12% for the five year period commencing on the first day of disclosure year 2017 (ie, 1 July 2016).
- 47.2 Under clause 5.7, we have also determined a vanilla WACC range from 5.14% to 7.10%, where the endpoints are the 25th and 75th percentile estimates respectively.
- 47.3 A mid-point estimate of post-tax WACC of 5.94% for the five year period commencing on the first day of disclosure year 2017 (ie, 1 July 2016).
- 47.4 Under clause 5.7, we have also determined a post-tax WACC range from 4.96% to 6.92%, where the endpoints are the 25th and 75th percentile estimates respectively.

Parameters used to estimate the WACC for AIAL and CIAL

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

Summary of parameters

49. The parameters used to estimate the vanilla and post-tax WACCs for AIAL and CIAL information disclosure year 2017 are summarised in Table 6 below.

Table 6: Parameters used to calculate WACC for AIAL and CIAL 2017 disclosure year

Parameter	5 year estimate
Risk-free rate	2.16%
Debt premium	1.30%
Leverage	17%
Equity beta	0.72
Tax adjusted market risk premium	7.0%
Average corporate tax rate	28%
Average investor tax rate	28%
Debt issuance costs	0.35%
Cost of debt	3.81%
Cost of equity	6.59%
Standard error of debt premium	0.0015
Standard error of WACC	0.015
Mid-point vanilla WACC	6.12%
Mid-point post-tax WACC	5.94%

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 \times (1 - investor tax rate) + the equity beta \times the tax adjustment market risk premium. The mid-point vanilla WACC is calculated as the cost of equity \times (1 - leverage) + the cost of debt \times leverage. The mid-point post-tax WACC is calculated as the cost of debt \times (1 - corporate tax rate) \times leverage + cost of equity \times (1 - leverage).

Risk-free rate

50. 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 years. The estimates use data reported by Bloomberg for the month of June 2016 for the 15 May 2021 and 15 April 2023 maturity bonds. The May 2021 and April 2023 maturity bonds have simple average annualised bid yields to maturity of 2.16% and 2.21% respectively.

51. 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 estimate of a 2.16% interest rate on a New Zealand Government bond with a five year term to maturity as at 1 July 2016.

Tax rates

52. 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

53. The standard error of the WACC is determined in accordance with the formula in the Airports IM Determination, and is shown to three decimal places only in the table above.

Debt premium

54. The methodology for determining the debt premium is set out in clause 5.4 of the Airports IM Determination.
55. Clause 5.4(3)(d) requires the Commission to estimate the debt premium that would reasonably be expected to apply to a vanilla NZ\$ denominated bond that:
- 55.1 is issued by an airport that is neither majority owned by the Crown nor a local authority;
 - 55.2 is publicly traded;
 - 55.3 has a qualifying rating of grade A-; and
 - 55.4 has a remaining term to maturity of five years.
56. In estimating the debt premium, clause 5.4(4) of the Airports IM Determination provides that the Commission will consider:
- 56.1 bonds issued by an airport (that is neither majority owned by the Crown nor a local authority) with a rating of A-;
 - 56.2 bonds issued by another entity (that is neither majority owned by the Crown nor a local authority) with a rating of A-;
 - 56.3 bonds issued by an airport (that is neither majority owned by the Crown nor a local authority) with a rating other than A-;
 - 56.4 bonds issued by another entity (that is neither majority owned by the Crown nor a local authority) with a rating other than A-; and
 - 56.5 bonds that are investment grade credit rated and issued by an entity that is majority owned by the Crown or a local authority.

57. Clause 5.4(5)(a) provides that progressively less consideration will ordinarily be given to the debt premium estimates in the order that the bonds are identified in clauses 5.4(4)(a) to (e).
58. Table 7 below shows the debt premium we determined as at 1 July 2016. This table includes a summary of information on the investment grade rated bonds we considered in determining the debt premium.
59. A spreadsheet showing the calculations for the debt premium (and the risk-free rate) is published on our website.²²

Table 7: Five year debt premium on an Airport-issued bond rated A-²³

	Industry	Rating	Remaining term to Maturity	Debt premium	Comment
Determined debt premium	Airport	A-	5.0	1.40	AIAL is an exact match. Regard to results of 4(b), 4(c), 4(d) and 4(e).

Subclause	Issuer	Note ref.	Industry	Rating	Remaining term to Maturity	Debt premium	Comment
4(a)	AIAL	1	Airport	A-	5.0	1.30	Linearly interpolated debt premium for AIAL is an exact match
4(b)	Spark	2	Other	A-	5.0	1.47	See paragraph 62
4(c)	WIAL	3	Airport	BBB+	5.0	1.70	A- debt premium would be lower
4(d)	Contact	4	Other	BBB	5.0	1.80	A- debt premium would be significantly lower
	Fonterra	5	Other	A-	5.0	1.73	
4(e)	Meridian	6	Other	BBB+	5.0	1.61	
	Genesis Energy	7	Other	BBB+	5.0	1.58	
	MRP	8	Other	BBB+	5.0	1.70	
	CIAL	9	Airport	BBB+	5.0	1.70	
	Transpower	10	Other	AA-	5.0	1.19	

Notes on bonds analysed:

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

²² See www.comcom.govt.nz/cost-of-capital.

²³ The five-year debt premiums on the AIAL, Spark, WIAL, Fonterra, Genesis Energy, MRP, CIAL, and Transpower bonds are calculated by linear interpolation with respect to maturity.

60. We have placed higher reliance on the estimated debt premium on the AIAL bonds due to the AIAL bonds being an exact match.²⁴ These bonds are issued by an airport, are publicly traded, are rated A- and have a debt premium of 1.30% when linearly-interpolated to give a remaining term to maturity of five years.
61. We have also considered the estimated debt premiums on bonds from a range of other issuers, but none of these match the requirements in clause 5.4(3)(d) as well as the AIAL bonds. The estimated debt premiums from these other bonds are, generally, not inconsistent with the debt premium on the AIAL bonds when consideration is given to different credit ratings and terms to maturity.
62. The yield on the Spark bonds (1.47%, rated A-, 5 year term to maturity) is higher than the yield on the AIAL bonds. Both the Spark and Fonterra bonds (which match the AIAL bonds' rating and term to maturity) support a debt premium greater than 1.30%. We have therefore considered these, to a lesser extent than the AIAL bonds, in the determining of the debt premium.²⁵ Accordingly, we have determined the debt premium on airport-issued bonds rated A- with a remaining term to maturity of five years to be 1.40% as at 1 July 2016.

²⁴ Consistent with clauses 5.4(4) and 5.4(5)(a) of the Airports IM Determination.

²⁵ Consistent with the ordering of the bonds in clause 5.4(4) of the Airports IM Determination.