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Cost of capital determination for disclosure year 2026 for information disclosure regulation

For Transpower, GasNet, Vector, Auckland International Airport and Christchurch International Airport

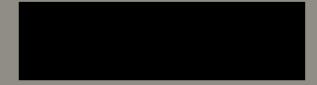
[2025] NZCC 16

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COMMERCE COMMISSION

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Associated documents

Publication date	Reference	Title
25 September 2024	ISSN 1178-2560	Cost of capital determination for electricity distribution businesses' default price-quality path commencing 2025 and Transpower New Zealand Limited's 2025-2030 individual price-quality path [2024] NZCC 21
1 August 2024	ISSN 1178-2560	Cost of capital determination for disclosure year 2025 for information disclosure regulation for Transpower, GDBs and Airports ID [2024] NZCC15
27 June 2024	ISBN 978-1-869457-90-7	Guidelines for WACC determinations under the cost of capital input methodologies - Regulation under Part 4 of the Commerce Act 1986 and Part 6 of the Telecommunications Act 2001 (Post-IM review version)
1 May 2024	ISSN 1178-2560	Cost of capital determination for disclosure year 2025 for information disclosure regulation for electricity distribution businesses and Wellington International Airport [2024] NZCC7
13 December 2023	ISSN: 1178-2560	Airport Services Input Methodologies (IM Review 2023) Amendment Determination 2023 [2023] NZCC 34
13 December 2023	ISSN: 1178-2560	Gas Distribution Services Input Methodologies (IM Review 2023) Amendment Determination – 13 December 2023 [2023] NZCC 37 (as amended)
13 December 2023	ISSN: 1178-2560	Transpower Input Methodologies (IM Review 2023) Amendment Determination 2023 [2023] NZCC 38 (as amended)
13 December 2023	ISBN 978-1-991085-69-6	Cost of capital topic paper, Part 4 Input Methodologies Review 2023 – Final decision

1 August 2023	ISSN 1178-2560	Cost of capital determination for disclosure year 2024 for information disclosure regulation - For Transpower, gas distribution businesses and suppliers of specified airport services (with a June year-end) [2023] NZCC 20
1 May 2023	ISSN 1178-2560	Cost of capital determination for disclosure year 2024 for information disclosure regulation – Electricity distribution businesses and Wellington International Airport [2023] NZCC 8
2 August 2022	ISSN 1178-2560	Cost of capital determination for disclosure year 2023 for information disclosure regulation – For Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end) [2022] NZCC 28
3 May 2022	ISSN 1178-2560	Cost of capital determination for disclosure year 2023 for information disclosure regulation – For Electricity distribution businesses and Wellington International Airport [2022] NZCC 12
1 April 2022	ISSN 1178-2560	Cost of capital determination for gas pipeline businesses' 2022-2026/2022-2027 default price-quality path [2022] NZCC 10
2 August 2021	ISSN 1178-2560	Cost of capital determination for disclosure year 2023 for information disclosure regulation—For Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end)
30 April 2021	ISSN 1178-2560	Cost of capital determination for disclosure year 2022 – Electricity distribution businesses and Wellington International Airport [2021] NZCC 4

WACC ID estimates for disclosure year 2026 for Transpower, GDBs (GasNet and Vector) and airports (AIAL and CIAL)

- 1. This cost of capital determination has been made under the Cost of Capital Input Methodologies (IMs). 1,2,3
- This determination specifies the weighted average cost of capital (WACC) estimates that will apply for information disclosure (ID) regulation for disclosure year 2026 for Transpower New Zealand Limited (Transpower), GasNet Limited (GasNet), Vector Limited (Vector), Auckland International Airport Limited (AIAL) and Christchurch International Airport Limited (CIAL).
- 3. The timing of our WACC determinations for ID regulation differs depending on the disclosure year of the regulated companies. Transpower, GasNet, Vector, AIAL, and CIAL have disclosure year of 1 July to 30 June, with disclosure year 2026 being the year ending 30 June 2026.
- 4. The vanilla and post-tax WACC estimates for disclosure year 2026 are summarised in Table 1, Table 2 and Table 3 below.

Table 1: Vanilla and post-tax WACC estimates for Transpower

	Vanilla WACC	Post-tax WACC
Mid-point	6.43%	5.80%
25 th percentile	5.70%	5.08%
65 th percentile	6.84%	6.22%
75 th percentile	7.16%	6.53%

Table 2: Vanilla and post-tax WACC estimates for GasNet and Vector GDB

	Vanilla WACC	Post-tax WACC
Mid-point	6.60%	6.00%
25 th percentile	5.85%	5.25%
75 th percentile	7.36%	6.76%

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Commerce Commission, <u>Transpower Input Methodologies (IM Review 2023)</u> [2023] NZCC 38 (as amended).

² Commerce Commission, <u>Gas Distribution Services Input Methodologies (IM Review 2023)</u>
<u>Amendment Determination 2023</u> [2023] NZCC 337 (as amended).

³ Commerce Commission, <u>Airport Services Input Methodologies (IM Review 2023) Amendment Determination 2023</u> [2023] NZCC 34 (December 2023).

Table 3: Vanilla and post-tax WACC estimates for AIAL and CIAL

	Vanilla WACC	Post-tax WACC
Mid-point	8.06%	7.73%

The WACC estimates have been calculated as at 1 July 2025, which is the first day of disclosure year 2026.

- 5. This determination applies the relevant sector IMs, including any applicable amendments to those IMs made as a result of a review under Part 4 of the Commerce Act 1986 (Part 4 IM Review 2023).^{4,5,6}
- 6. The Part 4 IM Review 2023 resulted in changes to some fixed WACC parameters, including leverage, asset beta and equity beta. These were used for the most recent Transpower PQ path cost of capital determination. However, this is the first instance these new parameters will apply for Transpower and GDBs in ID regulation. For airports, the changes have applied from 14 December 2023.
- 7. The 2023 Airport Services IM Amendment relating to the cost of capital is the subject of appeals brought by Auckland International Airport Ltd, Wellington International Airport Ltd and Christchurch International Airport Ltd (joint appeal), and New Zealand Airports Association Inc, and is also the subject of a judicial review application by Air New Zealand Ltd, Qantas Airways Ltd, and Board of Airline Representatives of New Zealand Inc. The 2023 Gas Distribution Services Input Methodologies is also the subject of appeal brought by First Gas Limited. These matters have yet to be heard by the Court.

Further details regarding WACC estimates

WACC parameter values for Transpower, GDBs and airports

8. The parameter values used to generate the mid-point WACC estimates for Transpower, GDBs (GasNet and Vector) and airports (AIAL and CIAL) are summarised in Table 4 below.⁷

Commerce Commission, <u>Airport Services Input Methodologies (IM Review 2023) Amendment Determination 2023</u> [2023] NZCC 34 (December 2023)

Commerce Commission, <u>Transpower Input Methodologies (IM Review 2023)</u> [2023] NZCC 38 (as amended).

Commerce Commission, <u>Gas Distribution Services Input Methodologies (IM Review 2023)</u>
<u>Amendment Determination 2023</u> [2023] NZCC 337 (as amended).

All parameter values except the estimate of the risk-free rate and the average debt premium are set in the IMs.

Table 4: Values used to calculate WACC estimates for Transpower, GDBs and airports*

Parameter	Transpower	GDBs (GasNet and Vector)	Airports (AIAL and CIAL)
Risk-free rate	3.96%	3.78%	3.96%
Average debt premium	1.28%	1.21%	0.96%
Leverage	41%	41%	23%
Asset beta	0.36	0.41	0.67
Equity beta	0.61	0.69	0.87
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	0.20%	0.25%	0.20%
Cost of debt	5.44%	5.24%	5.12%
Cost of equity	7.12%	7.55%	8.94%
Standard error of midpoint WACC estimate	0.0108	0.0112	0.0169
Mid-point vanilla WACC	6.43%	6.60%	8.06%
Mid-point post-tax WACC	5.80%	6.00%	7.73%

^{*}The numbers are rounded to two decimal points, except for tax adjusted market risk premium and standard error of the mid-point WACC estimate

Risk-free rate for Transpower, GDBs and airports

- 9. The risk-free rate reflects the estimated bid yield to maturity on New Zealand government bonds with a term to maturity equal to the length of the regulatory period (and five years for airports).
- 10. Our estimate of the five-year risk-free rate is based on data reported by Bloomberg for the three-month period ending 30 June 2025 in respect of the April 2029, May 2030 and May 2031 maturity bonds.
- 11. Our estimate of the four-year risk-free rate is based on data reported by Bloomberg for the three-month period ending 30 June 2025 in respect of the May 2028, April 2029 and May 2030 maturity bonds.

12. The daily data reported by Bloomberg is linearly interpolated, annualised (to reflect the six-monthly payment of interest) and averaged to produce the estimate of a 3.96% interest rate on New Zealand government bonds with a five-year term to maturity, as estimated at 1 July 2025. The same method produces an estimate of 3.78% for New Zealand government bonds with a four-year term to maturity.

Average debt premium for Transpower

13. The average debt premium for Transpower of 1.28% is the average of the debt premium values for the current debt premium reference year (DPRY) and the four previous DPRYs, as shown in Table 5 below.

Table 5: Average debt premium for Transpower (%)

	DPRY 2021	DPRY 2022	DPRY 2023	DPRY 2024	DPRY 2025	AVERAGE
Debt						
premium	1.55	1.15	1.25	1.40	1.05	1.28

- 14. The DPRY for Transpower starts on 1 September and ends on 31 August. DPRY 2025 is the current DPRY for Transpower as it contains the start of disclosure year 2026 (1 April 2025). The IMs state that the calculation of the debt premium for a DPRY is estimated for each business day in the 12 months preceding the start of the DPRY.
- 15. The debt premium values are taken from the following sources:
 - 15.1. The debt premium value for DPRY 2021 was estimated in the ID WACC determination published on 30 April 2021 for EDBs and WIAL.¹⁰
 - 15.2. The debt premium value for DPRY 2022 was estimated in the ID WACC determination published on 3 May 2022 for EDBs and WIAL.¹¹

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We interpolate between the two closest bonds surrounding a five-year remaining term. This requires taking the yields of the bonds with a remaining term immediately before and after a five-years term to maturity on that day. The target term to maturity is constant but the bonds' remaining terms to maturity decrease over time so the bonds immediately before and after the target term may change over time.

⁹ For example, DPRY 2025 for Transpower is 1 September 2024 to 31 August 2025.

Commerce Commission, Cost of capital determination for disclosure year 2022 for information disclosure regulation. Electricity distribution businesses and Wellington International Airport [2021] NZCC 4.

Commerce Commission, Cost of capital determination for disclosure year 2023 for information disclosure regulation. Electricity distribution businesses and Wellington International Airport [2022] NZCC 12.

- 15.3. The debt premium value for DPRY 2023 was estimated in the ID WACC determination published on 1 May 2023 for EDBs and WIAL.¹²
- 15.4. The debt premium value for DPRY 2024 was estimated in the ID WACC determination published on 1 May 2024 for EDBs and WIAL.¹³
- 15.5. The debt premium value for DPRY 2025 was estimated in the PQ WACC determination published on 25 September 2024 for EDBs and Transpower.¹⁴

WACC range and 65th percentile estimates for Transpower

16. In addition to the mid-point estimate, we are also required to determine a WACC estimate at the 25th, 65th and the 75th percentile estimate for Transpower for each disclosure year. The methodology for estimating different WACC percentiles is set out in clause 2.4.5 of the Transpower IMs.¹⁵

Average debt premium for GasNet and Vector GDB

17. The average debt premium for GDBs of 1.21% is the average of the debt premium values for the current DPRY and the four previous DPRYs, as shown in Table 6 below.

Table 6: Average debt premium for GasNet and Vector GDB (%)

	DPRY 2022	DPRY 2023	DPRY 2024	DPRY 2025	DPRY 2026	AVERAGE
Debt						
premium	1.35	1.10	1.45	1.20	0.95	1.21

- 18. The DPRY for GasNet and Vector GDB starts on 1 March and ends on 28 February¹⁶. DPRY 2026 is the current DPRY for GasNet and Vector as it contains the start of disclosure year 2026 (1 July 2025). The IMs state that the calculation of the debt premium for a DPRY is estimated for each business day in the 12 months preceding the start of the DPRY.
- 19. The debt premium values are taken from the following sources:

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Commerce Commission, Cost of capital determination for disclosure year 2024 for information disclosure regulation. Electricity distribution businesses and Wellington International Airport [2023] NZCC 8.

Commerce Commission, Cost of capital determination for disclosure year 2025 for information disclosure regulation. Electricity distribution businesses and Wellington International Airport [2024] NZCC 7.

Commerce Commission, Cost of capital determination for electricity distribution businesses' default price-quality path commencing 2025 and Transpower New Zealand Limited's 2025-2030 individual price-quality path [2024] NZCC21.

Commerce Commission, Transpower Input Methodologies (IM Review 2023) [2023] NZCC 38 (as amended).

¹⁶ For example, DPRY 2026 for GasNet and Vector is 1 March 2025 to 28 February 2026.

- 19.1. The debt premium value for 2022 DPRY was estimated in the ID WACC determination published on 2 August 2021 for Transpower, GDBs and airports¹⁷.
- 19.2. The debt premium value for 2023 DPRY was estimated in the WACC determination for the third price-quality path for the gas pipeline businesses published on 1 April 2022¹⁸.
- 19.3. The debt premium value for 2024 DPRY was estimated in the ID WACC determination published on 1 August 2023 for Transpower, GDBs and airports¹⁹.
- 19.4. The debt premium value for 2025 DPRY was estimated was estimated in the ID WACC determination published 1 August 2024 for Transpower, GDBs and airports²⁰.
- 20. We have estimated the debt premium of 0.95% for GasNet and Vector GDB's 2026 DPRY based on the data in Table 6 below:
 - 20.1. We have had greatest regard to the category (a) and (b) bonds. The category (a) bond supports a debt premium of 0.95%, whilst the category (b) bonds are not inconsistent with this estimate.
 - 20.2. The estimated debt premium for other issuers in bond categories (d) and (e) are not inconsistent with a debt premium around 0.95%, when consideration is given to the different credit ratings and term to maturity (refer to the commentary column of Table 7 for details).
 - 20.3. The Nelson-Seigel-Svennson (NSS) estimate of the debt premium of 0.95% aligns with our estimate of 0.95%.

Commerce Commission, Cost of capital determination for disclosure year 2022 for information disclosure regulation. For Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end) [2021] NZCC 10.

Commerce Commission, Cost of capital determination for gas pipeline businesses' 2022-2026/2022-2027 default price-quality path [2022] NZCC 10. In this determination we had two sets of WACC estimates – one reflecting a five-year period and the other reflecting a four-year period. We did this because we had not yet produced our final decision on the term of the regulatory period for the GPB default price path (DPP).

Commerce Commission, Cost of capital determination for disclosure year 2024 for information disclosure regulation. For Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end) [2023] NZCC 20.

Commerce Commission, Cost of capital determination for disclosure year 2025 for information disclosure regulation. For Transpower, gas pipeline businesses and suppliers of specified airport services (with a June year-end) [2024] NZCC 15.

Table 7: Debt premium estimate for GasNet and Vector GDB, DPRY 2026

			Remaining	
	100% Govt	Bond credit	term to	Debt
Sector	owned	rating	maturity (years)	premium %
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					Remaining		
Bond			100% Govt	Bond credit	term to	Debt	
category	Issuer	Sector	owned	rating	maturity (years)	premium %	Comments
a	Vector Limited	EDB/GPB	No	BBB+	3.2	0.77	5 year debt premium would be higher.
	Air New Zealand						
b	Limited	Other	No	BBB+	3.6	1.32	5 year debt premium would be higher.
	Genesis Energy						
b	Limited	Other	No	BBB+	4.3	1.03	5 year debt premium would be higher.
ь	Mercury NZ Limited	Other	No	BBB+	6.1	0.81	5 year debt premium would be lower.
	Meridian Energy	Other	140	DDD.	0.1	0.01	Sycal debt premium would be lower.
b	Limited	Other	No	BBB+	5.5	0.76	5 year debt premium would be lower.
	Auckland						
	International						BBB+ debt premium would be higher;
d	Airport Limited	Airport	No	A-	5.2	0.67	5 year debt premium would be lower.
							BBB+ debt premium would be lower;
d	Chorus Limited	Fibre	No	BBB	6.3	1.00	5 year debt premium would be lower.
	Contact Energy						BBB+ debt premium would be lower;
d	Limited	Other	No	BBB	4.6	0.70	5 year debt premium would be higher.
	Fonterra Co-						
	operative Group						BBB+ debt premium would be higher;
d	Limited	Other	No	A-	1.2	0.42	5 year debt premium would be higher.
	Spark Finance						
d	Limited	Telco	No	A-	5	0.60	BBB+ debt premium would be higher.
	Wellington						
	International						BBB+ debt premium would be lower;
d	Airport Limited	Airport	No	BBB	6	1.07	5 year debt premium would be lower.
	Christchurch						
	International						BBB+ debt premium would be higher;
е	Airport Limited	Airport	Yes	Α-	3.7	0.68	5 year debt premium would be higher.
	Transpower New						BBB+ debt premium would be higher:
е	Zealand Limited	EDB/GPB	Yes	AA-	3.5	0.35	5 year debt premium would be higher.
е	Zearand Limited	EDB/GPB	res	AA-	3.5	0.35	a year debt premium would be nigher.

Notes on bo	onds analysed
1	VCTNZ 3.69 11/26/2027
2	AIRNZ 6.61 04/27/2028
3	GENEPO 3.65 12/20/2028
4	MCYNZ 1.917 10/09/2030
5	MERINZ 5.4 03/21/2030
6	AIANZ 6.22 11/02/2029
7	CNUNZ 2.51 12/02/2030
8	CENNZ 5.62 04/06/2029
9	FCGNZ 4.15 11/14/2025
10	SPKNZ 5.21 09/18/2029
11	WIANZ 6.02 09/04/2030
12	CHRINT 5.18 05/19/2028
13	TPNZ 5.893 03/15/2028

WACC range estimate for GasNet and Vector GDB

- 21. In addition to the mid-point estimate, we are also required to determine a WACC range estimate for the GDBs.
- 22. The WACC range means the values falling between the 25th percentile and 75th percentile, inclusive of the mid-point estimate of WACC. The methodology for estimating different WACC percentiles is set out in clause 2.4.5 of the GDB IMs²¹.

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Commerce Commission, <u>Gas Distribution Services Input Methodologies (IM Review 2023)</u>
<u>Amendment Determination 2023</u> [2023] NZCC 337 (as amended).

Average debt premium for AIAL and CIAL

23. The average debt premium for AIAL and CIAL of 0.96% is the average of the debt premium values for the current DPRY and the four previous DPRYs, as shown in Table 8 below.

Table 8: Debt premium estimate for AIAL and CIAL (%)

	DPRY 2022	DPRY 2023	DPRY 2024	DPRY 2025	DPRY 2026	AVERAGE
Debt						
premium	1.10	1.00	1.20	0.90	0.60	0.96

- 24. The DPRY for AIAL and CIAL starts on 1 July and ends on 30 June.²² DPRY 2026 is the current DPRY for AIAL and CIAL as it contains the start of disclosure year 2026 (1 July 2025). The IMs state that the calculation of the debt premium for a DPRY is estimated for each business day in the 12 months preceding the start of the DPRY.
- 25. The debt premium values are taken from the following sources:
 - 25.1. The debt premium value for the 2022 DPRY was estimated in the ID WACC determination published on 2 August 2021 for Transpower, GPBs and airports.²³
 - 25.2. The debt premium value for the 2023 DPRY was estimated in the ID WACC determination published on 2 August 2022 for Transpower, GPBs and airports.²⁴
 - 25.3. The debt premium value for the 2024 DPRY was estimated in the ID WACC determination published on 1 August 2023 for Transpower, GPBs and airports.²⁵
 - 25.4. The debt premium value for the 2025 DPRY was estimated in the ID WACC determination published on 1 August 2024 for Transpower, GPBs and airports.²⁶

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²² For example, DPRY 2026 for WIAL is 1 July 2025 to 30 June 2026.

Commerce Commission, Cost of capital determination for disclosure year 2022 for information disclosure regulation [2021] NZCC 10

Commerce Commission, Cost of capital determination for disclosure year 2023 for information disclosure regulation [2022] NZCC 28

Commerce Commission, Cost of capital determination for disclosure year 2024 for information disclosure regulation [2023] NZCC 20

Commerce Commission, Cost of capital determination for disclosure year 2025 for information disclosure regulation [2024] NZCC 15

- 26. We have estimated a debt premium of 0.60% for the 2026 DPRY based on the data in Table 9 below.
 - 26.1. We have had greatest regard to the category (a) and (b) bonds which support a debt premium of 0.60%.
 - 26.2. The estimated debt premium for other issuers in bond categories (c) to (e) are also consistent with a debt premium of around 0.60%, when consideration is given to the different credit ratings and term to maturity (refer to the commentary column of Table 9 for details).
 - 26.3. The Nelson-Seigel-Svennson (NSS) estimate of the debt premium of 0.57% aligns closely with our estimate of 0.60%.

Table 9: Debt premium estimate for AIAL and CIAL, DPRY 2026

				Remaining	
		100% Govt	Bond credit	term to	Debt
	Sector	owned	rating	maturity (years)	premium %
Benchmark bond	Airport	No	A-	5	0.60%

					Remaining		
Bond			100% Govt	Bond credit	term to	Debt	
category	Issuer	Sector	owned	rating	maturity (years)	premium %	Comments
	Auckland						
	International						
a	Airport Limited	Airport	No	A-	4.8	0.59	5 year debt premium would be higher.
	Fonterra Co-						
	operative Group						
b	Limited	Other	No	A-	4.8	0.60	5 year debt premium would be higher.
	Spark Finance						
b	Limited	Telco	No	A-	4.7	0.57	5 year debt premium would be higher.
	Wellington						
	International						A- debt premium would be lower;
С	Airport Limited	Airport	No	BBB	5.7	0.99	5 year debt premium would be lower.
	Air New Zealand						A- debt premium would be lower;
d	Limited	Other	No	BBB+	3.3	1.19	5 year debt premium would be higher.
							A- debt premium would be lower;
d	Chorus Limited	Fibre	No	BBB	5.9	0.86	5 year debt premium would be lower.
	Contact Energy						A- debt premium would be lower;
d	Limited	Other	No	BBB	4.2	0.62	5 year debt premium would be higher.
	Genesis Energy						A- debt premium would be lower;
d	Limited	Other	No	BBB+	4	0.90	5 year debt premium would be higher.
							A- debt premium would be lower;
d	Mercury NZ Limited	Other	No	BBB+	5.8	0.68	5 year debt premium would be lower.
	Meridian Energy						A- debt premium would be lower;
d	Limited	Other	No	BBB+	5.2	0.68	5 year debt premium would be lower.
							A- debt premium would be lower;
d	Vector Limited	EDB/GPB	No	BBB+	2.9	0.66	5 year debt premium would be higher.
	Christchurch						
	International						
е	Airport Limited	Airport	Yes	A-	6.3	0.64	5 year debt premium would be lower.
	Transpower New						A- debt premium would be higher;
е	Zealand Limited	EDB/GPB	Yes	AA-	3.2	0.30	5 year debt premium would be higher.

Notes on bonds analysed					
1	AIANZ 6.22 11/02/2029				
2	FCGNZ 4.6 11/08/2029				
3	SPKNZ 5.21 09/18/2029				
4	WIANZ 6.02 09/04/2030				
5	AIRNZ 6.61 04/27/2028				
6	CNUNZ 2.51 12/02/2030				
7	CENNZ 5.62 04/06/2029				
8	GENEPO 3.65 12/20/2028				
9	MCYNZ 1.917 10/09/2030				
10	MERINZ 5.4 03/21/2030				
11	VCTNZ 3.69 11/26/2027				
12	CHRINT 5.44 04/15/2031				
13	TPNZ 5.893 03/15/2028				

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

- 27. The risk-free rate and the debt premium on bonds change over time. Changes in the risk-free rate and debt premium estimates are illustrated below. Figure 1 shows, as at 1 July 2025, changes over time in the:
 - 27.1. four-year risk-free rate;
 - 27.2. five-year risk-free rate;
 - 27.3. estimated debt premium on bonds rated BBB+ with a remaining term to maturity of five years; and;
 - 27.4. estimated debt premium on bonds rated A- with a remaining term to maturity of five years.

Figure 1: Changes in the risk-free rates and estimated debt premiums over time

