

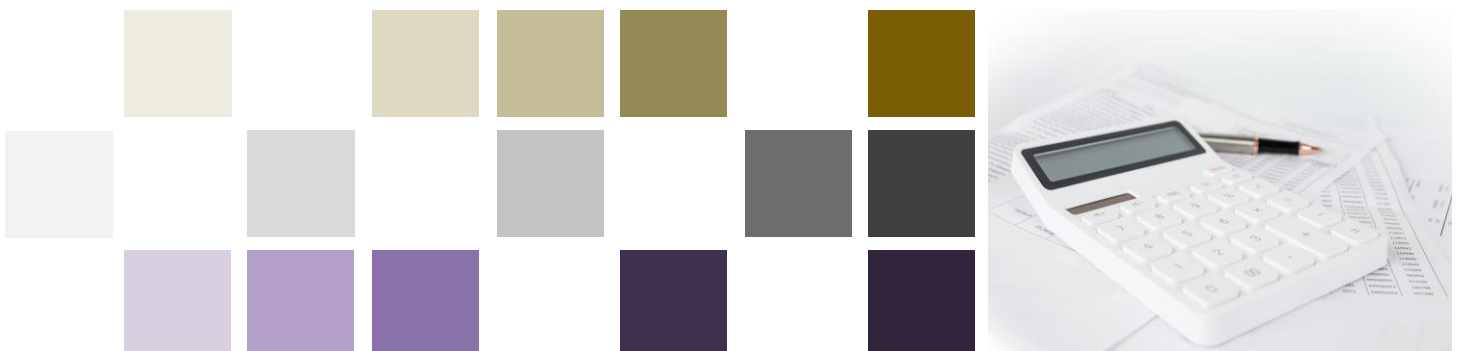
# Revenue required for investment grade credit rating

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Report to DLA Piper

Kieran Murray, Dean Nutsford, Tony van Zijl

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# 1. Introduction

In a letter dated 28 April 2023, DLA Piper instructed us to undertake analysis and provide a summary of advice to the Australian Competition & Consumer Commission (ACCC) in relation to a variation proposal by NBN Co Limited (NBN Co) to its special access undertaking.

DLA Piper instructed us to:

- estimate the increment to revenue above the Annual Building Block Revenue Requirement (ABBRR) required by NBN Co to transition to an investment-grade credit rating
- calculate the portion of the Initial Cost Recovery Amount (ICRA) that could be recovered from that additional revenue.

Our analysis focuses on these matters using NBN Co's building block model dated December 2022.<sup>1</sup> Our analysis considers:

- scenarios based on the benchmark firm and for the actual firm
- sensitivity analysis for dividend assumptions
- variation in estimates of WACC
- different time periods for when an investment-grade credit rating is to be achieved
- shifting, or smoothing, allowed revenue and ICRA recovery over time to better match NBN Co forecasts of actual revenue.

To answer these questions, our report is structured as follows:

- Section 2 sets out what an investment grade credit rating means, how ratings agencies determine whether an entity in the telecommunications sector is investment grade, and the metrics we apply in our modelling
- Section 3 describes the scenarios we model and our approach
- Section 4 sets out the results for the benchmark firm
- Section 5 sets out the results for the actual firm, including sensitivity to dividend assumptions and WACC estimates
- Section 6 considers revenue smoothing, including the timing for ICRA recovery.
- Section 7 contains our declarations in relation to this report.

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<sup>1</sup> The public version of this model, 'NBN Co 2024-2040 Core Services BBM (XLS) 9 December 2022', is available on the ACCC website. We also received and considered the confidential version of this model.

## 2. Investment grade credit rating

### 2.1 An opportunity to achieve an investment grade credit rating

On 29 November 2022, NBN Co lodged a variation to its Special Access Undertaking (SAU) with the ACCC. NBN Co's proposed SAU variation follows a previous SAU variation, which NBN Co submitted in March 2022 and subsequently withdrew, and an extensive industry consultation process in 2021 to consider the future regulatory framework for the NBN.

In its January 2023 consultation paper, the ACCC referred to an outcome identified through the working group process, where recovery of revenue above the ABBRR would be appropriate to the extent it is required to provide NBN Co the opportunity to transition to a standalone investment-grade credit rating (ACCC, 2023, p. 42). To model this objective, assumptions and inputs are required as to the:

- definition of an investment-grade credit rating
- metrics used to measure whether the projected financials achieve the desired rating
- information needed to populate the chosen metrics.

We address each of these points below.

### 2.2 Definition of investment grade credit rating

#### 2.2.1 Credit rating

A credit rating is an independent estimate of the capability of a borrower to fulfil its financial obligations to repay debt. A higher credit rating means a lower risk of default, and vice versa.

Three firms provide most of the independent ratings. Standard & Poor's (S&P), Moody's and Fitch have a combined market share of over 90 per cent in the USA and European Union. In Australia, Moody's rates 72 per cent of the value of all new bonds issued; S&P rates 71 per cent, and Fitch 20 per cent—issuers and instruments often have multiple ratings hence these measures total more than 100 per cent (European Securities and Markets Authority, 2021; Hung et al., 2022).

Given the market share of the 'big three', and the ubiquitous use of their ratings by borrowers and lenders, we consider an entity would need to satisfy the relevant criteria of one or more these three entities to be defined as having an investment grade credit rating.

#### 2.2.2 Investment grade

Investment grade is a level of credit rating that represents a low risk of default. As shown in Table 1, an investment grade rating corresponds to a credit rating of BBB- by S&P and Fitch or Baa3 by Moody's, or higher.

Table 1: Rating scales

Description		Standard & Poor's scale & Fitch*	Moody's scale	Probability of default over 5 years <sup>2</sup>
<b>Capacity to make timely payment</b>  <b>(Investment Grade)</b>	Extremely strong	AAA	Aaa	1 in 600
	Very strong	AA+/AA/AA-	Aa1/Aa2/Aa3	1 in 300
	Strong	A+/A/A-	A1/A2/A3	1 in 150
	Adequate	BBB+/BBB/BBB-	Baa1/Baa2/Baa3	1 in 30
<b>Vulnerability to non-payment</b>  <b>(Speculative Grade)</b>	Less vulnerable	BB+/BB/BB-	Ba1/Ba2/Ba3	1 in 10
	More Vulnerable	B+/B/B-	B1/B2/B3	1 in 5
	Currently vulnerable	CCC+/CCC/CCC-	Caa1/Caa2/Caa3	1 in 2
	Highly vulnerable	CC	Ca	
	Currently highly vulnerable	C		
	Default	D	C	

\*Fitch uses the same rating scale as S&P with an additional category of "RD" being Restricted Default (between C and D)

Source: FitchRatings, Reserve Bank of Australia, (2004) *Credit Ratings and Market Dynamics*; S&P Global, (2019) *Guide to Credit Rating Essentials*; Sapere Research Group

### 2.2.3 Australian regulators apply BBB/Baa2

Australian regulators typically apply a BBB/Baa2 rating in their benchmark cost of debt estimates when setting regulatory WACCs, as shown in Table 2 (QCA, 2021, p. 33):

Table 2: Cost of debt assumption used by Australian regulators as summarised by the QCA

Regulator	Credit rating assumption
AER	BBB+ rating
ESC	BBB rating
IPART	BBB rating
ESCOSA	BBB rating
OTTER	BBB rating
ICRC	BBB rating

Source: QCA, Rate of return review: Final report, November 2021, Table 3, p. 33

<sup>2</sup> The approximate, median, likelihood that an investor will not receive repayment on a five-year investment on time and in full based upon historical default rates published by each agency – see S&P Global Ratings Research and S&P Global Market Intelligence's CreditPro.

The New Zealand Commerce Commission also applies a BBB rating when regulating the New Zealand fibre network company, Chorus. The Commerce Commission concluded that one notch above the minimum investment grade rating of BBB- is a sufficient and appropriate signal of the prudent long-term level of exposure to credit default risk for regulated providers (Commerce Commission, 2020, para. 6.346).

Following the prevailing regulatory practice, we adopt a BBB/Baa2 rating for our central estimates; that is, a rating that is one notch above the minimum rating for an investment grade.

## **2.3 Metrics and values for determining whether an entity is investment grade**

### **2.3.1 Applied quantitative measures only**

Rating agencies apply various methodologies to determine whether an entity (a borrower) is deemed to have an investment grade rating. These methodologies include a mix of quantitative and qualitative measures. As a rough approximation, the quantitative measures assess financial risk, and the qualitative measures assess business risk including ownership.

We have reviewed the use of financeability measures by regulators in Britain, Australia and New Zealand. As summarised in Appendix A, regulators in these jurisdictions focus on the quantitative measures of financial risk as it is the quantitative measures which are impacted by regulatory decisions.

Similarly, in the modelling presented in this report, we calculate credit ratings solely from quantitative financial metrics.

However, in practice, the qualitative measures, especially government ownership, are particularly important in the credit ratings issued for NBN Co by Moody's and Fitch; Moody's currently rates NBN Co as A1 (stable) and Fitch provides a rating of AA (stable). As Moody observed:

NBN's A1 (stable) issuer rating reflects (1) the essential nature of the NBN infrastructure to the Australian economy, which can be seen in the high level of bipartisan political support for the company and the extent to which NBN is entrenched in public policy ... NBN's A1 rating benefits from a 6-notch rating uplift to its ba1 BCA [baseline credit assessment], based on Moody's assessment of high level of support from the Australian Government (Aaa stable) in times of need. The rating agency also regards government ownership as a key rating support to NBN's governance risk profile.

### **2.3.2 We adopt Moody's metrics**

We reviewed the Metrics applied by Moody's, S&P, and Fitch. We have elected to use in our modelling the metrics from Moody's methodology for '*Communications Infrastructure*' published in February



2022.<sup>3</sup> Moody’s applies this rating methodology globally to companies primarily engaged in providing communications infrastructure.<sup>4</sup>

We chose to use Moody’s methodology for two reasons:

- the approach is transparent, allowing observers to test and see-through the resulting ratings<sup>5</sup>
- Moody’s has a high market share in rating new bonds issued in Australia and hence its methodology would be familiar to many interested parties.

Table 3 shows Moody’s scorecard for revenue, profitability and efficiency, and leverage and coverage criteria for the communications infrastructure companies rated as investment grade. Following prevailing regulatory practice, we exclude the “revenue” metric (including this metric would introduce an element of circularity as the regulatory purpose in applying the metrics is to assess the allowed revenue).

Table 3: Moody’s communications infrastructure scorecard (quantitative criteria)

Rating	Revenue (10%)	Profitability and efficiency (20%)	Leverage and coverage (30%)		
	USD Billion	FFO Margin	(EBITDA-CAPEX) / Interest Expense	FCF / Debt	Debt / EBITDA
<b>Aaa</b>	≥60	> 95%	≥ 12x	≥ 45%	≤ 0.5x
<b>Aa</b>	30-60	75% - 95%	7x – 12x	30% - 45%	0.5x – 1x
<b>A</b>	10-30	60% - 75%	4x – 7x	20% - 30%	1x – 1.5x
<b>Baa</b>	3-10	50% - 60%	3x – 4x	10% - 20%	1.5x – 3x

Source: Moody’s, Rating methodologies: Communications Infrastructure, February 2022

## 2.4 Information required to apply Moody’s metrics

We set out below each of the metrics applied in our modelling, using the terms and formulae as they are expressed in NBN Co’s building block model:

<sup>3</sup> [https://www.moody.com/research/Moodys-updates-its-methodology-for-rating-communications-infrastructure-companies--PBC\\_1277293](https://www.moody.com/research/Moodys-updates-its-methodology-for-rating-communications-infrastructure-companies--PBC_1277293).

<sup>4</sup> Moody’s note that although communications infrastructure companies provide telecommunications services, they are generally more specialized than the companies covered under its methodology for telecommunications service providers, and they provide communications infrastructure on a wholesale basis rather than to retail consumers directly.

<sup>5</sup> See for example the material published at:

[https://www.moody.com/researchdocumentcontentpage.aspx?docid=PBC\\_79004](https://www.moody.com/researchdocumentcontentpage.aspx?docid=PBC_79004)

$$FFO \text{ margin} = \frac{FFO}{Revenue} = \frac{ABBRR \text{ Revenue (core)} - Opex - Tax - Interest \text{ Expense}}{ABBRR \text{ Revenue (core)}}$$

$$\frac{EBITDA - Capex}{Interest \text{ expense}} = \frac{ABBRR \text{ Revenue (core)} - Opex - Capex}{Interest \text{ expense}}$$

$$\frac{FCF}{Debt} = \frac{ABBRR \text{ Revenue (core)} - Opex + Interest \text{ income} - Interest \text{ expense} - Capex}{Debt}$$

$$\frac{Debt}{EBITDA} = \frac{Debt}{ABBRR \text{ Revenue (core)} - Opex}$$

The results of the calculation of these metrics are then matched to the cells in Table 3 and a weighted average is taken to provide an overall credit rating.

## 3. Modelling of revenue requirement

### 3.1 We modelled two scenarios

We model the financial results (produce pro-forma financials) for a firm with parameters consistent with each of two financial scenarios: the 'benchmark firm' and the 'actual firm' scenarios.

The benchmark firm scenario adopts the parameter values within the NBN Co building block model.

In the actual firm scenario, we substitute the debt balances and interest costs from NBN Co's "Integrated Operating Plan FY22-26" (Operating Plan) for the benchmark values. As the data in the Operating Plan extends only to FY 2032, we assume the implied cost of debt in FY 2032 (estimated by dividing interest costs by debt levels in the Operating Plan) is maintained over the remainder of the modelling period. We have not assessed, and express no view, on the financial projections contained in NBN Co's Operating Plan.

The primary inputs and assumptions for the two scenarios are shown in Table 4.

Table 4: Inputs for benchmark and actual firm scenarios

	<b>Benchmark</b>	<b>Actual</b>
<b>Revenue</b>	Building block target revenue	Building block target revenue
<b>Opex</b>	Building block allowance	Building block allowance
<b>Depreciation</b>	Building block allowance	Building block allowance
<b>Debt</b>	Equal to 40% of RAB	Actual opening debt
<b>Interest expense</b>	Calculated using WACC inputs and gearing	Calculated using projected debt and cost profile
<b>Tax expense</b>	Calculated	Calculated
<b>Dividends</b>	Calculated to maintain gearing ratio	Assume no dividend. We test sensitivity with three different dividend pay-out policies.

### 3.2 Our approach to modelling

In each scenario, we calculate, from the financial results, Moody's quantitative metrics and assess the estimated resulting credit rating for the firm. If the estimated credit rating is below the Baa2 target

(floor),<sup>6</sup> we add an increment to revenue through the building blocks model and re-estimate the credit rating. More revenue is added until the threshold credit rating is met in each year.

The increments to revenue in each year are then summed over the modelling period to determine the quantum of the ICRA balance that could be recovered under each scenario. The modelling period extends to the financial year 2039-40.

Our approach takes in the consequential impacts of any change to revenue. Notably, the tax expense is recalculated as an increase in revenue means the existing tax loss is exhausted earlier.

In the actual firm scenario, we initially assume that any increment in revenue (to achieve investment grade status in a given year) is applied to reducing debt. Our assumption that any increment in revenue is applied to reducing debt means that the debt level (and interest expense) for the subsequent year is reduced. The increment to revenue needed to achieve investment grade status for that subsequent year is similarly reduced.

As a sensitivity, we test the impact were NBN Co to pay a dividend, under three dividend scenarios (described below).

We also test sensitivity to a higher or lower WACC estimate of  $\pm 1\%$ .

We take in all other cost inputs directly from the NBN Co building block models. We have not been tasked with evaluating the input parameters and assumptions within the NBN Co model. Alternative parameter estimates, for example for expenditure on capital or operational costs, may result in changes to our assessed credit rating and therefore to our estimates of incremental revenue needed to achieve an investment-grade rating.

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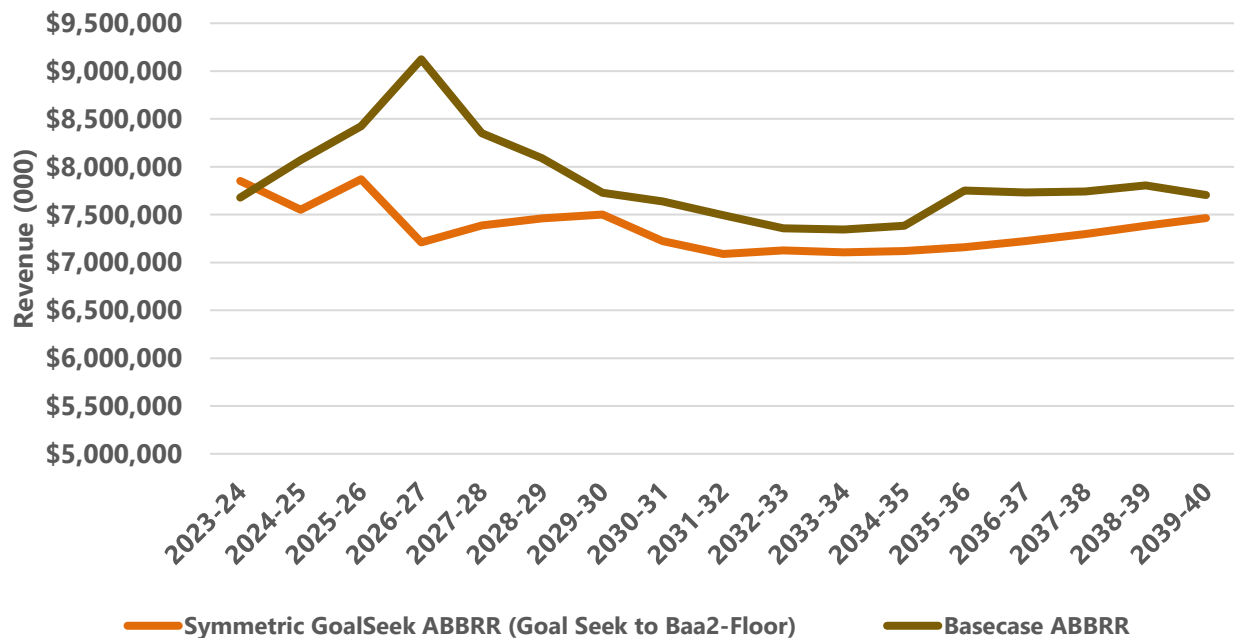
<sup>6</sup> That is, the credit rating that just meets the Baa2 credit rating.

## 4. Benchmark scenario results

### 4.1 No increment to revenue is needed for an investment grade status

Figure 1 shows the revenue profile produced by the building block model for the benchmark firm (gold line). It also shows the revenue profile that would be needed for the benchmark firm to meet a Baa2 credit rating (solid orange line). Summed over the modelling period, no net additional revenue would be required to achieve the investment grade status—the revenue would be higher than needed in all years except 2023-34.

Figure 1 Revenue profile for benchmark firm to achieve Baa2 rating vs building block model projection

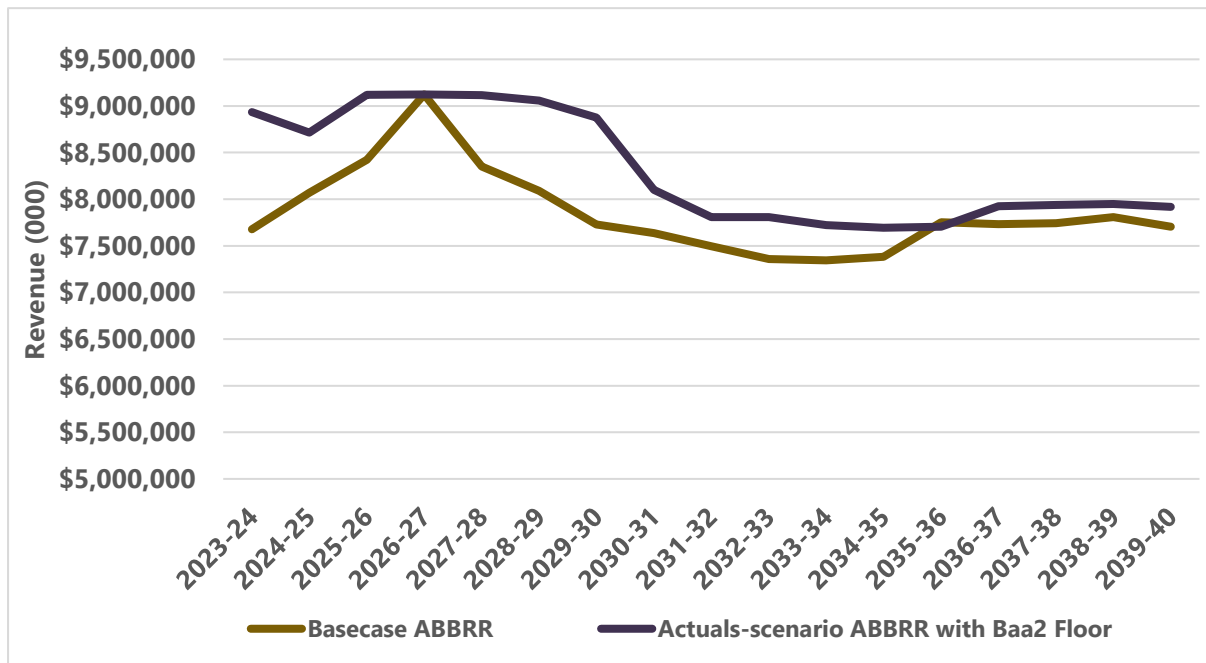


## 5. Actual firm scenario

### 5.1 Increment to revenue required

Figure 2 shows the revenue profile produced by the building block model for the benchmark firm (solid gold line) and the revenue profile that would be necessary for the actual firm in this scenario to just meet a Baa2 credit rating result in each year (solid dark purple line). The chart shows that additional revenue would be required to achieve the investment grade rating based on actuals compared with the revenue modelled for the benchmark firm.

Figure 2 Revenue profile for actual firm to achieve Baa2 rating vs building block model projection



### 5.2 ICRA recovery from additional revenue

Table 5 shows the amount of ICRA that could be recovered from the cumulative additional revenue the actual firm would require under the building blocks model to achieve an investment grade over the modelling period. The figures presented are the cumulative total over the modelling period. The figures are presented in nominal values and in present values (as at 2023-24), with the rate of inflation forecast applied in the building blocks model used as the discount factor.

Table 5: ICRA recovered from cumulative additional revenue to achieve investment grade status

Investment grade	Baa3	Baa2	Baa1
<b>Billion</b>	\$7.3	\$9.8	\$12.3
<b>PV billion (FY24)</b>	\$5.9	\$8.2	\$10.5

In the Baa2 central case, debt would reduce to \$10.7 billion over the modelling period (2039-40) from an opening value of \$25.4 billion. However, the actual firm would still require an increment to revenue of around \$549 million in the last year of the modelling period to achieve an investment grade status of Baa2.

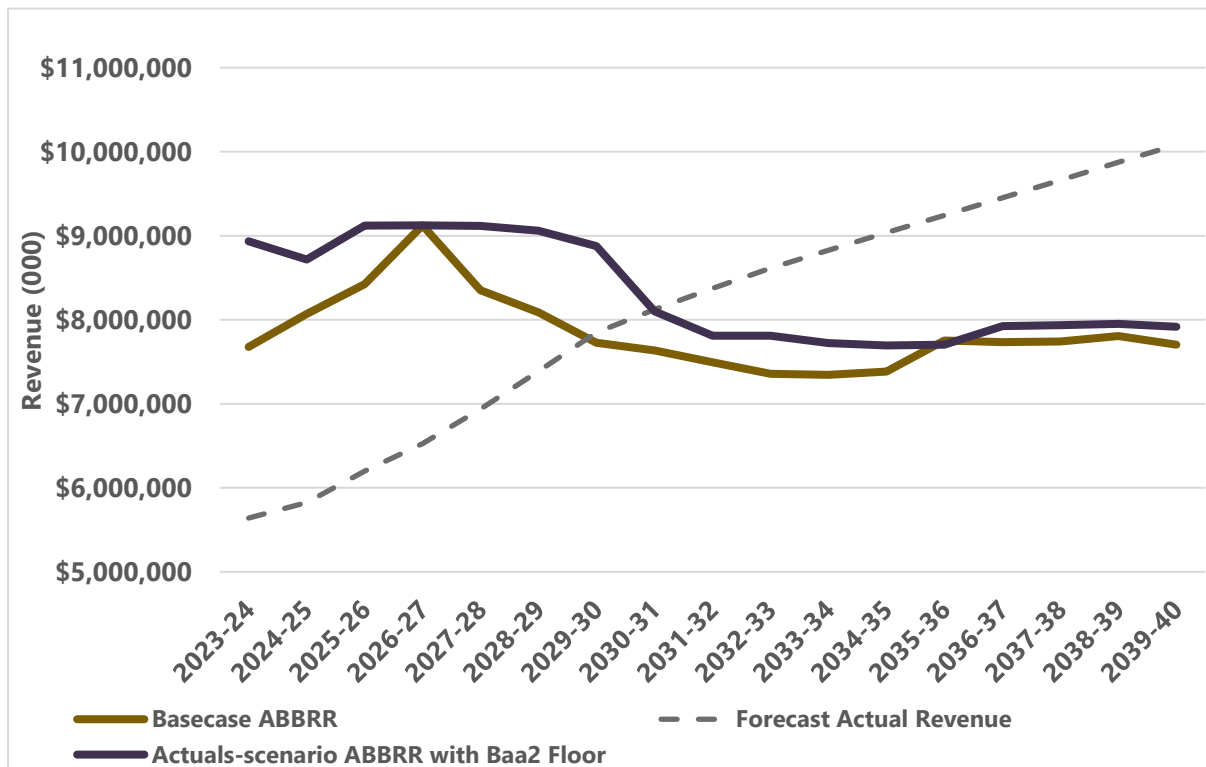
### 5.3 Required revenue would initially exceed forecast actual revenue

NBN Co’s financial projections show that NBN Co does not expect to achieve its Annual Building Block Revenue Requirement (ABBRR) until 2031-32. Hence, NBN Co would not expect to be able to earn an increment to revenue to achieve an investment-grade status:

- prior to 2029-30 under the benchmark scenario, and
- prior to 2031-32 under the actual firm scenario.

This result is shown in Figure 3. NBN Co’s projected actual revenue is represented by the dashed grey line, with the solid dark purple line representing the revenue needed for an investment-grade rating and the solid gold line the building block revenue.

Figure 3: Projected actual revenue, building block revenue, and revenue required for investment-grade rating



We consider the impact of the timing of recovery of ICRA and revenue smoothing further in section 6 below.

## 5.4 Dividend sensitivity

The ICRA recovered estimates shown in Figure 2 and Table 5 above assume that NBN Co does not pay a dividend and the additional revenue is used to repay debt. To test the sensitivity of this assumption, we model the additional ICRA recovery needed were NBN Co to pay dividends under three different pay-out policies.

Under Australian general law, dividends may only be paid from profits attributable to members, that is, from net profit after tax. For the purposes of this sensitivity analysis, we assume NBN Co would legally be in a position to pay dividends of at least \$100 million per annum from financial year 2030.<sup>7</sup> We assume that from the financial year 2030 onwards, NBN Co pays dividends of:

- a flat \$100 million per annum
- a flat \$200 million per annum
- an amount that grows in a smoothed fashion towards (but not reaching) a target pay-out ratio of 50 per cent of net income
- an amount that ramps up quickly toward (but not reaching) a target pay-out ratio of 80 per cent of net income.

These scenarios are illustrative only.

The finance literature does not provide guidance for a dividend assumption (Black, 1998). There is some evidence that when firms choose to pay dividends, managers often pursue a 'smoothed' dividend approach (Lintner, 1956; Stuart and Vieira, 2008). We chose a target of 50 per cent of net income for the third scenario after reviewing the practice of firms operating in the telecommunications sector of developed countries, with significant exposure to fixed infrastructure assets (fibre, wireline or other telecommunications infrastructure). For the fourth scenario, we assume the dividend pay-outs ramp up approximately three times as quickly as under the third scenario.

Table 6 shows the amount of ICRA that could be recovered from the cumulative additional revenue the actual firm would require under the building blocks model to achieve an investment grade (Baa2) over the modelling period and pay dividends under the four scenarios. The figures presented are the cumulative total over the modelling period and presented in nominal values and in present values (as at 2023-24).<sup>8</sup>

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<sup>7</sup> We arrived at this assumption by assuming a revenue profile consistent with the smoothed revenue discussed in section 6.2 below, deducting costs as per the building block model and assuming amortization is unchanged from the amounts disclosed in its 2022 Annual Report, and assuming no change in reserves. We do not test for the net assets criterion of section 254T(1) of the Corporations Act. Our assumed date on which NBN Co might be in a position to legally pay a dividend is therefore illustrative only for the purposes of this sensitivity. A projection of NBN Co's expected financial position may result in a different assumed date.

<sup>8</sup> The present values are discounted at the NBN Co WACC.



Table 6: ICRA recovered from cumulative additional revenue to achieve investment grade status (Baa2), for each dividend scenario

Dividend assumption	Scenario 1	Scenario 2	Scenario 3	Scenario 4	
	\$100m pa after FY30	\$200m pa after FY30	\$64m to \$792m	\$305m to \$2,070m	No dividend
<b>Billion</b>	\$10.4	\$10.9	\$11.7	\$15.9	\$9.8
<b>PV billion (FY24)</b>	\$8.6	\$9.0	\$9.5	\$12.5	\$8.2

## 5.5 Sensitivity to WACC estimate

The modelling presented above assumed a WACC of 7.7 per cent in financial year ending 2024-2025, and a WACC of 7.8 per cent in the subsequent years; these are the midpoint WACC assumptions in the building block model. We have repeated the calculations described above for two variations in the estimated WACC.

These variations are for a higher and a lower WACC based on values for the constituent parameters that reflect the “current” and “long term” estimates of the parameters shown in the building blocks model (on which the NBN Co midpoint estimate of WACC was based). We have not assessed and express no view in relation to the NBN Co estimates of WACC. The sensitivity analysis is presented to show how the modelled revenue profile changes with different estimates of WACC.

Table 7: WACC variations from FY 2026 onwards

	Lower WACC	Base case	Higher WACC
<b>Risk free rate</b>	3.45%	4.45%	5.45%
<b>Market risk premium</b>	7.19%	7.19%	7.19%
<b>Equity beta</b>	0.66	0.66	0.66
<b>Return on equity (nominal post tax)</b>	8.22%	9.22%	10.22%
<b>Return on debt<sup>1</sup></b>	4.3%	5.3%	6.3%
<b>Gearing</b>	36.73%	36.73%	36.73%
<b>Gamma</b>	0.585	0.585	0.585
<b>Nominal vanilla WACC<sup>2</sup></b>	6.782%	7.782%	8.782%

<sup>1</sup> The return on debt in FY2024 is 4.02%, 5.02%, and 6.02% in the low, base and high sensitivities, and 4.12%, 5.12%, and 6.12% in FY2025. <sup>2</sup> The nominal vanilla WACC in FY2024 is 6.677%, 7.677%, and 8.677% in the low, base and high sensitivities, and 6.716%, 7.716%, and 8.716% in FY2025.

Figure 4 shows the revenue profiles for the variations in WACC. As with Figure 3, NBN Co’s projected actual revenue is represented by the dashed grey line, with the solid dark purple line representing the revenue needed for an investment-grade rating and the solid gold line the building block revenue. The higher and lower WACC scenarios are represented by light blue dashed lines.

As illustrated in the chart, a lower WACC would:

- reduce the gap in the initial years between the building block revenue and forecast actual revenue
- increase the gap between the building block revenue and the revenue required for the actual firm to achieve an investment-grade status (considering only the financial measures).

A higher WACC would have the opposite effect; that is, increase the gap between the building block revenue and forecast actual revenue in the initial years, and reduce the gap between the building block revenue and the revenue required for the actual firm to achieve an investment-grade rating.

Figure 4: WACC sensitivity

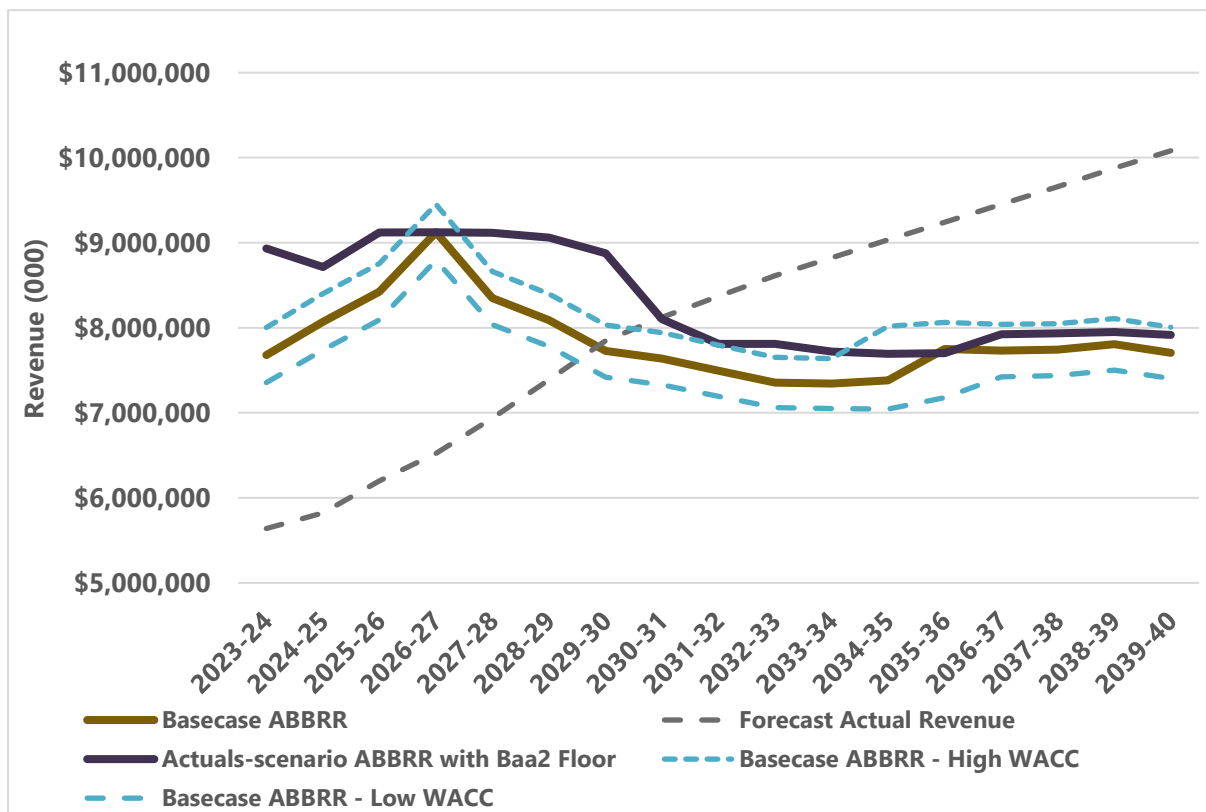


Table 8 shows the cumulative increment to revenue (and hence ICRA that could be recovered) for the WACC scenarios shown in Figure 4 above.

Table 8: Cumulative increment to revenue for actual firm to achieve Baa2 rating (FY 24 – FY40)

<b>WACC scenario<sup>9</sup></b>	<b>Low WACC</b>	<b>WACC base case</b>	<b>High WACC</b>
<b>Billion</b>	\$11.5	\$9.8	\$8.1
<b>PV billion (FY 24)</b>	\$9.6	\$8.2	\$6.6

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<sup>9</sup> As shown in Table 9.

## 6. Revenue smoothing

### 6.1 Alternative timing of ICRA recovery

As illustrated in Figure 3 above, NBN Co’s financial projections show that NBN Co would not expect to achieve its ABBRR until 2029-30. Hence, NBN Co would not expect to be able to earn an increment to revenue to recover ICRA prior to 2030-2031. Thereafter, it anticipates it could achieve higher revenue than would be permitted from its ABBRR requirement.

However, as NBN Co is government owned, it does not currently require an increment to revenue to achieve an investment grade rating (see discussion in section 2.3.1 above).

We modelled alternative timing of commencement of the ICRA recovery. Table 9 shows the nominal and present value of the cumulative ICRA recovered if the increment to revenue was commenced after a delay of one year, three years, or until 2031 (these dates are illustrative only and were selected simply to show the effect of delaying the commencement for different periods of time).

Table 9: Alternative timing of commencement of ICRA recovery

	<b>Base FY24</b>	<b>From FY25</b>	<b>From FY28</b>	<b>From FY31</b>
<b>Billion</b>	\$9.9	\$9.8	\$9.7	\$9.1
<b>PV billion (FY 24)</b>	\$8.2	\$7.9	\$7.6	\$6.8

Under the modelling assumptions, a delay in the timing of recovery of the ICRA results in only a relatively small change in the quantum of total ICRA recovery. The primary reason for this result is the assumption that any ICRA recovered would be used to repay debt. With a delay in the recovery of ICRA, debt is higher in later years and hence a larger increment to revenue (ICRA recovery) would be required to achieve the investment grade status.

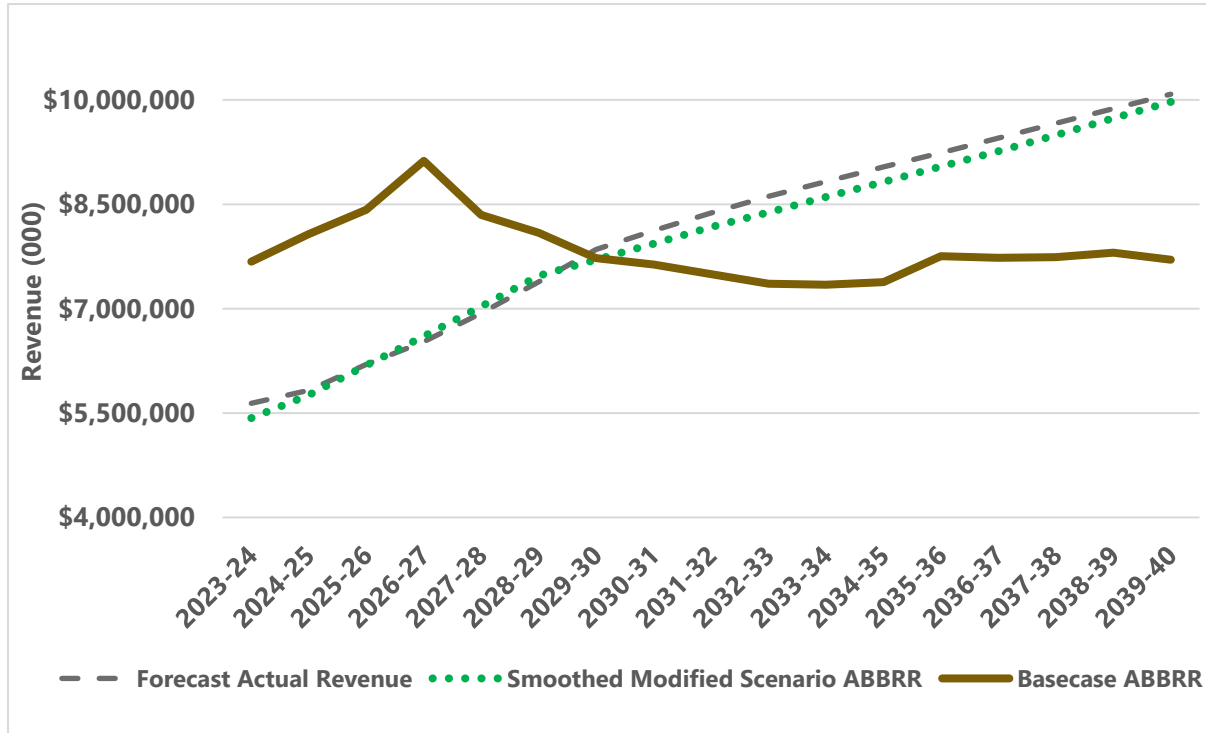
### 6.2 Smoothed building block revenue

Figure 3 above showed that NBN Co does not expect to achieve its ABBRR until 2029-30. In Figure 5 we show the effect of smoothing the building block revenue for the base case (the revenue produced by the NBN Co model) so that the revenue profile is more achievable given the forecast actual revenue. We apply the same smoothing approach as used by the Australian Energy Regulator (AER) in setting revenue for energy networks and adopted by the New Zealand Commerce Commission for Chorus.

The smoothed revenue profile—represented by the green dotted line—has the same present value as the revenue profile produced by the building block model, represented by the solid gold line.<sup>10</sup>

<sup>10</sup> In this example, the NBN Co estimate of WACC is used to discount the revenue streams. An alternative approach would be to discount the revenue stream by an interest rate to reflect that the smoothing process only alters the timing of cashflows.

Figure 5: Building block revenue smoothed to forecast actual revenue



### 6.3 Credit rating of actual firm receiving smoothed revenue profile

Reflecting the forecast actual revenue profile, the smoothed revenue profile shown in Figure 5 has a very different shape to the revenue profile produced by the building block model (solid gold line); less revenue is collected in the earlier years and more revenue is obtained in the later years. The credit rating of the actual firm therefore changes if that rating is assessed against the smoothed revenue profile rather than the building block model profile.

Table 10 shows the credit rating scores for the actual firm scenario, when assessed against the smoothed revenue profile. In this scenario, the firm transitions to a Baa2 credit rating in 2028-29 and maintains that rating (or higher) in subsequent years.

Table 10: Credit rating of actual firm receiving smoothed revenue

2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40
B	B	B	Ba	Ba	Baa2	Baa2	Baa1	Baa1	A	A	A	A	A	A	A	A

## **7. Declaration**

We have read and agree to be bound by the Federal Court of Australia Expert Evidence Practice Note. In preparing this report, we have made all enquiries we believe are desirable and appropriate. No matters of significance that we regard as relevant have, to our knowledge, been withheld from this report.

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## Appendix A Use of financeability measures by regulators

This appendix provides a summary of the use of financeability measures by regulators in Britain, Australia and New Zealand:

Table 11: Summary of use of financeability measures across regulators

	Approach	Application	Measures	Targets	Timeframe
<b>Britain</b>					
Ofwat	Entity self-assessment and Ofwat assessment	Notional and actual capital structure.	Gearing Interest cover Adjusted cash interest cover ratio FFO/Net debt Dividend cover Retained cash flow/Net debt RoCE RORE	Entity to determine. Most BBB+/Baa1/BBB+, Four BBB/Baa2/BBB, 3 lower for notional, noting still consistent with investment grade	PR19: 2020-2025, accounting for performance over 2015-2020.
Ofgem	Entity self-assessment and Ofgem assessment	Notional and actual	Implied Moody's methodology (as most transparent), with same measures as Ofwat as well as variations on FFO interest cover, Post Maintenance Interest Cover Ratio, EBITDA/RAV, and Dividend/RegEquity. Also considers strength of other metrics and qualitative factors.	Maintain investment grade rating. Ofgem use thresholds for ratings 2 notches above investment grade without hard requirements to always meet for every ratio	Regulator period: average projected figures considered over 2022-2026.
<b>Australia</b>					
IPART	IPART assessment	Benchmark (B) and actual (A)	Interest cover (B>2.2x, A>1.8x) FFO/debt (B>7%, A>6%) Gearing (<70%)	IPART has developed targets for each measure for benchmark and actual based on a target rating of BBB/Baa2.	Focused on upcoming regulatory period. <sup>1</sup>

ESC	Entity self-assessment and ESC assessment	Actual	FFO interest cover (> 1.5x) Gearing < 70% FFO/Net debt > 10% Internal financing ratio > 35%	ESC has developed targets on a target rating of investment grade (at or above BBB- or Baa3).	Estimated levels and trends over a 10-year period. Not a requirement to achieve investment grade in every year.
ESCOSA	Self-assessment and ESCOSA assessment	Actual against benchmark scenario	Interest coverage ratio > 2.2 FFO/Net debt > 7 Gearing = 60%	Targets based on a target rating of investment grade (at or above BBB- or Baa3).	Over forecast period. For RD20: 2020-21 – 2023-24
QCA	Self-assessment and QCA assessment	Actual	FFO interest cover (2.5x-4.5x) Gearing (55% - 70%) FFO/Nett debt (10%-15%) Internal financing ratio (1x-1.5x)	Financial ratios target ranges to determine if businesses are investment grade (i.e. BBB rating, so could be from BBB- or Baa3)	Applied to most recent data from entity's annual report in case of Gladstone Area Water Board price monitoring.
ERAWA	Input to BBM estimates	Benchmark: BBB+ in recent energy network determinations, Pilbara network: BBB for Horizon Power; BBB- for Alinta Energy			
AER	Considering the merits of using financeability tests as cross checks				
<b>New Zealand</b>					
Commerce Commission	Input to BBM estimates	Targets grade of BBB			

1 If financeability concerns are identified, time period extended to 2-3 years before and after the upcoming period provided robust forecasts are available.

Sources: Various as set out in Appendix B.

Table 12: Comparison of the financial metrics used in financeability tests

Financial Metric	Interpretation (measures/allows assessment of...)	Typical formula applied	Ofwat	Ofgem	IPART	ESC	ESCOSA	QCA
<b>Debt ratios</b>								
FFO interest cover	Business' ability to service its debt	$(\text{FFO} + \text{interest}) / \text{interest}$	✓	✓	✓	✓	✓	✓
Gearing	Business' leverage	Nett debt/RAB	✓	✓	✓	✓	✓	✓
FFO/net debt	Business' ability to generate cash flows to service and repay debt	FFO/net debt	✓	✓	✓	✓	✓	✓
RCF/net debt	A company's debt burden relative to operational income, after paying dividends	$(\text{FFO} - \text{dividends paid}) / \text{net debt}$	✓	✓				
Internal financing ratio	Extent to which an entity has cash remaining to finance capex after dividends	$(\text{FFO} - \text{dividends paid}) / \text{capex}$				✓		✓
Adjusted interest cover ratio (PMICR <sup>a</sup> )	A company's ability to meet its interest payments, taking into account regulatory depreciation	$(\text{FFO} + \text{interest} - \text{RAB depreciation}) / \text{interest}$	✓	✓				
Adjusted cash interest cover ratio (ACICR)	A company's ability to meet its interest payments after meeting costs that have been expensed and RAB run-off	$(\text{FFO}(\text{pre interest}) - \text{RAB run off}) / \text{cash interest}$	✓	✓				

Equity ratios								
Regulated equity/EBITDA	The return on regulated equity	Regulated equity/EBITDA		✓				
Regulated equity/profit after tax	The return on regulated equity	Regulated equity/ profit after tax		✓				
Dividend cover ratio	A company's ability to pay dividends or, if a financeability problem is due to dividend commitments	Profit after tax/ dividends declared	✓	✓				
Dividend/Regulated Equity	The cash earned by equity providers	Dividends declared/ equity component of RAB		✓				
Return on capital employed	Overall returns against the WACC	Profit after tax/ RAB	✓					
Return on regulated equity	The returns earned by equity providers against the cost of equity	$(EBIT - tax - (cost\ of\ debt * net\ debt)) / \text{equity component of the RAB}$	✓					

a PMICR stands for 'Post-maintenance interest coverage ratio'.

Sources: Adapted from IPART (2018), "Review of our financeability test" Final Report; Various sources as shown in Appendix B

## Appendix B Curriculum vitae of report authors

### Kieran Murray, Managing Director, Sapere Research Group

#### Bio/Summary

Kieran is a professional economist, working primarily in the fields of economic regulation, public-policy reform, competition analysis, and market design. He has served as an economic consultant on these matters in more than 15 countries over two decades. Kieran co-founded and jointly leads Sapere, one of the largest expert services firms in Australasia and a leader in providing independent economic, forensic accounting and public policy services. Kieran formerly led the design and implementation of the trading arrangements for the New Zealand wholesale electricity market. He was an adviser to the New Zealand Minister of Finance (Hon David Caygill), and began his career as a Treasury official with responsibility for advising on major policy reforms.

#### Current responsibilities

- Managing Director, Sapere Research Group (2010 – present)
- Lay Member of the New Zealand High Court (2011 – present; appointed by the Governor General for New Zealand for second 5-year term in 2017)
- International Arbitrator for appeals from the Papua New Guinea Independent Consumer and Competition Commission, (2010 – present; appointed by the Governor General for PNG for a second 5-year term in 2016)
- Expert economist, providing evidence-based testimony and reports (1998 – present)
- Complaint Committee, Kiwifruit New Zealand, (decided complaints in 2016, 2017, 2018)

#### Previous experience

- LECG Ltd, Managing Director 2007-2010; Director, 1997-2007
- Chairman, Board of Directors, LECG Ltd (Australia and New Zealand), 2006-2010
- Member, senior executive team, LECG global energy and environmental practice, 2008-2010
- Member, Appeal Board, New Zealand Electricity Market
- Electricity Market Company, Manager Research and Development, 1994-1997
- New Zealand Treasury, Advisor, 1994
- New Zealand Parliament, Advisor to Rt Hon Mike Moore Leader of the Opposition, 1992-1993
- State Services Commission, Economic Consultant, 1991-1992
- Member, Rt Hon James Bolger Prime Ministerial Task Force on Targeting social Assistance, 1991
- New Zealand Parliament, Advisor to Hon David Caygill, Minister of Finance, 1990
- New Zealand Treasury Department, Financial and Economic Analyst, 1987-1990

## **Expert testimony**

Serving as an expert economist Kieran has testified on more than 30 occasions. He has testified before Select Committees of New Zealand's House of Representatives, the High Court, the Environment Court, the Environment Protection Agency, the Human Rights Tribunal, the Waitangi Tribunal, the New Zealand Commerce Commission, and the Energy Regulatory Commission of the Philippines. He has provided expert evidence and reports to the Australian Federal Court, the Australian Consumer and Competition Commission, the Australian Energy Market Commission, the Australian Energy Regulator, the (former) National Electricity Code Administrator in Australia, the Energy Regulatory Authority in Singapore, and presented to the Federal Energy Commission of the United States.

## **Contract design and economic regulation**

Kieran has worked with policymakers, regulators, industry participants, and consumers, in the design, implementation, application and assessment of contract design and economic regulation in the Asia-Pacific region. He has advised on efficient pricing and risk allocation between commercial entities in New Zealand, Australia and South East Asia. He has assisted regulators apply economic regulation in Australia, New Zealand, PNG and Singapore to electricity networks, sea ports and statutory export monopolies. He has led revenue application projects for electricity, gas and telecommunication networks, and airports in Australia, New Zealand, Singapore and the Philippines. He has worked with major consumers and customers of regulated networks in New Zealand and Australia in negotiating access terms and commenting on revenue applications, and testified on valuation of land under specialised assets such as airports and sea ports. Kieran has advised on and led projects to ensure compliance with consumer finance requirements in New Zealand and Australia.

## **Competition analysis**

Kieran has over two decades experience in preparing expert reports and testimony on competition matters. His expertise as a competition economist has been recognised in his appointment, by the Governor General of New Zealand, as an expert lay member of the New Zealand High Court under the Commerce Act 1986, and his appointment by the Governor General of Papua New Guinea as an International Arbitrator for appeals from the PNG Independent Consumer and Competition Commission.

## **Internationally recognised in energy market reform**

Prior to his consulting career, Kieran was instrumental in establishing the (former) wholesale electricity market operator, EMCO. He was responsible for the design and implementation of the wholesale electricity market, NZEM, which went live in October 1996. After leaving EMCO, Kieran held leading roles in projects to advance the market design, including the Electricity Governance Establishment Project and the Grid Security Project. His expertise in electricity market reform is recognised through subsequent engagements to advise on electricity market institutions and design in Australia (east and west coast markets), Canada, Columbia, the Philippines, Singapore, south-eastern United States, Vietnam, and several Pacific Island nations.

## Environment and natural resources

Kieran has written, testified and advised on the impact of commercial activities on the environment. He has been engaged directly by the Environment Protection Agency to help it assess applications in the marine environment and testified before it in relation to fumigants used for agricultural exports and the impacts of major roading projects. He has testified before the Environment Court considering applications for land use change and the extraction of natural resources, and provided expert reports to government agencies quantifying green-house emissions and carbon reductions. He has written and testified on the economic principles relating to specifying and valuing water rights and interests in water, including the interests of landowners and holders of entitlements to water. This work includes testifying to the Treaty of Waitangi Tribunal on the residual interest of iwi in water, valuing land used for hydro electricity storage, testifying to the Environment Court on the comparative value of water used in dairy and hydro electricity generation, and advised on the value of water entitlements for the acquisition of hydro generation power plants in South East Asia.

## Public policy

Kieran maintains a strong interest in public policy. He is regularly asked to provide advice to public and private institutions with regard to proposed policy changes, and his informal advice is sought by senior decision-makers. Recent publicly available work includes lessons from experience of a decade of tax reform across 16 Pacific countries, and a suite of papers for the freshwater Iwi Leaders Group considering how iwi interests in freshwater might be reflected in modern economic instruments.

Kieran was formerly the economic advisor to Rt Hon Mike Moore (subsequently Director-General of the WTO) during his term as Leader of the Opposition and to Rt Hon Sir Michael Cullen. He was member of Rt Hon James Bolger Prime Ministerial Task Force on Targeting Social Assistance. Kieran served as an economic advisor to the New Zealand Minister of Finance, the Hon David Caygill, during a period of fundamental reforms including passage of the Reserve Bank Act, the Public Finance and State Sector Acts and the sale of Telecom NZ. He began his career as an economist at the New Zealand Treasury Department with responsibility for embedding the GST and advised on major income and business taxation reforms.

## Services to the community

- New Zealand Coast Guard *Merit Award* in recognition of outstanding rescue services for the rescue of Celtic Kiwi crew
- New Zealand Yachting Federation *Cruising Award* in recognition of outstanding services to yachting

## Education

- Graduate Certificate in Management, Monash University, Australia, 1997
- Advanced Management Programme, Monash University, Australia, 1997
- Bachelor of Commerce, Otago University, New Zealand, 1985
- Post Graduate Diploma in Commerce, Otago University, New Zealand, 1986

## Dean Nutsford, Principal – Sapere Research Group

### Bio/summary

Dean Nutsford works primarily in telecommunications and with other network industries. He provides advice on network economics and analysis on business development and regulation. He has a particular focus on economic and financial model development. Dean has advised on and developed economic and financial models for a wide range of regulatory and other decision support requirements.

With an electrical engineering background, experience in telecommunications / ICT (including network architecture planning) and additional background in finance and economics he provides a unique blend of technological knowledge combined with economic understanding that allows him to mediate between technologist and economists. His technoeconomic analytical skill enables him to quickly understand the key drivers in economic matters that relate to network industries such as mobile networks, broadband networks and electricity networks.

### Education

- Bachelor of Engineering (Electrical and Electronic) (Hons), University of Canterbury
- Diploma in Money and Finance, University of Victoria

### Present position

Principal, Sapere Research Group Ltd, 2015 – present

### Professional experience

#### **Product and Economics Manager, Senior Regulatory Analyst, Telecom New Zealand Ltd 2009 - 2014**

Provided high quality leadership and advice in the areas of regulatory economics, reporting, pricing and modelling. Responsible for coordinating information and inputs from experts in each of these respective domains, to ensure accurate and useful advice is provided to internal and external stakeholders. Support Telecom's legal and regulatory teams in the preparation of regulatory submissions and engagements. Examples of work include:

- Designed and implemented a dynamic mobile network simulation and forecasting model (at cell site level) for UMTS (3G) and LTE (4G) carrier technologies. This modelling framework was used to: estimate the economic cost of 700 MHz spectrum holdings for a range of scenarios for Telecom's mobile network and competitor mobile networks; forecast customer traffic between carrier band types (3G and 4G/LTE) to optimise LTE deployment to maximise coverage and minimise cost during the transition to a 4G network
- Current and forecasted (long run) unit cost (by service type) for regulatory and commercial pricing issues.



- Provided analysis and advice to support: Price squeeze tests and efficient rival test to screen and identify potential new products and services that could potential breach section s6 of the Commerce Act; Regulatory economic modelling to support the Skinny business case which is Telecom's no frills Mobile brand.
- Fixed Broadband modelling to support analysis around the separation of Telecom NZ Ltd into a Telecom Retailer and Chorus (the last mile access infrastructure provider). Chorus now provide wholesale fibre and copper access services to Telecommunication retailers in NZ - examples include xDSL services and copper access ultra-fast broadband services on fibre access technologies.
- Developed and implemented the analytical framework used to allocate Telecom network asset value across a range of regulated services to support Telecom's audited regulatory financial statements for operational separation disclosure requirements as specified by the Telecommunications Act.

### **LECG Asia Pacific (Now Sapere Research Group)**

Senior Managing Consultant, Managing Consultant, Consultant 2001 – 2009

Responsible for the financial/economic analysis (including reports and associated modelling) for a range of consulting assignments in the telecommunications industry and the electricity industry. During this period I also completed a number of assignments associated with Health, Education and Sports. See Illustrative example below.

### **Telecom NZ Ltd, Networks**

- Integrated Costing and Economics Manager 1999 – 2001
- Integrated Costing and Economics Adviser 1997 – 1999

Business and economic modelling to provide advice and recommendations for business divisions within Telecom Network. Economic cost driver analysis, modelling and advice to support the internal trading arrangement between the network and service arms of Telecom.

### **Telecom NZ Ltd, Fundamental Planning**

- Network Architecture Planner 1993 – 1997
- Business Analyst 1992 – 1993

## **Illustrative engagements**

### **Telecommunications**

- REANNZ (New Zealand's national research and education network), developed a network costing model to support pricing decisions.
- Chorus, New Zealand: Developed a suite of strategic models based on a cost building block framework to estimate initial asset value and resulting regulatory revenue cap and/or price cap forecast. This was part of an investigation into the impact of a government's proposed regulatory review for telecommunications Act in NZ.
- Secondment to Chorus, New Zealand's largest fixed line communications infrastructure services provider to provide economic cost modelling advice in relation to the regulators

- review of wholesale prices (based on TSLRIC) for services provided over the copper access network. (June to September in 2015).
- Analysed and assisted preparation of an international benchmarking study on the price for subloop telecommunications services (associated with unbundled local loop) for Telecom New Zealand Ltd (2008/09)
  - Analysed and assisted preparation of an international benchmarking study on the price for backhaul telecommunications services (associated with unbundled local loop) for Telecom New Zealand Ltd (2007/08)
  - Analysed and assisted preparation of submissions to the NZ Commerce Commission for Telecom New Zealand Ltd concerning proposed regulated prices for Unbundled Copper Local Loop Service (2007).
  - Review of the business analysis approach used by a major Telecommunication equipment vendor to support Telecommunication companies develop compelling business cases for a multi-service IP network transformation. Development of generic business analysis approach (based on this review and business analysis fundamentals) and associated business analysis training package to support the business analysis component of a newly established multi-service IP network transformation centre of excellence based on Europe.
  - Review of a benchmark study of an incumbent telecommunication provider's proposed unbundled private circuit (UPC) service to assess cost-based prices for comparable UPC services in other jurisdictions - commissioned by the NZ Commerce Commission. The review proposed adjustments to better reflect the service being offered and reported revised results.
  - Provided a high level assessment of Key Performance Measures (KPI) associated with an incumbent telecommunication provider's proposed migration to a packet based network. This assessment included developing a high level economic model to estimate the incremental investment required to support the KPIs.
  - Provided an independent technical audit of an incumbent telecommunication provider's dialup internet service performance, as part of the requirements for regulatory compliance.
  - Critique of a CBA model that was commissioned by the NZ Commerce Commission as part of its local loop unbundling enquiring. The critique focused on the data, calculations and assumptions used in the model and formed part of the submissions to the Commerce Commission.
  - Prepared an economic feasibility study of a telecommunications entrant expanding the reach of its existing network, to establish geographical market boundaries for the regulatory requirement that the incumbent wholesale its services to the entrant.
  - Developed a comprehensive cost model to estimate the costs of potential unbundling of telecommunications networks in New Zealand.
  - 3G Mobile Business Modelling: Designed and implemented a total mobile business model for Telecom NZ Ltd to investigate the opportunity of delivering future mobile 3G services in New Zealand. The model was used to analyse the incremental value of the 3G opportunity (against a do minimum scenario) for a number of scenarios including: Network technology options and timings; Demand forecasts and product mix. The business model was based a number of detailed modules that include: Subscriber forecast model: based on mobile customer penetration growth, customer migration, churn and connection

behaviour for six market segments; Product pricing and product cost driver model by business segment and network platform; IT cost model and HR cost model – to support the produced 3G products and services; Network platform cost modelling; Financial summaries that captures the total and incremental value by network platform.

- Design and implementation of a cost benefit model to support a cost benefit study of long term number portability in New Zealand – commissioned by the Number Administration Deed Management Committee.

## **Electricity**

- Developed the modelling and methodological framework to analyse and assess the cost and benefits to Transpower New Zealand of a separate grid operator and system operator compared with an integrated operation. June 2015
- Developed the modelling and methodological framework to analyse and assess an electricity line's company forecast financial returns (ROI) to test compliance with Commerce Commission disclosure requirements.
- Developed and conducted a comprehensive training programme for the National Transmission Corporation (TransCo) in the Philippines in the use of maximum allowable revenue (MAR) model developed by the Energy Regulatory Commission of the Philippines. This training was part of TransCo's preparation for a regulatory price reset for the period 2010 to 2015.
- Development of the modelling and methodological framework to support a quantitative approach to measuring and forecasting the Wholesale Risk Management Policy for Synergy, Western Australia. The results of the framework supports Synergy's wholesale electricity purchase strategies to hedge against volume and price risk.
- Developed a number of trading templates in EXCEL to support the electricity trading for an electricity generator firm in the Philippines.
- Developed the analytical framework and associated modelling to calculate annual revenue forecasts for a range of regulatory return approaches for the Electricity Market Company in Singapore. The model was on the cost building block model covering the cost components associated with the provision of regulated electricity market services.
- Review of and comment on the Commerce Commission's Gas Control Model for an electricity lines company in New Zealand (2007).
- Review of transmission system pricing methodology and computer model for an electricity distribution company in New Zealand. This work included developing the approach to model a regulated price for the transmission services if they were regulated.
- Recommend the appropriate level of retail operating costs (ROC) and retail operating margin (ROM) that should be recovered by regulated electricity contract prices for the regulatory in South Australia (ESCOSA). Developed the modelling framework to estimate the appropriate level of ROC and ROM. Developed the modelling framework to estimate the expected number of customers as a function of switching trends.
- Development of a model to compare electricity retail prices in New Zealand by excluding transmission loss and constraints effect to provide litigation support for an electricity distribution company in New Zealand.

- Development of a model to estimate the retail margins for electricity retailers in New Zealand. The retail margins were estimated by analysing historical retail prices and line charges and quantifying estimates for retail costs such as energy cost (using an estimate of LRMC), retail operating costs (including cost to serve, government levies, cost of capital and depreciation, tax) for each retailer.
- Development of a maximum allowable revenue (MAR) model for the National Transmission Corporation in the Philippines. The results and assumptions used in this model provided support for an expert witness statement to the Energy Regulatory Commission of the Philippines on the efficient costs for the purposes of calculating the maximum allowable revenue for the National Transmission Corporation.
- Review of a model developed and used by an electricity provider to determine its pricing and costing structure. Two key components: (1) audit of the efficacy of the model in terms of its capability to produce accurate and robust basis for pricing and investment decisions. (2) Documentation of the techniques, processes and assumptions and critical inputs of the model with a view to better streamlining the model.
- Review of a maximum allowable revenue (MAR) model developed by the Energy Regulatory Commission of the Philippines to support its final determination for the Regulatory Reset for the National Transmission Corporation (TransCo) 2006 to 2010.
- Development of a comprehensive tariff model for the National Transmission Corporation (TransCo).

## Other

- Developed a financial modelling framework (including profit and loss, and balance sheet) of a medical alarm business for St John New Zealand to support a bid for funding from the Government. This modelling framework included a comprehensive alarm platform demand model that forecasted connections by technology based on connection growth, competition, platform migration, and churn.
- Developed a financial model (including profit and loss, and balance sheet) to provide an aggregate view of 4 district health boards. The model was used to support a major capital investment initiative in the region.
- Prepared a cost estimate framework to calculate a preliminary cost estimate of a new centralized information system for the mental health sector that augments an existing patient centric system with episodic information.
- Developed a patient volume flow study for a primary health provider that was used to assess whether their acute demand management programmes had significantly reduced emergency department attendances and acute admissions.
- Analysis and preliminary assessment of the effectiveness of the Public Health Acute Services (PHAS) levy and its current distribution framework (Population Based Funding) to fund District Health Boards (DHBs) to provide serious injury services.
- Provided modelling expertise and advice in for a project tasked to design a fund in perpetuity for all health and education needs for an oil rich country. In this project I played a lead role in developing and integrating the various models used to estimate the fund comprising a comprehensive demographic model, a health and education expenditure

model and a financial investment model. I also was involved in the writing the cost estimation section of the final report.

- Review of the multi-sport sector in New Zealand for SPARC to provide comprehensive briefing package. In essence the study established a view on the ability of the multi-sport sector and its systems to contribute to maintaining and/or growing participation in multi-sport events and successful high performance results.

## Tony van Zijl, Director – Sapere Research Group

### Bio/summary

I am Professor of Accounting & Financial Management and Director of the Centre for Accounting, Governance and Taxation Research, Wellington School of Business and Government, Victoria University of Wellington.

My academic qualifications are in Finance, Accounting, Economics and Mathematics. I am a Fellow Chartered Accountant member of Chartered Accountants Australia and New Zealand (CA ANZ) (previously New Zealand Institute of Chartered Accountants (NZICA)) and a Certified Securities Analyst Professional member of the Institute of Finance Professionals of New Zealand. I am a Life Member of CA ANZ and also of the Accounting and Finance Association of Australia and New Zealand (AFAANZ).

My initial appointment at Victoria University was to a Senior Lectureship and I was appointed Professor in 1990. I was Head of the School of Accounting & Commercial Law (and its predecessor body) from 1990 to 1999, and Deputy Dean of the Business School, 2004/05. I have been Director of the Centre for Accounting, Governance and Taxation Research (CAGTR) from 2006 to 2012 and again from 2014. I was Director of Academic Programmes Accreditation for the Business School and the School of Accounting and Commercial Law from 2008 to 2012 and again in 2020. Prior to joining the university I worked at the Central Institute of Technology as a Lecturer in Economics and Quantitative Methods, NZ Institute of Economic Research as a Research Economist, and Mobil Oil as a Distribution Analyst.

I am a former Chair of the NZ Financial Reporting Standards Board, I was a foundation member of the Accounting Standards Review Board and am currently a member of the XRB External Reporting Advisory Panel. I am a past member of the Valuation and Property Standards Board of the New Zealand Property Institute. I have served on government working parties on securities law reform, capital charging for tertiary education institutions, and value based reporting.

In 2005 I received the AFAANZ Outstanding Contribution to Accounting & Finance Practice Award, in 2011 a Victoria University Research Excellence Award, and in 2012 the CA ANZ (previously NZICA) Outstanding Service to the Accountancy Profession Award.

I am a Consulting Director of Sapere Research Group Limited (previously LECG, Nasdaq: XPRT) and of Financial Analysis Consulting Group Limited and I provide consulting advice and litigation support in the areas of my research interests. I have provided expert evidence on these matters in arbitrations, Commerce Commission hearings and High Court proceedings. Expert evidence given in the High Court has included New Zealand's most significant commercial cases (at least in terms of the dollar amounts in dispute) – the Equiticorp (civil), Trinity, Westpac, Alesco, Feltex and Mainzeal cases. I am a Lay Member of the High Court of New Zealand.

I am an Honorary Consul for the People's Republic of Bangladesh.

## Contact details

School of Accounting & Commercial Law  
Wellington School of Business and Government  
Victoria University of Wellington ('VUW')  
PO Box 600  
Wellington

Tel: + 64 4 463 5329

Mob: + 64 27 563 5329

Fax: + 64 4 463 5076

E-mail: [tony.vanzijl@vuw.ac.nz](mailto:tony.vanzijl@vuw.ac.nz)

Internet : <https://www.victoria.ac.nz/sacl/about/staff/tony-vanzijl>

## Qualifications

### Academic (VUW)

PhD (Finance), "Essays on Capital Asset Pricing Theory", 1986

Dip Acc (Accounting), BCA (Hons) (Economics), BSc (Mathematics).

### Professional

Chartered Accountants Australia And New Zealand (**CA ANZ**) (previously New Zealand Institute of Chartered Accountants ('**NZICA**'))

Chartered Accountant, 1986 -; Fellowship conferred 1996; in 2012 I was awarded the NZICA

Outstanding Service to the Accountancy Profession Award; in 2019 I was awarded Life Membership of CA ANZ (there are currently 26 Life Members).

Institute of Finance Professionals of New Zealand

Certified Securities Analyst Professional, 1981 -

### Honorary appointment

Honorary Consul, People's Republic of Bangladesh, December 2012 -

### Present employment

Victoria University of Wellington

#### **Professor of Accounting & Financial Management**

Since 1990 my teaching and research supervision has covered all aspects of financial accounting and financial statement analysis. In earlier years I taught introductory and advanced courses in finance. My research interests include financial reporting, audit, capital markets, cost of capital, valuation, and performance measurement and reporting. I currently supervise four PhD students.

During the period that I was Director of Research for NZICA I was instrumental in the establishment of *Pacific Accounting Review* and was co-editor of the *Review* from 2003–2006.

I am a member of the editorial boards of *Accounting and Finance*, *Journal of Contemporary Accounting & Organisational Change*, *Accounting Research Journal*, *Australian Accounting Review* and *Journal of Business Finance and Accounting Perspectives*. I occasionally act as a referee for these journals and other journals including *Contemporary Accounting Research*, *Abacus*, *International Journal of Auditing*, *Research in Accounting Regulation*, and *British Accounting Review*.

In 2011 I was awarded a Victoria University Research Excellence Award – the only award in the Business School in 2011.

### **Director, Centre for Accounting, Governance and Taxation Research (CAGTR)**

As Director of CAGTR I am responsible for bringing researchers together with accounting and legal professionals and representatives of business and the public sector in ongoing discussion and exploration of accounting, governance and taxation issues that have potential impact on the Asia-Pacific region. This has been achieved through four principal avenues – seminars, working papers, the Don Trow Visiting Fellow scheme, and conferences.

The principal focus of the Centre's work in recent years has been on the new structure for the regulation of financial reporting and audit in New Zealand, Māori resource management and governance, and on management and financial reporting by not-for-profit organisations.

Further information on the work of the Centre is available at:

<http://www.victoria.ac.nz/sacl/cagtr/>

## **Professional experience**

### **Positions held**

#### **Victoria University of Wellington**

Professor of Accounting & Financial Management, 1990 –

Director, Centre for Accounting, Governance and Taxation Research, 2006–2012, 2014 –

Director, Academic Programmes Accreditation, Wellington School of Business and Government and School of Accounting and Commercial Law, 2008–2012, 2020

Deputy Dean, Wellington School of Business and Government, Oct. 2004–July 2005

Head, School of Accounting and Commercial Law (and its predecessor body), 1990–1999

Reader in Accounting, 1985–1990

Senior Lecturer in Accounting and Finance, 1978–1985

Tutor (part-time), Quantitative Analysis and Economics, 1967–1977



Accounting Standards Board, London  
Visiting Professor, July–October, 1996

Vrije Universiteit, Amsterdam, The Netherlands  
Visiting Scholar, April–June, 1989

University of Bristol, England  
Touche Ross Visiting Fellow, 1988–1989

New Zealand Institute Of Chartered Accountants  
Director of Research (on leave from VUW), 1985–1988

Central Institute of Technology  
Lecturer in Economics and Quantitative Methods, 1970–1977

Management Department Course Supervisor, 1976–77

New zealand institute of economic research  
Research Economist, 1967–1970

Mobil Oil New Zealand Limited  
Distribution Analyst, 1964–1967

### **Professional appointments**

External Reporting Advisory Panel to the XRB, 2019 –

University of Brighton, AACSB Mentor, 2019 –2022

Hong Kong Council for Accreditation of Academic and Vocational Qualifications, Accreditation Specialist, 2017 – 2020, 2021 –

East China University of Science and Technology, AACSB Mentor, 2016–2019

Institut Teknologi Bandung, Indonesia, AACSB Mentor 2014–2018

Review of Teaching of Māori Business at VBS, 2013–2014 (chair)

Australian Research Council, Expert Assessor, 2013 –

AACSB, Special Committee on the Value of AACSB Accreditation, 2011–2012

Lay Member of the High Court of New Zealand, 2009 –

Valuation Standards Board, New Zealand Property Institute, 1998–2017

International Valuation Standards Committee, Working Group on Valuation Uncertainty, 2011–2013

New Zealand Qualifications Authority, Monitor of the New Zealand Diploma In Business, offered at New Zealand College, 2005–2008

Institutes of Technology and Polytechnics Quality, Monitor of the New Bachelor of Applied Business Studies, offered at Whitireia Polytechnic (Auckland and Titahi Bay), 2004–2009

New Zealand Financial Reporting Standards Board, NZICA, 1989-1999, 2002-2003 (Deputy Chair, 1995-1999, Chair 2002–2003)

International Accounting Standards Board Revaluation Group, 2002–2003 (chair)

New Zealand Representative at the London Meetings of the International Accounting Standards Board With Partner National Standard Setters, 2002–2003

Accounting Standards Review Board, 1991–2002

NZICA Sustainable Development Reporting Task Force, 2002

NZICA Financial Reporting Award Committees - Companies and Public Sector, 1991–1995

NZICA Financial Reporting Committee 2, 1994

NZICA Working Group To Develop A Conceptual Framework For Financial Reporting, 1991–1993

Government Value Based Reporting Steering Committee, 1995–1996

Government Tertiary Capital Charge Steering Group, 1993–1996

Government Tertiary Capital Charge Feasibility Study Task Force, 1992–1993 (chair)

Ministerial Working Group on Securities Law Reform, 1991

## **Consultancy**

Sapere Research Group Limited (formerly Law & Economics Consulting Group Limited (*NASDAQ: XPRT*))

### **Consulting Director**

FINANCIAL ANALYSIS CONSULTING GROUP LIMITED

### **Director**

Since 1990 I have provided consulting advice in a large number of assignments for both business and public sector clients covering the areas of financial reporting, capital markets, and valuation in New Zealand and in other countries. In particular, in recent years this work has included comparison of New Zealand and international financial reporting standards, valuation of exotic options, and estimation of cost of capital for valuation and in a regulatory context. I have also provided litigation support and expert evidence on these matters in arbitrations, Commerce Commission hearings and High Court proceedings. Expert evidence given in the High Court has included New Zealand's most significant commercial cases (at least in terms of the dollar amounts in dispute) – the *Equiticorp* (civil), *Trinity*, *Westpac*, *Alesco*, *Feltex* and *Mainzeal* cases.

## Academic associations

Accounting and Finance Association of Australia and New Zealand ('**AFAANZ**')

- Accounting Standards Special Interest Group (Deputy Chair)  
Accounting History Special Interest Group

American Accounting Association

European Accounting Association

Law and Economics Association of New Zealand

New Zealand Association of Economists

In 1995 I was elected to the Executive of AFAANZ and I was New Zealand President during 1996/97. In 2004 I was awarded Life Membership of AFAANZ (there are currently 16 Life Members) and in 2005 the Outstanding Contribution to Accounting & Finance Practice Award.

## Research grants received

### VUW

Various small grants up to \$40,000.

### International funded research projects

In 2004, together with Professors Ann Tarca, Philip Hancock, Philip Brown, David Woodliffe, and Michael Bradbury, I was awarded a research grant of USD 20,000 from the International Association of Accounting Education and Research (IAAER) for research on Performance Reporting. The grant was made for research on Performance Reporting, was one of five similar grants awarded internationally, and the only one in Australasia. The IAAER program aims to support the joint IASB/FASB/ASB project on performance reporting.

In 2011, together with a VUW colleague, Dr Wares Karim, and Associate Professor Sabur Mollah, Stockholm University, I was awarded a grant of 2 million Krona (about NZD 400,000) from the Handelsbanken Foundation in Sweden for research on the impact of adoption of IFRS on market efficiency around the world.

## Research outputs

### Peer-reviewed journal articles

'Earnings Management and Underperformance after Seasoned Equity Offerings: A Cross-Country Study' (with Opare, S., Houque, N.) *International Journal of Managerial Finance*, (forthcoming). (ABDC, A).

'Meta-analysis of the Impact of Financial Constraints on Firm Performance', (with Ahamed, F., Houque, N.), *Accounting & Finance*, (forthcoming: <https://doi.org/10.1111/acfi.12923>). (ABDC, A).

'Determinants of cash holdings—evidence from New Zealand local councils', (with Bhuiyan, Md. B., Houque, N., Nomura, T.), *Public Money & Management*, 46, 2022, 605-615. (ABDC, B).

'Influence of extractive revenue disclosure on control of corruption: Are EITI implementers better than their non-EITI implementing counterparts?'\_(with Moses, O., Houque, N.), *China Accounting and Finance Review*, 23, 2021, 29-64. (ABDC, A).

'The Value Relevance of Corporate Donations', (with Houque, N., Karim, W., St George, T.), *Pacific Basin Finance Journal*, 66, 2021, 1-12. (ABDC, A).

'Meta-analysis of the Impact of IFRS Adoption on financial reporting comparability, market liquidity, and cost of capital', (with Houque, N., Opare, S.), *Abacus*, 57, 2021, 502-556. (ABDC, A).

'Governance of Tunnelling in Developing Countries: Evidence from Bangladesh', (with Tareq, M., Houque, N.), *Accounting & Finance*, 61, 2021, 3031-3051. (ABDC, A).

'The impact of SFAS 157 on fair value accounting and future bank performance', (with Ehalaiye, D., Tippett, M.), *International Journal of Accounting and Information Management*, 28, 2020, 739-757. (ABDC, B).

'IFRS Adoption and Seasoned Equity Offering Underperformance', (with Opare, S., Houque, N.), *Pacific Basin Finance Journal*, 61, 2020, 1-22. (ABDC, A).

'Bribery and Corruption: Assessing the Fairness of the Malaysian Judicial System', (with Houque, N., Zahir-ul-Hassan, M., Idris, M.), *Crime, Law and Social Change*, 74, 2020, 135-154.

'What is the Impact of Corruption on Audit fees?', (with Houque, N., Mahoney, A., Karim, W.), *Public Money & Management*, 39, 2019, 123-131. (ABDC, A).

'What is the Economic Value of the Extractive Industries Transparency Initiative Information Disclosure?', (with Moses, O., Houque, N.), *Journal of Contemporary Accounting and Economics*, 14, 2018, 216-233, (ABDC, A).

'Discriminatory Related Party Transactions: A New Measure', (with Tareq, M., Houque, M., Taylor, D., Morley, C.), *International Journal of Accounting and Information Management*, 25(4), 2017, 395-412. (ABDC, B).

'The predictive value of bank fair values', (with Ehalaiye, D., Tippett, M.), *Pacific Basin Finance Journal*, 41, 2017, 111-127. (ABDC, A).

'Audit Quality, Earnings Management, and Cost of Equity Capital: Evidence from India', (with Ahmed, K., Houque, N.), *International Journal of Auditing*, 21, 2017, 177-189. (ABDC, A).

'Differentiated regulation: The case of charities', (with Cordery, C., Sim, D.), *Accounting & Finance*, 57, 2017, 131-164. (ABDC, A)

'The Economic Consequences of IFRS Adoption: Evidence from New Zealand', (with Houque, N., Monem, R.), *Journal of International Accounting, Auditing and Taxation* 27, 2016, 40-48. (ABDC, B).

'Secrecy and the Impact of Mandatory IFRS Adoption on Earnings Quality in Europe', (with Houque, N., Monem, R., Tareq, M.), *Pacific Basin Finance Journal*, 40, 2016, 476-490. (ABDC, A).

'Intellectual Capital and Market Performance: The Case of Multinational R&D Firms in the US', (with Ariff, A., Islam, A.), *Journal of Developing Areas*, 50(5), 2016, 487-495. (ABDC, B).

'Corporate Ethics and Auditor Choice – International Evidence', (with Houqe, N., Dunstan, K., Karim, W.), *Research in Accounting Regulation*, 27, 2015, 57-65. (ABDC, B)

'The purpose of financial reporting: the case for coherence in the Conceptual Framework and standards', (with Sutton, D., Cordery, C.), *Abacus*, 51(1), 2015, 116-141. (ABDC, A)

'Does mandatory IFRS adoption improve information quality in low investor protection countries?' (with Houqe, N., Easton, S.), *Journal of International Accounting, Auditing and Taxation*, 23, 2014, 87-97. (ABDC, B)

'Examining a positive role for performance measures', (with Marginson, D., McAulay, L., Roush, M.), *Management Accounting Research*, 25(1), 2014, 63-75. (ABDC, A\*)

'Efficiency and opportunism in auditor quality choice in emerging audit services markets: The case of Bangladesh', (with Karim, W.), *International Journal of Accounting and Information Management*, 21(3), 2013, 241-256. (ABDC, B)

'Earnings Quality and the Adoption of IFRS-Based Accounting Standards: Evidence from an Emerging Market', (with Wan Ismail, W., Kamarudin, K., Dunstan, K.), *Asian Review of Accounting*, 21(1), 2013, 53-73. (ABDC, B)

'Impact of board ownership, CEO-Chair duality and foreign equity participation on auditor quality choice of IPO companies: Evidence from an emerging market', (with Karim, W., Mollah, S.), *International Journal of Accounting and Information Management*, 21(2), 2013, 148-169. (ABDC, B)

'Government Quality and Auditor Choice: A Cross Country Analysis', (with Houqe, N., Monem, R.), *Advances in Accounting, incorporating Advances in International Accounting*, 28-2, December 2012, 307-316. (ABDC, A)

'The effect of IFRS Adoption and Investor Protection on Earnings Quality around the World', (with Houqe, N., Dunstan, K., Karim, W.), *International Journal of Accounting*, 47(3), September 2012, 333-355 and Reply to Discussion, 363-368. (ABDC, A)

'Rights Offerings, Subscription Period, Shareholder Takeup and Liquidity', (with Balasingham, B., Faff, R., Theobald, M.), *Journal of Financial and Quantitative Analysis*, 47(1), February 2012, 213-239. (ABDC, A\*)

'Does Corporate governance Affect earnings Quality: Evidence from an Emerging Market', (with Houqe, N., Dunstan, K., Karim, W.), *A. T. Business Management Review*, 7(3), December 2011, 48-57.

'Performance measures and short-termism: An exploratory study', (with Marginson, D., McAulay, L., Roush, M.), *Accounting & Business Research*, 40(4), 2010, 353-370.

'Co-deterministic Relationship between Concentration of Ownership and Corporate Value: Evidence from an Emerging Market', (with Farooque, O Al, Dunstan, K., Karim, W.), *Accounting Research Journal*, 23(2), (2010), 172-189.

- 'Measures of Accounting Conservatism: A Construct Validity Perspective', (with Wang, R., O hOgartaigh, C.), *Journal of Accounting Literature*, 28, (2009), 165-203.
- 'Identifying Decision Useful Information with the Matrix Format Income Statement', (with Tarca, A., Brown, P., Hancock, P., Woodliffe, D., Bradbury, M.), *Journal of International Financial Management & Accounting*, 19, 2, Summer (2008), 185-217.
- 'Corporate Governance in Bangladesh: Link between Ownership and Financial Performance', (with Farooque, O Al, Dunstan, K., Karim, W.), *Corporate Governance: An International Review*, 15, November (2007), pp. 1453-1468.
- 'The Matrix Format Income Statement: A Case Study about Earnings Management and Reporting Financial Performance', (with Tarca, A., Brown, P., Hancock, P., Woodliffe, D. Bradbury, M.), *Issues in Accounting Education*, 22, 4, November (2007), pp. 607-623; Teaching Notes, pp 44-52, see <http://aaahq.org>.
- 'Ownership Structure and Corporate Performance: Evidence from Bangladesh', (with Farooque, O Al, Dunstan, K., Karim, W.), *Asia Pacific Journal of Accounting and Economics*, 14, August (2007), pp. 127-149.
- 'Auditor Independence and NAS: Review of the Literature', (with Islam, A., Karim, W.), *Journal of Business Studies*, 28(1), (2007), pp. 179-214.
- 'International Financial Reporting Standards and New Zealand – Loss of Sector Neutrality', (with Bradbury, M.), *Research in Accounting Regulation*, 19, (2006), pp. 35-51.
- 'Deprival Value and Fair Value: A Reinterpretation and a Reconciliation', (with Whittington, G.), *Accounting & Business Research*, 36, July (2006) pp. 121-130.
- 'The Economics of Auditor Independence', (with Islam, A., Karim, W.), *Journal of Business Studies*, 27, 2, (2006), pp. 439-453.
- 'Due Process and the Adoption of IFRS in New Zealand', (with Bradbury, M.), *Australian Accounting Review*, July (2006), pp. 87-95.
- 'Analysis of Change in Present Value Measurements', (with Bradshaw, J., Khanna, B., Roush, M.), *Journal of Theoretical Accounting Research*, 1, Spring (2006), pp 58-81.
- 'Auditor Independence and NAS: A Comparative Analysis of Selected Current Regulatory Frameworks', (with Islam, A., Karim, W.), *AIUB Journal of Business and Economics*, January (2006), pp 51-75.
- 'Agency Theory and Trust Ownership of Shares', (with Emanuel, D.), *New Zealand Economic Papers*, 39, December (2005), pp 195-207.
- 'NZ IAS 32: An evaluation of the potential impact on the financial statements of issuers of convertible financial instruments', (with Bishop, H., Bradbury, M.), *Pacific Accounting Review*, 17, December (2005), pp 34-52.
- 'Shifting to IFRS', (with Bradbury, M.), *University of Auckland Business Review*, 7, 1 (2005), pp 77-83.
- 'The Market Risk Premium: Survey Evidence', (with Lally, M., Roush, M.), *INFINZ Finance Journal*, Winter (2004), pp 5-12.

'IFRS: Implementation and Impact', *INFINZ Finance Journal*, Winter (2004), pp 20-32.

'Capital Gains Tax and the Capital Asset Pricing Model', (with Lally, M.), *Accounting and Finance*, July (2003), pp 187-210.

'Auditor Independence: An International Perspective', (with Falk, H., Frucot V.), *Journal of Accounting, Ethics and Public Policy*, 2, Summer (1999), pp 508-559.

'Dow Jones Indicators of Stock Prices', (with McCallum, D.), entry in *The New Palgrave Dictionary of Money and Finance*, October (1992).

'Macaulay and Closed Form Duration Formulas', *British Accounting Review*, 22, December (1990), pp 343-349.

'Risk Decomposition: Variance or Standard Deviation: A Re-examination and Extension', *Journal of Financial and Quantitative Analysis*, 22, June (1987), pp 237-247.

'The Duration of a Mixed Stream Comprising Positive and Negative Flows', (with Ma, R.), *Accounting & Finance*, 27, November (1986), pp 81-90.

'Direct Test of Harville's Multi-Entry Competitions Model on Race Track Betting Data', (with McCulloch, B.W.), *Journal of Applied Statistics*, 13, 2 (1986), pp 213-220.

'The Impact of Variation of Share Market and/or Business Conditions on the Parameters of the Market Model', (with Quirk, A.), *New Zealand Economic Papers*, 20, (1986), pp 93-99.

'Beta Loss, Beta Quotient: Comment', *Journal of Portfolio Management*, 11, Summer (1985), pp 75-78.

'A New Statement of the Extended Capital Asset Pricing Model', *Australian Journal of Management*, 9, December (1984), pp 67-86.

'Bias in Estimation of the Beta Quotient', *New Zealand Operational Research*, 12, July (1984), pp 129-134.

'Combining Market Data to Predict Future Returns', (with Keef, S.P.), *The Journal of the New Zealand Society of Investment Analysts*, December (1983), pp 40-46.

'Abnormal Returns via the Price-Earnings Ratio', (with Keef, S.P.), *The Journal of the New Zealand Society of Investment Analysts*, July (1983), pp 30-34.

'Financing with Specified Preference Shares - New Zealand 1975-1982', (with Smith, A.M.C.), *New Zealand Journal of Business*, 5, (1983), pp 96-121.

'The Credit Contracts Act 1981: Which is the Finance Rate?' *New Zealand Universities Law Review*, 10, June (1983), pp 302-306.

'The Efficient Markets Hypothesis and Accounting Rule Making', *New Zealand Journal of Business*, 4, (1982), pp 35-50.

## **Book**

*The New Zealand Convergence Handbook*, (with Walker, S.), Institute of Chartered Accountants of New Zealand, Wellington, October 2001, 174pp.

### **Book chapters**

'Value Relevance of Environmental, Social and Governance Disclosure', (with Zuraida, Houqe, N), pp 458-484, Chapter 24 in *Research Handbook of Finance and Sustainability*, Boubaker, S., Cummings, D. and Nguyen, D. (Eds), Edward Elgar, November 2018.

'Indonesia', (with Khanna, B., Merwanto, R.), pp 141-170, Chapter 4 in *Studies in the Development of Accounting Thought, Volume 3, A Global History of Accounting, Financial Reporting and Public Policy: Asia and Oceania*, Previts, G., Walton, P., and Wolnizer, P., (Eds), Emerald Publishing, United Kingdom, 2011.

'The New Zealand Financial Reporting Framework', (with Bradbury, M.), 23 pp, (John Wiley, Australia, 2005), (supplementary chapter to Alfredson et al., *Applying International Accounting Standards*, John Wiley, Australia, 2005, 2009); revised 2012, 2013.

'Financial Reporting Regulation', pp 420-43, Chapter 19 in *Securities Regulation in Australia and New Zealand*, Walker, G., Fisse, B., (Eds), Oxford University Press, Auckland, 1994.

'Accounting Aspects of Mergers and Takeovers', (with Laswad, F.), Chapter 10, pp 341-358, in *Essays on Takeovers and Mergers*, Farrar, J., (Ed), Oxford University Press, Auckland, 1993.

### **Book Review**

Review of *Indecent Disclosure: Gilding the Corporate Lily*, Frank Clarke and Graeme Dean (Cambridge University Press, Cambridge UK, 2007) in *The Accounting Review*, 83, November (2008), pp 1674-1677.

### **Research monograph**

*Accounting for Companies Involved in Cross Shareholdings*, (with Trow, D.G.), Research Bulletin R-116, New Zealand Society of Accountants, December 1986, 21pp.

### **Peer-reviewed academic conference papers (with Proceedings)**

'Stakeholder conflict: The Case of Trusts', (with Emanuel, D.), abstracted in *Proceedings of the Conference of the Multinational Finance Society*, (Garda, June 2001).

'Capital Asset Pricing and Undiversifiable Risk', abstracted in *The Financial Review*, Vol. 18, 1983 - *Proceeding of the Conference of the Eastern Finance Association*, (New York, April 1983).

### **Peer-reviewed academic conference papers (without Proceedings)**

'Corporate Governance and Investment Decisions: An Experimental Study on Real Investors', (with Tariquzzaman, ATM, Eggleton, I. R. C.) *Asian-Pacific Conference on International Accounting Issues*, (Warsaw, October 2019).

'Intellectual Capital Efficiency and Firm Financial Performance: Evidence from South East Asian Countries', (with Arifatul Mohd Ariff, Islam, A.), *Asian-Pacific Conference on International Accounting Issues*, (Warsaw, October 2019).



'IFRS Adoption and Seasoned Equity Offering Underperformance', (with Houque, N., Opare, S.), *Asian-Pacific Conference on International Accounting Issues* (Warsaw, October 2019), *Financial Markets and Corporate Governance Conference*, (Sydney, April 2019), *Asian-Pacific Conference on International Accounting Issues*, (San Francisco, November 2018), *Accounting and Finance Association of Australia and New Zealand Conference*, (Auckland, July 2018), *Financial Markets and Corporate Governance Conference*, (Melbourne, April 2018).

'Meta-Analysis of the Impact of IFRS Adoption on Financial Reporting Comparability, Market Liquidity, and Cost of Capital', (with Houque, N., Opare, S.), *Accounting and Finance Association of Australia and New Zealand Conference*, (Brisbane, July 2019), *Asian-Pacific Conference on International Accounting Issues*, (Hong Kong, November 2017).

'Accounting for Wellbeing', (with Dormer, R., Lau, S.), *CIGAR Conference*, (Vrije Universiteit, Amsterdam, June 2019).

'EITI Implementation Experience and Perceived Control of Corruption', (with Moses, O., Houque, N.), *Financial Markets and Corporate Governance Conference*, (Sydney April 2019), *Asian-Pacific Conference on International Accounting Issues*, (San Francisco, November 2018), *Financial Markets and Corporate Governance Conference*, (Melbourne, April 2018).

'Business Strategy, Earnings Quality and Financial Flexibility', (with Monem, R., Houque, N.), *Financial Markets and Corporate Governance Conference*, (Melbourne, April 2018).

'An Empirical Investigation of the Legal Origin Theory and Capital Market Development', (with Tareq, M., Houque, N.), *Asian-Pacific Conference on International Accounting Issues*, (Gold Coast, November 2018), *Financial Markets and Corporate Governance Conference*, (Melbourne, April 2018), *Asian-Pacific Conference on International Accounting Issues*, (Gold Coast, November 2015).

'Cross Listings, Investor Protection and Earnings Quality', (with Houque, N., Binh, B.), *Financial Markets and Corporate Governance Conference*, (Melbourne, April 2018).

'Secrecy and the Impact of Mandatory IFRS Adoption on Audit Fees', (with Houque, N.), *Asian-Pacific Conference on International Accounting Issues*, (Hong Kong, November 2017).

'Audit Fees and Corruption', (with Houque, N., Karim, W., Mahoney, A.), *Accounting and Finance Association of Australia and New Zealand Conference*, (Adelaide, July 2017), *European Accounting Association Conference*, (Valencia, May 2017), *Financial Markets and Corporate Governance Conference*, (Wellington, April 2017), *Asian-Pacific Conference on International Accounting Issues*, (Hawaii, November 2016).

What is the Economic Value of the Extractive Industries Transparency Initiative (EITI) Information Disclosure?, (with Moses, O., Houque, N.), *Financial Market and Corporate Governance Conference*, (Wellington, April 2017), *Financial Market and Corporate Governance Conference*, (Melbourne, April 2016).

'SFAS 157 and the predictive value of US bank fair values', (with Ehalaiye, D., Tippet, M.), *Financial Markets and Corporate Governance Conference*, (Wellington, April 2017), *Asian-Pacific Conference on International Accounting Issues*, (Hawaii, November 2016), *Accounting and Finance Association of Australia and New Zealand Conference*, (Gold Coast, July 2016), *Financial Markets and Corporate Governance Conference*, (Melbourne, April 2016).

'The Value Relevance of Donations', (with Houque, N., Karim, W., St George, T.), *Financial Markets and Corporate Governance Conference*, (Wellington, April 2017), *Asian-Pacific Conference on International Accounting Issues*, (Hawaii, November 2016), American Accounting Association Annual Meeting, (New York, August 2016).

'Value Relevance of Environmental, Social and Governance Disclosure', (with Zuraida, Houque, N), *American Accounting Association Conference*, (New York, August 2016), *Multinational Finance Society Conference*, (Stockholm, June 2016), *Accounting and Finance Association of Australia and New Zealand Conference*, (Auckland, July 2014), *Journal of International Accounting Research Symposium*, (Hong Kong, June 2014), *European Accounting Association Conference*, (Tallin, May 2014).

'Discriminatory Related Party Transactions: A New Measure', (with Tareq, M., Taylor, D., Morley, C., Houque, N.), *American Accounting Association Conference*, (New York, August 2016), *Accounting and Finance Association of Australia and New Zealand Conference*, (Gold Coast, July 2016), *Financial Markets and Corporate Governance Conference*, (Wellington April 2013).

'Secrecy and Mandatory IFRS Adoption on Earnings Quality', (with Houque, N., Monem, R., Tareq, M.), *American Accounting Association Conference*, (New York, August 2016), *Accounting and Finance Association of Australia and New Zealand Conference*, (Gold Coast, July 2016), *Accounting and Finance Association of Australia and New Zealand Conference*, (Hobart, July 2015), *Financial Markets and Corporate Governance Conference*, (Perth, April 2015).

'A Critical Review of Intellectual Capital Measurement Approaches', *International Conference in Accounting Studies*, (with Ariff, A., Islam, A.), P&P, 50(5) 2016

'Effects of Audit Quality on Earnings Management and Cost of Equity Capital: Evidence from India', (with Ahmed, K. and Houque, N.), *Journal of Contemporary Accounting Research Conference*, (Taipei, January 2016), *European Accounting Association Conference*, (Paris, May 2013), *Asian-Pacific Conference on International Accounting Issues*, (Hawaii, October, 2012), *American Accounting Association Conference*, (Washington, August 2012).

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'Rights Issues – Changes in Prices, Earnings and Risk', (with Balachandran, B.), *Multinational Finance Society*, (Paphos, July 2002).

'Why Not Allow the FASB and IASB to Compete: A Comment', (with Falk, H., Forker, J.), *European Accounting Association*, (Copenhagen, May 2002).

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'Fixed Dividend Ratio Policy, Differential Taxation and Cost of Capital', *Accounting Association of Australia and New Zealand*, (Hamilton Island, July 2000).

'A New Statement of the Extended Capital Asset Pricing Model', *Accounting Association of Australia and New Zealand*, (Wellington, July 1982).

### **Invited conference presentations**

Member of the Panel for the keynote session: 'IFRS: The Costs and Benefits to the Majority of Corporations in Australia and New Zealand', *Accounting and Finance Association of Australia and New Zealand*, (Melbourne, July 2005).

Member of the Panel for the keynote session: 'Transition to IFRS', *Accounting and Finance Association of Australia and New Zealand*, (Alice Springs, July 2004).

'Adoption of IFRS: Background, Application & Development', *Auckland Region Accounting Conference*, (Auckland, December 2003).

'Research Opportunities – A Standard Setter's Perspective', *Auckland Region Accounting Conference*, (Auckland, December 2002).

Commentary on 'It's Hard to be a Believer in the Efficient Markets Hypothesis', (Bowman, R. G., Buchanan, J.), Plenary Session, *Accounting and Finance Association of Australia and New Zealand*, (Perth, July 1990).

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### **Published refereed working papers**

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'Governance of Tunnelling in Developing Countries: Evidence from Bangladesh', (with Muhammad, A., Houqe, N.), Working Paper No. 114, Centre for Accounting, Governance, and Taxation Research, (2019), 19pp.

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'Audit Fees and Corruption', (with Houqe, N., Karim, W., Mahoney, A.), Working Paper No. 109, Centre for Accounting, Governance, and Taxation Research, (2018), 25pp.

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'Secrecy, Mandatory IFRS Adoption and Earnings Quality', (with Houqe, N., Monem, R. and Tareq, M.), Working Paper No. 97, Centre for Accounting, Governance, and Taxation Research, (2015), 37pp.

'Discriminatory Related Party Transactions: A New Measure', (with Tareq, M., Taylor, D., Morley, C. and Houqe, N.), Working Paper No. 96, Centre for Accounting, Governance, and Taxation Research, (2015), 34pp.

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### **Consultancy reports published on the Commerce Commission of NZ website:**

*Cost of capital input methodologies— further consultation initial value of financial loss asset*, (with McWha, V.), Sapere Research Group, September 2020, 14pp.

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*Cross-submission on UCLL and UBA Price Determination Issues*, (with Shepherd, S. and Murray, K.), Sapere Research Group, September, 2015, 24pp.

*Economic Comment on UCLL and UBA Pricing Issues*, (with Shepherd, S. and Murray, K.), Sapere Research Group, August, 2015, 39pp.

*Estimating the WACC percentile - comments on further evidence*, (with Murray, K.), Sapere Research Group, September, 2014b, 15pp.

*WACC Percentile: Cross submission*, (with Murray, K.), Sapere Research Group, September 2014a, 17pp.

*Proposed amendment to the WACC percentile - Commerce Commission's draft decision*, (with Murray, K.), Sapere Research Group, August 2014, 49pp.

*Setting the WACC percentile for Vector's price-quality path*, (with Murray, K.), Sapere Research Group, May 2014, 37pp.

*A statistical forecasting framework and models for the determination of starting price adjustments for default price-quality paths*, (with Thompson, P.), Statistics Research Group and Sapere Research Group, December (2010), 27pp.

*Response to Commerce Commission's Draft Cost of Capital Input Methodology, LECG, August (2010), 19pp.*

*Comments of the Commerce Commission's approach to estimate the cost of capital*, (with Boyle, G., Irwin, T.), LECG, August (2009), 29pp.

*Response on behalf of Vector Limited to the Commerce Commission's Estimate of WACC in the Draft Authorisation for the Control of Supply of Natural Gas Distribution Services by Powerco Limited and Vector Limited, LECG, November (2007), 17pp.*

*Comments on the Commerce Commission's Draft Guidelines to Estimate the Cost of Capital, LECG, December (2005), 12pp.*

*Calculation of Income Tax in the Unison Inquiry, LECG, October (2005), 10 pp.*

*Commentary on the Commerce Commission's approach to determination of the weighted average cost of capital for electricity lines businesses, LECG, October (2005), 15pp.*

*Comments on the Commerce Commission's Review of Electricity Information Disclosure Requirements, (with Shepherd, S.), LECG, February (2005), 17pp.*

*Measurement of Income Tax for the Purposes of the Gas Inquiry Analysis, LECG, (September 2004), 18 pp.*

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*Response to the Commerce Commission's Gas Control Inquiry Draft Report: Estimation of the Weighted Average Cost of Capital, (with Boyle, G., Verster, R.), LECG, July (2004), 37 pp.*

*Report on the Treatment of the Interest Tax Shield when Determining Excess Earnings in the Gas Control Inquiry, LECG, June (2004), 7pp.*

*Valuation Principles for Electricity Lines Businesses in the Context of the Targeted Control Regime, LECG, October (2003), 12pp.*

*Review of the Weighted Average Cost of Capital as proposed for the Regulation of Electricity Lines Businesses, (with Verster, R.), LECG, September (2003), 17pp.*

*Response to the Commerce Commission's Gas Control Inquiry Draft Framework Paper: Estimation of the Weighted Average Cost of Capital, (with Verster, R.), LECG, August (2003), 28pp.*

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## **Appendix C      Letter of Instruction**



**DLA Piper Australia**  
Wurundjeri Woi Wurrung Country  
80 Collins Street  
Melbourne VIC 3000  
PO Box 4301  
Melbourne VIC 3000  
Australia  
DX: 147 Melbourne  
T: +61 3 9274 5000  
F: +61 3 9274 5111  
dlapiper.com

## Privileged and Confidential

Kieran Murray  
Managing Director  
Sapere Research Group  
Level 9, 1 Willeston Street  
Wellington 6011  
New Zealand

### Our reference

KZS/KZS/3010528/638110  
AUM/1228296902.1

28 April 2023

**By Email: kmurray@thinksapere.com**

Dear Kieran

## Letter of Instruction - ACCC assessment of NBN Co proposed variation to Special Access Undertaking

- 1 We act for the Australian Competition and Consumer Commission (**ACCC**).
- 2 The purpose of this letter is to instruct you to provide the ACCC with expert advice in relation to its statutory decision on whether to accept or reject a variation proposed by NBN Co Limited (**NBN Co**) to its special access undertaking (**SAU**). Specifically, your expert advice is sought in relation to the estimation (including the appropriate methodology or methodologies for estimation) of the revenue NBN Co requires to have a reasonable opportunity to achieve an investment grade credit rating.
- 3 You are instructed to undertake analysis and provide advice in relation to the particular matters set out below.
- 4 Please find enclosed with this letter a brief of relevant documents. Tab references in this letter correspond with the index of documents set out in Annexure A.

## Background

- 5 NBN Co (an Australian Government owned corporation) owns and operates Australia's national broadband network (**NBN**).
- 6 Part XIC of the *Competition and Consumer Act 2010* (Cth) (**CCA**) establishes a regime for third party access to telecommunications infrastructure services. Under that regime, NBN Co has previously submitted to the ACCC an undertaking, referred to as a 'special access undertaking', to govern third party access to NBN Co's infrastructure services provided by means of the NBN until 2040.
- 7 On 13 December 2013, the ACCC accepted the SAU from NBN Co, which governs the principles for the regulation of wholesale access to the National Broadband Network (**NBN**) until June 2040 [**Tab 1**].

- 8 On 9 April 2021, the ACCC accepted a variation to the SAU which (among other things) extended the expiration date of three non-price provisions from 30 June 2019 to 30 June 2023 (**April 2021 Variation**) [Tab 2].
- 9 In the second half of 2021, the ACCC held an industry roundtable and a series of working groups and consultations to discuss various proposals for a further variation of the SAU. Subsequently, on 22 December 2021, the ACCC released a summary paper [Tab 3] which detailed the key issues discussed during this process, including the following five key outcomes:
  - 9.1 NBN Co has the opportunity to earn the minimum revenues it needs to meet its legitimate financing objectives, including to transition to a stand-alone investment grade credit rating;
  - 9.2 NBN end-users are protected from price shocks and from prices that are higher than necessary in later years;
  - 9.3 the regulatory framework provides incentives for NBN Co to operate efficiently and promote use of the NBN;
  - 9.4 NBN access seekers have greater certainty over the costs that they will face when using the NBN; and
  - 9.5 there is a clear and robust quality of service framework so access seekers and end-users know what to expect from NBN services, including a review mechanism so that service standards remain fit for purpose.
- 10 On 29 March 2022, NBN Co submitted a variation to the ACCC which (among other things) sought to include significant changes to its product and pricing commitments, the framework for its cost recovery, and rules for how the ACCC assesses network expenditure (**March 2022 Proposed Variation**) [Tab 4]. However, on 27 July 2022, NBN Co wrote to the ACCC and withdrew the March 2022 Proposed Variation [Tab 5].
- 11 NBN Co subsequently submitted a revised variation to the ACCC, on 29 November 2022, (**November 2022 Proposed Variation**) [Tab 11], which included a revised framework for the determination of required revenues (i.e. the ABBRR) and price controls, including a revised proposal for the recovery of accumulated losses (i.e. the ICRA), and updated forecasts of expenditure (including forecasts of capital expenditure and operating expenditure), required revenues and price controls for the First Regulatory Cycle. For present purposes, the key elements of the November 2022 Proposed Variation include the following.
  - 11.1 It seeks to govern the terms and conditions relating to access to the NBN in the period from 1 July 2023 to 30 June 2040 (**Subsequent Regulatory Period**). In particular, it provides for the periodic review and determination of expenditure forecasts, the rolled forward value of the regulatory asset base, the annual building block revenue requirement for each financial year (**ABBRR**) and required revenues for the forthcoming 'regulatory cycle' using a building block cost approach.
  - 11.2 It specifies detailed proposed terms of access, including expenditure forecasts, required revenues and resultant price controls, for the first three-year regulatory cycle (**First Regulatory Cycle**).
  - 11.3 NBN Co proposes a mechanism for the recovery of a portion of its accumulated losses, as reflected in the initial cost recovery account (**ICRA**), from 1 July 2023 to the end of the SAU term in 2040. In short, NBN Co proposed that:
    - (a) it would adopt a core services ICRA balance of \$12.5 billion as of 1 July 2023;

- (b) it would seek to recover this \$12.5 billion by adding a portion of this amount (the ICRA drawdown amount) to the ABBRR in certain years over the SAU period;
- (c) the sum of the ICRA drawdown amount and ABBRR in each year of a regulatory cycle would form its revenue cap;
- (d) in the 'subsequent regulatory period', NBN Co would be able to recover approximately \$1 billion of the ICRA balance (in 2022-23 terms), with any portion of this \$1 billion that is not recovered by NBN Co by the end of 2031-32 being extinguished;
- (e) NBN Co would then have an opportunity to recover up to \$11.5 billion of the ICRA (in 2022- 23 terms) in the post-2032 regulatory period, with any residual ICRA amounts extinguished at the end of the regulatory period; and
- (f) the timing and size of the ICRA drawdown amounts in each year would be determined through the replacement module process.

- 12 On 13 January 2023, the ACCC released a consultation paper in relation to the November 2022 Proposed Variation and invited stakeholder submissions as part of that process [Tab 12]. The recovery of accumulated losses (i.e. the ICRA) is discussed in section 5.4, commencing on page 541.

## Instructions

- 13 On the basis of the information detailed above, you are instructed to prepare a report setting out an expert opinion, which:
- 13.1 estimates the increment to revenue above the Annual Building Block Revenue Requirement (ABBRR) required by NBN Co to transition to an investment-grade credit rating; and
  - 13.2 calculates the Initial Cost Recovery Amount (ICRA) as of 1 July 2023 that would be required to allow recovery of the additional revenues.
- 14 In answering this question, please consider:
- 14.1 the appropriate methodology (or methodologies) that could be adopted to calculate the required revenue increment;
  - 14.2 whether and how the revenue increment that achieves the objective of enabling NBN Co to transition to an investment-grade credit rating would be affected by adopting various assumptions and approaches, including different:
    - (a) scenarios based on benchmark firm (i.e. based on benchmark inputs for debt and interest expense as reflected in NBN Co's building block model) and actual firm approaches (i.e. based on projections of NBN Co's actual debt and interest expenses);
    - (b) smoothing and/or recovery profile of the revenue increment;
    - (c) assumptions in respect of when NBN Co's standalone investment-grade credit rating is to first be achieved;

- (d) values for the weighted average cost of capital (**WACC**);<sup>1</sup>
  - (e) assumptions with respect to any cash dividends that are paid by NBN Co; and
- 14.3 any other matters you consider relevant.

### **Federal Court of Australia Expert Evidence Practice Note**

- 15 As this matter may become litigious, we enclose a copy of the Federal Court of Australia's *Expert Evidence Practice Note (GPN-EXPT) (Practice Note)*, which includes the *Harmonised Expert Witness Code of Conduct* and the *Concurrent Expert Evidence Guidelines*.
- 16 Please carefully read the Practice Note and ensure that any report you provide in this matter complies with it. You are required to act impartially, and not as an advocate for the case of the ACCC.
- 17 Further, in providing any report, you should also:
- 17.1 expressly confirm that you have read and agree to be bound by the Practice Note;
  - 17.2 include a curriculum vitae setting out full details of your relevant qualifications, experience and expertise;
  - 17.3 include a copy of these instructions;
  - 17.4 set out a list of all documents that you have relied upon in preparing your report;
  - 17.5 expressly state all assumptions that you have made in preparing the report and the reasons for making those assumptions;
  - 17.6 give reasons for each opinion that you express in the report;
  - 17.7 qualify any opinion expressed in the report if you consider your report may be incomplete or inaccurate without the qualification;
  - 17.8 qualify any opinion expressed in the report if you are unable to form a conclusive opinion because of insufficient research, insufficient information, or for any other reason; and
  - 17.9 at the end of the report, include a declaration in the following terms:  

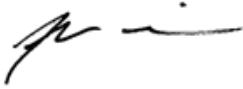
'I have made all the enquiries that I believe are desirable and appropriate. No matters of significance that I regard as relevant have, to my knowledge, been withheld from the report.'
- 18 If you change your opinion after giving us any report in this matter, you must provide a supplementary report.

---

<sup>1</sup> Regarding the sensitivity testing for the WACC, we request that you include NBN Co's proposed WACC mid-point as the base case, with two further scenarios applying a higher and lower WACC.

Please feel free to contact us to discuss. We look forward to working with you.

Yours sincerely



**Fleur Gibbons**  
Partner

T: +61 3 9274 5840  
fleur.gibbons@dlapiper.com

**DLA Piper Australia**



**Kade Sheely**  
Senior Associate

T: +61 3 9274 5007  
kade.sheely@dlapiper.com

**DLA Piper Australia**

## Annexure A: Brief of Documents

Tab	Document	Date
1.	NBN Co Special Access Undertaking (including all variations)	13 December 2013
2.	ACCC Decision regarding NBN Co Special Access Undertaking Variation	9 April 2021
3.	ACCC Summary Paper – Industry Roundtable Discussions	22 December 2021
4.	NBN Co March 2022 Proposed Variation and supporting documents	Various
5.	NBN Co Letter to ACCC withdrawing March 2022 Proposed Variation	27 July 2022
6.	NBN Co Confidential BBM Model (provided to you by separate file transfer link)	29 March 2022
7.	NBN Co BBM Handbook	March 2022
8.	Summary of NBN Co updated integrated operating plan (IOP) information	Undated
9.	Updated NBN Co Confidential BBM Model (provided to you by separate file transfer link)	8 August 2022
10.	Castalia memo titled 'ICRA Adjustment Concept'	18 July 2022
11.	NBN Co November 2022 Proposed Variation and supporting documents	29 November 2022
12.	ACCC Consultation Paper re November 2022 Proposed Variation and supporting documents	13 January 2023
13.	NBN Co Confidential BBM Model (provided to you by separate file transfer link)	2 December 2022

## About Sapere

Sapere is one of the largest expert consulting firms in Australasia, and a leader in the provision of independent economic, forensic accounting and public policy services. We provide independent expert testimony, strategic advisory services, data analytics and other advice to Australasia's private sector corporate clients, major law firms, government agencies, and regulatory bodies.

'Sapere' comes from Latin (to be wise) and the phrase 'sapere aude' (dare to be wise). The phrase is associated with German philosopher Immanuel Kant, who promoted the use of reason as a tool of thought; an approach that underpins all Sapere's practice groups.

### For more information, please contact:

Kieran Murray

Phone: +64 4 915 7592

Mobile: +64 21 245 1061

Email: [kmurray@thinkSapere.com](mailto:kmurray@thinkSapere.com)

#### Wellington

Level 9  
1 Willeston Street  
PO Box 587  
Wellington 6140

P +64 4 915 7590  
F +64 4 915 7596

#### Auckland

Level 8  
203 Queen Street  
PO Box 2475  
Shortland Street  
Auckland 1140

P +64 9 909 5810  
F +64 9 909 5828

#### Sydney

Level 18  
135 King Street  
Sydney  
NSW 2000

P +61 2 9234 0200  
F +61 2 9234 0201

#### Melbourne

Level 5  
171 Collins Street  
Melbourne  
VIC 3000

P +61 3 9005 1454  
F +61 2 9234 0201 (Syd)

#### Canberra

PO Box 252  
Canberra City  
ACT 2601

P +61 2 6100 6363  
F +61 2 9234 0201 (Syd)

[www.thinkSapere.com](http://www.thinkSapere.com)

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