



HOUSTONKEMP
Economists

Review of NBN Co's expenditure

Part A – Overview report

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FINAL REPORT

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Structure of this report

The Australian Competition and Consumer Commission (ACCC) engaged HoustonKemp to review whether NBN Co's capital and operating expenditure is prudent and efficient, consistent with the requirements of NBN Co's Special Access Undertaking (SAU). This review has been undertaken to inform the ACCC's Replacement Module Determination on NBN Co's Replacement Module Application (RMA), which was lodged on 2 July 2025.

This document is **Part A** of a four-part report delivered in response to this engagement. This Part A report provides an overview of the context for our review, our assessment methodology, our findings and recommendations. The other parts of this report comprise:

- **Part B**, in which we provide context for NBN Co's expenditure, describe the legislative and regulatory framework within which our review is undertaken and introduce our assessment methodology;
- **Part C**, in which we apply our assessment methodology to NBN Co's expenditure and make findings about the prudence and efficiency of this expenditure; and
- **Part D**, in which we draw on our approach and findings to make recommendations to the ACCC for how it should implement our findings about NBN Co's expenditure and how this assessment task could be streamlined in future reviews.

This Part A report is structured in line with the overarching narrative of the other parts of our review so that:

- section 1 introduces the scope of our review;
- section 2 summarises the context for this review and introduces the methodology that we deploy in this review;
- section 3 collates the findings of our expenditure review for the prudence and efficiency of NBN Co's expenditure; and
- section 4 makes recommendations to the ACCC for how it should implement our findings and how this assessment task could be streamlined in future reviews.

1. Introduction

The Australian Competition and Consumer Commission (ACCC) engaged HoustonKemp to review whether NBN Co's capital and operating expenditure is prudent and efficient, consistent with the requirements of NBN Co's Special Access Undertaking (SAU). This review has been undertaken to inform the ACCC's Replacement Module Determination on NBN Co's Replacement Module Application (RMA), which was lodged on 2 July 2025. To support the preparation of this advice, we engaged Jim Kennedy from Kennedy Associates to provide telecommunications industry subject matter expertise.

The RMA is a document that NBN Co is required to submit under the terms of its SAU and contains, among other things, proposals made by NBN Co applying to the second regulatory cycle (proposed as FY27 to FY29) for:

- regulated revenue that NBN Co intends to earn and the various inputs and methodologies by which this is calculated;
- the categorisation of services between regulated (core) and competitive; and
- benchmark service standards that NBN Co intends to incorporate into its standard form of access agreement (SFAA).

1.1 Scope of this report

We have been engaged by the ACCC to review whether NBN Co's capital and operating expenditure is prudent and efficient, consistent with the requirements of the SAU. Specifically, the SAU requires that:

- forecasts of operating and capital expenditure used to calculate regulated revenue in the second regulatory cycle must reasonably reflect the prudent and efficient expenditure that an operator in NBN Co's position would incur;¹ and
- actual capital expenditure that is added to the regulatory asset base (RAB) during the first regulatory cycle (being FY24 to FY26) must be assessed by the ACCC as having been (or having likely been) incurred prudently and efficiently by NBN Co.²

Consistent with these requirements of the SAU, the scope of this report comprises:

- an assessment of the prudence and efficiency of NBN Co's proposed capital and operating expenditure forecasts for the second regulatory cycle; and
- an assessment of the prudence and efficiency of NBN Co's actual (or expected actual) capital expenditure for the first regulatory cycle.

Where we find that forecast or actual expenditure is not incurred prudently and/or efficiently, we propose and implement methods by which an amount of expenditure that is (or would have been) prudent and efficient may be estimated based on the information available to us.

1.2 Information provided by NBN Co

Over the course of this review, we have collected a substantial amount of information about NBN Co's business and operations.

The information sources for our review include NBN Co's RMA and supporting attachments, 18 briefing sessions with senior NBN Co staff conducted over approximately 29 hours, five tranches of information

¹ NBN Co's SAU, s 2G.2.5(c) and (d)

² NBN Co's SAU, s 2G.5.10(d)(iii)(A)

requests yielding over 120 pages of responses and over 400 supporting documents, and public documents including submissions and materials from the SAU variation consultation process.

NBN Co cooperated fully with our review and provided timely responses to our requests for information. We consider that NBN Co has provided us with all available information that we sought to undertake our assessment.

Where our review identifies gaps in evidence to support the prudence and efficiency of particular expenditure items, this reflects the information that NBN Co had available to it at the time of making its expenditure decisions, rather than any failure to provide us with relevant documentation.

The briefing sessions held with senior NBN Co staff were particularly valuable in developing our understanding of NBN Co's expenditure governance frameworks, demand forecasting methodology, and the rationale for specific expenditure programs. These sessions enabled us to probe the underlying drivers of expenditure and to seek clarification on matters arising from our review of documentary evidence. The information we have collected has enabled us to form views on the prudence and efficiency of NBN Co's expenditure across all material expenditure categories.



2. Context and methodology for our review

Consistent with its transition away from the build phase of its networks, NBN Co's actual and proposed capital expenditure over the first and second regulatory cycle is on a downward trajectory in real terms. Similarly, NBN Co's operating expenditure has declined, and is expected to decline further over the second regulatory cycle in real terms. These trends are positive but do not establish that NBN Co's expenditure is prudent and efficient.

We have conducted some benchmarking of NBN Co against international peers. NBN Co has higher prices than comparable businesses for similar download and upload speed combinations. Despite these higher prices, NBN Co appears to operate less profitably than other comparators, although we note a positive trend towards peer performance. These findings do not establish imprudent or inefficient conduct but provide context to our detailed review of NBN Co's expenditure.

The SAU is a regulatory instrument given by NBN Co and accepted by the ACCC, which provides the basis for review of NBN Co's expenditure. We approach our assessment with a conventional approach to consideration of the meaning of 'prudent and efficient' that is grounded in Australian regulatory practice.

Our methodology for reviewing NBN Co's expenditure comprises three stages, ie:

- an initial stage (stage zero) in which we focus our detailed assessment on items of expenditure for which we establish concerns or are material in magnitude;
- a subsequent stage in which we undertake detailed assessment of whether NBN Co has justified the expenditure by reference to the need, assessment of feasible option and demonstration of least cost delivery; and
- a final stage that examines any gaps in NBN Co's justification and collect further information to accept or reject a hypothesis that prudent and efficient expenditure is lower than actual or forecast expenditure.

Our review of NBN Co's expenditure does not proceed under the assumption that compliance with government expectations is sufficient to meet the requirements of prudence and efficiency in the SAU, or that any decision it takes to implement government policy is prudent and efficient. We assess the prudence and efficiency of expenditure in the absence of these expectations and agreements (other than as mandated by a GPPN).

2.1 NBN Co's actual and proposed expenditure

NBN Co's RMA sets out its actual and expected expenditure for the first regulatory cycle (FY24 to FY26) and forecast expenditure for the second regulatory cycle (FY27 to FY29). This section provides an overview of this expenditure to establish the context for our assessment.

Throughout the remainder of this report, all NBN Co expenditure is reported in real FY24 dollars, unless otherwise stated.

2.1.1 Capital expenditure

NBN Co expects to incur total capital expenditure of approximately \$10.8 billion in the first regulatory cycle and forecasts \$8.4 billion in the second regulatory cycle, as shown in Table 2.1. Capital expenditure is declining as NBN Co transitions from a network build phase to a steady state operational phase. The main categories of capital expenditure are network build, connect maintain and assure, network capacity and performance, technology AI and automation, and other capital expenditure.

Table 2.1: Capital expenditure by category (\$mill, June 2024 dollars)

Category	FY24-26 (\$m)	FY27-29 (\$m)	Total (\$m)	Change (%)
Network build	\$4,350	\$3,476	\$7,826	-20%
Connect, maintain and assure	\$3,680	\$3,110	\$6,790	-16%
Network capacity and performance	\$1,747	\$1,358	\$3,105	-22%
Technology, AI and automation	\$839	\$344	\$1,183	-59%
Other capital expenditure	\$143	\$131	\$274	-9%
Total capital expenditure	\$10,759	\$8,418	\$19,177	-22%

Source: NBN Co, NBN replacement module application, Chapter 8: expenditure in the current regulatory cycle, 2 July 2025; and NBN Co, NBN replacement module application, Chapter 9: forecast expenditure in the next regulatory cycle, 2 July 2025.

Actual and expected capital expenditure in the first regulatory cycle has exceeded initial forecasts prepared under its integrated operating plan for FY23 (ie, 'IOP23') at the time of the SAU variation. Total capital expenditure is approximately \$2.4 billion (28 per cent) higher than initially forecast. The largest variance is in the connect maintain and assure category, which is \$1.5 billion (72 per cent) higher than forecast, reflecting higher than anticipated upgrade connection volumes and assurance costs.

2.1.2 Operating expenditure

NBN Co expects to incur total operating expenditure of approximately \$8.5 billion in the first regulatory cycle and forecasts \$7.9 billion in the second regulatory cycle, as we show in Table 2.2. Infrastructure payments to Telstra represent the largest component of operating expenditure. Resourcing costs and assurance restoration and maintenance costs are declining, reflecting workforce transformation initiatives and improvements in the field delivery model.

Table 2.2: Operating expenditure by category (\$mill, June 2024 dollars)

Category	FY24-26 (\$m)	FY27-29 (\$m)	Total (\$m)	Change (%)
Infrastructure payments	\$3,191	\$3,296	\$6,486	3%
Resourcing costs	\$2,119	\$1,712	\$3,831	-19%
Direct operating costs	\$1,926	\$1,728	\$3,653	-10%
Other operating costs	\$1,268	\$1,175	\$2,443	-7%
Service level rebates	-\$9	\$37	\$27	-501%
Total operating expenditure	\$8,494	\$7,946	\$16,440	-6%

Source: NBN Co, NBN replacement module application, Chapter 8: expenditure in the current regulatory cycle, 2 July 2025; and NBN Co, NBN replacement module application, Chapter 9: forecast expenditure in the next regulatory cycle, 2 July 2025.

2.1.3 Expenditure trends and context

Total expenditure across the two regulatory cycles amounts to approximately \$35.6 billion, comprising \$19.2 billion in capital expenditure and \$16.4 billion in operating expenditure. The overall trend is one of declining expenditure as the network transitions from a build phase to an operational phase, with total annual expenditure expected to fall from approximately \$6.7 billion in FY24 to \$5.0 billion in FY29.

NBN Co's actual expenditure in the first regulatory cycle has exceeded initial forecasts, particularly in the connect, maintain and assure and network build categories. While some variance is to be expected given the inherent uncertainty in forecasting, the magnitude of the variance raises questions about the accuracy of NBN Co's forecasting processes. The discrepancy between actual and anticipated expenditure is a relevant

consideration in our assessment of forecast expenditure for the second regulatory cycle. However, we do not assume that IOP23 forecasts necessarily reflect prudent and efficient expenditure.

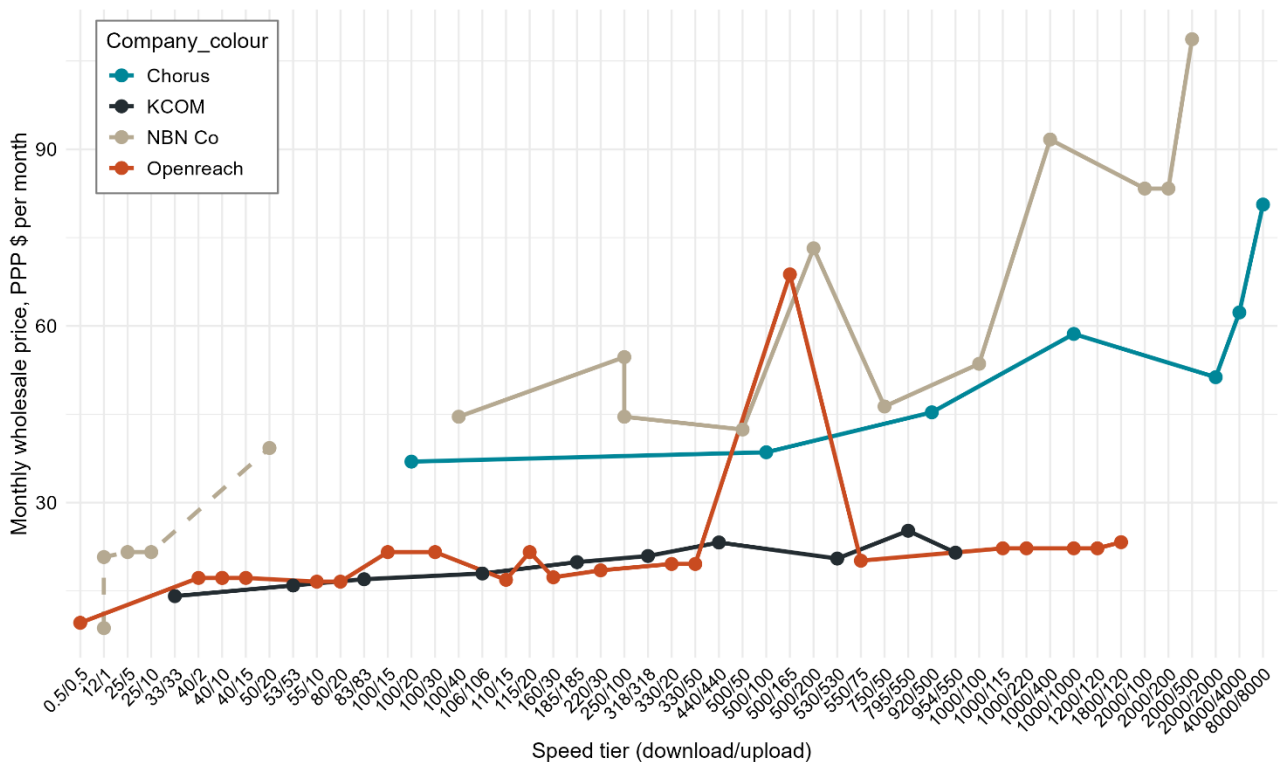
2.1.4 Benchmarking NBN Co against global comparators

Our benchmarking of NBN Co against international peers raises some issues for further consideration.

NBN Co has higher prices than comparable businesses for similar download and upload speed combinations. Our comparison, shown in figure 2.1 below, provides for a holistic comparison of prices across these comparator businesses. It demonstrates that:

- NBN Co's access prices are considerably higher than those set by comparator businesses:
 - > across the 50 Mbps, 100 Mbps and 250 Mbps download speed categories; and
 - > across the 500 Mbps and 1 Gbps download speed categories, with the exception of 500 Mbps and 1 Gbps products with high upload speeds, for which prices set by Openreach are similar; and
- NBN Co sets higher prices for plans with high download speeds (as compared to plans with low download speeds) and the extent to which it does so is similar to comparator businesses.

Figure 2.1: Comparison of wholesale broadband prices for FTTP



Source: NBN Co, Chorus, Openreach, KCOM³

Note: Speed tiers are sorted by download speed, then by upload speed within each download tier.

³ NBN Co, SAU Tariff List 1 July 2025 to 30 June 2026, available at:

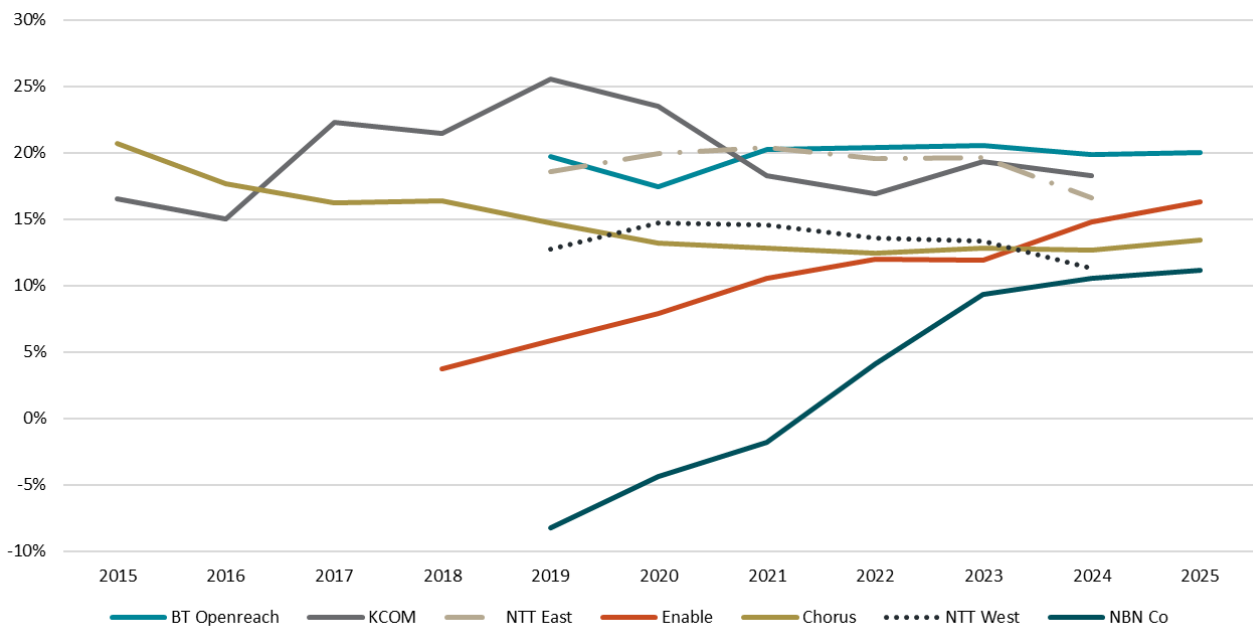
https://www.nbnco.com.au/content/dam/nbn/documents/sell/sau/nbn_tariff_list_fy26.pdf.coredownload.pdf, accessed 15 November 2025.

Openreach, Price list, available at:

<https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=M80QNeH46o4g6JKGD604vTypQOKfNn%2Beo6vmoVhAOBZZ6rNZujnCs99NblKJZPD9hXYmijxH6wrCQm97GZMyQ%3D%3D>, accessed 15 November 2025.

Despite these higher prices, NBN Co appears to operate less profitably than other comparators. We compare NBN Co against these comparators by reference to the ratio of earnings before interest, tax, depreciation and amortisation (EBITDA) to the (depreciated) book value of property, plant and equipment assets. Using this measure we can compare the ability of different business to generate an operating return in proportion to the assets in which they have invested.

Figure 2.2: Comparison of EBITDA to the book value of property, plant and equipment



Source: Annual reports, regulatory filings.

These findings do not establish imprudent or inefficient conduct but raise questions that have been addressed in our detailed review of NBN Co's expenditure.

2.2 Our assessment methodology for this review

2.2.1 Our understanding of prudent and efficient expenditure

Drawing from established regulatory approaches, we observe that prudent and efficient expenditure reflects the selection of the best course of action taking into account the available alternatives, and delivery at the lowest cost to consumers over the long term.

The SAU requires that the prudence and efficiency of expenditure be assessed in connection with the achievement of four expenditure objectives:

- meeting the expected demand for products and services;
- complying with all regulatory requirements;

Chorus, Chorus UFB Services Agreement Price List, September 2024, available at: <https://assets.ctfassets.net/7urik9yedttqc/F99yPSmpTX4WCx8LyLZIE/4abd6521873d14d599368fe18dfceaa4/Chorus-UFB-Services-Agreement-Price-List-2024-09.pdf>, accessed 15 November 2025.

KCOM, Connect Broadband Fibre Residential Packages, available at: https://www.kcom.com/pricing/media/1508/p13-s25_connect_broadband_fibre_residential_packages.pdf, accessed 15 November 2025.

- implementing a project or program which is the subject of a Government Policy Project Notice (GPPN); and
- maintaining and improving the quality, reliability, safety, security and integrity of supply of any products and services, including by meeting the benchmark service standards.

We consider that expenditure to comply with regulatory requirements or to implement a GPPN is presumptively prudent, given that these obligations do not leave alternative options available to NBN Co. Similarly, expenditure required to improve service quality to meet legislative and regulatory obligations is presumptively prudent. This still leaves open the prospect of review as to whether NBN Co is complying with these obligations efficiently, ie, at least cost.

In contrast, expenditure to meet expected demand or to maintain and improve service quality requires careful assessment against the economic concept of demand, including whether consumers' willingness-to-pay exceeds the costs of providing the service.

In addition to the expenditure objectives, the SAU also requires consideration of the expenditure factors when reviewing the prudence and efficiency of NBN Co's expenditure. Specifically, the SAU requires that regard must be had for several expenditure factors in forecasting the prudent and efficient expenditure that an operator in NBN Co's position would incur in achieving the expenditure objectives. These factors are:

- actual and expected relevant expenditure in previous regulatory cycles, and historical trends in relevant expenditure;
- expected end user willingness to pay for NBN Co's products and services, including as to connections, speed requirements, data volumes, quality and reliability;
- the extent to which relevant expenditure includes expenditure to address the concerns of access seekers and consumer advocacy groups as identified by NBN Co in the course of its engagement with such persons;
- current and reasonably anticipated future market conditions, including the extent to which NBN Co must adjust product and service quality to meet competition;
- NBN Co's procurement and governance framework, and whether NBN Co's asset management and planning framework reflects generally accepted industry standards and practice;
- NBN Co's ability to finance relevant expenditure;
- the substitution possibilities between operating expenditure and capital expenditure; and
- any other relevant matters.

2.2.2 Our expectations for expenditure justification

At a high level, we expect that justification for expenditure will satisfy three key expectations:

- first, NBN Co should establish the **need** for expenditure by demonstrating by reference to at least one of the SAU expenditure objectives that action is required;
- second, NBN Co should consider all feasible and effective **options** to address the identified need, including the option to do nothing; and
- third, NBN Co should implement frameworks for design, planning and delivery that ensure the selected option is delivered at **least cost**.

The primary purpose of our information gathering as part of our evaluation has been to enable us to understand how NBN Co assures itself of the prudence and efficiency of its expenditure.

Although our task involves reviewing NBN Co's expenditure decisions, it is not our role to make or remake those decisions. Where the information that NBN Co has presented leads us to form the opinion that prudent and efficient expenditure is lower than actual or forecast expenditure, we are required to arrive at an estimate of the expenditure that would be prudent and efficient. Such estimates should be regarded as being

indicative of the direction and magnitude of the level of prudent and efficient expenditure. Despite these limitations, in our opinion these estimates are the best available in the circumstances and with the information available to us.

2.2.3 Our three-stage framework for assessing NBN Co's expenditure

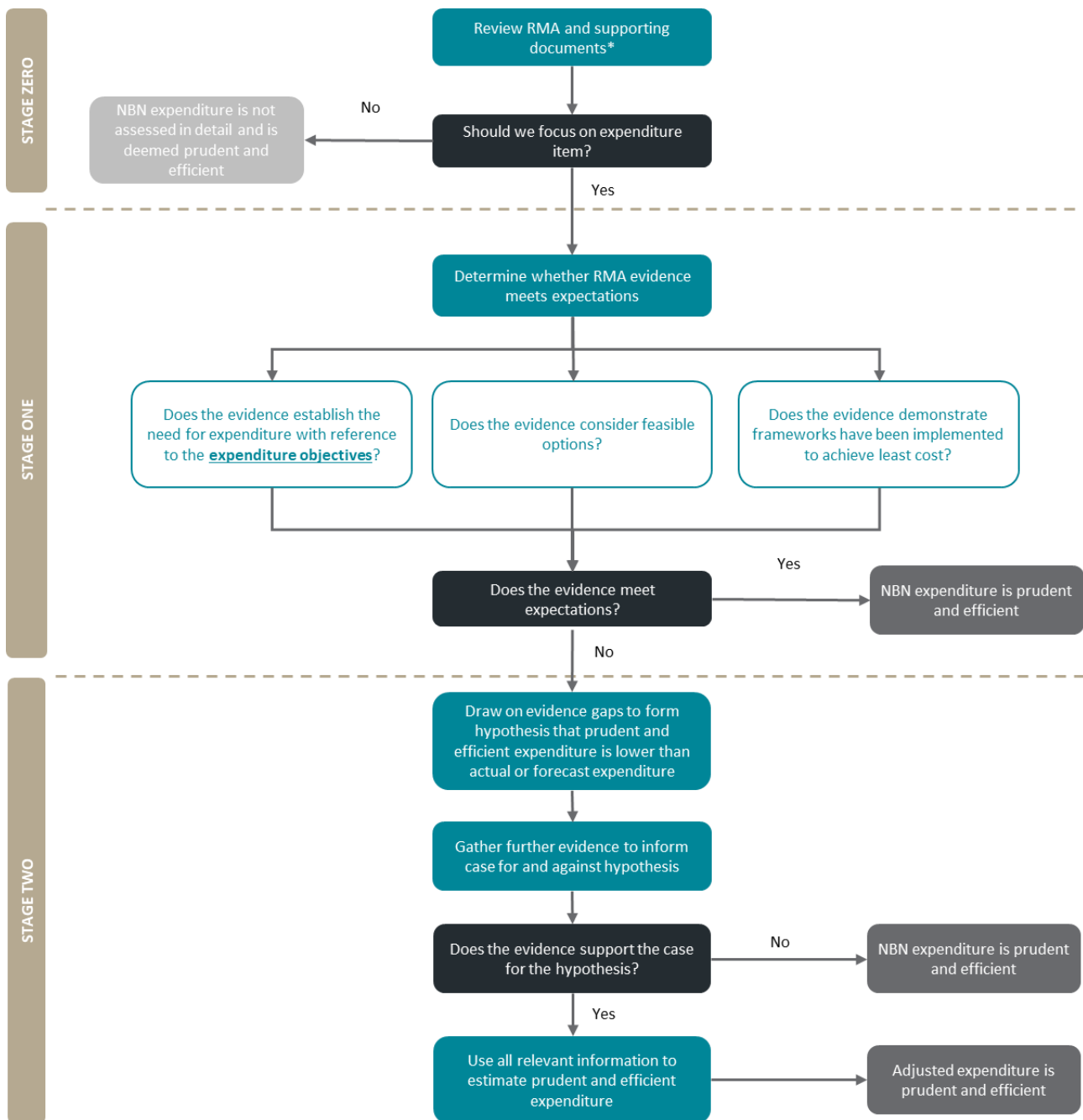
Our approach for assessing and estimating prudent and efficient expenditure comprises three stages outlined in figure 2.3.

Stage zero comprises a high-level process by which we identify expenditure items that should be subject to assessment. We review information on expenditure items in the RMA and supporting documents on a case-by-case basis and determine whether each item should be a focus of our assessment or whether it should be excluded from detailed review. Expenditure items selected for assessment in stage one either:

- present indicators of potential imprudence or inefficiency; and/or
- are material to NBN Co's overall expenditure program.

Stage one requires an assessment of whether the evidence that NBN Co provides meets the expectations described above. If the evidence meets our expectations, then we find that the relevant expenditure is prudent and efficient for the purpose of the SAU, and no further steps are taken. This stage is primarily informed by the RMA and supporting documentation, briefing sessions held by NBN Co, and NBN Co's response to initial information requests.

Figure 2.3: Process for assessing and estimating prudent and efficient expenditure



Note: *Including expenditure governance and demand forecasting.

If the evidence does not meet our expectations, the expenditure item progresses to stage two. In this final stage, we draw on the evidence gaps to form one or more plausible hypotheses about how prudent and efficient expenditure could be lower than actual or forecast expenditure. We gather evidence, including the preliminary material provided by NBN Co as well as additional information for the purposes of this stage, to take a detailed assessment of the case for and against our hypotheses.

If we find that the evidence supports the case for our hypotheses, then we use all available information to estimate the amount of prudent and efficient expenditure. Conversely, if we find that the evidence does not

support the case for our hypotheses, then we find that the actual or forecast expenditure is prudent and efficient.

An important element of our process is that the provision by NBN Co of insufficient evidence to show prudent and efficient expenditure does not automatically lead to a conclusion that this expenditure is not prudent or efficient. Our process is instead to commence an assessment of that expenditure, in which there is no presumption as to our findings.

2.2.4 Our consideration of NBN Co's incentives and conduct

During the course of our review, we have seen evidence that NBN Co's decisions are influenced by government expectations, including in a formal sense through the SoE. This influence is entirely to be expected – any firm would be influenced by the expectations of its sole shareholder, whether written or unwritten.

However, our review of NBN Co's expenditure does not proceed under the assumption that compliance with the SoE is prudent and efficient in the sense referred to in the SAU, or that any decision it takes to implement government policy is prudent and efficient. Our adoption of this approach reflects that:

- the SAU provides a direct role for a GPPN to impact on an assessment of prudence and efficiency through the expenditure objectives; and
- the expectations of government, or government policy more generally other than as formalised in a GPPN, is not cited as one of the expenditure objectives that prudent and efficient expenditure is required to achieve and is not mentioned as one of the expenditure factors.

This approach to our task has particular relevance in relation to our review of NBN Co's expenditure on its fibre build, fibre connect, transit networks and fixed wireless networks in Part C of this report. All of these expenditure categories are all at least partly affected by government expectations or agreements that NBN Co has entered with the Commonwealth or State governments. Our approach to expenditure review in these circumstances is to assess the prudence and efficiency of expenditure in the absence of these expectations and agreements (other than as mandated by a GPPN). We believe that this approach is consistent with, and required by, the SAU.



3. Findings of our review

Our assessment of NBN Co's expenditure has identified a mixed picture.

Overall, the evidence that we have collected indicates that much of NBN Co's expenditure has been prudently and efficiently incurred and that most forecast expenditure is also prudent and efficient. However, our review identifies a number of expenditure areas in which NBN Co has made, or plans to undertake, expenditure that exceeds our estimates of prudent expenditure. We also have found evidence that some items of historical capital expenditure were inefficiently incurred.

During the course of our review, we have observed that NBN Co's expenditure governance frameworks and decision making processes have improved since the first regulatory cycle. NBN Co has implemented more rigorous cost reduction targets, enhanced its procurement practices, and developed better frameworks for evaluating investment options.

However, there remain elements of historical or expected expenditure that do not meet our expectations for prudent and efficient expenditure. These areas are characterised by common themes including expenditure being incurred ahead of demonstrated customer need, insufficient consideration of end users willingness-to-pay, and gaps in the evidence base supporting business cases.

3.1 Overview of our findings

3.1.1 Material expenditure amounts

Total expenditure across the two regulatory cycles amounts to approximately \$35.6 billion, of which we have undertaken a detailed assessment of the categories representing the substantial majority of this expenditure.

Table 3.1 and table 3.2 below present a summary of the actual and proposed expenditures by RMA and our revised amounts reflecting the outcomes of our assessment.

Table 3.1: Summary of capital expenditure assessment findings

NBN capex category	NBN capex items	RMA capex amounts (\$mill, June 2024 dollars)		Assessment finds capex prudent and efficient?	Estimated prudent and efficient capex (\$mill, June 2024 dollars)	
		FY24-26	FY27-29		FY24-26	FY27-29
	Fibre upgrade program					
	<i>Base 3.5 million premises footprint</i>	\$2,295.0	\$-	No	\$1,147.5	\$1,147.5
	<i>Last 622,000 FTTN Premises¹</i>	\$693.4	\$2,325.2	No ³	\$693.4	\$854.2
Network Build	New developments	[c-i-c]	[c-i-c]	Yes		
	Business deployment	[c-i-c]	[c-i-c]	Yes ⁴		
	Commercial works	\$137.4	\$118.1	Yes ⁴		
	Regional co-investment ²	\$157.6	\$184.8	Yes ⁴		
	Other Network Build capex	[c-i-c]	[c-i-c]	Yes ⁴		
Connect, maintain and assure	Upgrade connections	\$1,975.3	\$1,635.2	No	\$1,715.6	\$1,774.4
	First time customer connect	\$652.2	\$519.4	No	\$1,500.6	\$1,411.0

NBN capex category	NBN capex items	RMA capex amounts (\$mill, June 2024 dollars)		Assessment finds capex prudent and efficient?	Estimated prudent and efficient capex (\$mill, June 2024 dollars)	
		FY24-26	FY27-29		FY24-26	FY27-29
	Reconnections	\$244.0	\$290.7	No		
	Customer service and assurance	\$476.0	\$309.5	No		
	Network operations	\$166.5	\$220.2	No		
	Network maintenance and normalisation	\$53.5	\$71.2	No		
	Other operations capex	\$112.7	\$63.4	Yes ⁴		
Network capacity and performance	Transit networks	\$381.2	\$357.7	No	\$330.8	\$372.8
	Hybrid fibre coaxial	\$112.3	\$518.8	No	\$112.3	\$515.0
	Fixed wireless	\$1,001.5	\$303.8	No	\$859.3	\$281.6
	Satellite	\$119.1	\$57.5	Yes		
	Underperforming lines	\$47.6	\$35.8	Yes ⁴		
	Other network capex	\$85.3	\$83.9	Yes ⁴		
Technology, AI and Automation	Technology capability delivery	\$772.2	\$278.0	Yes		
	Other technology capex	\$66.6	\$66.4	Yes		
Other	Facilities	\$53.7	\$24.4	Yes ⁴		
	Supply	\$67.2	\$138.1	Yes ⁴		
	Capitalised corporate costs	\$22.4	\$18.3	No ⁵		
	Other (other capex)	\$-	-\$50.2	Yes ⁴		
Capitalised resourcing costs ⁵		\$1,761.7	[c-i-c]	No ⁵	\$1,719.1	[c-i-c]

Notes: [c-i-c]. 3. Our assessment for the remaining 622,000 FTTN premises finds that the maximum capital expenditure specified in the GPPN is prudent and efficient. 4. Denotes categories of expenditure that were not the focus of our detailed review and that we deem to be prudent and efficient. 5. Our assessment of gross resourcing expenditure identifies inefficiencies in the first regulatory cycle that – given the scope of our assessment – are confined to capitalised resourcing expenditures, including capitalised corporate costs. We report these separately in the final row for clarity given this expenditure does not fall under a specific NBN Co capex category, rather it spans across all NBN Co's capital programs.

Table 3.2: Summary of operating expenditure assessment findings

NBN opex category	NBN opex items (if relevant)	RMA opex amounts (\$mill, June 2024 dollars)		Assessment finds opex prudent and efficient?	Estimated prudent and efficient opex (\$mill, June 2024 dollars)	
		FY24-26	FY27-29		FY24-26	FY27-29
Infrastructure payments		\$3,190.7	\$3,295.6	Yes ¹		
Resourcing costs		\$2,119.0	\$1,711.8	Yes		
Direct operating costs	Network operating costs	\$780.1	\$897.3	Yes ¹		
	Assurance, restoration and maintenance ²	\$860.4	\$540.3	Yes		
	Other network costs	\$285.3	\$289.8	Yes ¹		
Other operating costs	IT and software costs	\$539.3	\$557.8	Yes ¹		
	Marketing,	\$211.2	\$172.7	Yes		

NBN opex category	NBN opex items (if relevant)	RMA opex amounts (\$mill, June 2024 dollars)		Assessment finds opex prudent and efficient?	Estimated prudent and efficient opex (\$mill, June 2024 dollars)	
		FY24-26	FY27-29		FY24-26	FY27-29
	advertising, comms, engagement and development costs					
	Other	\$517.3	\$444.1	Yes ¹		
Service level rebates		-\$9.1	\$36.5	Yes ¹		

Notes: 1. Denotes categories of expenditure that were not the focus of our detailed review and that we deem to be prudent and efficient. 2. Assessed together with connect, maintain and assure capital expenditure, excluding upgrade connections and other operations capex.

3.1.2 Summary of findings by expenditure category

Our findings vary considerably across the expenditure categories we assessed.

For **gross resourcing expenditure**, we identified historical efficiency concerns arising from the failure to achieve planned headcount reduction targets in FY24 and FY25, given a lack of evidence about cost efficiency achievements during this period. That said, we are more confident that forward-looking expenditure is efficient given the implementation of [c-i-c]

For **fibre upgrade** expenditure covering the base 3.5 million premises, we identified timing concerns, with the network build completed by FY26 potentially ahead of demonstrated customer need and willingness-to-pay. A more gradual build profile completed by 2030 may have been more prudent and aligned with the timelines of other countries and regions who also face an ageing copper network. The prudence of upgrade expenditure on remaining 622,000 premises program is justified up to the maximum capital expenditure specified by the GPPN and subject to cost efficiency mechanisms employed across the fibre upgrade program.

For **network capacity (transit) expenditure**, we found the expenditure to be efficient overall, although the timing of the aggregation evolution program raises concerns about whether acceleration of the program was justified.

Customer connection upgrade expenditure is of particular concern, with evidence suggesting that upgrades are occurring ahead of demonstrated customer need. The purchase of products with download speeds of 100 Mbps has triggered upgrades for fibre to the node (FTTN) and fibre to the curb (FTTC) customers who may have been adequately served by existing copper technology.

For **connections, assurance and maintenance expenditure**, we identified historical concerns relating to delivery partner productivity incentives and expenses capitalised in the first regulatory cycle, although we expect the new field delivery model will improve efficiency in the second regulatory cycle.

For **hybrid fibre coaxial (HFC)** expenditure, we found the expenditure likely largely prudent and efficient, with the majority of expenditure in the first and second regulatory cycles appropriately justified on maintaining quality and reliability of services. However, we identified concerns about approximately \$3.8 million in FY29 relating to premature investment in multi-gigabit capabilities ahead of demonstrated customer demand.

For **fixed wireless** expenditure under the fixed wireless and satellite upgrade program delivered in FY24 and FY25, we identified significant concerns where services have been extended beyond NBN Co's IOP23 plans – which were designed to meet the contracted requirements of the associated government grant – without apparent regard to customer need and willingness-to-pay.

For **satellite** expenditure across the two regulatory cycles, we found both geosynchronous satellite maintenance and the low Earth orbit satellite transition to be prudent and efficient. Expenditure is justified by the need to maintain service quality and comply with Statutory Infrastructure Provider obligations, with appropriate cost efficiency mechanisms including competitive procurement of the low Earth orbit satellite provider.

For **new developments** expenditure, we found that the expenditure is prudent and efficient for both regulatory cycles. The framework NBN Co applies to determine technology choice was not sufficiently clear from initial documentation, but further information demonstrated a systematic approach based on cost per premise thresholds and potential developer contributions that ensures least-cost technology selection.

We find that **technology capital expenditure and marketing operating expenditure** are both prudent and efficient, with no material concerns identified for these categories.

3.1.3 Key themes arising from our assessment

Several key themes have emerged from our assessment of NBN Co's expenditure.

The first relates to **timing** of expenditure. In several categories, we have found that expenditure has been incurred ahead of demonstrated customer need. This includes fibre upgrades for the base 3.5 million, connection upgrades, network capacity augmentation, and fixed wireless expansion. While the underlying investments may eventually be required, incurring expenditure before it is needed is not prudent. Such actions impose unnecessary costs on access seekers and end users through the time value of money and eliminate options not to incur the expenditure should circumstances change.

The second theme relates to **demand forecasting**. NBN Co's demand forecasts appear to reflect its planned expenditures and prices, rather than planned expenditures being developed to reflect its expectation of demand at prices that meet or exceed the cost of supply. This gives rise to the risk that investment decision-making may result in expenditure that exceeds prudent and efficient levels. Although NBN Co conducts conjoint surveys to understand customer preferences and the value they place on product characteristics, we have not seen evidence demonstrating that these insights are systematically integrated into the business cases that justify major investments on the basis of meeting expected demand or improving the quality and reliability of supply above minimum service requirements.

The third theme relates to the distinction between **historical and forward-looking efficiency**. For several expenditure categories, including gross resourcing and connections, assurance and maintenance, we have identified concerns about historical efficiency but are more confident that forward-looking expenditure will be efficient. This reflects improvements in NBN Co's expenditure governance and cost reduction initiatives that were implemented during the first regulatory cycle and are expected to deliver benefits in the second regulatory cycle.

In the remainder of this summary, we set out and explain our findings in relation to specific expenditure categories.

3.2 Historical gross resourcing expenditure raises efficiency concerns but expected real cost reductions should deliver future efficiencies

Gross resourcing expenditure comprises the costs of NBN Co's internal and external workforce, including employees, contractors and managed service providers.

This expenditure is material, with gross resourcing costs of approximately \$3.7 billion in the first regulatory cycle and [c-i-c] forecast for the second regulatory cycle. Resourcing is inherently required for NBN Co to meet the majority of the SAU expenditure objectives, including connecting customers, maintaining the network, and delivering technology programs.

We find that with the earlier implementation of effective cost reduction targets, NBN Co may have been able to achieve efficiencies on gross resourcing expenditure in the first regulatory cycle of \$42.7 million, comprising \$22.1 million in FY24 and \$20.6 million in FY25. Given the scope of our review, these estimates relate only to the capitalised component of gross resourcing expenditure in the first regulatory cycle.

We further find that expected and forecast gross resourcing expenditure is prudent and efficient for:

- FY26 given the implementation of a cost reduction target; and
- for the second regulatory cycle given [c-i-c]

3.2.1 Our assessment approach

We assessed gross resourcing expenditure – ie, all resourcing expenditure before it is allocated to operating expenditure and capital expenditure – against our expectations for prudent and efficient expenditure. Given that resourcing is inherently required for NBN Co to meet its expenditure objectives, our focus was primarily on whether NBN Co has considered alternative resourcing options and implemented appropriate frameworks to ensure resourcing costs are efficient.

Our assessment approach recognised that NBN Co generally considers internal and external resourcing options to undertake or deliver work. NBN Co confirmed that its resourcing decisions are determined based on consideration of whether works requiring resourcing are temporary or ongoing, the capabilities required to deliver works, and the associated costs. This evidence was sufficient to demonstrate NBN Co's consideration of feasible resourcing options.

We also examined the evidence relating to cost reduction targets, workforce transformation initiatives, and the mechanisms by which NBN Co seeks to achieve productivity improvements. Our review of this evidence identified forward-looking efficiency improvements but raised concerns regarding historical cost efficiencies.

3.2.2 Historical efficiency concerns

We have identified concerns about the efficiency of gross resourcing expenditure in the first regulatory cycle. NBN Co's IOP23 included plans to reduce headcount during the first regulatory cycle through four 'mega processes' comprising volume-based activity reduction as the build phase completed, enterprise simplification, process simplification, and operating model optimisation. However, actual gross resourcing costs have exceeded IOP23 forecasts, indicating that these targets were not achieved.

Resourcing operating expenditure in FY24 exceeded forecasts by \$16.8 million as a result of higher total employee headcount and increases in employee remuneration. Expected resourcing operating expenditure for FY25 and FY26 also exceeded forecasts as a result of salary increases for roles covered by enterprise agreements and increases in payroll tax rates in Victoria and Western Australia. The failure to achieve planned headcount reductions suggests that NBN Co did not have effective cost reduction frameworks in place for FY24 and FY25.

We note that NBN Co did not implement its gross resourcing cost reduction target until FY26. The absence of effective cost reduction targets in FY24 and FY25 represents a gap in NBN Co's expenditure governance that may have resulted in inefficient expenditure.

We estimate that potential efficiencies of \$22.1 million in FY24 and \$20.6 million in FY25 may have been available to NBN Co had it taken earlier action to implement effective cost reduction frameworks. Our estimation methodology applies a [c-i-c] efficiency factor to capitalised resourcing costs, adjusted by a feasibility ratio of [c-i-c] to account for the portion of planned reductions that related to the completion of the build phase. These estimates are necessarily subject to considerable uncertainty since it is not possible to observe the outcomes that would have arisen had NBN Co taken different actions.

3.2.3 Forward-looking efficiency improvements

Notwithstanding our concerns about historical efficiency, we are more confident that gross resourcing expenditure in the second regulatory cycle will be efficient. NBN Co has implemented gross resourcing cost reduction targets that we expect will deliver cost efficiencies, and these have been appropriately factored into the proposed expenditures.

[c-i-c]

[c-i-c]

Additionally, the field evolution strategy is a particularly important initiative that specifically targets productivity gains in the field delivery workforce through greater digitisation to reduce manual workloads, the adoption of technology solutions to inform work process optimisation, and investments in workflow management systems to enable resource allocation optimisation.

Under the field evolution strategy, we believe that NBN Co has delivered productivity-focused activities including regional workforce placement to reduce costs associated with transporting technicians, and a centralised control tower to manage workflows and bundle works to achieve efficiencies.

We consider that these initiatives provide a reasonable basis for concluding that gross resourcing expenditure forecast for the second regulatory cycle is likely to be efficient.

3.3 Fibre upgrade expenditure for the base 3.5 million premises may have been incurred ahead of need, though expenditure for the remaining 622,000 premises under the GPPN maximum is prudent and efficient

Fibre upgrade capital expenditure comprises two distinct programs:

- the base footprint covering 3.5 million premises, planned for delivery between 2020 and 2025; and
- a separate program announced in January 2025 to upgrade the remaining 622,000 FTTN premises by 2030.

We find that fibre upgrade capital expenditure for the base 3.5 million premises in the first regulatory cycle represents an overspend of approximately \$1.1 billion. Whilst we recognise the need to address copper network obsolescence by the [c-i-c], the evidence of demand based on customer willingness-to-pay does not support completing the build by FY26. Based on the available information, we find that the application of a more gradual build profile from FY24 and extending completion to 2030, aligned with international practice, would have been prudent and efficient.

We find that the forecast capex required to deliver the fibre upgrade for the remaining 622,000 FTTN premises in the first and second regulatory cycle is prudent up to the maximum capital expenditure specified in the GPPN and is efficient because it is subject to appropriate cost efficiency disciplines. This amounts to \$693.4 million and \$854.2 million in the first and second regulatory cycles, respectively.

3.3.1 Base 3.5 million premises program

The base footprint program involves upgrading FTTN connections to fibre to the premise (FTTP) across 3.5 million premises, with the network build completed by December 2025 under a \$2.4 billion equity funding agreement with the Australian government. Actual and expected capital expenditure for FY24 to FY26 amounted to approximately \$2.3 billion, representing a seven per cent cost reduction compared to IOP23 forecasts due to cost efficiencies.

Although not stated explicitly, NBN Co's documentation indicates that the primary driver for completing the network build by FY26 was to meet expected customer demand for higher speed tiers and improved service quality. NBN Co states in its RMA that 'the primary driver for upgrading the FTTN network is the ongoing

capability of the full fibre access technology to deliver and meet consumer demand'. Additional justifications in the documentation, which are given equal weight alongside meeting demand, included copper network obsolescence, declining equipment supply for copper infrastructure, and the superior reliability and lower operating costs of fibre networks.

Given that NBN Co's documentation indicates that the timing of this expenditure was driven by demand considerations, we reviewed the revenue and average revenue per user (ARPU) analysis underpinning NBN Co's financial justification for completing the build by FY26. Our review identified significant concerns about whether customer willingness-to-pay supports the accelerated delivery timeline.

NBN Co's revenue forecasts rely on estimates of ARPU uplift – the incremental revenue generated by upgrading a premise from FTTN to FTTP – that appear inconsistent with other evidence provided. The IOP26 business case assumes monthly ARPU uplift will increase sharply from FY24 to FY33. However, our analysis of NBN Co's data book indicates that the actual monthly ARPU difference between FTTP and FTTN customers peaks at just over half the increase modelled in the IOP26 business case over FY21 to FY29. This substantial divergence suggests the ARPU uplift estimates may be materially overstated.

Further, other evidence indicates lower customer willingness-to-pay than NBN Co's forecasts assume, including NBN Co's:

- conjoint analysis demonstrating significant customer price sensitivity; and
- RMA customer engagement highlighting affordability as a key concern.

When we adjust NBN Co's IOP26 financial modelling to reflect ARPU assumptions more consistent with the data book figures, the program yields a negative net present value, suggesting customer willingness-to-pay does not support completing the build by FY26.

[c-i-c].⁴

Based on the information available to us, we consider that a gradual build profile aligned with international practice, with completion targeted for 2030, may be a prudent alternative. Desktop review of copper-to-fibre transitions in other jurisdictions indicates that whilst many countries are targeting 2030 for copper switch-off, most will not achieve this timeline. A 2024 survey of 31 European countries found only 10 expect to achieve total copper switch-off by 2030. Aligning with this international timeframe would have allowed NBN Co to defer capital expenditure until closer to demonstrated customer need whilst still addressing copper obsolescence well before the [c-i-c].

Separately, although NBN Co's equity funding agreement with the Australian government required delivery by December 2025, compliance with this agreement does not demonstrate prudence under the SAU framework. The prudence and efficiency requirements apply to NBN Co's investment decisions, including the timing considerations that preceded the equity funding agreement. We expect that a prudent business would evaluate alternative build profiles and timings before committing to an accelerated program. Consistent with this framework, we assess whether NBN Co's decision to complete the build by FY26 was justified by the underlying business case.

A more gradual build profile completed by 2030 would have delivered several benefits. It would have reduced financing costs through the time value of money, allowed NBN Co to capture greater learning curve efficiencies by undertaking a larger share of the build after productivity improvements were identified, and better aligned capital deployment with customer willingness-to-pay. Evidence of a learning curve exists, with nominal cost per premise decreasing by [c-i-c] from FY24 to FY25, suggesting NBN Co identified efficiencies during the rollout that could have been applied to a larger volume of premises under a more gradual profile.

⁴ This connections forecast relates to the upgrade connections of the whole fibre upgrade program, ie, not just the base 3.5 million footprint.

We approximate the impact of these findings by assuming a more gradual build profile such that the fibre roll out completed for the base footprint over FY24 to FY26 is instead gradually delivered over FY24 to FY29, with total cost evenly split between both regulatory cycles. Using this approach, we estimate that the timing inefficiency associated with completing the base footprint build ahead of demonstrated customer need amounts to approximately \$1.1 billion across FY24 to FY26, with an equivalent offsetting addition of \$1.1 billion in the second regulatory cycle as the expenditure would have been more prudently and gradually extended to FY29.

We note that this estimate is conservative as it does not account for the additional cost efficiencies that NBN Co has demonstrably achieved through the roll out to FY26. A more gradual deployment profile would have provided greater opportunity to realise and apply these efficiencies across a larger proportion of the fibre footprint, resulting in further cost savings beyond the timing inefficiency identified above.

3.3.2 Remaining 622,000 premises program

The remaining 622,000 premises program, announced in January 2025 and backed by up to \$3 billion in government equity investment, will complete the upgrade of Australia's FTTN network to FTTP by 2030. This program is more complex and costly per premise (in nominal terms) than the base footprint.

Expenditure for this program is justified by a GPPN, which under the SAU framework makes the expenditure presumptively prudent. NBN Co must provide 95 per cent of premises with the option to upgrade to full fibre, with the remaining five per cent subject to further design work. NBN Co is applying the same cost efficiency frameworks used successfully in the base program, including delivery partner incentive mechanisms, performance monitoring against contractual KPIs, and quality auditing.

Further, the GPPN for the remaining 622,000 FTTN premises provides that no more than \$1.7 billion (nominal) of capital expenditure will be included in NBN Co's RAB on an as commissioned basis. Put another way, only \$1.7 billion (nominal) is considered prudent and efficient so as to be permitted in the RAB.

We find that actual and forecast capital expenditure for the remaining 622,000 premises program in the first and second regulatory cycles – totalling \$693.4 million and \$854.2 million, respectively, to reflect the maximum capital expenditure specified by the GPPN – are prudent and efficient.

3.4 Transit capacity expansion expenditure is prudent and efficient overall, with the exception of planned 'evolve the network' activities

Transit capacity expenditure is required to ensure NBN Co's network can meet growing demand for broadband services.

Transit capital expenditure totals approximately \$381.2 million in the first regulatory cycle and \$357.7 million in the second regulatory cycle. This expenditure supports the capacity, efficiency and resilience of the network that connects local access networks to NBN Co's points of interconnection with retail service providers.

We find that transit capital expenditure is prudent and efficient across the first and second regulatory cycles, with the exception of timing inefficiencies in the aggregation evolution program.

A more gradual deployment of the 'aggregation evolution' program completing in FY29, consistent with the original timeline, may have been more efficient. On this basis, we estimate that \$50.4 million in transit capital expenditure incurred in the first regulatory cycle could have been deferred, and an additional \$15.1 million is instead incurred in the second regulatory cycle.

3.4.1 Components of transit expenditure

NBN Co disaggregates transit capital expenditure into four components, specifically the:

- 'manage the network' component comprises expenditure on capacity and lifecycle upgrades as well as network efficiency and resilience;
- 'new products and markets' component comprises expenditure on upgrades to meet incremental demand driven by new products and new premises connections;
- 'evolve the network' component comprises expenditure required to support large transformation and upgrade programs including the aggregation evolution program; and
- 'other' component comprises expenditure on capitalised labour and the ACT infrastructure levy.

3.4.2 Assessment findings

Our assessment found that 'manage the network' and 'new products and markets' capital expenditure meets our expectations and is prudent and efficient. NBN Co has demonstrated that this expenditure is necessary to comply with its regulatory requirements and maintain the quality and reliability of supply. The approach of delivering upgrades on a just-in-time basis when capacity triggers are met reflects time efficiency and is likely to be least cost given that NBN Co has no practical alternative to upgrading capacity when triggers are breached.

However, in our opinion 'evolve the network' capital expenditure raises concerns about timing. NBN Co accelerated the delivery of its aggregation evolution program from FY29 to FY27 [c-i-c]. Importantly, this acceleration was not driven by demonstrated customer willingness-to-pay for the services enabled by the earlier delivery of the aggregation program.

We estimate that the accelerated delivery of the aggregation program resulted in timing inefficiencies of approximately \$12.0 million in FY25 and \$38.4 million in FY26, with offsetting reductions in FY28 and FY29. That is, we estimate that NBN Co could have realised efficiencies by deferring expenditure [c-i-c] without compromising service quality or regulatory compliance.

3.5 Connection upgrades may have been delivered ahead of need

Customer connection upgrade expenditure comprises the costs of upgrading existing FTTN and FTTC customers to full fibre to the premises (FTTP) connections. This is a material expenditure category, with capital expenditure of approximately \$2.0 billion in the first regulatory cycle and \$1.6 billion in the second regulatory cycle. The upgrade program is central to NBN Co's network evolution strategy and represents a significant component of total capital expenditure.

We find that connection upgrade expenditure in the first regulatory cycle will exceed prudent expenditure where it occurs ahead of customer need. The 100/20 Mbps high speed tier thresholds (HSTT) have triggered upgrades for customers who may have been adequately served by existing copper technology, imposing unnecessary costs that will ultimately be recovered from end users through regulated prices.

Had NBN Co delayed the upgrades to meet end user needs – say by one year – it would have avoided \$259.7 million in the first regulatory cycle, and instead later incurred \$139.2 million in the second regulatory cycle.

3.5.1 Types of connection upgrades

NBN Co undertakes connection upgrades through two pathways: demand-led and assurance-led upgrades.

Demand-led upgrades are triggered when a customer orders a speed tier above NBN Co's defined HSTT. For FTTN connections, the HSTT is 100/20 Mbps, meaning that customers ordering plans with 100/20 Mbps or higher trigger an upgrade to FTTP. For FTTC connections, the HSTT was originally 250/25 Mbps but was reduced to 100/20 Mbps from FY25, expanding the pool of customers who would trigger an upgrade when ordering higher speed services.

Assurance-led upgrades are proactive upgrades delivered to premises experiencing service issues. These comprise:

- underperforming lines, being connections that cannot achieve 25/5 Mbps; and
- poor performing lines (PPLs), being connections that cannot achieve 50 Mbps download or that exhibit consistent service issues such as frequent dropouts.

Regarding the latter, NBN Co introduced its PPL proactive fibre upgrade program in 2024 to upgrade PPLs that met specified criteria relating to speed achievement and connection stability.

3.5.2 Our concerns

Our assessment identified concerns about the timing of connection upgrade expenditure.

The reduction in the HSTT for FTTC from 250/25 Mbps to 100/20 Mbps has triggered upgrades for customers who could have been adequately served by the existing copper network at 100 Mbps speeds. This change means that customers ordering a 100/20 Mbps plan on an FTTC connection now trigger an upgrade to FTTP, even though the existing FTTC technology can deliver this speed in many cases.

Our analysis of ACCC broadband performance data indicates that 65 to 75 per cent of services on the FTTC network achieved at least 100 per cent of advertised download speeds during busy period hours over the first regulatory cycle.

We believe that this evidence demonstrates that a substantial majority of FTTC connections could deliver the speeds required by customers on the 100/20 Mbps plan without requiring an upgrade to FTTP. Similarly, our analysis indicates that 35 to 36 per cent of FTTN services achieved at least 100 per cent of advertised download speeds, suggesting that a meaningful proportion of FTTN connections could also serve customers at these speeds.

Actual upgrade connection volumes have significantly exceeded IOP23 forecasts. Moreover, NBN Co's cost per premise for upgrades in IOP23 and did not capture higher upfront demarcation costs that were subsequently incurred, with capital expenditure exceeding forecasts by \$908.4 million across the first regulatory cycle. These factors combine to suggest that NBN Co has undertaken more upgrades than anticipated, at higher costs than forecast, for end users who may not have required the upgrade to meet their service needs.

3.5.3 Estimation of inefficient expenditure

We have estimated the potential inefficient expenditure associated with premature connection upgrades. Our methodology estimates the number of upgrades within each year that may not have been required, being upgrades initiated through an order for a 100/20 Mbps plan where the underlying copper connection could feasibly deliver 100 per cent of the advertised plan speed. We adopt a conservative assumption of a one year delay to upgrades that are deemed unnecessary, recognising that these connections will eventually require upgrading.

Our analysis indicates that a material proportion of upgrade expenditure in both regulatory cycles may be considered to have been inefficient due to occurring ahead of customer need. When a connection is upgraded, NBN Co incurs capital costs that could have been deferred if the copper technology could adequately serve the customer. While deferral also affects ongoing service assurance costs, our analysis accounts for the additional copper maintenance costs that would be incurred under a delayed upgrade scenario.

3.6 Connections, assurance and maintenance expenditure have historically raised concerns, but a new delivery model is expected to drive future efficiency

Connections, assurance and maintenance expenditure (excluding connection upgrades) comprises the capital and operating costs of connecting end users to the network, maintaining service quality, and addressing faults.

This expenditure totals approximately \$1.6 billion in the first regulatory cycle and \$1.4 billion in the second regulatory cycle. The efficiency of this expenditure is important because it directly affects the ongoing costs of operating the network and maintaining service quality for end users.

We find that connections, assurance and maintenance expenditure in the first regulatory cycle may include costs that could be considered to have been inefficient resulting from the design of the previous cost efficiency mechanism in delivery partner contracts. Reflecting the scope of our review, any potential cost inefficiencies would be confined to capital expenditure items and total \$88.9 million.

We find that forecast expenditure for the second regulatory cycle is likely to be prudent and efficient given the improvements in the field delivery model, the implementation of new delivery partner contracts with better cost incentives, and a myriad of other initiatives targeting lower truck roll volumes and costs.

3.6.1 Truck rolls

Connection, assurance and maintenance works are largely delivered through NBN Co's truck rolls program.

A truck roll is the process by which a technician is dispatched to a customer premises or network site to undertake works. These technicians are either part of NBN Co's internal workforce or contracted through an NBN Co delivery partner.

It is the unit cost and volume of truck rolls undertaken to deliver connection, assurance and maintenance works that ultimately determine truck roll costs.

3.6.2 New delivery model

NBN Co has implemented a range of initiatives to drive truck roll cost efficiencies, targeting both truck roll volumes and unit costs, through enhanced delivery partner management and monitoring, technology solutions to reduce unnecessary truck rolls and benchmarking, among other measures.

A key initiative – the field partner transformation initiative – was completed in FY25. The program represents a fundamental change in how NBN Co manages delivery partner relationships, with a focus on achieving productivity gains and cost reductions.

Key elements of the transformation program include a reduction in delivery partners from four to two, and renegotiated delivery partner contracts with improved cost efficiency incentives. The new contracts incorporate productivity targets that encourage delivery partners to reduce costs while maintaining service quality.

NBN Co has provided evidence that the new delivery model has already achieved cost per premise reductions in FY25 and FY26. These early results suggest that the transformation program is delivering the intended benefits and provide a reasonable basis for expecting that efficiency improvements will continue through the second regulatory cycle.

3.6.3 Historical concerns

Our assessment identified concerns about the efficiency of connections, assurance and maintenance expenditure in the first regulatory cycle.

In particular, the considerable cost reductions resulted from the field partner transformation initiative relative to renegotiated contracts with existing, long-term delivery partners. This raises questions regarding whether NBN Co could have achieved these cost efficiencies earlier.

Our review of NBN Co's prior field delivery contracts with the two contractors selected under the initiative – Service Stream and Visionstream (now Ventia) – found that NBN Co previously employed a 'productivity review' mechanism to drive cost efficiencies, rather than an annual productivity target as employed under the new contracts.

These reviews were instigated by NBN Co and would require the contractor to share information and identify potential productivity improvements. Where improvements were identified, these would likely give rise to a reduction in rates and prices following negotiation.

In our view, delivery partners would have had little to no incentive under this mechanism to identify and implement productivity improvements, and therefore deliver cost efficiencies. If NBN Co instigated a review, there would be a reduction in its charge rates, thereby lowering its revenue and profits.

We believe that the absence of effective cost efficiency mechanisms in the delivery partner contracts in effect prior to FY26 represents a gap in NBN Co's expenditure governance that may have given rise to inefficient costs.

3.7 HFC expenditure is largely prudent and efficient, with concerns about premature multi-gigabit investment

HFC capital expenditure comprises ongoing capacity upgrades to ensure the HFC network can serve speeds purchased by end users, involving plant modernisation upstream activities and upgrading from centralised access architecture to distributed access architecture. HFC capital expenditure totalled approximately \$112.3 million in the first regulatory cycle and is forecast at approximately \$518.8 million for the second regulatory cycle.

We find that the majority of HFC expenditure across the first and second regulatory cycles is justifiable on the basis of maintaining quality and reliability of services by replacing end-of-life components and ensuring that end users obtain speeds they have purchased. NBN Co has implemented appropriate cost efficiency mechanisms including just-in-time delivery and workforce management strategies.

However, forecast expenditure in the second regulatory cycle enabling speeds above 2 Gbps – ie, \$3.8 million in FY29 [c-i-c] – appears premature and exceeds our estimates of prudent expenditure given limited demonstrated customer demand for multi-gigabit speeds.

3.7.1 Expenditure justification and reframing

NBN Co's documentation prominently justifies HFC capital expenditure on the basis of meeting expected demand for higher speed tiers. The RMA and business cases emphasise that existing HFC infrastructure capacity is limited and insufficient to support growing broadband demand, with demand for multi-gigabit speeds beyond the HFC network's existing 500-1000 Mbps capability expected to grow.

However, justification primarily on the basis of meeting demand raises concerns that NBN Co may be investing ahead of customer need. Each option in NBN Co's HFC upgrade program presents a negative net present value, demonstrating that expected demand for services facilitated by HFC expenditure is insufficient to justify the investment on demand grounds alone. Current consumer behaviour indicates limited uptake of existing high-speed tiers, with take-up of 1 Gbps plans on the HFC network at only 4.7 per cent across almost 2 million premises as of June 2025.

HFC capital expenditure to deliver ongoing capacity upgrades can be more appropriately justified on the basis of maintaining the quality and reliability of services rather than meeting demand. This justification encompasses ensuring that end users obtain the speeds they have already purchased – that is, ensuring

quality and reliability do not decline as more end users purchase higher speed products and/or overall usage increases – and replacing network components reaching end of life and end of support to prevent service degradation from ageing equipment.

NBN Co's preliminary materials outline that HFC upgrades are delivered on a just-in-time capacity delivery model, meaning upgrades are only undertaken when capacity triggers are breached. This ensures prudent and timely investment aligned with actual network requirements rather than forecasts of demand. This approach, combined with [c-i-c], provides a sound basis for the majority of planned HFC expenditure.

3.7.2 Optioneering and cost efficiency

[c-i-c]

NBN Co has implemented several cost efficiency mechanisms. The just-in-time delivery model ensures upgrades are time efficient and costs are only incurred as end users require upgrades. NBN Co prioritises poor-performing network segments to avoid truck rolls and maintain reliability. With program costs comprised primarily of labour (approximately 70 per cent), NBN Co achieves efficiencies through workforce planning with two experienced delivery partners. Equipment procurement efficiencies are pursued through competitive tendering for plant modernisation materials and direct negotiations with incumbent vendors for distributed access architecture components.

Notably, NBN Co has brought forward some HFC upgrades to smooth the resourcing profile and achieve a steady construction run rate. Whilst this raises initial concerns about incurring costs ahead of customer need, this approach represents prudent workforce management. Failure to smooth the upgrade profile could result in insufficient labour availability to deliver upgrades when required, potentially compromising NBN Co's ability to maintain quality and reliability of supply.

3.7.3 Premature multi-gigabit investment

A specific concern relates to expenditure on network upgrades enabling delivery of speeds above 2 Gbps. Multiple sources of evidence indicate limited near-term demand for multi-gigabit speeds. NBN Co's RMA stakeholder engagement revealed significant uncertainty about market demand for speeds beyond 2 Gbps, with retail service providers characterising NBN Co's investment to enable 2 Gigabit speeds as 'premature' and emphasising that NBN Co should focus on improving service quality at 50 and 100 Mbps speeds rather than provisioning 2 Gbps services.

The Australian Communications Consumer Action Network (ACCAN) – a consumer advocacy group – recommended that the HFC capacity upgrade program be deferred or substantially revised, noting that Australian consumers are likely to gradually evolve onto high-speed tier services but forecasts do not predict this evolution to occur by FY29. ACCAN's consumer sentiment tracker indicates low demand for high-speed services by HFC consumers, with only 8 per cent of consumers on plans of 250 Mbps or higher being HFC customers.

In response to stakeholder feedback, NBN Co plans a more gradual approach to upgrading the HFC network to enable speeds above 2 Gbps, with completion expected by the early 2040s. However, questions remain about whether even this gradual investment trajectory aligns with actual market demand.

HFC investment in the second regulatory cycle specifically tied to multi-gigabit capability, particularly expenditure on [c-i-c] solely required to provide access to speeds above 2 Gbps, is likely premature given insufficient demonstrated customer willingness-to-pay.

We estimate that prudent expenditure will not include approximately \$3.8 million in FY29 [c-i-c] given the lack of near-term demand. The bulk of NBN Co's planned HFC capital expenditure represents justified replacement of ageing infrastructure and capacity augmentation to serve existing speed tiers.

3.8 Fixed wireless expenditure raises concerns where services have been extended ahead of customer need

Fixed wireless and satellite networks serve customers in regional and remote areas of Australia where fixed-line infrastructure is unavailable.

Fixed wireless capital expenditure – the focus of this section – totals approximately \$1.0 billion in the first regulatory cycle and \$303.8 million in the second regulatory cycle.

We find that expenditure on fixed wireless capacity upgrades raises significant concerns about prudence and efficiency, particularly where capacity has been extended beyond demonstrated customer need and far beyond willingness-to-pay.

The delivery of capacity under the fixed wireless and satellite upgrade program (FWSUP) in the first two years of the first regulatory cycle in excess of NBN Co's IOP23 plans – which were designed to meet its contractual requirements – without corresponding evidence of customer demand for higher speed services, suggests that expenditure incurred above forecast for these years may not be prudent.

Further, our concerns about the lack of integration between NBN Co's demand forecasting approach with its expenditure justification indicates that there may be a risk that the capacity it plans to provide in FY26 and the second regulatory far exceed end user willingness-to-pay, noting that fixed wireless services are loss-making.

Together, we estimate capacity upgrades delivered ahead of need amount to \$139.8 million in the first regulatory cycle and \$22.2 million in the second regulatory cycle.

We also find that NBN Co has incurred expenditure to upgrade wireless network termination devices (WNTDs) from version three to version four at premises ordering the fastest products that exceeds our estimates of prudent and efficient levels by \$2.5 million in the first regulatory cycle.

3.8.1 Fixed wireless and satellite upgrade program

The FWSUP is a major investment program funded in part by a \$480 million federal government grant. Under the program, NBN Co committed to upgrading its fixed wireless towers to achieve typical wholesale busy period download speeds of at least 50 Mbps. The program was designed to improve internet speeds and expand coverage of the fixed wireless network in regional and remote areas.

The bulk of fixed wireless expenditure in FY24 and FY25 relates to capacity upgrades delivered under the FWSUP, while expenditure from FY26 onwards relates to business as usual upgrades. The significant front-loading of expenditure reflects the intensive upgrade activity required to meet the program's delivery timing milestones.

3.8.2 Our concerns regarding tower upgrades and wireless network termination device upgrades

Our assessment identified several concerns about fixed wireless expenditure.

Most significantly, NBN Co delivered capacity upgrades under the FWSUP over and above its IOP23 plans – which were designed to meet its contractual commitments under the FWSUP government grant – resulting in capex that materially exceeded IOP23 forecasts. Specifically, FY24 and FY25 capex exceeded those forecasts by \$104.3 million and \$140.7 million, respectively. NBN Co attributes these variances largely to the delivery of additional network capacity to support the launch of higher speed tier services. However, the materials provided do not demonstrate that this additional capacity was justified by customer need or willingness-to-pay.

Rather, NBN Co has explained that the enhanced upgrade volumes were intended to reduce the frequency of tower upgrades required in the long-term, but we believe that this rationale does not address whether the higher speed capability itself is justified.

We have not seen evidence that NBN Co's demand forecasts for higher speeds – including its demand forecasts for fixed wireless – are developed to reflect its expectation of demand at prices that meet or exceed the cost of supply. This gives rise to a risk that investment decisions may proceed even in circumstances where the cost of supply exceeds end user willingness-to-pay.

Analysis of take-up rates on NBN Co's fixed line network indicates limited demand for speed tiers above 100 Mbps in the lead up to FY24, with most residential customers on mid-tier plans until accelerate great effectively made available higher speed products at the same price as lower speed products. If customers on the more accessible fixed line network are not taking up high speed services at prices that justify the expenditure required to provide these services, there is reason to question whether customers in regional and remote areas served by fixed wireless will demonstrate sufficient willingness-to-pay for such services relative to the cost of their supply, noting NBN Co's fixed wireless products are loss-making and subsidised by the regional broadband scheme. We hold these concerns not only for the significant upgrades delivered in FY24 and FY25 under the FWSUP, but also for business-as-usual upgrades planned for FY26 to FY29.

Additionally, NBN Co's decision to offer high speed tier products above what was agreed under the FWSUP government grant has also prompted additional expenditure on wireless termination devices that exceeds what we estimate to be prudent and efficient.

Under the original grant agreement, NBN Co was to introduce high speed products that were serviceable by the latest WNTD in the market at the time: version three. Its subsequent decision to upgrade the high speed tier products it agreed with the government meant customers purchasing the fastest offering (ie, superfast) required a version four WNTD that facilitated these speeds. Given that the higher speeds offered under the relevant upgraded product (400 Mbps) likely exceeds the needs of fixed wireless customers, upgrades of WNTDs from version three to version four are greater than what we estimate to be prudent and efficient.

3.9 Satellite expenditure is legislatively required and subject to various cost efficiency mechanisms to drive down cost

Satellite capital expenditure comprises investments in maintaining NBN Co's existing geosynchronous (GEO) satellites and transitioning to low Earth orbit (LEO) satellites operated by Amazon. The satellite network serves approximately 300,000 premises in regional and remote areas where fixed-line and fixed wireless connections are not feasible.

Satellite capital expenditure totalled approximately \$119.1 million in the first regulatory cycle and is forecast at approximately \$57.5 million for the second regulatory cycle. The decline reflects NBN Co's transition from maintaining capital-intensive GEO satellites to purchasing and on selling wholesale broadband services from a third-party LEO provider.

We find that satellite capital expenditure in the first regulatory cycle and forecast for the second regulatory cycle is prudent and efficient. Expenditure is justified by the need to maintain service quality and comply with Statutory Infrastructure Provider (SIP) obligations, with appropriate consideration of feasible options and implementation of cost efficiency mechanisms including competitive procurement and bulk pricing arrangements.

3.9.1 GEO satellite maintenance

NBN Co's two GEO satellites, collectively known as Sky Muster, have operated since 2016 and are expected to reach end of life in approximately FY32 when fuel supplies are exhausted. Maintenance expenditure is justified on the basis of maintaining service quality and ensuring compliance with Statutory Infrastructure Provider obligations.

NBN Co considered three options for GEO lifecycle maintenance ranging from reactive to comprehensive proactive replacement. The selected option of targeted proactive maintenance of high-risk components balances capital expenditure efficiency with network stability, yielding the most positive net present value. Cost efficiency mechanisms include bulk pricing and long-term supplier agreements to avoid inflated emergency repair costs, and asset sweating during the LEO transition.

3.9.2 LEO satellite transition

NBN Co is transitioning from GEO to LEO satellites from FY26, with full migration targeted by December 2027. The transition addresses the imminent end-of-life of the GEO network whilst delivering improved customer experience through superior speeds, lower latency and enhanced reliability. NBN Co will act as a reseller of wholesale broadband services from Amazon.

The LEO transition is justified by the need to have a replacement satellite service operational before Sky Muster reaches end of life, ensuring continued compliance with SIP obligations. [c-i-c] The LEO reseller model was selected as it yields a positive net present value compared to continuing with GEO.

[c-i-c] Cost efficiency during transition is being achieved including through offering self-installation kits to end users, which cost less than professional truck roll installations.

3.10 New developments expenditure is required either under legislation or to meet needs, and is subject to cost efficiency mechanisms in design and delivery

New developments capital expenditure relates to the costs of constructing infrastructure to connect new residential and commercial developments. This comprises:

- compulsory investments where NBN Co is the SIP and must connect premises under regulatory obligations; and
- competitive (discretionary) investments where NBN Co competes with other providers to operate the network.

New developments capital expenditure totalled approximately [c-i-c] million in the first regulatory cycle and is forecast at approximately [c-i-c] million for the second regulatory cycle.

We find that new developments capital expenditure in the first regulatory cycle and forecast for the second regulatory cycle is prudent and efficient. Expenditure for compulsory developments is justified by regulatory obligations, whilst discretionary developments meet appropriate investment hurdles demonstrating positive returns. NBN Co applies a systematic framework for technology selection that ensures least-cost delivery and has implemented appropriate cost efficiency mechanisms.

3.10.1 Expenditure justification

New developments expenditure is justified on two bases. For compulsory developments, expenditure is necessary to meet NBN Co's SIP obligations to connect and supply services upon reasonable request. For discretionary developments, expenditure enables NBN Co to meet expected demand and acquire new customers to generate profitable growth. NBN Co's IOP25 and IOP26 business cases demonstrate that investment in discretionary developments, in addition to compulsory developments, yields positive net present value.

Discretionary new developments are subject to stringent investment hurdles. This hurdle policy is selected over alternative moderate hurdle or compulsory-only options on the basis of delivering the greatest net present value.

3.10.2 Technology selection framework

The framework NBN Co applies to determine technology choice for new developments was not clear from the RMA and supporting documentation. However, further information provided during our assessment demonstrated that NBN Co does apply a systematic framework based on whether the development is compulsory or competitive, and the build cost per premise.

Developments where fibre can be installed at a CPP below a defined threshold are classified as low-cost sites and delivered using fibre. For high-cost sites exceeding this threshold, NBN Co uses native network technology for small compulsory developments, seeks developer contributions for large compulsory developments and competitive sites, or deploys cost-effective alternative technologies such as fixed wireless or satellite. The threshold represents the turning point at which fixed wireless or satellite technology becomes more cost effective than fixed line.

3.10.3 Cost efficiency mechanisms

NBN Co has implemented several cost efficiency initiatives for new developments. For compulsory developments, these include capital planning strategies targeting lower-cost large developments, preference for fibre where it is less costly than native technology, high-cost control tools to improve quote accuracy, maximising developer contributions, and dark fibre leasing where commercially viable.

For discretionary developments, NBN Co's sales and major projects teams prioritise projects that minimise costs by pursuing residential over commercial projects, metropolitan over regional projects, and large apartment buildings with strong take-up prospects.

Across all new developments, an on-demand module strategy promotes competition between delivery partners and enables integrated project lifecycle planning.

3.11 Technology investment expenditure across over 200 projects is prudent and efficient

Technology, AI and automation expenditure (ie, 'technology capital expenditure') comprises investments in business systems and digital capabilities.

This expenditure – which relates to more than 200 individual technology projects under the current FY26 technology roadmap – totals approximately \$838.8 million in the first regulatory cycle and \$344.4 million in the second regulatory cycle.

We find that actual and forecast technology capital expenditure in the first and second regulatory cycles is prudent and efficient.

NBN Co has demonstrated that technology investments are needed to achieve expenditure objectives, that appropriate optioneering processes are in place through the enterprise technology delivery (ETD) framework, and that cost efficiency is a consideration in investment decisions. That said, there is an opportunity for NBN Co to strengthen the evidence base to demonstrate this in a clearer and cohesive manner.

3.11.1 Assessment findings

Our assessment found that technology capital expenditure across the first and second regulatory cycles is prudent and efficient.

The need for technology investments is demonstrated by reference to multiple expenditure objectives that link to the SAU expenditure objectives comprising mandatory regulatory obligations, business continuity requirements, and discretionary investments that generate a positive commercial return.

In relation to optioneering, the documentation presented demonstrates consideration of options at a project- and program-level. At the project-level, NBN Co's ETD framework provides a structured approach to evaluating technology investments through six stages covering feasibility, business case development, design, build, deployment and post-implementation review. The first three stages of the framework require the identification and interactive development and analysis of potential options to address a defined need. We believe that this framework ensures that technology investments are subject to appropriate scrutiny and that alternative feasible options are considered.

At the program-level, NBN Co determines its total technology program – that is all the capital expenditure projects it will deliver – based on the funding available and the need for each approved project. As part of this process, it considers what projects are needed immediately and what projects can be delayed.

The evidence demonstrates that NBN Co's technology investment framework incorporates cost efficiency considerations throughout the investment lifecycle. We understand that the ETD framework has resulted in several projects being rejected, paused or withdrawn where costs exceeded benefits or where the investment did not meet hurdle rates. NBN Co has provided evidence of technology investments achieving cost efficiencies through initiatives including the 'Partnering.Next' program, which has delivered procurement savings.

3.12 Marketing forecast expenditure is prudent and efficient

Marketing, educational advertising, communications, engagement and development operating expenditure (ie, 'marketing expenditure') comprises marketing and educational initiatives explaining the benefits of NBN Co's network, and customer engagement activities including co-marketing campaigns and funds providing financial incentives for retail service providers to promote NBN Co products.

Marketing expenditure totalled approximately \$211.2 million in the first regulatory cycle and is forecast at approximately \$172.7 million for the second regulatory cycle. Forecast marketing expenditure in the second regulatory cycle is within the scope of our assessment, whilst we examine actual expenditure in the first regulatory cycle for context.

We find that marketing expenditure forecast for the second regulatory cycle is prudent and efficient. Our assessment indicates that there is a prudent rationale for marketing and educational expenditure that seeks to make end users aware of the availability and capability of NBN Co services and provides incentives to RSPs to promote these services, to grow the total number of customers connected to NBN infrastructure. We have seen some evidence that NBN Co seeks to implement its marketing and educational activities in a cost-effective way by sharing costs with RSPs, while also undertaking efficiency initiatives to lower overall expenditure .. However, we consider that there is scope for NBN Co to provide more positive evidence for the prudence and efficiency of its marketing expenditure for future reviews.

3.12.1 Expenditure governance and 'directional' expenditure forecasts

Although NBN Co forecasts marketing expenditure five years ahead, the specific activities funded by the budget are typically planned one year in advance during the annual integrated operating plan (IOP) process to align with strategic initiatives and meet immediate market needs. The structure and scope of marketing and retail service provider development funds evolve over time in alignment with strategic priorities. As expenditure is determined one year in advance, forecast marketing expenditure for the second regulatory cycle is directional and primarily directed towards educational campaigns and retail service provider development funds.

Our examination of the information provided during our assessment revealed that there are genuine reasons why it may be prudent for NBN Co to engage in certain types of marketing, promotional or educational activities, to build awareness of the capabilities and benefits of the NBN network

The disconnection between NBN Co providing wholesale services to RSPs, who then compete to provide retail services to end users, may contribute to a lack of awareness by consumers about the services provided by means of NBN Co's infrastructure.

Consistent with these observations, a prudent rationale for NBN Co to incur marketing expenditure involves:

- communicating directly to end users through various media about the availability and capability of services supplied by means of NBN Co's networks; and/or
- providing incentives to RSPs to promote internet services supplied by means of NBN Co's networks to their customers.

Further, there may be specific instances in which NBN Co faces some degree of competitive pressure from alternative fixed broadband suppliers, mobile and fixed wireless broadband services, and LEO satellite broadband services. Such circumstances, if they arise, could amount to a prudent rationale for NBN Co to incur marketing expenditure with a similar scope to that discussed above, but focused more narrowly on end users who have the closest potential substitutes to broadband provided by means of NBN Co's network.

We have seen some evidence that NBN Co seeks to achieve effective marketing outcomes at least cost by engaging in cost-sharing with RSPs through its deployment of RSP development funds. These operate under structured performance-based models requiring matched or greater retail service provider contributions, with funding contingent on detailed plans assessed against strategic alignment, plan quality and cost-to-acquire metrics. Funding is released upon achievement of agreed targets such as verified activations or capability uplift, validated through third-party invoice verification.

Notwithstanding that we do not find any evidence that NBN Co's marketing expenditure is above prudent and efficient levels, we remain concerned about the limited extent of positive evidence that NBN Co has supplied to establish the prudence and efficiency of its expenditure. To support future reviews of the prudence and efficiency of its marketing expenditure, it would be helpful for NBN Co to undertake assessments of the effectiveness of different types of marketing expenditure, so as to establish the profitability of its marketing activities and justify the forecast size of its marketing budget.



4. Our recommendations

For many items of expenditure, we find (or deem) that NBN Co's expenditure is prudent and efficient. For these items, we recommend that the ACCC take no action, either to remove capital expenditure from the RAB or to reduce NBN Co's forecast capital and operating expenditures for the second regulatory cycle.

For a limited number of expenditure items, we find that NBN Co's expenditure exceeds prudent and efficient levels. Our recommendations to the ACCC in respect of these findings depends upon whether:

- the additional expenditure arises in the first regulatory cycle, and further upon whether the expenditure is incurred ahead of need and the extent to which this is the case; or
- the additional expenditure is reflected in a forecast for the second regulatory cycle.

In certain circumstances in which NBN Co incurred capital expenditure in the first regulatory cycle that exceeds prudent and efficient levels but the need for the expenditure arises during the second regulatory cycle, we recommend that the ACCC consider not removing the additional part of this expenditure from the calculation of the RAB during the first regulatory cycle.

This review identifies opportunities to improve documentation and streamline future expenditure assessments. Recommendations cover business cases, demand forecasting, cost efficiency, and documentation. These build on expenditure-specific suggestions in our Part C report.

Business cases were a key information source for assessing NBN Co's largest capital expenditure programs. Where recommendations reference business cases, they apply equally to justification materials for expenditure not subject to formal business case development.

4.1 Recommendations to ACCC for its determination

4.1.1 We recommend that the ACCC makes no adjustments for wholly prudent and efficient expenditure

We find substantial parts of NBN Co's historical capital expenditure and forecast operating and capital expenditure to be wholly prudent and efficient, either because:

- the expenditure did not proceed past stage zero of our process and therefore did not become part of the detailed focus of our review, such that we deem this expenditure to be prudent and efficient; or
- the expenditure did proceed past stage zero of our process and we either:
 - > found that we were satisfied with NBN Co's justification for the expenditure such that we accepted that the expenditure was prudent and efficient; or
 - > found that we were not satisfied with NBN Co's justification for the expenditure but the weight of evidence that we collected led us to reject a hypothesis (or hypotheses) that the expenditure exceeded prudent and efficient levels.

In table 4.1 and table 4.2 below we set out all expenditure that we find (or deem) to be wholly prudent and efficient.

Table 4.1: Capital expenditure that we find (or deem) to be wholly prudent and efficient (\$mill, June 2024)

NBN capex category	NBN capex items	FY24	FY25	FY26	FY27	FY28	FY29
Fibre build	New Developments	\$260.2	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	Business Deployment	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	Commercial Works	\$42.7	\$41.9	\$52.8	\$39.3	\$39.4	\$39.4
	Regional Co-Investment	\$49.1	\$29.9	\$78.6	\$152.9	\$25.1	\$6.8
	Other Network Build capex	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
Connect, maintain and assure	Other operations capex	\$30.4	\$29.9	\$52.4	\$27.2	\$18.4	\$17.8
	Satellite	\$39.9	\$33.9	\$45.3	\$30.4	\$22.3	\$4.8
Network capacity and performance	Underperforming lines	\$18.8	\$13.9	\$14.9	\$13.7	\$11.5	\$10.6
	Other Network capex	\$30.4	\$23.4	\$31.5	\$30.4	\$28.4	\$25.1
Technology, AI and Automation	Technology capability delivery	\$274.1	\$205.4	\$292.7	\$105.0	\$86.0	\$87.0
	Other technology capex	\$3.0	\$35.9	\$27.7	\$23.8	\$22.0	\$20.6
Other	Facilities	\$8.9	\$18.9	\$25.9	\$10.4	\$7.7	\$6.3
	Supply	\$10.2	\$7.2	\$49.8	\$48.1	\$45.9	\$44.1
	Other (other capex)	\$-	\$-	\$-	-\$14.7	-\$18.0	-\$17.5
Total		\$990.4	\$746.8	\$948.9	\$749.3	\$572.9	\$525.7

Table 4.2: Operating expenditure that we find (or deem) to be wholly prudent and efficient (\$mill, June 2024)

NBN opex category	NBN opex items (if relevant)	FY27	FY28	FY29
Infrastructure payments		\$1,092.4	\$1,099.8	\$1,103.4
Resourcing costs		\$609.2	\$557.2	\$545.4
Direct operating costs	Network operating costs	\$283.8	\$308.3	\$305.2
	Assurance, restoration and maintenance	\$209.3	\$185.8	\$145.2
	Other network costs	\$95.7	\$96.8	\$97.3
Other operating costs	IT and software costs	\$193.9	\$183.3	\$180.6
	Marketing, advertising, comms, engagement and development costs	\$57.0	\$63.4	\$52.3
	Other	\$139.3	\$154.4	\$150.4
Service level rebates		\$10.5	\$13.7	\$12.3
Total		\$2,691.1	\$2,662.7	\$2,592.1

For historical capital expenditure during the first regulatory cycle that we find (or deem) to be prudent and efficient, we recommend that the ACCC add all of this capital expenditure as specified by section 2G.5.10(d)(iii)(A) of the SAU when calculating the real RAB and real core services RAB at the end of each financial year during the first regulatory cycle.

For forecast operating and capital expenditure during the second regulatory cycle that we find (or deem) to be prudent and efficient, we recommend that the ACCC accept that this expenditure is prudent and efficient as specified by section 2G.2.5(c) of the SAU for the purpose of determining forecast ABBRR.

4.1.2 We recommend that the ACCC consider making no adjustments for certain historical capital expenditure incurred ahead of need

Some of NBN Co's historical capital expenditure exceeds prudent and efficient levels.

In most circumstances where this is the case, we recommend that the ACCC makes adjustments to this expenditure so that only prudent and efficient expenditure is added to the real RAB or real core services RAB. The effect of this action is to ensure that end users do not bear the cost of any excessive component of expenditure, and leaves the cost of any such expenditure to be borne exclusively by NBN Co.

However, in limited circumstances, where efficient capital expenditure exceeds prudent levels during the first regulatory cycle because it has been occurred ahead of need and should likely have been incurred during the second regulatory cycle, this action may not have the effect that we describe above.

If this expenditure would be prudently incurred before the ABBRR becomes binding, then it will promote the interests of end users for the ACCC to ensure that only the depreciated value of the asset can be recovered from end users from this time. To do otherwise would instead (and perversely) benefit NBN Co and come at the cost of end users, because it would allow NBN Co to delay recovery of the expenditure until a later period when consumers have a greater ability or willingness-to-pay for it.

In respect of such expenditure, it appears to us that the ACCC has two options:

- option 1: add only the prudent parts of the expenditure incurred during the first regulatory cycle to the RAB, and add other parts of the expenditure during the second regulatory cycle (or later) at a time that the ACCC determines that this expenditure is now prudent, at depreciated values; or
- option 2: add all expenditure incurred during the first regulatory cycle to the RAB.

Both options have similar effects but there are important differences in the assumptions underpinning each. Option 1 gives the ACCC more flexibility to ensure that only prudent and efficient expenditure is added to the RAB but involves additional complexity in requiring the ACCC to undertake assessments of when to add expenditure back into the RAB. Option 2 is simpler but may result in expenditure being recovered from end users even when it is not prudent and efficient. Both options make assumptions about the ACCC's powers under the SAU.

table 4.3 below we set out all historical capital expenditure that we find to be incurred ahead of need but would be prudently incurred in the second regulatory cycle.

Table 4.3: Historical capital expenditure that we find to be incurred ahead of need but would be prudently incurred in the second regulatory cycle (\$mill, June 2024)

NBN capex items		FY24	FY25	FY26	FY27	FY28	FY29
Fibre Upgrade Program <i>Base 3.5 million premises footprint</i>	RMA capex	\$1,083.1	\$882.2	\$329.7	\$-	\$-	\$-
	Recommended capex	\$1,083.1	\$882.2	\$329.7	\$-	\$-	\$-
Transit networks	RMA capex	\$137.5	\$101.1	\$142.6	\$136.1	\$107.4	\$114.2
	Recommended capex	\$137.5	\$101.1	\$142.6	\$136.1	\$107.4	\$114.2
Upgrade Connections	RMA capex	\$496.9	\$694.5	\$783.9	\$655.6	\$512.9	\$466.7
	Recommended capex	\$496.9	\$694.5	\$783.9	\$655.6	\$512.9	\$466.7

Table 4.3 includes adjustments for prudent and efficient capital expenditure that have been calculated on the basis that the ACCC implements option 1 when calculating the real RAB or real core services RAB during the first regulatory cycle (and estimates for the second regulatory cycle). However, if the ACCC implements option 2, then it would make no adjustments, negative or positive, in either the first regulatory cycle or the second regulatory cycle.

4.1.3 We recommend that the ACCC makes adjustments to the RAB for other historical capital expenditure exceeding prudent and efficient levels

For other items of historical capital expenditure that we find exceed prudent and efficient levels, we recommend that the ACCC makes adjustments to this expenditure so that only prudent and efficient expenditure is added to the real RAB or real core services RAB for the purpose of section 2G.5.10(d)(iii)(B) of the SAU.

In table 4.4 below we set out all historical capital expenditure that we find to exceed prudent and efficient levels, other than the expenditure already included in table 4.3.

For fixed wireless, our finding that historical capital expenditure exceeds prudent and efficient levels is based on an assessment that this expenditure was not justified by reference to the needs of end users. However, this does not mean that this will remain the case in the future. In principle, to the extent that end users derive value from the additional fixed wireless capabilities delivered by NBN Co, this should be reflected by the addition of commensurate value into NBN Co's RAB at the time this value is realised, with a cumulative value of such additions not exceeding the efficient cost of these capabilities. We have not sought to estimate or forecast the extent to which these actions should be contemplated in the second regulatory cycle.

Table 4.4: Historical capital expenditure that we find to exceed prudent and efficient levels (\$mill, June 2024)

NBN expenditure items		FY24	FY25	FY26
Connect, maintain and assure capex, excluding upgrade connections and other operations capex	RMA capex	\$539.5	\$551.5	\$501.2
	Recommended capex	\$494.2	\$505.2	\$501.2
Capitalised resourcing costs	RMA capex	\$588.3	\$549.0	\$624.4
	Recommended capex	\$566.3	\$528.4	\$624.4
Fixed wireless	RMA capex	\$491.7	\$407.8	\$102.0
	Recommended capex	\$420.5	\$341.8	\$97.0

For the reasons we set out above, we recommend that the ACCC make adjustments to the expenditure included in table 4.4 when calculating the real RAB or real core services RAB during the first regulatory cycle. This adjustment ensures the removal of excessive expenditure, so that only prudent and efficient expenditure is rolled into the RAB and recovered from end users.

4.1.4 We recommend that the ACCC makes adjustments to forecast operating and capital expenditure exceeding prudent and efficient levels

We find parts of NBN Co's forecast operating and capital expenditure to exceed prudent and efficient levels, because the justification for the expenditure did not meet our expectations and because the further evidence that we collected weighed in favour of a hypothesis that the expenditure exceeds prudent and efficient levels.

In table 4.5 below we set out all expenditure that we find to exceed prudent and efficient levels.

Table 4.5: Forecast operating and capital expenditure that we find to exceed prudent and efficient levels (\$mill, June 2024)

NBN capex items		FY27	FY28	FY29
Fibre Upgrade Program Last 622,000 FTTN Premises	RMA capex	\$933.9	\$837.9	\$553.4
	Recommended capex	\$854.2	\$-	\$-
Fixed wireless	RMA capex	\$94.2	\$82.4	\$127.2
	Recommended capex	\$88.8	\$71.8	\$121.0
HFC	RMA capex	\$84.9	\$213.3	\$220.6
	Recommended capex	\$84.9	\$213.3	\$216.8

For forecast operating and capital expenditure that we find exceed prudent and efficient levels set out in table 4.5 above, we recommend that the ACCC makes adjustments to this expenditure so that only prudent and efficient expenditure is included in its calculation of forecast ABBRR.

4.2 We offer recommendations to improve the evidence base for future reviews

Based on our experience conducting this review, we have identified the following areas where further information or improved documentation would assist future reviews of NBN Co's expenditure.

These recommendations cover four key areas and are intended to support improved future regulatory review processes and to strengthen the evidence base supporting expenditure decisions.

4.2.1 Business case improvements

First, we recommend several enhancements to NBN Co's business cases, the guidance and processes for which were introduced 18 months prior to the submission of its RMA following the recommendations and outcomes of the varied SAU.

The recommendations we outline below build upon the business case developments already in place to enhance the evidence base for significant programs.

We recommend that NBN Co's business cases for the next RMA include clear problem statements that articulate the need for expenditure with reference to the SAU expenditure objectives. The linkage between investment rationale and expenditure objectives should be explicit, enabling assessment of whether the investment is directed at achieving legitimate regulatory purposes.

Business cases should include comprehensive options analysis including the option to do nothing and non-network alternatives. Where only variants of a preferred approach are considered, the business case should explain why other approaches were not feasible or were clearly inferior. The absence of do-nothing options or non-network alternatives creates uncertainty about whether the full range of options has been considered.

Detailed financial analysis should be provided with clear assumptions and sensitivity analysis. The assumptions underpinning financial analysis should be stated and explained, and sensitivity analysis should demonstrate how outcomes change under different assumptions. Terminal values should be clearly calculated and explained, including the assumptions about asset lives, residual values, and discount rates.

Further, we encourage NBN Co to extend its options analysis beyond financial analysis and implement cost-benefit analysis modelling. Limiting options analysis to financial considerations may risk excluding valid economic benefits that undersells investments that address needs at the lowest cost to end users over the long-term.

Where investments are justified on the basis of meeting demand, business cases should include evidence of customer willingness-to-pay for services enabled by proposed investments. This evidence could be drawn from insights gleaned from activities NBN Co already undertakes, including the annual conjoint survey and market research. The absence of willingness-to-pay evidence creates uncertainty about whether demand forecasts reflect genuine customer value or aspirational projections.

4.2.2 Demand forecasting

Second, we recommend that NBN Co provide more detailed information about its demand forecasting methodology in the next RMA and the linkages between its demand forecasting approach, customer willingness-to-pay and its planned expenditure program. Providing this information is important to the extent that it supports assessments of expenditure justified on the basis of the SAU expenditure objective of meeting expected demand.

Methodological consistency should be maintained across different documents and information requests. Key assumptions and methodologies should be explained consistently.

Most importantly, the information should also explain how information about costs and end user willingness-to-pay is incorporated into demand forecasts, including the specific mechanisms by which this analysis influences forecast outcomes. The relationship between demand forecasts and investment decisions should be clearly explained, demonstrating how forecast demand translates into expenditure to deliver services for which end user willingness-to-pay exceeds costs.

NBN Co's current approach to demand forecasting appears to reflect its planned expenditures and prices, rather than planned expenditures being developed to reflect its expectation of demand at prices that meet or exceed the cost of supply. Integration of cost and willingness-to-pay analysis would ensure that investment decisions are based on demonstrated customer value.

4.2.3 Cost efficiency

Third, we recommend that NBN Co provide more granular information on cost efficiency initiatives and undertake and document benchmarking where feasible.

We recommend that NBN Co provide more detailed information about cost efficiency initiatives in the next RMA. Progress against cost reduction targets should be documented, including quantification of savings achieved and explanation of initiatives implemented. This information would support assessment of whether efficiency disciplines are being effectively implemented.

Benchmarking analysis comparing NBN Co's costs to relevant comparators would support assessment of cost efficiency. While international comparisons present challenges due to differences in market structure and network characteristics, benchmarking against relevant metrics would provide context for evaluating NBN Co's cost performance. Evidence of procurement efficiency in delivery partner arrangements would demonstrate that NBN Co is achieving value for money in its major contracted expenditure.

These improvements would streamline the regulatory review process and enable more efficient assessment of NBN Co's expenditure in future regulatory cycles. By addressing the documentation and evidence gaps identified in this review, NBN Co can reduce the burden of regulatory review for both the ACCC and itself, while providing greater assurance that expenditure decisions are prudent and efficient.

4.2.4 Documentation improvements

Fourth, we recommend that NBN Co improve the clarity and consistency of documentation provided to support regulatory reviews.

We recommend improvements to data consistency provided by NBN Co. Historical actuals should be consistently reported across reporting periods. We identified instances where data for the same period differed between IOP25 and IOP26 reports, creating uncertainty about which figures were correct. For example, the number of active premises reported for July 2021 differs between reports, and resolving these inconsistencies required additional clarification that could have been avoided through better data management.

We also recommend improvements to data availability. Data should be provided at consistent granularity across time periods. We noted that monthly data was available for earlier periods from IOP21 to IOP24, but IOP25 and IOP26 contained large gaps with data reported for only a few months before switching to annual reporting. Consistent granularity would facilitate trend analysis and improve understanding of expenditure drivers.

Graphs and illustrations should include clear labelling, axes, and units to facilitate interpretation. Charts and diagrams in the briefing packs and RMA documents are often difficult to read or interpret due to poor labelling, missing axis labels, or unclear units. Clear visual presentation of data supports efficient review and reduces the need for follow-up questions.

Critically, clearer documentation with consistent expenditure category definitions would streamline the regulatory review process and reduce the need for clarification through information requests.



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