Memo

To: nbn

From: Frontier Economics

Date: 13 March 2023

Subject: **nbn's depreciation approach for Module 2**

Introduction

In November 2022, NBN Co lodged a variation to its Special Access Undertaking (SAU) with the ACCC. In January 2023, the ACCC published a consultation paper on the SAU and invited submissions on the SAU and supporting documents. These submissions were publicly released at the end of February 2023. nbn is seeking to respond and clarify issues raised in these submissions.

The purpose of this memo is to clarify nbn's depreciation approach in the BBM and SAU in response to ACCC and Telstra's comments and questions.

nbn has simplified its approach to calculating depreciation

nbn's revised building block model (BBM) groups assets into asset classes for the purpose of depreciation. Assets were grouped into classes by function and the services they deliver. This approach is to simplify the usability and calculations in the model, reducing over 600 line-by-line depreciation calculations to less than 20 asset classes.

Many Australian regulators use or approve a weighted average depreciation calculation as summarised in **Table 1**. Most regulators agreed that the simplicity and transparency of the calculations outweigh the administrative burden of the more accurate line by line approach.

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Table 1: A summary of Australian regulators approach to depreciation

Regulator	Approach	Reasoning
ESC	Weighted average	In NPV terms, businesses are no better or worse off under either approach. It is important to balance the advantage of more accurately calculating depreciation with the administrative costs associated with it.[1]
IPART	Reduced asset categories and allows business to propose lives.	For urban water business - Reduced the number of asset categories per service and allows the water business to propose appropriate asset lives. The remaining lives are based on evidence of economic lives and proposed by the business. E.g. from its asset register or its preferred breakdown. Asset lives are re-set at the beginning of each regulatory period. Allows businesses to propose asset lives that are weighted by depreciation.[2]
ESCOSA	Weighted average	SA Water have used a weighted average life approach to depreciate asset classes, approved in the 2020 Final Decision by ESCOSA.[3]
AER	Weighted average	For example, uses a weighted average remaining life in the SA Power Networks 2020 Decision.[4]

Source: Frontier Economics analysis

1 ESC in response to a letter from the Office of Tasmania Economic Regulation, see OTTER (2018), 2018 Water and Sewerage Price Determination Investigation – Final Report, Ch 8 Regulatory Depreciation, https://www.economicregulator.tas.gov.au/Documents/Chapter%208%20-%20Regulatory%20depreciation%2018%20881.pdf

2 IPART (2022), Our water regulatory framework, Technical Paper November 2022, pp. 70-71, https://www.ipart.nsw.gov.au/sites/default/files/cm9_documents/Final-technical-paper-Our-water-regulatory-framework-November-2022.PDF

3 ESCOSA (2020), SA Water Regulatory Determination 2020, Final Determination: Statement of reasons, June 2020, https://www.escosa.sa.gov.au/ArticleDocuments/21489/20200611-Water-SAWRD20-FinalDetermination-StatementOfReasons.pdf.aspx?Embed=Y

4 AER (2019), Attached 4 Regulatory Depreciation, SA Power Networks – 2020-25 Regulatory Proposal – Attachment 4 – Regulatory Depreciation, https://www.aer.gov.au/system/files/SAPN%20-%20Attachment%204%20-%20Regulatory%20depreciation%20-%20January%202019.pdf

nbn's approach to calculating a weighted average remaining life

Depreciation calculations require a standard life for new capital expenditure and a remaining life for depreciation of the RAB. In nbn's FY24-40 model, each asset class has a standard life and a calculated weighted average remaining life. Depreciation is calculated and applied in the BBM[5] at the class level (aggregated across asset types) using the weighted average remaining life for the capex in that class that has been incurred prior to the regulatory period, and standard life for the capex in that class incurred during the regulatory period.

Telstra suggests that nbn's methodology is not consistent with the SAU.[6]

Schedule 2G.5.5 in the SAU requires a weighted average remaining life for an asset class to be used for the capex incurred in that asset class prior to the commencement of a regulatory period, and a standard life to be used for the new capital expenditure in that asset class in the regulatory period.[7]

nbn's 2009-23 BBM depreciates each asset separately at each asset's specified asset life as per Module 1. The 2009-23 BBM also calculates a remaining asset value and remaining life for each asset class for the beginning of Module 2 and the regulatory period beginning in FY2024.

The 2009-23 BBM calculates the remaining value of each asset class (opening RAB for each asset class) in respect of a regulatory cycle by considering the opening RAB, the capex incurred, disposals, and depreciation, in accordance with a standard RAB roll-forward approach[8].

The most straight forward way to calculate a weighted average remaining asset life for the asset class is to weight using depreciation. That is, a life based on the relative depreciation of each of the individual assets. As noted in the BBM handbook, "The weighted average remaining life for each asset class in a financial year is a function of the remaining value (or RAB) and annual asset class depreciation in that financial year".[9]

As such, the BBM calculates a remaining life for each asset class by dividing the real closing RAB of each asset class by the sum of annual depreciation in each asset class. The weights in this calculation are the contribution to depreciation from each individual assets in the class.

$$weighted\ average\ remaining\ life_i = \frac{\sum closing\ RAB_a}{\sum real\ depreciation_a}$$

Where i is an asset class and a are the asset types specified in asset class i.

As per the SAU, nbn will reset the remaining value and weighted average remaining life for each asset class at the beginning of each regulatory period.

5 See Clause 2G.5.5 of NBN Co Special Access Undertaking, https://www.accc.gov.au/system/files/SAU%20variation_2.pdf

6 Telstra (2023), Telstra Submission in relation to NBN's proposed SAU variation, Public version, 17 February 2023, p. 43

7 NBN Co Special Access Undertaking, https://www.accc.gov.au/system/files/SAU%20variation_2.pdf

8 Clause 2G.5.3 of Module 2 of the SAU also applies this standard roll-forward approach.

9 Nbn FY09-FY23 Building Block Model handbook, December 2022, p. 14, https://www.accc.gov.au/system/files/NBN%20Co%20-%20FY09-FY23%20BBM%20Handbook%20-%202%20December%202022.pdf

nbn's application of weighted average remaining life

nbn has applied the above weighted average remaining life approach (which aligns with the SAU) in the BBM. nbn has also determined a standard life for each asset class. Telstra noted that the standard life for Active Plant was 7 years and the remaining life of 6.38 years in nbn's published BBM.[10]

There are two areas to note here:

- Telstra is concerned that the weighted average remaining life calculation is wrong, and calculated the remaining life to be 3.7 years rather than 6.38
- nbn's reported standard life of 7 and the remaining life of 6.38 are close

Telstra has calculated the remaining life of Active Plant to be 3.7 years based on $3.8B expenditure on Active Plant over the past 7 years. This infers that all assets in the Active Plant class had a life of 7 years up to FY2024. That is not correct. All capital expenditure incurred prior to FY2023 is depreciated at its original asset life up until the end of FY2023. Assets that are now defined as in the Active Plant class did not have a standard asset life of 7 years prior to FY2024 — some were longer and some shorter. This means that the historical depreciation profile of the now defined Active Plant asset class does not exactly follow a 7 year cycle.

From FY2024, all new expenditure in the Active Plant asset class will have a standard life of 7 years and will hence depreciate over 7 years. This reflects nbn's view as to the appropriate average life of assets within this class.

With respect to the Active Plant assets, nbn notes:

- nbn collated the now defined Active Plant assets as at the end of FY2023 and calculated a weighted average remaining life for that class in accordance with the SAU and methodology noted above.
- expenditure for assets that were defined in Active Plant increased in the latter years of the FY2009-23 model and peaked in 2020. The bulk of this expenditure had an asset life greater than 7 years. This results in a heavier weight in the weighted average remaining life calculation as this value has not yet fully depreciated, increasing the remaining life. A worked example of this is provided below.

Worked example of remaining life calculation

Say a regulated business is seeking to calculate a weighted average remaining life for Asset Class A at the end of the regulatory period for the capex incurred during a five year regulatory cycle. Over the 5 years, there were 3 assets that each incurred capex with different remaining lives as shown in **Table 2**. Annual depreciation begins the year after the capex is incurred as shown in **Table 3**.

[10] Telstra (2023), Telstra Submission in relation to NBN's proposed SAU variation, Public version, 17 February 2023, p. 43

Table 2: Asset expenditure and life

Expenditure	Asset life	Year 1	Year 2	Year 3	Year 4	Year 5
Asset 1	6	$200,000				
Asset 2	6		$5,000,000			
Asset 3	10				$15,000,000	

Source: Frontier Economics

Table 3: Annual depreciation

Annual depreciation	Year 1	Year 2	Year 3	Year 4	Year 5
Asset 1		$33,333	$33,333	$33,333	$33,333
Asset 2			$833,333	$833,333	$833,333
Asset 3					$1,500,000

Source: Frontier Economics

Asset 1 incurred in the first year of the regulatory period will have a different remaining value and remaining life than Asset 3 that was incurred in the Year 4 as shown in **Table 4**.

Table 4: Remaining value and remaining life of the assets

Asset	Remaining value	Remaining life
Asset 1	$66,667	2
Asset 2	$2,500,000	3
Asset 3	$13,500,000	9

Source: Frontier Economics

As such, in calculating the weighted average remaining life, Asset 3 that has a large remaining value and long remaining life will increase the average.

The weighted average remaining life for this Asset Class A is 6.8.

$$WARL_A = \frac{66{,}667 + 2{,}500{,}000 + 13{,}500{,}000}{33{,}333 + 833{,}333 + 1{,}500{,}000} = 6.8$$

For example, suppose that at the commencement of the preceding regulatory period, the standard life for Asset Class A was defined to be the arithmetic average of assets 1-3 (7.1 years). This would not mean that the remaining life of 6.8 is wrong; rather, it is simply an indication that that was relatively more or later investment in longer lived assets. There is no simple relationship between the remaining life of the asset class and the standard life.

nbn considers that the standard life used for assets within an asset class should reflect the expected future value of the capex for those assets in the asset class. So, for the example cited, it may be appropriate to adopt a longer standard life for assets within the class if relatively more investment in Asset 3 is expected.