nbn FY24-FY40 Building Block Model handbook

August 2023

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Contents

1 Introduction

1.1 The role of the BBM

The LTRCM currently set out in Module 1 of the SAU was developed to ensure that details of **nbn**'s ABBRR, RAB and ICRA were transparent during the Initial Regulatory Period when **nbn** was focused on building out its networks and migrating users to its network. The operation of the LTRCM means that expenditures on all **nbn** networks (including MTM networks) have been included in the LTRCM where they met the relevant tests in the SAU (such as the Prudent Design Condition and the Prudent Cost Condition), and the RAB and ICRA values determined annually by the ACCC include the totality of **nbn**'s prudently incurred costs.

The Initial Regulatory Period ended on 30 June 2023. For the Subsequent Regulatory Period, which commenced on 1 July 2023, **nbn** proposes to replace the LTRCM with a revised methodology. The BBM is a spreadsheet implementation of this revised methodology that calculates an ABBRR that reflects our prudent and efficient costs – including the RAB as calculated under the Module 1 LTRCM provisions – as well as an ICRA specified in the SAU.

The BBM also contains cost allocations between Core Regulated Services and Competitive Services. This makes **nbn**'s allocation of costs between Core Regulated Services and Competitive Services transparent. These allocations are for the purposes of **nbn**'s SAU only and may not be appropriate for any other purpose, context or circumstance.

The BBM has been split into two models:

- A backward-looking model that captures calculations with historical data from FY09 to FY22 and one year of forecasts for FY23 (note that **nbn** will not report its actuals for FY23 to the ACCC until 31 October 2023) – this applies the LTRCM from Module 1, but overlays cost allocation (between Core Regulated Services and Competitive Services) from the start of FY20.
- A forward-looking model from the First Regulatory Cycle (FY24 to FY26) onwards which captures calculations using forecast data and runs out to FY40 – this applies the revised methodology under Module 2 (1 July 2023 to 30 June 2032) and assumes that this continues under Module 3 (1 July 2032 to 30 June 2040).

This handbook refers to the forward-looking model from the beginning of FY24.

1.2 How this manual fits with other documents, including the SAU and the Cost Allocation Manual

The BBM reflects the calculations in the revised proposed variation to the SAU lodged by **nbn** in August 2023 (the **Amended SAU Variation**) and the principles in the initial Cost Allocation Manual (CAM)[1]. This handbook documents at a high level, for instructive purposes only, how the BBM implements the calculations in the SAU and the principles in the initial CAM.

[1] The initial CAM lodged in December 2022 in support of the November 2022 SAU variation is interim in nature. Under the SAU variation, **nbn** will lodge a proposed CAM for ACCC approval within 30 days of acceptance of the SAU variation.

nbn has prepared the BBM to support its Amended SAU Variation. The current SAU does not require cost allocation between services or product components.

The BBM calculates, in nominal and real terms, multiple intermediate and final outputs from the application of the Amended SAU Variation, including ABBRR, RAB and ICRA for each Financial Year. As part of this, the BBM allocates between Core Regulated Services and Competitive Services and includes further breakdowns of capex, depreciation, opex and asset disposals, and a tax calculation.

The initial CAM documents the methodologies by which **nbn** allocates costs to Core Regulated Services and Competitive Services (using the cost allocation principles proposed in the Amended SAU variation).

A capitalised term used but not defined in this handbook has the meaning given to it in the Amended SAU Variation.

1.3 Updating this document and process for revision

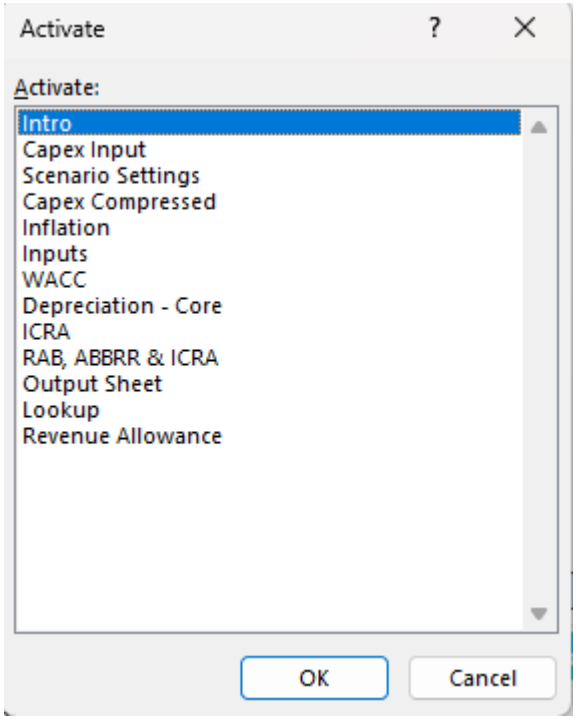
This document will be updated as necessary by **nbn**, so it aligns with the latest version of the BBM and CAM. This document is for users of the initial FY24-FY40 BBM.

2 Model overview

2.1 Structure

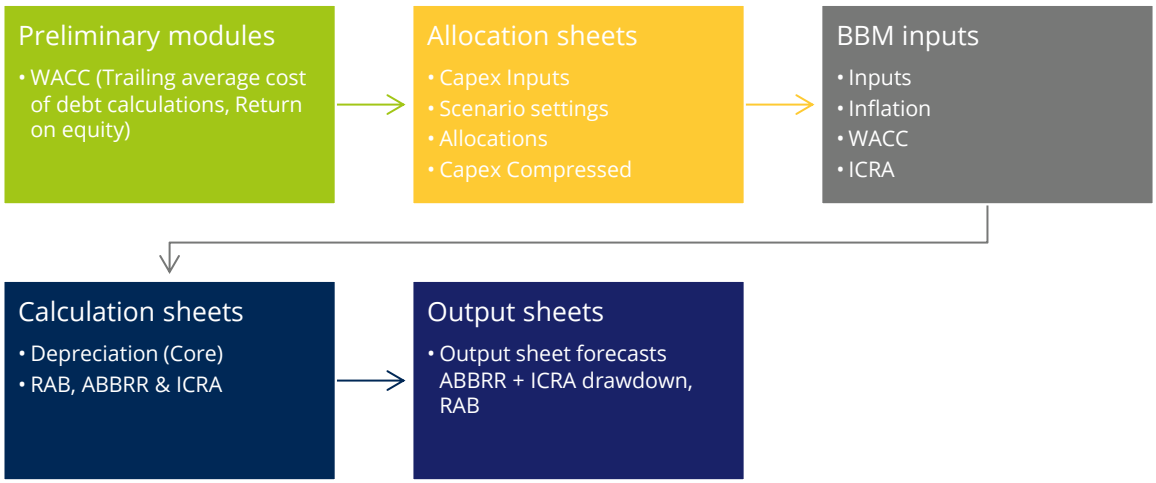
The BBM has been set up with a separation between the inputs, allocations, calculations and outputs of the model. The sheets included in the model and the structure of the model can be seen in **Figure 1** and **Figure 2**.

Figure 1: **Sheets in the BBM**



Source: ***nbn***

Figure 2: **BBM structure**



Source: ***nbn***

For the forward-looking BBM, the WACC is calculated separately and treated as an input into the BBM.

2.2 Model conventions

nbn has developed the BBM based on the spreadsheet used for the purposes of the LTRCM provisions in Module 1 of the SAU. **nbn** has retained the simplified RAB and ICRA build-up sheets from the LTRCM Spreadsheet for transparency. However, one of the greatest differences between the BBM and the LTRCM Spreadsheet is that the BBM implements cost allocation between Competitive Services and Core Regulated Services, including in respect of the RAB and the ICRA. In the public BBM, only Core Regulated Services are visibly modelled with the allocation to Competitive Services occurring outside the public BBM.

The backward-looking BBM (described in a separate handbook) calculates the closing RAB values and weighted average remaining lives as at 30 June 2023 that are transferred across into the forward looking BBM.

The forward looking BBM (for FY24 to FY40) uses forecast capex and opex to determine the forecast ABBRR. The forecast ABBRR is used to calculate the tax allowance on a forward-looking basis.

The forward-looking BBM has been used to calculate the inputs to the Forecast Nominal Core Services ABBRR and Forecast Real Core Services ABBRR for the First Regulatory Cycle, as well as other Building Block Model parameters. These are set out in Attachment J of the Amended SAU Variation.

3 Allocation sheets

Allocations of costs between Core Regulated Services and Competitive Services, for the purposes of the BBM, are confidential and are visible in the confidential model only. The information in Sections 3.1, 3.2 and 3.3 is provided for information only, relating to the methodology used in the confidential version of the BBM.

The allocation to Competitive Services commences in FY20 (in the backward-looking BBM), based on when such services were introduced at scale. While **nbn** began supplying Competitive Services prior to FY20, the relatively low volumes meant that any cost allocation would have produced negligible impacts to the backward-looking BBM as it relates to Financial Years prior to FY20.

As noted in Section 4.1.2.2, the opex inputs to the BBM are already split between Core Regulated Service and Competitive Services.

3.1 Inputs

3.1.1 Capex Input

To maintain transparency of capital expenditure information, the BBM has been built to accommodate the allocation of capex to Core Regulated Services and Competitive Services, and aggregates post allocated capex into Asset Classes for the purposes of depreciation.

The Capex Input sheet captures the first step of this process. The purpose of this sheet is to capture the capital expenditure on the 600+ asset types **nbn** records in the current LTRCM Spreadsheet. This sheet includes inputs for:

- Capital expenditure
- Assets received for nil consideration
- Asset additions and subtractions – disposals are included by asset type up to the end of FY23 and are currently zero.

3.1.2 Allocators

The allocators for individual Asset Classes are defined on the 'Scenario Settings' sheet.

Different allocators are selectable for capex type (e.g., whether it is direct to a cost category, or shared) and allocation methodology (e.g., premises passed). This feeds into the Allocations sheet which determines the allocation between Core Regulated Services and Competitive Services. Where the asset type is reported along with a cost category, 100% of the cost is allocated/attributed to that cost category (e.g., 'Network Assets – FTTP – Local Joint' is fully allocated to FTTP (a Core Regulated Service).

The public BBM provides transparency on whether assets are wholly part of Core Services or Shared assets but does not include the percentage allocation that is applied to Competitive and Shared assets.

The allocation sheet also allocates asset types to Asset Classes. These Asset Classes are carried through the model to simplify calculations and depreciation modules. There are 16 Asset Classes in the model.

Figure 3: **Allocations snapshot**

RAB Code	Description	Allocation Methodology	Capex Type	Asset Class
201100	Land	Premise_Passed	Overhead	Land
201101	Land - Aggregation Node	Premise_Passed	Overhead	Land
201200	Buildings	Premise_Passed	Overhead	Buildings
201201	TAND Air-Conditioning Assets - Packaged Units	Premise_Passed	Shared	IT Long
201202	TAND Boom Gates	Premise_Passed	Shared	IT Long
201203	TAND Building Management System	Premise_Passed	Shared	Fitout
201204	TAND Computers - Free Access Floors in Computer Rooms	Premise_Passed	Shared	Buildings
201205	TAND Data Module	Premise_Passed	Shared	Fitout
201206	TAND Fire Control - Detection & Alarm Systems	Premise_Passed	Shared	Fitout
201207	TAND Fire Control - EWIS	Premise_Passed	Shared	Fitout
201208	TAND Fire Control - Fire Extinguishers	Premise_Passed	Shared	Fitout
201209	TAND Fire Control - Gas Suppression	Premise_Passed	Shared	Buildings

Source: ***nbn***

3.2 Allocations

The Allocations sheet uses a combination of inputs and calculations to determine appropriate allocations to attribute costs.

The initial CAM refers to the reasons and methodology behind the allocations in the BBM.

The allocation uses a specific coding of each Asset Class into different Capex types – cost category specific (e.g., FTTP), shared across fixed line, shared across all networks, or overhead (see 'Allocators' below). Costs directly attributable to specific cost categories are allocated directly to Core Regulated Services or Competitive Services (as appropriate). The BBM allocates costs that cannot be directly attributed to each cost category – i.e., asset types that have shared elements across all cost categories (e.g., transit network, transit and distribution fibre). The allocation of costs to cost categories is based on the fixed asset register. Where the asset is not reported against a specific cost category, the residual is allocated based on whether it is shared across all cost categories (where traffic flow through gets aggregated) or shared within fixed line cost categories (mainly distribution fibre). This allocation is used along with one of the allocators (as appropriate) shown in **Table 1**. The details of each allocator type, including the respective underlying methodologies, are set out in the initial CAM.

Table 1: **Allocators**

Category	Asset Examples	Rationale
Premises Passed (Share of network footprint)	TAND, FAN Site Physical Plants. Office equipment and corporate software licenses.	Shared physical and non-network assets costs are not directly driven by number of customers and bandwidth consumed, therefore allocated based on total intended footprint
Premises Connected (Share of active services)	Exchange and transit equipment	Shared network assets sensitive to number of customers connected (i.e., constrained by number of ports)
Provisioned Bandwidth (Share of bandwidth demand)	Distribution Fibre and supporting ducts and pits	Shared network assets sensitive to the total bandwidth demand on the network (i.e., constrained by total throughput)

Source: ***nbn***

The Allocations sheet calculates a percentage of competitive capex for each cost category under each of these allocators to be applied to the raw capex data depending on the selected allocation. This percentage is based on actuals and forecasts. The raw data is merged to achieve a share across the cost categories.

3.3 Allocating capex to Asset Classes

The post allocated capex is summed into Asset Classes. As noted above, there are 16 Asset Classes in the model.

4 Input sheets

4.1 Inputs

The purpose of the 'Inputs' sheet is to create a single place to consolidate the main inputs into the BBM.

This sheet contains a mix of rolled forward RAB and remaining asset lives, forecasts for the First Regulatory Cycle FY24 to FY26, and projections out to FY40. The 'Inputs' sheet also consolidates the post allocated capex so that all BBM inputs are on the same sheet.

4.1.1 Opening RAB

The Opening Core RAB values, by Asset Class at 1 July 2023, are considered inputs into the BBM. They are calculated in the backward-looking BBM – see **Figure 4** below.

Figure 4: **Opening Core RAB**

Opening Regulatory Asset Base and Opening Tax Base - Core		As at beginning of 2023-24	Opening Asset Value	Assets Under Construction	Remaining Life	Standard Life	Opening Tax Value	Tax Remaining Life	Tax Standard Life
Code	Description								
201100	Land		17,070.58	-	n/a	n/a	12,791.59	n/a	n/a
201101	Buildings		107,667.96	-	34.95	45.00	85,311.59	35.24	45.00
201200	Fitout		131,815.52	-	8.68	15.00	107,530.52	8.82	15.00
201201	Indirect Capital Assets		1,524,546.12	-	6.20	10.00	1,286,787.95	6.12	10.00
201202	Inventory		70,429.76	-	n/a	n/a	56,260.30	n/a	n/a
201203	Distribution Local		2,242,947.69	-	15.85	25.00	1,995,534.65	20.25	25.00
201204	Passive Infrastructure		4,321,441.75	-	36.08	40.00	4,784,988.36	36.82	40.00
201205	NTD		4,366,061.09	-	4.40	8.00	3,684,788.95	3.83	8.00
201206	Transit		-	-	n/a	25.00	-	n/a	25.00
201207	Active Plant		4,557,103.31	-	6.37	7.00	3,997,532.26	6.04	7.00
201208	IT Long		1,938,734.12	-	4.29	7.00	1,738,644.02	4.40	7.00
201209	Remediation		30,826.48	-	1.00	1.00	30,826.48	1.00	1.00
201210	IT Short		220,887.42	-	1.62	4.00	198,597.53	1.68	4.00
201211	Distribution Long		9,091,540.29	-	33.63	40.00	7,814,959.53	35.49	40.00
201212	Access Network		1,818,967.40	-	8.41	12.00	1,540,333.69	8.87	12.00
201213	FW Grants		-	-	n/a	10.00	-	n/a	10.00
201214	Spare 4		-	-	n/a	n/a	-	n/a	n/a
201215	Spare 5		-	-	n/a	n/a	-	n/a	n/a
201216	Spare 6		-	-	n/a	n/a	-	n/a	n/a
201217	Spare 7		-	-	n/a	n/a	-	n/a	n/a
Total			30,440,039.49	-			27,334,887.42		

Source: ***nbn***

4.1.2 Other key inputs

4.1.2.1 Construction in progress

Construction in progress (CIP) includes a yearly forecast CIP for a start and end of the period. This data is used in the calculation of the ABBRR.

4.1.2.2 Opex

The model uses a forecast of high-level opex inputs, split between Core Regulated Services and Competitive Services. The publicly available version of the BBM does not display the Competitive Services opex.

4.1.2.3 Revenue

The model uses forecast revenue. The publicly available version of the BBM does not display the Competitive Services revenue.

4.1.2.4 Capital Contributions

The model uses a forecast of Capital Contributions by Asset Class – see **Figure 5** below.

Figure 5: **Capital Contributions by Asset Class**

Capital Contributions by Asset Type ($'000 NOMINAL) - Core		2023-24	2024-25	2025-26
201100	Land			
201101	Buildings			
201200	Fitout			
201201	Indirect Capital Assets			
201202	Inventory			
201203	Distribution Local	-	-	-
201204	Passive Infrastructure			
201205	NTD			
201206	Transit			
201207	Active Plant			
201208	IT Long			
201209	Remediation			
201210	IT Short			
201211	Distribution Long	268,240.01	106,918.48	106,834.88
201212	Access Network			
201213	FW Grants	526,006.69425		
201214	Spare 4			
201215	Spare 5			
201216	Spare 6			
201217	Spare 7			
Total		794,246.70	106,918.48	106,834.88

Source: ***nbn***

The forecast Capital Contributions are netted from capital expenditure for each relevant Asset Class before entering the RAB. Capital contributions are netted at the Asset Class level.

It is important to note that:

- Capital Contributions are treated as having a negative asset value;
- the Amended SAU Variation specifies the amount in real terms to be deducted from capital expenditure entering the RAB in FY24 in regard to the 2022 FW Grant; and
- there are some additional provisions in regard to depreciation of Capital Contributions (see Section 5.1.2).

4.2 CPI calculations

The CPI calculations in the 'Inflation' sheet are used throughout the model to adjust for inflation. The calculations and inputs required for the Cumulative Inflation Factor are found in the 'Inflation' sheet.

The forward-looking BBM uses forecasts of inflation based on the RBA's May 2023 Statement of Monetary Policy – these are calculated separately, alongside the WACC inputs (see Section 4.3 below). As shown in **Figure 6** inflation is forecasted with a long-term outlook of 2.5% to align with the RBA's long-term forecast / mid-point of target inflation band. The inflation factor and the cumulative inflation factor are calculated based on these inputs.

Note that the first financial year in the model is FY14 (all real data is reported in FY14 dollars) as per the SAU. This aligns with the financial year in which the SAU was first accepted.

Figure 6: **CPI input data and calculations**

		Index Numbers ; All groups CPI ; Australia ;	June Quarter CPI (annual percentage change) - as per Dictionary	Inflation factor (1+June Quarter CPI)	Cumulative Inflation Factor
Financial year	Unit	Index Numbers			
2007-08	Jun-2008	91.60			
2008-09	Jun-2009	92.90	1.42%	1.01	0.88
2009-10	Jun-2010	95.80	3.12%	1.03	0.90
2010-11	Jun-2011	99.20	3.55%	1.04	0.94
2011-12	Jun-2012	100.40	1.21%	1.01	0.95
2012-13	Jun-2013	102.80	2.39%	1.02	0.97
2013-14	Jun-2014	105.90	3.02%	1.03	1.00
2014-15	Jun-2015	107.50	1.51%	1.02	1.02
2015-16	Jun-2016	108.60	1.02%	1.01	1.03
2016-17	Jun-2017	110.70	1.93%	1.02	1.05
2017-18	Jun-2018	113.00	2.08%	1.02	1.07
2018-19	Jun-2019	114.80	1.59%	1.02	1.08
2019-20	Jun-2020	114.40	-0.35%	1.00	1.08
2020-21	Jun-2021	118.80	3.85%	1.04	1.12
2021-22	Jun-2022	126.10	6.14%	1.06	1.19
2022-23	Jun-2023		6.25%	1.06	1.27
2023-24	Jun-2024		3.14%	1.03	1.30
2024-25	Jun-2025		3.14%	1.03	1.35
2025-26	Jun-2026		3.14%	1.03	1.39
2026-27	Jun-2027		2.50%	1.03	1.42
2027-28	Jun-2028		2.50%	1.03	1.46
2028-29	Jun-2029		2.50%	1.03	1.49
2029-30	Jun-2030		2.50%	1.03	1.53
2030-31	Jun-2031		2.50%	1.03	1.57
2031-32	Jun-2032		2.50%	1.03	1.61
2032-33	Jun-2033		2.50%	1.03	1.65
2033-34	Jun-2034		2.50%	1.03	1.69
2034-35	Jun-2035		2.50%	1.03	1.73
2035-36	Jun-2036		2.50%	1.03	1.78
2036-37	Jun-2037		2.50%	1.03	1.82
2037-38	Jun-2038		2.50%	1.03	1.87
2038-39	Jun-2039		2.50%	1.03	1.91
2039-40	Jun-2040		2.50%	1.03	1.96

Source: ***nbn***

4.3 WACC

The WACC inputs are developed separately and pasted into the BBM. The WACC is an input to the ABBRR and Annual Construction in Progress Allowance (ACIPA).

4.4 ICRA

The ICRA sheet contains the calculated ICRA drawdown, for modelling purposes, for input into the RAB, ABBRR and ICRA sheet. **nbn** does not currently forecast to start recovering the ICRA until approximately the FY31 Financial Year. This is captured in the WAPC Factor Change Year concept in the Amended SAU Variation, which has the effect that for Financial Years prior to the WAPC Factor Change Year, the drawdown amount is zero.

5 Calculation sheets

5.1 Depreciation

5.1.1 General approach

Depreciation is calculated for both Competitive Services and Core Regulated Services. These calculations are made in separate sheets. The public BBM presents the depreciation for Core Regulated Services.

Each sheet calculates:

- the real straight-line depreciation and nominal tax depreciation for the capex already included in the RAB as at 1 July 2023 (based on the opening value and remaining life for each Asset Class) (**Figure 7**), and
- the real straight-line depreciation and nominal tax depreciation for each Asset Class on forecast real capex from the beginning of the First Regulatory Cycle (Figure 8).

Figure 7: **Roll forward depreciation**

Roll forward Real Straight Line Depreciation ($'000 REAL)		Remaining valu	Remaining life			
201100	Land	13,492.75	n/a	n/a	n/a	n/a
201101	Buildings	85,101.74	34.95	2,434.66	2,434.66	2,434.66
201200	Fitout	104,188.18	8.68	12,006.14	12,006.14	12,006.14
201201	Indirect Capital Assets	1,205,015.14	6.20	194,459.77	194,459.77	194,459.77
201202	Inventory	55,668.33	n/a	n/a	n/a	n/a
201203	Distribution Local	1,772,846.28	15.85	111,860.27	111,860.27	111,860.27
201204	Passive Infrastructure	3,415,706.91	36.08	94,676.87	94,676.87	94,676.87
201205	NTD	3,450,974.44	4.40	784,403.59	784,403.59	784,403.59
201206	Transit	-	n/a	n/a	n/a	n/a
201207	Active Plant	3,601,975.95	6.37	565,830.53	565,830.53	565,830.53
201208	IT Long	1,532,393.10	4.29	357,537.24	357,537.24	357,537.24
201209	Remediation	24,365.53	1.00	24,365.53	0.00	-
201210	IT Short	174,591.43	1.62	108,021.02	66,570.41	-
201211	Distribution Long	7,186,036.23	33.63	213,659.47	213,659.47	213,659.47
201212	Access Network	1,437,728.40	8.41	171,047.11	171,047.11	171,047.11
201213	FW Grants	-	n/a	n/a	n/a	n/a
201214	Spare 4	-	n/a	n/a	n/a	n/a
201215	Spare 5	-	n/a	n/a	n/a	n/a
201216	Spare 6	-	n/a	n/a	n/a	n/a
201217	Spare 7	-	n/a	n/a	n/a	n/a
Total				2,640,302.20	2,574,486.06	2,507,915.65

Source: ***nbn***

Figure 8: **Depreciation on forecast capex**

201207 Active Plant						
		Net Real Capex	640,623	591,037	562,425	711,135
		Asset lifetime	7.00			
1	640,623			91,518	91,518	91,518
2	591,037				84,434	84,434
3	562,425					80,346
4	711,135					
5	880,575					
6	911,543					
7	819,895					
8	533,652					
9	337,596					
10	337,232					
11	316,899					
12	270,745					
13	230,990					
14	222,626					
15	213,587					
16	207,486					
17	198,195					
18	#N/A					
201207	Active Plant	Asset Real Straight Line Depreciation	-	91,518	175,951	256,298

Source: ***nbn***

5.1.2 Depreciation of Capital Contributions

Module 2 of the Amended SAU Variation provides that the method for determining regulatory depreciation will treat Capital Contributions received in previous Financial Years as having a negative asset value, where such Capital Contributions will be depreciated:

- for Capital Contributions other than the 2022 FW Grant, using a method that provides a reasonable alignment between the profile (including the overall time period) of the depreciation of:
    - the Capital Contributions; and
    - the Capital Expenditure funded by those Capital Contributions; and
- for the 2022 FW Grant, using an asset lifetime of 10 years.

In general, Capital Contributions are expected to be closely matched in time to the capex they fund. This is the basis on which the BBM applies currently undertakes deprecation of Capital Contributions.

5.2 RAB, ABBRR & ICRA

The 'RAB, ABBRR & ICRA' sheet (see **Figure 9**) contains the primary calculations in the model. It calculates:

- RAB – real and nominal
- ABBRR
- Taxation calculations
- ICRA (in the forward-looking BBM this calculation is not included because the ICRA value no longer accumulates Unrecovered Costs. As noted above, the 'ICRA' sheet calculates the ICRA drawdown, for modelling purposes.

Figure 9: **RAB, ABBRR & ICRA**

2. Regulatory Asset Base ($'000 REAL)

Real RAB (start period)
Core
Competitive
Real Capex
Core
Competitive
Real Disposals
Core
Competitive
Real Straight Line Depreciation
Core
Competitive
Real RAB (end period)
Core
Competitive

3. Regulatory Asset Base ($'000 NOMINAL)

Nominal RAB (start period)
Core
Competitive
Nominal Straight Line Depreciation
Core
Competitive
Nominal RAB (end period)
Core
Competitive

4. ABBRR ($'000 NOMINAL)

Return on capital
Core
Competitive

Nominal Regulatory Depreciation
Core
Competitive

Nominal Opex
Core
Competitive

Net Tax Allowance (as calculated in Table 5 below)
Core
Competitive

ACIPA
Core
Competitive

ABBRR
Core
Competitive

Source: ***nbn***

Module 2 includes some formula changes from the start of FY24. These include the following.

- For the purposes of the tax calculation, Nominal Revenue is based on the forecast ABBRR forecast ICRA Drawdown) rather than **nbn**'s forecast revenue (noting that **nbn**'s revenue will initially be less than the ABBRR).
- The interest expense input as per **nbn**'s statutory accounts will no longer be used from 1 July 2023 in the tax calculations. Instead, interest expense is calculated as $Interest\ expense_t = RAB_t \times Gearing \times Expected\ Return\ on\ debt_t$. The RAB amount will be the forecast Nominal RAB for that financial year, the Gearing will be the benchmark gearing ratio for the relevant Regulatory Cycle.
- The ICRA will no longer continue to accrue from FY23.

5.3 Roll forward

In the forward-looking BBM, from FY24, **nbn** is taking a streamlined approach to calculating depreciation.

5.3.1 Asset Classes

The streamlined approach involves grouping asset types into Asset Classes for the purpose of depreciation. Asset types are grouped into Asset Classes by function and the services they deliver. This approach improves the usability by reducing the volume of calculations in the model, replacing over 600 line-by-line depreciation calculations with less than 20 asset class depreciation calculations.

nbn has used the following Asset Classes:

- Land
- Buildings
- Fitout
- Indirect Capital Assets
- Inventory
- Distribution Local
- Passive Infrastructure
- Network Termination Device
- Transit
- Active Plant
- IT Long
- Remediation
- IT Short
- Distribution Long
- Access Network
- FW Grants

nbn is proposing to differentiate within Asset Classes between assets commissioned prior to FY24, and those after FY24.

5.3.2 Approach to calculating a weighted average remaining lifetime

In Module 2, under clause 2G.5.5 in the Amended SAU Variation, depreciation calculations require a standard life for new capital expenditure and a remaining life for an Asset Class to be used for the capex incurred in that Asset Class prior to the commencement of a Regulatory Cycle.

In **nbn**'s FY24-FY40 BBM, each Asset Class has a Standard Asset Life and a calculated Weighted Average Remaining Lifetime. Depreciation is calculated and applied in the BBM at the Asse Class Level (aggregated across asset types) using the Weighted Average Remaining Lifetime for the capex in that Asset Class that has been incurred prior to the First Regulatory Cycle, and Standard Asset Life for the capex in that Asset Class incurred during the First Regulatory Cycle.

The FY09-FY23 BBM calculates the remaining value of each Asset Class by considering the opening RAB, the capex incurred, disposals, and depreciation, in accordance with a standard RAB roll-forward approach[2].

The BBM calculates a remaining life for each Asset Class by dividing the amount of the real RAB associated with each Asset Class, as at the date the on which the Weighted Average Remaining Life is determined, by the sum of annual depreciation in that Asset Class. The weights in this calculation are the contribution to depreciation from each individual assets in the Asset Class.

$$Weighted\ Average\ Remaining\ Lifetime_i = \sum_a RL_a \frac{real\ depreciation_a}{\sum_a real\ depreciation_a} = \frac{\sum_a closing\ real\ RAB_a}{\sum_a real\ depreciation_a}$$

Where i is an Asset Class, a denotes each asset type specified in Asset Class i, and RL_a is the remaining life for asset type a.

nbn will propose a roll forward depreciation amount as part of each Replacement Module Application in respect of a Regulatory Cycle. As part of this application, **nbn** proposes to treat assets commissioned prior to FY24 separately to those incurred from the start of FY24. **nbn** proposes to separately calculate a Weighted Average Remaining Lifetime for each Asset Class using the weight by depreciation approach for assets commissioned from the start of FY24.

Box 1 sets out a worked example of the Weighted Average Remaining Lifetime depreciation calculation.

Box 1: Worked example of Weighted Average Remaining Lifetime calculation

Assume we are seeking to calculate a Weighted Average Remaining Lifetime for Asset Class A at the end of the regulatory cycle for the capex incurred during a five year regulatory cycle. Over the 5 years, there were 3 asset types 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**.

Table 2: Asset expenditure and life

Expenditure	Asset life	Year 1	Year 2	Year 3	Year 4	Year 5
Asset type 1	6	$200,000				
Asset type 2	6		$5,000,000			
Asset type 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 type 1		$33,333	$33,333	$33,333	$33,333
Asset type 2			$833,333	$833,333	$833,333

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

Asset type 3	$1,500,000

Source: Frontier Economics

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

Table 4: Remaining value and remaining life of the assets

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

Source: Frontier Economics

As such, in calculating the Weighted Average Remaining Lifetime, Asset type 3 that has a large remaining value and long remaining life will increase the average.

The Weighted Average Remaining Lifetime for this Asset Class A is 6.8.

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

Source: nbn

nbn applied this methodology in the FY09-23 BBM to calculate a Weighted Average Remaining Lifetime for each Asset Class on the Core Roll Forward and Competitive Roll Forward sheets (with only the Core Roll Forward sheet being visible in the public version). The outputs of this calculation are presented in **Figure 10**.

Figure 10: Core Roll Forward output

Opening Regulatory Asset Base and Opening Tax Base - Core		Opening Asset Value	Assets Under Construction	Remaining Life	Standard Life	Opening Tax Value	Tax Remaining Life	Tax Standard Life
Code	Description							
201100	Land	17,071		n/a	n/a	12,792	n/a	n/a
201101	Buildings	107,668		34.95	45	85,312	35.24	45
201200	Fitout	131,816		8.68	15	107,531	8.82	15
201201	Indirect Capital Assets	1,524,546		6.20	10	1,286,788	6.12	10
201202	Inventory	70,430		n/a	n/a	56,260	n/a	n/a
201203	Distribution Local	2,242,948		15.85	25	1,995,535	20.25	25
201204	Passive Infrastructure	4,321,442		36.08	40	4,784,988	36.82	40
201205	NTD	4,366,061		4.40	8	3,684,789	3.83	8
201206	Transit	-		n/a	25	-	n/a	25
201207	Active Plant	4,557,103		6.37	7	3,997,532	6.04	7
201208	IT Long	1,938,734		4.29	7	1,738,644	4.40	7
201209	Remediation	30,826		1.00	1	30,826	1.00	1
201210	IT Short	220,887		1.62	4	198,598	1.68	4
201211	Distribution Long	9,091,540		33.63	40	7,814,960	35.49	40
201212	Access Network	1,818,967		8.41	12	1,540,334	8.87	12
201213	FW Grants	-		n/a	10	-	n/a	10
201214	Spare 4	-		n/a	n/a	-	n/a	n/a
201215	Spare 5	-		n/a	n/a	-	n/a	n/a
201216	Spare 6	-		n/a	n/a	-	n/a	n/a
201217	Spare 7	-		n/a	n/a	-	n/a	n/a
Total		30,440,039.49	-			27,334,887.42		

Source: nbn

6 Output sheets

6.1 Outputs

This sheet summarises the outputs of the main calculation sheets. This sheet is used to create an outputs table in the SAU. It meets the SAU requirements to calculate the items shown in **Figure 11**.

Figure 11**: Outputs in respect of Core Regulated Services**

Core Regulated Services
Nominal Forecast Core Services RAB Portion (start period)
Nominal Forecast Core Services RAB Portion (end period)
Forecast Real Core Services RAB Portion (start period)
Forecast Real Core Services RAB Portion (end period)
Nominal Forecast Core Services Capital Expenditure minus Capital Contributions
Nominal Forecast Core Services Capital Contributions
Nominal Forecast Core Services Capital Expenditure
Real Forecast Core Services Capital Expenditure minus Capital Contributions
Real Forecast Core Services Capital Contributions
Real Forecast Core Services Capital Expenditure
Nominal Forecast Core Services Disposals
Real Forecast Core Services Disposals
Real Forecast Core Services Depreciation
Forecast Nominal Tax Depreciation in connection with the forecast Nominal Core Services RAB Portion
Forecast Nominal Regulatory Depreciation in connection with the forecast Nominal Core Services RAB Portion
Nominal Forecast Core Services Operating Expenditure
Nominal Forecast Construction in Progress in connection with Core Regulated Services (start period)
Forecast Annual Construction in Progress Allowance (nominal) in connection with Core Regulated Services
Forecast Core Services Tax Allowance (nominal)
Forecast Nominal Core Services ABBRR
Forecast Real Core Services ABBRR
Nominal Annual Drawdown of ICRA
Forecast Annual Core Revenue Allowance
Forecast Core Services Revenue Cap
Annual Core Services Forecast Revenue
Annual Core Services RBS

Source: ***nbn***