



Customised price-quality path (CPP)

# Financial and modelling information

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12 June 2017

**POWERCO**



# Contents

<b>1</b>	<b>Introduction</b>	<b>5</b>
1.1	Purpose	5
1.2	Structure	5
1.3	Commerce Commission Input Methodologies (IMs)	7
1.4	CPP Financial Model	8
1.5	Forecast Period	8
<b>2</b>	<b>Revenue requirement overview</b>	<b>10</b>
2.1	Revenue requirement	10
<b>3</b>	<b>Maximum allowable revenue</b>	<b>11</b>
3.1	Present value of annual allowable revenue	11
3.2	Revenue smoothing	12
3.3	Revised revenue allowance terminology	13
<b>4</b>	<b>Building block allowable revenues</b>	<b>14</b>
4.1	Building blocks allowances	14
<b>5</b>	<b>Cost of capital</b>	<b>17</b>
5.1	Cost of capital applied in our proposal	17
5.2	Revenue requirement reflects expected allowable revenues	17
<b>6</b>	<b>RAB roll-forward</b>	<b>21</b>
6.1	RAB roll-forward	21
6.2	Revaluations	23
6.3	Depreciation	24
6.4	Value of commissioned assets	25
6.5	Asset disposals	32
<b>7</b>	<b>Operating expenditure</b>	<b>35</b>
7.1	Cost escalation	35
7.2	Cost allocation – Opex	36
7.3	Schedule E: Opex disclosure modification	37
<b>8</b>	<b>Regulatory tax allowance</b>	<b>38</b>
8.1	Regulatory profit/(loss) before tax	38
8.2	Permanent differences	39
8.3	Regulatory tax adjustments	39
8.4	Tax losses	42
8.5	Corporate Tax Rate	42
8.6	Deferred tax	42
<b>9</b>	<b>Other components</b>	<b>45</b>
9.1	TCSD allowance	45
9.2	Timing factors	45
<b>10</b>	<b>Historical expenditure</b>	<b>47</b>
10.1	Historical disclosure adjustments	47
10.2	Historical expenditure escalation	48
10.3	Disclosure consistent with how we manage our business	48

10.4	Reconciliation to historical information disclosure .....	49
<b>11</b>	<b>Pass-through and recoverable costs .....</b>	<b>51</b>
11.1	How do pass-through and recoverable cost effect prices .....	51
11.2	Pass-through and recoverable costs disclosure .....	51
<b>Appendix A</b>	<b>Compliant revenue requirement disclosure.....</b>	<b>53</b>
<b>Appendix B</b>	<b>Recoverable Costs .....</b>	<b>57</b>

# 1 INTRODUCTION

## Key Points

This document details how we derived our revenue requirement from our expenditure forecasts as outlined in the Main Proposal. Our revenue requirement is derived consistent with the assumptions, methodologies and calculations specified in the Commerce Commission's regulatory requirements.

- The revenue requirement is for the financial years FY19-23. The proposal includes forecasts for the financial years FY17-23.
- Our proposal includes a financial model that substantiates how the revenue requirement is calculated (CPP financial model).

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## 1.1 Purpose

This document outlines the revenue requirement we are proposing the Commerce Commission (Commission) approve to allow us to recover the cost of our forecast expenditure.

The revenue requirement has been determined in accordance with the Commerce Commission Input Methodologies Determination (IMs). This document provides an overview of the revenue requirement calculation and outlines how the IMs have been applied; how the expenditure forecasts apply in deriving our revenue requirement and how non-expenditure forecast assumptions have been determined and applied.

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## 1.2 Structure

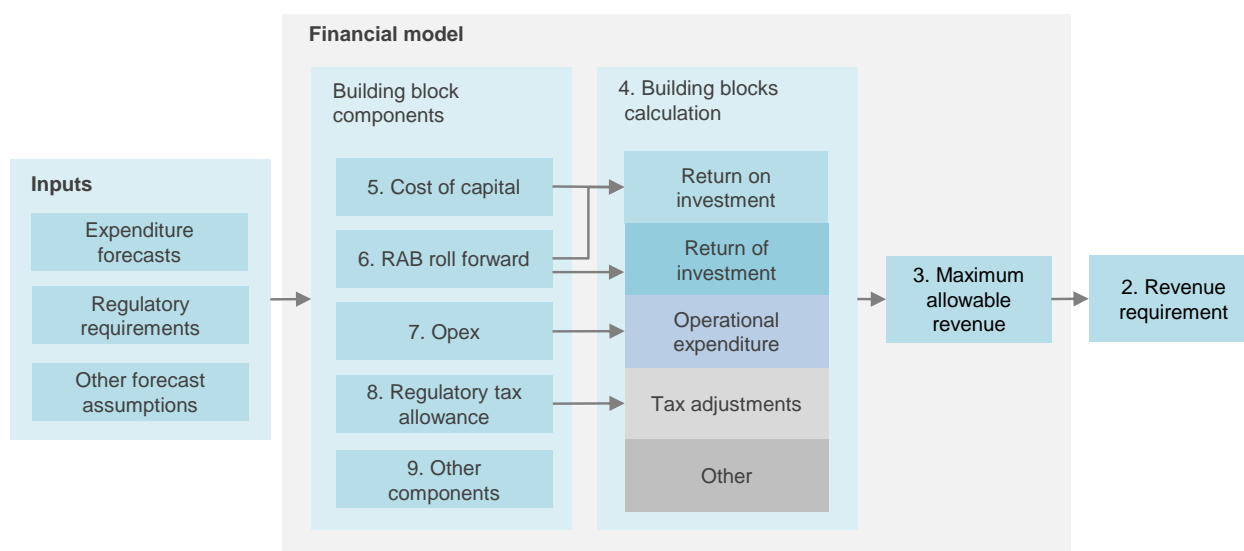
The structure of this document is based on the revenue requirement calculation. The document starts by discussing the outcome of the calculation and then discusses how the calculation, as specified in the IM, is applied. The discussion is grouped around the key building blocks calculation and its components.

We discuss the expenditure forecasts and other forecast assumptions in the sections where they apply. An explanation for the expenditure forecast is detailed in the Main Proposal. The other forecast assumptions are described and explained in this document.

The other forecast assumptions are those assumptions other than expenditure forecast assumptions required to determine the revenue requirement. They, amongst other things, provide for capital expenditure to be realised over time (RAB roll-forward), real expenditure to be escalated to nominal expenditure, shared costs to be allocated to the regulated business and provide for a regulatory tax allowance.

The structure of this document is outlined in the figure below and described in more detail in Table 1.1.

Figure 1: Document structure



This document also outlines how we have presented comparable historical expenditure (Chapter 10) and our preliminary forecast of pass-through and recoverable costs (Chapter 11).

Table 1.1: Document Structure

CHAPTER	DESCRIPTION
1 Introduction	This chapter.
2 Revenue requirement overview	Summarises the outcome from the revenue requirement calculation.
3 Maximum allowable revenue	Outlines how we have smoothed allowable revenues across the CPP period to remove fluctuations associated with annual variances in expenditures and how we have determined the initial revenue increase.
4 Building blocks allowable revenue	Outlines how allowable revenues have been determined based on the building block revenue calculation.
5 Cost of capital	Outlines how the cost of capital assumption used throughout the revenue calculation is determined.
6 Regulatory asset base	Describes how the regulatory asset base value used in the building blocks calculation is determined, including how the value of commissioned assets, depreciation and revaluations are calculated.
7 Operating expenditure	Describes how the forecast Opex, used in the building blocks calculation, is determined from the expenditure forecasts.
8 Regulatory tax allowance	Describes how the regulatory tax allowance, tax adjustment and deferred tax balance is determined.
9 Other components	Describes how the term credit spread differential (TCSD) and timing assumptions are determined
10 Historical expenditure	Outlines how we have presented historical financial information in our proposal.
11 Pass-through and recoverable costs	Outlines how we have forecast the past-through and recoverable costs that are required to be disclosed.

### 1.3 Commerce Commission Input Methodologies (IMs)

The revenue requirement is derived consistent with the IMs.<sup>1</sup> The IMs are the methodologies, rules and processes, established by the Commission, we are required to follow in deriving our proposed revenue requirement.

Suppliers of electricity distribution services are subject to the regulatory provisions under subpart 9 of Part 4 of the Commerce Act 1986. Subpart 9 provides that electricity distribution businesses, as suppliers of electricity lines services, are subject to default/customised price-quality regulation.

The Commission set the IMs on 22 December 2010 and most recently amended them in December 2016.

The determination includes input methodologies for asset valuation, cost allocation, regulatory tax, cost of capital, regulatory rules and processes and includes the determination of maximum allowable revenues (our revenue requirement) under a customised price-quality path (CPP).

The revenue requirement proposal and associated disclosures have been made consistent with the IMs except for the modifications and exemptions as outlined in the table below. We have provided, in the relevant sections of this chapter, a detailed discussion on each of the modifications and exemptions including the reason for them and their effect on the revenue requirement. Table 1.2 references to those discussions.

Table 1.2: Modifications and exemptions to the IMs

IM REQUIREMENTS MODIFICATIONS	STATUS	REFERENCE
Definition of "current period" – IM clause 1.1.4	Applied for 11 June 17	Section 1.5
Depreciation by asset category disclosure - IM clause 5.4.12	Approved 12 April 17	Section 6.3.1
Actual and forecast commissioned asset disclosure - IM Table 2c, Schedule E	Approved 12 April 17	Section 6.4.11
Commissioned assets information - IM clause 5.4.14	Applied for 11 June 17	Section 6.4.11
Cost allocation disclosure - IM clause 5.4.9(4)(d)	Approved 12 April 17	Section 7.2.1
Cost allocation disclosure – IM clause 5.4.9(4)(d)(ii)	Applied for 11 June 17	Section 7.2.1
Opex categorisation - Schedule E, Table 3	Applied for 11 June 17	Section 7.3
Tax information - IM clause 5.4.19(2)	Approved 12 April 17	Section 8.1
Differences in asset values - IM clause 5.4.22	Approved 12 April 17	Section 8.3.1
Amortisation of revaluations – IM clause 5.4.23	Applied for 11 June 17	Section 8.3.2
Priority of proposals – IM clause 5.4.3	Applied for 11 June 17	Application paragraph 6.2.5

All exemptions and modifications relate to the CPP disclosure requirements and don't affect the revenue requirement outcome.

As outlined in Chapter 8 of the Application, we have also requested variations to the IMs. The variation to the WACC forecast affects the revenue requirement outcome. For the reasons outlined in Section 5.2 our revenue requirement, presented in the Main Proposal and body of this report, is consistent with our proposed variation. For compliance purposes we have also included, in Appendix A, the information from each of the data tables from the body of this report as if the variation had not been applied.

The other proposed variations, outlined in the Chapter 8 of the Application, have not been reflected in the revenue requirement presented in the Main Proposal or this report.

<sup>1</sup> Commerce Commission, Electricity Distribution Service Input Methodologies 2012, 28 February 2017.

**Box 1.1: Modification or exemptions**

Section 53V(2)(c) of the Commerce Act 1986

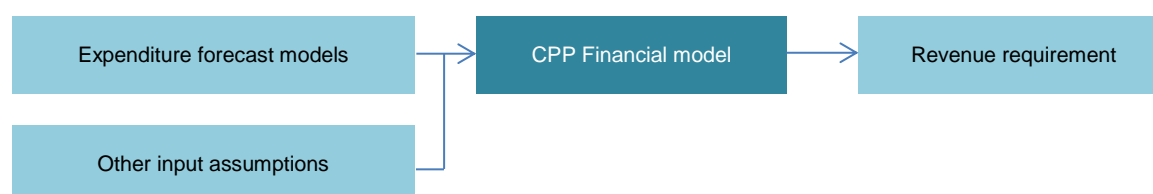
Modification and exemption – IM clause 5.1.6 - 5.1.8

**1.4 CPP Financial Model**

Our CPP financial model calculates a CPP price path consistent with the IMs and is based on the input assumptions as outlined in this document. The CPP financial model is part of our proposal.

In accordance with clause 5.4.7(4) of the IMs, the various sections of this chapter reference the relevant CPP financial model calculations.

Figure 2: CPP Financial model



Our financial model design is based on the model used by the Commission to determine the final Orion CPP<sup>2</sup> with minor amendments for such things as the IM changes since the Orion CPP decision.

The expenditure models collate the forecast Opex and Capex outlined in the Main Proposal. The other forecast assumptions are discussed in this report.

**Box 1.2: Financial model IM requirement**

Disclosure requirement - clause 5.4.7

**1.5 Forecast Period**

Consistent with clause 1.1.4(2) of the IMs, price path information is presented in this report and in the model for:

- the Assessment Period (comprising the two disclosure years prior to the CPP Period)
- the CPP Period (comprising the five disclosure years commencing on 1 April 2018)
- the Next Period (comprising the Assessment Period and the CPP Period).

References to the Current Period refer to the five disclosure years preceding the next period.

Figure 3: Forecast period

CURRENT PERIOD					NEXT PERIOD						
					ASSESSMENT PERIOD		CPP PERIOD				
FY12	13	14	15	16	17	18	19	20	21	22	23

IM clause 1.14 defines “current period” as “the five disclosure years preceding the disclosure year in which the CPP application is submitted”. Because Powerco’s submission date is 12 June, it is submitting

<sup>2</sup> ‘Orion Customised Price-Quality Path Model 29 November 2013’ <http://comcom.govt.nz/dmsdocument/11312>



very soon after the conclusion of the disclosure year ended 31 March 2017. The consequence is that, while the “current period” is technically the five disclosure years through to 31 March 2017, it has not been possible for Powerco to provide information for the period 1 April 2016 to 31 March 2017. The information is simply not available yet.

We have requested a modification to the definition of “current period” so that it means the 5 disclosure years from 1 April 2011 to 31 March 2016.

**Box 1.3: Forecast period IM requirement**

Determination of revenue requirement – clause 1.1.4(2)

## 2 REVENUE REQUIREMENT OVERVIEW

### Key Points

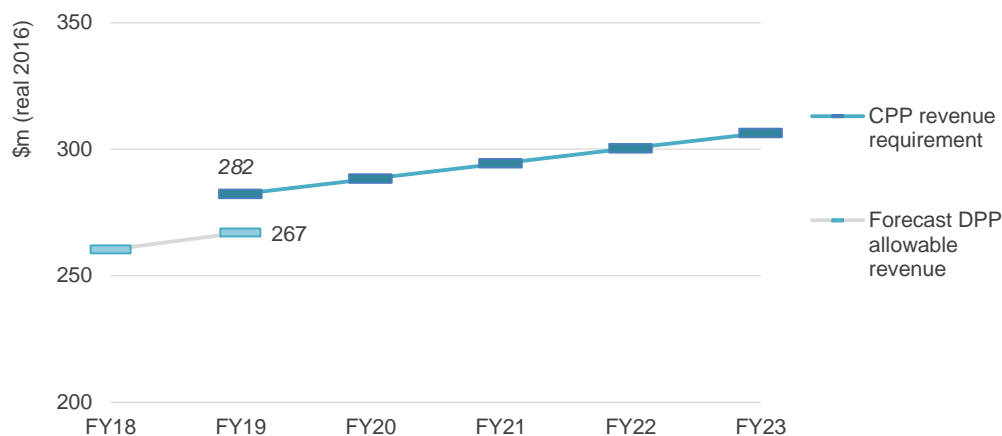
Our revenue requirement is forecast to increase by 5.7% at the start of the CPP period and then adjust annually in line with inflation during the period.

### 2.1 Revenue requirement

Our investment plans will impact the price customers pay for our distribution services. If our plan is approved, our revenue requirement will need to increase to cover the additional expenditure.

The revenue requirement resulting from our proposed expenditure is outlined in the graph below.

Figure 4: Revenue requirement



Our proposed revenue requirement includes an increase of 5.7% at the start of the CPP period (FY19) and then adjusts annually in line with inflation during the period.<sup>3</sup>

The present value of our proposed total revenue requirement for the five year CPP period (FY19-23) is \$1,241m. This amount reflects the efficient costs of providing our distribution services and meeting the safety and service levels our customers expect and value.

The Commission will assess whether our proposed investments are prudent and efficient and will approve the amount of revenue we are allowed to recover.

The remainder of this document outlines how we have derived our revenue requirement based on our proposed investments and in accordance with the IMs.

<sup>3</sup> The increase in allowed revenue is the difference between our FY19 proposed revenue requirement and the FY19 forecast DPP allowed revenue. Section 3.3 outlines how we determined the FY19 forecast DPP allowable revenue.

### 3 MAXIMUM ALLOWABLE REVENUE

#### Key Points

- The revenue requirement is the maximum allowable revenue determined in accordance with the IMs.
- The maximum allowable revenue is the smoothed allowable revenue requirement. It has the same net present value as the building blocks allowable revenues (BBAR) and has been determined after applying price smoothing assumptions.

Our revenue requirement is based on the maximum allowable revenues determined in accordance with the IMs.

Maximum allowable revenue is the annual allowable revenue derived from the present value of the building blocks allowable revenues (NPV of BBAR after tax) after applying price smoothing and discounting assumptions.

The present value of the series of MAR after tax equals the NPV of BBAR after tax. In this document we refer to this NPV as the PV of annual allowable revenues. BBAR after tax is the revenue allowance determined using the building blocks calculation and before revenue smoothing. How the BBAR is determined is outlined in chapter 4.

The maximum allowable revenue (MAR) before and after tax for each year of the CPP period are presented below. MAR after tax is equal to MAR before tax less our regulatory tax allowance, which is the tax expense we are expected to incur on our regulated taxable profits.

Table 3.1: Maximum allowable revenue

\$M	1-APR-18	FY19	20	21	22	23
MAR before tax		282.3	288.4	294.4	300.4	306.4
MAR after tax		259.4	263.1	269.4	273.5	277.9
PV of annual allowable revenues	1,241.3					

The below table outlines the assumptions used to determine the maximum allowable revenues. The rest of the chapter outlines the purpose and reasoning for each assumption.

Table 3.2: Maximum allowable revenue assumptions

\$M - EXCEPT WHERE NOTED	1-APR-18	FY19	20	21	22	23
MAR before tax		282.3	288.4	294.4	300.4	306.4
Discounting assumption - Cost of Capital		7.19%	7.19%	6.78%	6.78%	6.78%
PV of annual allowable revenues	1,241.3					
CPI		2.11%	2.15%	2.10%	2.03%	2.00%
X Factor		-	-	-	-	-
Increase in allowable revenue		5.7%				

#### 3.1 Present value of annual allowable revenue

The present value of annual allowable revenues is the value of the BBAR after tax at the beginning of the CPP period (1 April 2018) when applying the cost of capital as the discount assumption. Chapter 4 outlines how the BBAR allowable revenues have been determined.

The PV of allowable revenues is used to determine the maximum allowable revenue for each year of the CPP period by factoring in the revenue smoothing and discount assumptions as outlined below.

### 3.1.1 Discount assumption

The cost of capital assumption is used extensively throughout the revenue requirement calculation. In this instance it is used to discount the building blocks allowable revenue and to determine the maximum allowable revenue that has the same present value as the building blocks allowable revenue.

Table 3.3: Cost of Capital

	FY19	20	21	22	23
Cost of Capital	7.19%	7.19%	6.78%	6.78%	6.78%

An explanation of how the cost of capital assumption is determined is outlined in chapter 5.

## 3.2 Revenue smoothing

The primary purpose of revenue smoothing is to remove fluctuations in revenue that would likely be the case if our final revenue requirement was based on BBAR allowable revenue.

Revenue smoothing also allows us to assess whether revenue increases are better reflected as a one-off increase at the beginning of the CPP period or as gradual increases during the period.

Our proposal is for the revenue requirement to increase by 5.7% at the start of the CPP period and adjust annually in line with inflation during the period.

We have smoothed our allowable revenue in accordance with IM clause 5.3.4. The remainder of this section outlines how we have done this.

We have chosen not to include an X factor in the smoothing of revenue that is provided for under IM clause 5.3.4(6).

### 3.2.1 Inflation assumption

The CPI inflation rate is used in determining the maximum allowable revenue to provide for increases in revenue during the CPP period that are consistent with forecast general increases in prices of consumer goods and services.

Clause 5.3.4(9) of the IMs defines the inflation rate as the sum of forecast CPI for the four quarters of the disclosure year divided by the sum of forecast CPI for the four quarters of the preceding disclosure year, less one.

The CPP inflation rate used in the CPP price path is presented below.

Table 3.4: CPI Inflation Rate

	FY19	20	21	22	23
CPP inflation rate	2.11%	2.15%	2.10%	2.03%	2.00%

### 3.2.2 Initial increase in revenues

The initial increase in revenues reflects the increase in revenues required to allow us to earn our allowable revenues after taking into account the discount factor and inflation increase in prices during the CPP period.

An alternative to the application of initial increase in revenues, the regulatory requirements allow us to apply consistent increases in prices, over and above the CPI inflation rate (X factor). This approach has the effect of lessening the initial increase in revenues at the beginning of the CPP period.

Reflecting the required uplift in revenue as a one-off increase, rather than gradual increases during the CPP period, over and above CPI, is consistent with how the Commission has previously set prices and consistent with expectations implied in the regulatory requirements. We have also considered the

expected price impact on customers' total electricity cost in making our decision and feedback received during our stakeholder engagement process.

Feedback from our stakeholder engagement identified that retailers leaned towards a single initial increase on the grounds that it would facilitate better coordination and communication with end-consumers. Feedback from customers was not conclusive.

We welcome any feedback from the Commission's consultation on how our revenue requirement increase should be reflected.

Clause 5.4.8(4) of the IMs allows us to apply an X factor different to the DPP determination X factor. We have applied a nil X factor which is consistent with the DPP determination.<sup>4</sup>

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### 3.3 Revised revenue allowance terminology

In 2016, after a review of the IMs, the Commission, amongst other things, amended the basis by which our revenue is regulated.

The amendment changed the revenue control mechanism from a weighted average price cap to a revenue cap.

In determining our revenue requirement increase, as outlined in section 3.2, we have compared the forecast DPP allowable revenue for FY19 to the CPP revenue requirement for FY19. The FY19 DPP allowable revenue includes forecast inflation and quantities whereas the FY19 CPP revenue requirement does not require a forecast of quantities.

#### **Box 3.1: Maximum allowable revenues IM requirements**

Determination of revenue requirement- clause 5.3.4

Disclosure requirement - clause 5.4.8

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<sup>4</sup> Electricity Distribution Services Default Price-Quality Path Determination 2015, consolidating all amendments as of 9 July 2015 (9 July 2015), Schedule 2, Clause 2.

## 4 BUILDING BLOCK ALLOWABLE REVENUES

### Key Points

The building blocks allowable revenue (BBAR) is based on return on investment, return of investment, revaluation, operating expenditure, tax and other allowances.

- The PV of allowable revenue is determined by the building blocks calculation included in the IMs.
- Timing assumptions are applied in the BBAR calculation to provide for when revenues and expenses are deemed to incur during the year. The timing assumptions are specified in the IMs and are based on the cost of capital assumption.

The building blocks allowable revenue (BBAR) is the allowable revenue determined from the revenue calculation prior to revenue smoothing.

The BBAR before and after tax for each year of the Next Period are presented below.

Table 4.1: Building blocks allowable revenue

\$M	1-APR-18	FY19	20	21	22	23
BBAR before tax		266.4	288.6	294.2	307.0	319.8
Regulatory tax allowance		- 22.8	- 25.2	- 25.0	- 26.8	- 28.5
<b>BBAR after tax</b>		<b>243.6</b>	<b>263.4</b>	<b>269.2</b>	<b>280.2</b>	<b>291.3</b>
PV of annual allowable revenues	1,241.3					

The BBAR is determined from the building blocks outlined in the next section.

### 4.1 Building blocks allowances

The BBAR is made of the six allowances outlined in the table below. This section discusses what each of the allowances provides for.

Table 4.2: Building blocks allowances

\$M	FY19	20	21	22	23
Return on investment allowance	165.7	183.0	184.1	196.7	209.5
Return of investment allowance - depreciation	61.7	65.8	70.7	75.5	80.1
Return of investment allowance - revaluations	- 47.5	- 51.2	- 54.7	- 57.9	- 61.7
Operating expenditure allowance	94.1	99.8	102.2	101.4	101.1
Tax adjustments allowance	- 10.6	- 12.0	- 11.5	- 12.3	- 13.2
Other allowances	3.0	3.2	3.4	3.7	4.0
<b>BBAR before tax</b>	<b>266.4</b>	<b>288.6</b>	<b>294.2</b>	<b>307.0</b>	<b>319.8</b>

The return on investment allowance provides us with the ability to earn a return on our investment in the regulated business.

The return of investment allowance provides for the return of our past expenditure on regulated assets. It is more commonly referred to as depreciation.

The regulatory requirements also provide for the revaluation of assets during the period. Revaluations reflect the increase in the value of assets from which the regulated entity can earn a return on and, a return of, in future periods.

The operating expenditure allowance provides for the return of Opex incurred during the period. Opex includes the cost of operating and maintaining our assets, responding to emergencies, and administering and managing our business.

The tax adjustments building block makes an adjustment to allow for differences between regulatory profits and assumed taxable profits.

The regulatory regime also allows for a TCSD allowance to cover the estimated costs a regulated entity would incur if they have debt securities that are for longer than the years assumed in the cost of capital calculation.

The formula for the building blocks calculation, as outlined in IM clause 5.3.2, is detailed below. The formula includes the six allowances described above. The formula is structured around the timing factors as discussed in section 9.2.

$$\begin{aligned} & (\text{regulatory investment value} \times \text{cost of capital} + \text{total value of commissioned assets} \times (\text{TFVCA} - 1) \\ & + \text{term credit spread differential allowance} \times \text{TF} - \text{total revaluation}) \div (\text{TFrev} - \text{corporate tax rate} \times \text{TF}) \\ & + (\text{total depreciation} \times (1 - \text{corporate tax rate} \times \text{TF})) \\ & + \text{forecast operating expenditure} \times \text{TF} \times (1 - \text{corporate tax rate}) \\ & + (\text{closing deferred tax} - \text{opening deferred tax}) \times (\text{TF} - 1) \\ & + (\text{permanent differences} + \text{regulatory tax adjustments} - \text{utilised tax losses}) \times \text{corporate tax rate} \times \text{TF} \div (\text{TFrev} - \text{corporate tax rate} \times \text{TF}) \end{aligned}$$

The remainder of this section introduces the regulatory investment value (RIV) and regulatory tax allowance terms, which are used in the building blocks calculation, and then goes on to discuss how the timing factors and term credit differential allowance have been determined.

#### 4.1.1 Regulatory investment value

The RIV is a key input assumption in the return on investment component of the building blocks. It is defined as:

$$\text{total opening regulatory asset base (RAB) value} + \text{opening deferred tax}$$

The RIV series included in the BBAR before tax calculation is shown below. The RIV calculation is included in worksheet 1.0BBARx of the CPP financial model.

Table 4.3: Regulatory investment value

\$M	FY17	18	19	20	21	22	23
Opening RAB	1,528.0	1,600.3	1,679.0	1,865.2	2,000.3	2,139.7	2,310.1
Opening deferred tax	- 49.3	- 59.4	- 63.7	- 70.4	- 81.6	- 95.5	- 113.0
<b>RIV</b>	<b>1,478.7</b>	<b>1,540.9</b>	<b>1,615.3</b>	<b>1,794.8</b>	<b>1,918.7</b>	<b>2,044.1</b>	<b>2,197.1</b>

For the remainder of this document we refer to the RAB value and deferred tax balances as building block assumptions rather than referring to the RIV. How the RAB value is derived is outlined in chapter 5 and the deferred tax balance is discussed in section 8.6.

#### 4.1.2 Regulatory tax allowance

The regulatory tax allowance is an allowance for the tax expense the regulated entity is expected to incur. It represents the tax expense a regulated entity would likely incur if it was a stand-alone business. Accordingly it is determined based on the regulated profit and adjusted for permanent and timing differences as well as tax losses. Chapter 8 outlines how the regulatory tax allowance is determined.

### 4.1.3 Building block input assumptions

The BBAR calculation is made up of the input assumptions as outlined in the table below, which have been grouped into the building blocks. The table also references where each of the input assumptions are discussed in this document.

Table 4.4: Building block input assumptions

\$M – EXCEPT WHERE NOTED	FY19	20	21	22	23	REFERENCE
<b>RETURN ON INVESTMENT</b>						
Opening RAB	1,679.0	1,865.2	2,000.3	2,139.7	2,310.1	Section 6.1
Opening deferred tax	63.7	70.4	81.6	95.5	113.0	Section 8.6
Commissioned assets	226.5	179.1	186.9	221.1	226.4	Section 0
Cost of capital (%)	7.19%	7.19%	6.78%	6.78%	6.78%	Chapter 5
<b>RETURN OF INVESTMENT</b>						
Depreciation	64.5	69.0	74.0	79.2	84.0	Section 0
Revaluations	35.1	37.8	40.3	42.7	45.5	Section 6.2
<b>OPERATING EXPENDITURE</b>						
Operating expenditure	93.3	98.9	101.3	100.5	100.3	Chapter 7
<b>TAX</b>						
Permanent differences	0.1	0.1	0.1	0.1	0.1	Section 8.2
Regulatory tax adjustments	27.2	30.8	29.6	31.6	33.8	Section 8.3
Regulatory tax allowance	22.8	25.2	25.0	26.8	28.5	Chapter 8
<b>OTHER COMPONENTS</b>						
TCSD allowance	2.1	2.3	2.5	2.6	2.8	Section 9.1
Timing assumptions	(refer Table 9.2)					Section 9.2

#### Box 4.1: Building blocks IM requirement

Determination of revenue requirement - clause 5.3.2

Disclosure requirement – clauses 5.4.7(1)-(2)



## 5 COST OF CAPITAL

### Key Points

The cost of capital is a key assumption in the revenue requirement calculation.

- We have applied the current DPP WACC of 7.19% in the first two years of the CPP period and a forecast WACC of 6.78% for the remaining three years.
- We have proposed the use of a forecast WACC for the last three years of the CPP period because it better reflects the WACC that will likely apply to that period. This is a variation to the IMs.

The cost of capital assumption is applied in our revenue requirement in deriving the:

- return on investment allowance in the building blocks calculation (section 4.1);
- NPV of maximum allowable and building blocks allowable revenue (section 3.1); and
- timing factors (section 9.2).

The determination of WACC also has an impact on the forecast revaluation rate, which in turn affects our return of investment and RAB roll-forward.

This chapter outlines how we have determined our cost of capital assumption, with reference to the relevant regulatory requirements, and outlines why we have proposed a variation to the IMs.

### 5.1 Cost of capital applied in our proposal

The cost of capital applied in determining our revenue requirement is the cost of capital assumption applied in the current DPP requirements (FY19-20) and a forecast of the cost of capital that will apply when the Commission determines the cost of capital to apply for the next DPP period (FY21-25).

The cost of capital assumptions used in deriving the revenue requirement are outlined in the table below.

Table 5.1: Cost of capital applied in deriving the revenue requirement

	FY19	20	21	22	23
Cost of Capital	7.19%	7.19%	6.78%	6.78%	6.78%

IM clause 5.3.22 notes that the Commission, when taking into account the cost of capital in making a CPP determination, will take into account the 67th percentile of WACC that is used in the DPP applying at the start of the CPP period.

Accordingly, for the first two years of the CPP period, we have applied the 67th percentile for the current DPP WACC of 7.19%.

We have applied an alternative WACC for the remaining three years of the CPP period, which is potentially inconsistent with how the Commission may set our prices. We have applied the alternative cost of capital assumption because we believe it better meets the purpose of the regulation.

### 5.2 Revenue requirement reflects expected allowable revenues

Our revenue requirement reflects the impact of a 'WACC change reopener' in FY21. This approach to disclosing our revenue requirement is a deviation from the IMs and how the Commission may choose to approve our revenue requirement. We, however, believe that it better meets the purpose of Part 4 of the Act if we present our revenue requirement, and calculate our prices, based on what the average revenue requirement will likely be over the regulated period.

Clause 5.3.22 of the IMs notes that the Commission will apply the DPP WACC for the whole of the regulatory period when making a CPP determination. However, clause 5.6.7 also provides for the resulting CPP to be reconsidered when the WACC for the new DPP period is determined (WACC change reopener).

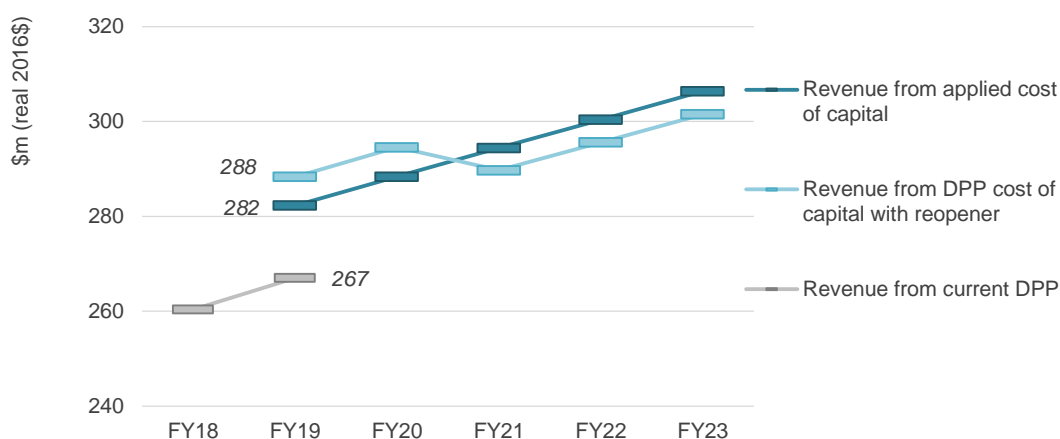
We know a WACC change reopener will occur part way through the CPP period due to the Commission being required to determine a DPP for price regulated suppliers prior to the start of the FY21 financial year. Accordingly, we have presented our revenue requirement and associated information in our proposal consistent with what the regulatory requirements prescribe to occur.<sup>5</sup>

If the current DPP WACC is applied throughout our CPP period, then it is more likely than not that there would be a larger increase in revenue in FY19 than we are proposing, as the price path derived will likely overstate the impact on revenue during the full CPP period. This would be followed by a correction in FY21 when the WACC change reopener is applied, and so customers would experience multiple, and potentially significant, price changes as a consequence.

Our approach means that we try to minimise future change in revenue by using a forecast of WACC, revaluation rate and cost of debt from FY21-23, rather than the assumptions included the current DPP WACC.

The below graph demonstrates the effect of our approach.

Figure 5: Cost of capital assumptions comparison



The below table outlines the effect the applied cost of capital, revaluation rate and cost of debt assumptions has on our revenue requirement relative to the current DPP assumptions.

<sup>5</sup> As a point of reference, Appendix A of this document presents all revenue requirement information consistent with the application of the DPP cost of capital for the whole CPP period.

Table 5.2: Impact of applied cost of capital

\$M - EXCEPT WHERE NOTED	1-APR-18	FY19	20	21	22	23
<b>APPLIED COST OF CAPITAL</b>						
Applied cost of capital (%)		7.19%	7.19%	6.78%	6.78%	6.78%
Revenue requirement based on applied cost of capital		282.3	288.4	294.4	300.4	306.4
PV of allowable revenues	1,241.3					
<b>DPP COST OF CAPITAL</b>						
DPP cost of capital (%)		7.19%	7.19%	7.19%	7.19%	7.19%
Revenue requirement based on DPP cost of capital		288.0	294.2	300.4	306.5	312.6
PV of allowable revenues	1,256.5					
<b>DPP COST OF CAPITAL WITH REOPENER</b>						
DPP costs of capital with reopener (%)		7.19%	7.19%	6.78%	6.78%	6.78%
Revenue requirement based on DPP cost of capital with reopener		288.0	294.2	290.0	295.9	301.8
PV of allowable revenues	1,241.3					

The table above demonstrates that the revenue requirement we have smoothed over the CPP period has the same PV as the revenue requirement based on the DPP cost of capital with the reopener.

The WACC that will actually apply to FY21–23 will be determined in FY20 when the Commission sets the WACC for the DPP period that succeeds the current DPP period.

We have proposed a variation to the IMs that would allow the Commission to use the current DPP WACC to calculate the price path for FY19-20 and a forecast of the DPP WACC for FY21-23.<sup>6</sup>

### 5.2.1 How we forecast the cost of capital

We have forecast the cost of capital for FY21-23 using the methodology specified in the IMs.<sup>7</sup>

The input assumptions used in forecasting the WACC are outlined the table below.

<sup>6</sup> Chapter 8 of the Application outlines the legal basis we proposed the IM variation.

<sup>7</sup> IM clause 4.4.1- 4.4.5.

Table 5.3: Forecast WACC

PARAMETER	IM CLAUSE REFERENCE	INPUT ASSUMPTION
Risk-free rate	4.4.3	3.60%
Average debt premium	4.4.4	1.90%
Leverage	4.4.2(1)	42%
TAMRP	4.4.2(7)	7.0%
Corporate tax rate	4.4.2(4)	28.0%
Debt issuance costs	4.4.2(6)	0.20%
Equity beta	4.4.2(5)	0.60
67 <sup>th</sup> percentile WACC z score	4.4.5(3)	0.440
Standard error	4.4.5(3)	0.0101
67 <sup>th</sup> percentile vanilla WACC	4.4.5	6.78%

In deriving the forecast WACC all the input assumptions other than risk-free rate, average debt premium and corporate tax rate are specified by the IMs.

We have used a forecast of the risk free rate and average debt premium from an independent source, NZIER, who prepared it on a basis consistent with how these assumptions will be observed when the Commission makes its determination in FY20.

The IMs define the corporate tax rate as the average of the corporate tax rates that will apply during the 5 year period. We have assumed no change in corporate tax rate from the current rate of 28%.

We have applied an alternative WACC because in our view it is more likely than not that the risk free rate and average debt premium observed for the DPP WACC set in FY20 will be lower than those specified in the current DPP WACC.

Providing a forecast of the lower risk free rate and average debt premium in our CPP WACC better smooths the price adjustments for customers and is more consistent with the Part 4 purpose.

While the forecast of the risk free rate and average debt premium provided by NZIER are unlikely to be the actual rates that eventuate in FY20, we believe they are more likely than not to be closer than the current DPP rates.

#### Box 5.1: Cost of capital IM requirements

Determination of revenue requirement - clauses 5.3.22 and 5.6.7

Forecast of applied WACC - clauses 4.4.1 - 4.4.5

Disclosure requirement – clause 5.4.27

## 6 RAB ROLL-FORWARD

### Key Points

- The closing RAB value for each year is determined by adding the value of commissioned assets and revaluations to the opening RAB value and deducting depreciation and disposals.
- Existing assets have been allocated during the forecast period using the 2016 asset allocation assumptions.
- Revaluations are calculated consistent with the IM requirements and are determined based on information sourced from Statistics New Zealand.
- Depreciation is determined consistent with the IM requirements and relies on asset life assumptions specified in the IM Requirements.
- The value of commissioned assets is determined from forecast capital expenditure after taking into account asset allocation, escalation and works under construction assumptions.
- Asset disposals are forecast to increase consistent with expenditure increases on assets that have historically driven asset disposals.

The RAB roll forward and its components are key drivers in a number of areas in the building blocks revenue calculation. The opening RAB value is used in the determination of return on investment; the depreciation component of the RAB roll-forward is the return of investment and the revaluation component of the RAB roll-forward is the revaluation allowance.

The closing RAB value is also used to determine the next years return on investment, return of investment and revaluation allowances.

### 6.1 RAB roll-forward

The forecast RAB and its roll-forward components for the Next Period are shown below.

Table 6.1: RAB roll-forward

\$M	FY17	18	19	20	21	22	23
Opening RAB	1,528.0	1,600.3	1,679.0	1,865.2	2,000.3	2,139.7	2,310.1
Value of commissioned assets	110.9	116.0	226.5	179.1	186.9	221.1	226.4
Depreciation	- 61.2	- 62.2	- 64.5	- 69.0	- 74.0	- 79.2	- 84.0
Revaluations	32.0	34.4	35.1	37.8	40.3	42.7	45.5
Disposals	- 9.4	- 9.5	- 11.0	- 12.9	- 13.8	- 14.3	- 14.6
<b>Closing RAB</b>	<b>1,600.3</b>	<b>1,679.0</b>	<b>1,865.2</b>	<b>2,000.3</b>	<b>2,139.7</b>	<b>2,310.1</b>	<b>2,483.4</b>

Descriptions of each of the RAB components (total value of commissioned assets, revaluation, depreciation and disposals) are included later in this chapter.

#### Box 6.1: RAB roll-forward IM requirements

Determination of revenue requirement - clause 5.3.6

Disclosure requirement – clause 5.4.11

### 6.1.1 Asset allocation – Existing Assets

We deliver two regulated services, being electricity distribution and gas distribution services. In delivering these services we own assets that are shared between the services. The regulatory requirements' cost allocation methodologies specify how these assets are to be allocated.

The allocation methodologies require assets to be identified as directly attributable to a service or not directly attributable (shared assets). The majority of our assets are directly attributable and are represented as such in our proposal.

The remainder of this section outlines how we allocate, in accordance with the regulatory requirements, assets that are shared in delivering the two regulated services.

In accordance with IM clause 5.3.6 the asset allocation ratios applied in allocating shared assets throughout the next period are the ratios we used to determine the FY16 RAB values. How new assets are allocated is discussed in section 6.4.5.

The assets that are shared between the regulated services are corporate assets. The value of our existing shared assets is \$28.5m and the allocated value represents 1.5% of our RAB as 31 March 2016 and forecast to represent 0.4% as at 31 March 2023.

In applying the regulatory requirements in determining our allocations for the 2016 disclosure, we note that:

- We applied the information disclosure cost allocation input methodologies, being IM clauses 2.1.2-2.1.5;
- We elected to apply the accounting-based allocation approach (ABAA);
- Consistent with the IMs we have applied fixed asset NBV as a proxy allocator for shared non-network assets because a causal allocator was not available. A causal relationship cannot be established because there is no determinable factor that influences the utilisation of these assets. The fixed asset NBV proxy allocator is used because the shared non-network assets are created and used within our business to support our asset management functionality;
- The allocators applied in our distribution services disclosure are consistent with the allocators applied in our disclosure of gas distribution services. No asset costs have been allocated to non-regulated services due to the application of ACAM; and
- The values allocated to regulated services do not exceed the total regulated service asset values.

In accordance with IM clause 5.4.9 and the modification as outlined in section 7.2.1, Schedule B includes information supporting the current asset allocators applied to existing assets.

In line with the modification we confirm that the allocation methodology used for existing assets for the year ended 31 March 2017 is to be the same as the allocation methodology used in the allocation of regulatory assets for the year ended 31 March 2016.

We also confirm:

- there is no material sale of assets, between the start of the assessment period and the date of the CPP application, or is highly probable. Accordingly there have not been any changes to cost allocations as a result - as per IM clause 5.3.5(2); and
- no alternative methodologies with equivalent effect have been applied for cost allocation and accordingly there is no cost allocation disclosure made consistent with clause 5.4.33.

**Box 6.2: Asset allocation - existing assets IM requirement**

Determination of revenue requirement - clause 5.3.6

Price path information – clause 5.4.9 and subsequent modification

**6.2 Revaluations**

The RAB is revalued annually consistent with clause 5.3.10 of the IMs. The table below outlines the revaluations applied for each year of the next period.

Table 6.2: Revaluations

\$M	FY17	18	19	20	21	22	23
Revaluations	32.0	34.4	35.1	37.8	40.3	42.7	45.5

Clause 5.3.10 requires the opening RAB to be revalued each year by applying the CPP revaluation rate. Assets which have reached the end of their physical asset life that are disposed of or lost are not revalued.

The CPP revaluation rate is derived in accordance with the formula set out in clause 5.3.10(4) of the IMs. Worksheet 1.0RABx of the CPP financial model calculates the revaluation rates and amount for the forecast period.

The CPP revaluation rates for the forecast period are outlined in the table below.

Table 6.3: CPP revaluation rate

	FY17	18	19	20	21	22	23
CPP revaluation rate	2.11%	2.17%	2.11%	2.06%	2.05%	2.02%	2.00%

Clause 5.3.10(4) specifies the revaluation rate as:

$$\frac{\text{forecast CPI for the quarter at the end of the disclosure year}}{\text{forecast CPI for the quarter at the end of the preceding disclosure year}} - 1.$$

Forecast CPI for CPP revaluation means:

- In the CPP regulatory period and up to the end of the DPP regulatory period, the forecast CPI for DPP revaluation;
- For each last quarter for which a forecast of the change in headline CPI has been included in the Monetary Policy Statement last issued by the Reserve Bank of New Zealand prior to the date for which the vanilla WACC applicable to the relevant DPP regulatory was determined. The CPI last applying under paragraph (a) extended by the forecast change; and
- In respect of later quarters, the forecast last applying under paragraph (b), adjusted such that an equal increment or decrement made to that forecast for each of the following three years results in the forecast for the last of those years being equal to the target midpoint for the change in headline CPI set out in the Monetary Policy Statement referred to in (b).

**Box 6.3: Revaluations IM requirement**

Determination of revenue requirement - clause 5.3.10

Disclosure requirement – clause 5.4.13

## 6.3 Depreciation

Depreciation is the sum of depreciation for existing CPP assets and additional CPP assets. Existing CPP assets are those assets included in the closing RAB at the end of the last year of the Current Period. Additional CPP assets are those assets forecast to be commissioned during the Next Period.

Depreciation is calculated in worksheet 1.0RABx of the CPP financial model.

Forecast depreciation for the Next Period is shown below.

Table 6.4: Depreciation

\$M	FY17	18	19	20	21	22	23
Depreciation for existing CPP assets	61.2	59.6	58.9	56.9	57.0	56.9	56.1
Depreciation for additional CPP assets	-	2.6	5.6	12.2	17.0	22.3	27.9
<b>Total depreciation</b>	<b>61.2</b>	<b>62.2</b>	<b>64.5</b>	<b>69.0</b>	<b>74.0</b>	<b>79.2</b>	<b>84.0</b>

The standard depreciation method is applied to all assets.

### 6.3.1 Depreciation disclosure exemption

IM clause 5.4.12 requires depreciation information to be provided by asset category. However, we have sought, and the Commission has provided a modification to this requirement.

We sought to modify this requirement so that we only need to provide the total sum of depreciation where it uses the standard depreciation method, rather than the sum of depreciation by either asset category or type of asset. We sought the modification on the basis that we considered the added disaggregation required by the IMs unnecessary and the cost of complying was disproportionately high.

### 6.3.2 Physical asset lives

The physical asset lives applied to commissioned assets are direct inputs into the CPP financial model (refer to direct inputs worksheet, input reference 3.3-i8) and are consistent with the asset lives for CPP commissioned assets in Schedule A Table A.2.

For existing CPP assets, the implied physical asset lives are consistent with the standard physical asset lives required in Schedule A Table A.1.

### 6.3.3 Land and easements

In accordance with IM clause 5.3.7 (3) no depreciation is calculated for land and easements. We have not forecast any expenditure on fixed life easements in our proposal.

### 6.3.4 Network spares

The network spares included in our opening RAB remain constant throughout the CPP period and are not depreciated.

#### Box 6.4: Depreciation IM requirement

Determination of revenue requirement - clause 5.3.7

Disclosure requirement – clause 5.4.12 and subsequent modification



## 6.4 Value of commissioned assets

The value of commissioned assets is the value of assets that have been added to the RAB during the forecast period. It is determined from the capital expenditure forecast<sup>8</sup> and after factoring in cost escalations, cost of finance and works under construction (WUC).

The value of commissioned assets and its components for the Next Period is shown below.

Table 6.5: Value of commissioned assets

\$M	FY17	18	19	20	21	22	23
Capital expenditure (real 2016 \$m)	123.2	148.5	179.1	171.2	181.5	173.6	167.6
Cost escalation	1.1	3.5	11.0	16.1	22.0	26.0	30.6
Cost of finance	1.1	2.1	3.8	1.5	2.3	2.7	2.5
Opening WUC	47.4	61.9	100.1	67.4	77.1	96.0	77.0
Closing WUC	- 61.9	- 100.1	- 67.4	- 77.1	- 96.0	- 77.0	- 51.3
<b>Commissioned assets</b>	<b>110.9</b>	<b>116.0</b>	<b>226.5</b>	<b>179.1</b>	<b>186.9</b>	<b>221.1</b>	<b>226.4</b>

We have prepared real Capex forecasts by portfolio and asset type. These forecasts are collated in module '3.3 Capex price escalation' of the CPP financial model and escalated into nominal dollars using price escalators calculated in module '3.1 NZIER indices'. The cost of finance is added to the nominal expenditure and the forecast value of commissioned assets is determined in worksheet 3.3 COF&VCA.

We use one of two different methods for calculating forecast value of commissioned assets from each portfolio nominal Capex forecast. We have called the two methods 'specific date commissioning' and 'simple commissioning'.

Specific date commissioning is applicable to identified major projects and the ERP project. The Capex forecasts for these projects are split into phases and a date is specified for the end of each phase when the asset is forecast to be commissioned. Annual Capex is assumed to be incurred evenly between the start of a financial year and either the end of that financial year or the date that the phase is commissioned, whichever occurs first. The cost of finance is applied on a monthly compounding basis to the opening balance of the project's works under construction. The forecast value of commissioned assets for one of these projects is the balance of works under construction at the time the project is commissioned.

Under the simple commissioning method, the forecast value of commissioned assets is calculated as nominal Capex less/plus any increase/decrease in works under construction in each year. We have applied this method to all projects that are not deemed suitable for the specific date commissioning method.

We have assumed in our calculations that Capex is incurred evenly throughout a year and that assets do not incur a cost of financing as these projects do not meet our qualifying criteria for capitalising interest. We assume that the opening works under construction maintains the same proportion to Capex as established in FY2016 less an efficiency factor applied.

### 6.4.1 Easements

Our capital expenditure forecasts include a limited amount of expenditure on easements. We have assumed that the commissioning value of these assets is not more than the market value that a registered valuer would determine on the commissioning date of the assets.

This treatment is consistent with clause 5.3.11(1)(b).

<sup>8</sup> Capex forecasts include capitalisation of internal labour costs.

### 6.4.2 Spares

In preparing our forecast value of commissioned assets we have assumed that the current level of network spares will remain the same throughout the next period. Our forecast value of commissioned assets therefore does not include any network spares.

This treatment is consistent with clause 5.3.11(1)(d).

### 6.4.3 Capital contributions

Our forecast value of commissioned assets includes assets that are partially funded by capital contributions. In the circumstances where such contributions are taken into account when applying Generally Accepted Accounting Practices (GAAP), the cost of the asset is determined by applying GAAP reduced by the amount of the capital contributions.

This treatment is consistent with clause 5.3.11(1)(h).

### 6.4.4 Internal cost capitalisation

In accordance with GAAP we capitalise on to the cost of asset, internally incurred expenditure. Our internally incurred expenditure consists of the cost of employees that are directly attributable to the creation of an asset. Capitalising internal costs ensures there is consistency between the treatment of costs incurred externally and internally. For example, where we chose to use an external designer the cost is included in the cost of the asset. Similarly, an internally employed designer's costs should also be included in the cost of the asset.

The internal cost capitalisation included in the forecast has been derived consistent with our internal cost capitalisation procedure. The current internal capitalisation procedure has been applied in the FY 2015 and 2016 disclosures.<sup>9</sup> The two areas where internal cost capitalisation is applied are network Capex and ICT Capex.

Network Capex internal cost capitalisation is forecast by making an assessment for each year regarding the amount of directly attributable cost that is to be incurred and therefore is to be capitalised. A ratio is then determined and applied to network Capex. The table below outlines the forecast internal cost capitalisation amount and rate. It also includes the applicable forecast capital expenditure amount used to determine the internal capitalisation rate. The applicable forecast capital expenditure includes capital contributions so the forecast internal cost capitalisation amount is applied across all costs to which the capitalisation applies.

Table 6.6: Network internal cost capitalisation

\$M - EXCEPT WHERE NOTED	FY19	20	21	22	23
Forecast internal cost capitalisation amount	12.8	13.7	13.9	13.8	13.7
Forecast capital expenditure*	168.0	169.4	174.1	169.3	165.1
<b>Internal cost capitalisation rate</b>	<b>7.63%</b>	<b>8.11%</b>	<b>7.99%</b>	<b>8.16%</b>	<b>8.32%</b>

\* Gross of capital contributions and excluding internal cost capitalisation.

The network internal cost capitalisation forecast is based on the same base-step-trend forecasting approach as described in our discussion of SONS.

The expenditure that is reflected in the internal cost capitalisation forecast relates to:

- the ongoing base expenditure amount (i.e. FY16 expenditure); and
- the capacity increases required to deliver the forecast work program.

<sup>9</sup> Prior to FY15 we applied an alternative procedure for internal cost capitalisation. Section 10.1.2 provides further details on the change in approach.

The forecast capital expenditure used in the network internal cost capitalisation rate is derived from the CPP financial model.

Our forecast for ICT Capex does not distinguish between internally or externally sourced resources and forecast ICT Opex excludes any costs that would be capitalised. Accordingly, any internally incurred costs that relate to the creation of assets will be capitalised as they are incurred. This is consistent with historical practices.

#### 6.4.5 Asset allocation for commissioned assets

Forecast asset allocation ratios have been applied to indirectly attributable capital expenditure included in the ICT and Facilities expenditure portfolios.

The regulatory value of indirectly attributable commissioned assets is determined by applying the forecast fixed asset allocation rate. The fixed asset allocation rate is consistent with the rate applied in the March 2016 disclosures except that the calculation forecasts changes in our EDBs business. This is consistent with clause 5.3.11(2) of the IMs.

The table below outlines the forecast cost allocation rates and the key assumptions.

Table 6.7: Forecast asset allocation rates

\$M	FY17	18	19	20	21	22	23
Electricity NBV	1,662.3	1,743.9	1,909.6	2,040.9	2,172.2	2,343.3	2,519.5
2016 Gas NBV	350.4	350.4	350.4	350.4	350.4	350.4	350.4
<b>Forecast asset allocation rate</b>	<b>82.59%</b>	<b>83.27%</b>	<b>84.50%</b>	<b>85.35%</b>	<b>86.11%</b>	<b>86.99%</b>	<b>87.79%</b>

In applying the above methodology we have forecast the change in the fixed asset NBV of the electricity distribution services business by trending it off the historical weighted average Network RAB relative to the fixed asset NBV.

#### 6.4.6 Cost of financing

We apply a cost of finance to capital projects in accordance with GAAP. We only capitalise interest on projects that take longer than six months to construct and have a project value greater than half a million dollars.

We describe in section 0 how we apply either the simple commissioning or specific date commissioning approach to each portfolio. We assume, for the simple commissioning approach, that these assets do not meet the GAAP qualifying criteria and their costs therefore do not include a cost of financing.

For portfolios where we apply our specific date commissioning approach, the cost of financing is calculated by applying the forecast weighted average of borrowing costs to the opening works under construction balance on a monthly compounding basis.

Our weighted average borrowing cost is forecast using our projected cost of debt, extracted from our internal corporate modelling. It takes into account the assumptions we make for refinancing debt facilities, and also uses the existing interest rate hedging we have in place. This rate is applied as part of our usual business planning and budgeting processes, and is also compliant with the requirement that it is the weighted average of the costs applicable to borrowings outstanding in each disclosure year.

Table 6.8: Cost of financing

\$M - EXCEPT AS OTHERWISE IDENTIFIED	FY17	18	19	20	21	22	23
Forecast weighted average borrowing cost	6.57%	5.23%	6.11%	6.12%	5.69%	5.51%	5.61%
Cost of financing - simple commissioning approach	-	-	-	-	-	-	-
Cost of financing - specific date commissioning approach	1.1	2.1	3.8	1.5	2.3	2.7	2.5

### 6.4.7 Cost escalation

Our Capex forecasts are prepared in 2016 real dollars. For the CPP period we escalate our forecasts into nominal dollars using escalators developed from forecast generic and specialised price indices. These indices have been independently forecast by NZIER.

Our approach for price escalation is based on that adopted by Orion in their CPP proposal. Orion cited the approaches used by Ofwat (the regulator of water companies in England and Wales), Ofgem (the UK energy networks regulator), and the Australian Energy Regulator to support their approach.

The Commission stated in its final Orion CPP determination that, overall, they considered this approach to be appropriate and broadly similar to that used in other jurisdictions and by Transpower in its Opex Capex review for the period 2012/13 to 2014/15.<sup>10</sup>

We use a forecast of CPI to escalate Capex in the assessment period as this better aligns with our FY17 actual spend and FY18 budget, both of which are constrained by the DPP Capex allowance.

#### Independent forecasts

The following table outlines the NZIER forecasts that we have used to escalate Capex in our proposal.

Table 6.9: NZIER index forecasts

COST ITEM FOR ESCALATION	CURRENCY	FY19	20	21	22	23
Aluminium	USD	3.93%	1.43%	3.12%	3.73%	4.39%
Copper	USD	6.90%	2.77%	3.86%	2.43%	1.42%
Steel	USD	11.93%	5.18%	0.15%	4.17%	3.09%
Other capital goods	NZD	1.84%	1.88%	1.89%	2.40%	2.40%
Engineers	NZD	1.38%	1.96%	2.14%	2.04%	2.14%
Professional	NZD	1.75%	2.03%	2.00%	1.93%	2.00%
Project managers	NZD	0.80%	1.38%	1.52%	1.62%	1.97%
IT labour costs	NZD	1.75%	2.03%	2.00%	1.93%	2.00%
Capex labour	NZD	1.96%	2.57%	2.69%	2.58%	2.89%

Where the forecasts are based in US dollars, we adjust these for forecast changes in the exchange rate. NZIER also provided us with an independent forecast of NZD/USD exchange rates for the CPP period. The forecast rates we have used in our proposal are summarised in the following table:

Table 6.10: NZIER NZD/USD exchange rate forecast

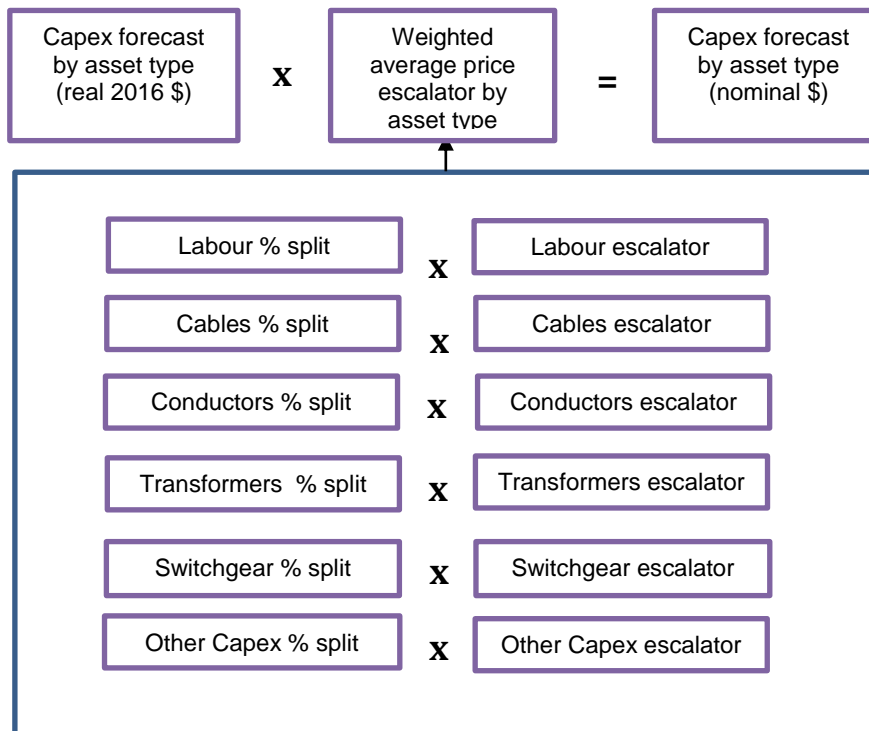
	FY19	20	21	22	23
Forecast NZD/USD exchange rate	0.69	0.67	0.67	0.67	0.67

#### Escalation method for the CPP period

Our approach to escalating our forecast real costs is illustrated in the table below.

<sup>10</sup> Commerce Commission Final decision for Setting the customised price-quality path for Orion New Zealand Limited [2013] NZCC 21, 29 November 2013, Paragraph N27

Figure 6: Overview of capital expenditure escalation method



In the first step we disaggregate our real Capex forecasts by asset type.

Secondly, we derive a weighted average price escalator that will apply to the specific asset type. To do this we determine the typical percentage split of the asset into six common input components. We then apply a price escalation forecast to each input component.

The input component forecasts are a weighted average of the forecast generic and specialised price indices provided to us by NZIER. The weighting assumptions are summarised in Table 6.11 below.

The resulting weighted average price escalation takes into account the specific input price pressures for each asset type.

In the third and final step, the real Capex forecasts are inflated by the weighted average price escalation to derive a nominal dollar Capex forecast.

The six input components and the assumptions we have used to develop a price escalation index for each of them is detailed in the following table.

Table 6.11: Capital component price escalation assumptions

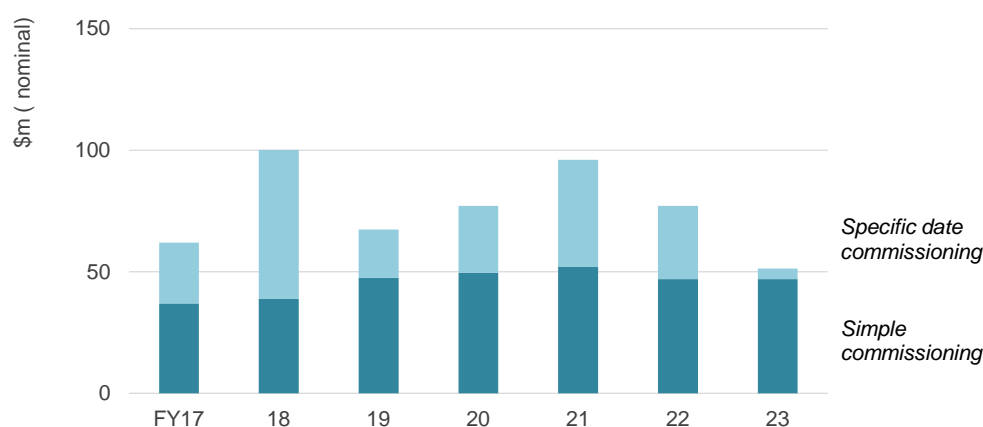
COMPONENT	COST ESCALATOR WEIGHTINGS
Labour	85% Capex labour 3.75% Project managers 3.75% Professionals 3.75% IT labour costs 3.75% Engineers
Cables	95% Aluminium 5% Copper
Conductors	100% Aluminium
Transformers	50% Copper 45% Steel 5% Other capital goods
Switchgear	75% Copper 25% Steel
Other Capex	100% Capital goods price index

The cost escalator weightings are a management judgement derived from our review of our historical costs and cost escalator weightings applied by other industry participants, including those applied in the Orion CPP proposal.

#### 6.4.8 Works under construction

As outlined in section 0 we have applied specific date commissioning and standard commissioning assumptions in the determination of commissioned assets. These commissioning approaches also impact the value of works under construction (WUC). Figure 7 demonstrates the impact of the two approaches on the works under construction balances for the forecast period.

Figure 7: Works under construction closing balance



#### 6.4.9 Specific date commissioning

Specific date commissioning commissions assets on the dates the assets are forecast to become used and useful.

Table 6.12: Specific date commissioning works under construction

\$M	FY17	18	19	20	21	22	23
Opening WUC	11.9	25.0	61.3	19.9	27.6	44.1	30.2
Cost of financing	1.1	2.1	3.8	1.5	2.3	2.7	2.5
Capital expenditure	11.9	34.2	41.4	27.1	30.2	37.4	30.1
Commissioned assets	-	-	- 86.6	- 21.1	- 15.9	- 54.0	- 58.3
<b>Closing WUC</b>	<b>25.0</b>	<b>61.3</b>	<b>19.9</b>	<b>27.6</b>	<b>44.1</b>	<b>30.2</b>	<b>4.4</b>

For assets commissioned using our specific date commissioning method, the works under construction balance builds up as Capex is incurred in the early part of the CPP then decreases in the later part as most projects are completed. The WUC roll forward for assets commissioned using the specific date method is shown in the table above.

#### 6.4.10 Simple commissioning

For our simple commissioning method we have assumed that the closing balance of works under construction will remain in proportion to the Capex forecast for each year. We have used FY2016 as a base year to establish the percentage of nominal Capex to closing works under construction. We hold this percentage constant from FY2017 to FY2018 then apply an efficiency decrease for the CPP period. The efficiency is based on the implementation of our enterprise resource planning (ERP) system and improved processes. The WUC roll forward for assets commissioned using the simple commissioning method is shown below.

Table 6.13: Simple commissioning works under construction

\$M	FY17	18	19	20	21	22	23
Opening WUC	35.5	37.0	38.7	47.4	49.5	51.9	46.9
Cost of financing	-	-	-	-	-	-	-
Capital expenditure	112.4	117.8	148.7	160.2	173.4	162.2	168.2
Commissioned assets	- 110.9	- 116.0	- 140.0	- 158.1	- 171.0	- 167.1	- 168.1
<b>Closing WUC</b>	<b>37.0</b>	<b>38.7</b>	<b>47.4</b>	<b>49.5</b>	<b>51.9</b>	<b>46.9</b>	<b>47.0</b>

#### 6.4.11 Commissioned assets disclosure

IM clause 5.4.14 and subsequent modification requires us to disaggregate our forecast value of commissioned assets by sources and types. We have summarised this information in the following table:

Table 6.14: Value of commissioned assets disclosures

\$M	FY17	18	19	20	21	22	23
All other commissioned assets	110.9	116.0	226.5	179.1	186.9	221.1	226.4
<b>Total forecast commissioned assets</b>	<b>110.9</b>	<b>116.0</b>	<b>226.5</b>	<b>179.1</b>	<b>186.9</b>	<b>221.1</b>	<b>226.4</b>

Our forecast value of commissioned assets does not include any of the following:

- Assets acquired from a related party;
- Assets transferred from unregulated services;
- Assets acquired from another regulated supplier; or
- Assets transferred from other regulated services.

As outlined in section 6.4.2, our value of commissioned assets does not include any forecast of network spares.

Table 2 of Schedule E requires us to provide historical, current and forecast values of commissioned assets by defined Capex categories. We have sought, and the Commission has provided an exemption from the requirement to complete this table. This exemption was sought on the basis that the historical information does not exist and we consider it unhelpful to the consideration of, and consultation on, our proposal.

We have also sought a modification as a result of a drafting error in clause 5.4.14. We have applied subclause 5.4.14(3) as if “subclause (1)(e)” was replaced by “subclause (1)(c)”, and applied subclause 5.4.14(4) as if “subclause (1)(f)” was replaced by “subclause (1)(d)”.

#### 6.4.12 Related Party Transactions

In the 2016 disclosure year we acquired a Remote Access Power Supply (RAPS) unit for \$0.1m from Powerline Limited (trading as BasePower), a related party. Powerline is a wholly owned subsidiary of Powerco.

The price we paid in 2016 for the RAPS unit was based on the cost to Powerline plus a 17.5% margin. In accordance with clause 2.2.11(5)(a)(i) the cost of the commissioned asset recognised in the 2016 disclosure was the price we paid.

RAPS provide an option as a modern replacement asset for end-of-line, remote rural distribution feeders. Installing a RAPS unit to supply a small customer connected to the end of long distribution feeder can be more cost effective than renewing the overhead line. When the end of a remote rural line requires replacement, we undertake an economic evaluation of installing a RAPS unit compared to overhead line renewal.

We are not aware of any other product on the market that provides a viable alternative. Accordingly, when procuring the RAPS units we rely on the economic evaluation of the RAPS units compared to overhead line renewal rather than a competitive tender process.

Our forecast does not include the procurement of any services to be undertaken by related parties. We note, however, that where the RAPS solution provided by Powerline is economically advantageous we will consider it on a case by case basis.

#### Box 6.5: Assets commissioned and works under construction IM requirement

Determination of revenue requirement - clauses 5.3.11 and 5.3.12

Disclosure requirement – clauses 5.4.14, 5.4.16, D12 and subsequent modifications

### 6.5 Asset disposals

Disposed assets are assets which are sold or transferred, and accordingly their asset values are removed from the RAB. The forecast value of asset disposals during the next period is outlined in the table below.

Table 6.15: Asset disposals

\$M	FY17	18	19	20	21	22	23
Asset disposals	9.4	9.5	11.0	12.9	13.8	14.3	14.6

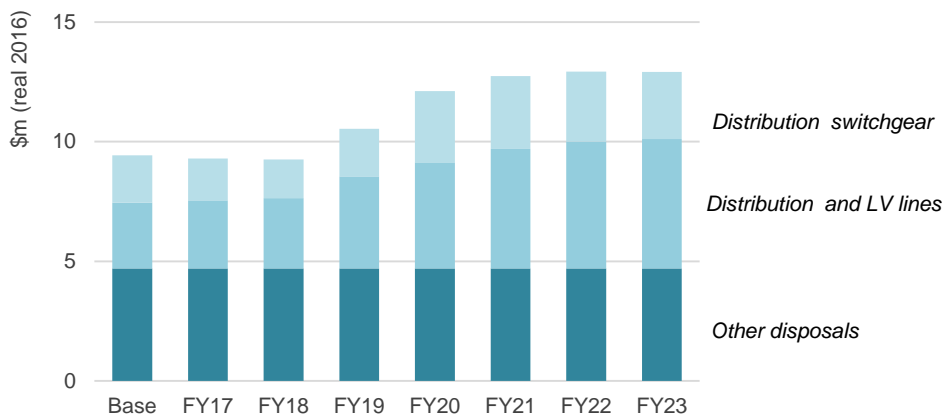
We have used a base-step-trend methodology to forecast disposals.

The assumptions applied in the asset disposals forecast are:

- distribution and LV lines asset disposals are forecast to increase consistent with the increase in renewals expenditure on distribution lines;
- distribution switchgear asset disposals are forecast to increase consistent with the increase in growth and security expenditure within the reliability portfolio; and
- all other asset disposals are forecast to remain consistent with the base year assumption.



Figure 8: Asset disposals by asset description



### 6.5.1 Base year assumption

The base-step-trend forecast relies on an accurate base year from which to forecast future disposals. In applying the base-step-trend approach to disposals we used an average of historical disposals as our baseline data, rather than a single base year, as it represents a wide range of different weather patterns and disposal events.

### 6.5.2 Distribution and LV lines asset disposals

Distribution and LV lines asset disposals are forecast to increase consistent with the increase in renewals expenditure on distribution lines. Distribution and LV lines asset disposals have historically represented some 29% of the total value of asset disposals.

Our review of historical distribution and LV lines disposals showed that 70% of the disposals related to crossarms and poles. The crossarms and poles disposals' value is high because they have traditionally been replaced earlier than the years provided for in the IMs (for example crossarms on our network typically last 35-40 years, compared to the 45/60<sup>11</sup> years in the IMs). Our increase in expenditure on crossarms and poles during the next period is forecast to create a corresponding increase in asset disposals as the increase in expenditure represents the increase in replacement required to deal with an ageing asset stock.<sup>12</sup>

Another significant component of the distribution and lines disposals is conductor disposals. We are expecting an increase in this at a rate greater than the relative increase in renewals expenditure. This is because we are planning to increase our replacement of a specific conductor type. The conductor being replaced will be at various stages through its assumed useful life and will therefore have varying book values at the time of disposal.

We are not aware of any other reason to adjust the base year assumption for the remaining distribution and LV lines disposals.

Accordingly, on average we believe it is appropriate to forecast an increase in distribution and LV lines disposals relative the increase in renewals expenditure on these assets.

### 6.5.3 Distribution switchgear

Distribution switchgear asset disposals are forecast to increase relative to the increase in growth and security expenditure within the reliability portfolio. Distribution switchgear asset disposals have historically represented some 21% of the total value of asset disposals.

<sup>11</sup> 45 years if on a wooden pole, 60 if on a concrete pole.

<sup>12</sup> Chapter 15 of the 2017 AMP.

The reliability portfolio expenditure generally relates to the installation of new reclosers and sectionalises on the distribution network (automation devices). These installations replace existing pole mounted switches, making them redundant. The removal of these switches is what has driven the value of historical disposals in this area.

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#### 6.5.4 Other asset disposals

All other disposals are forecast to remain consistent with the base year assumption. In making this assumption we have considered:

- Distribution substations and transformers asset disposals, which historically represented some 28% of asset disposals, are expected to remain flat as renewal expenditure in this area is forecast to stay flat and consistent with historical practices: and
- The growth and security projects proposed for the next period. These projects are not forecast to materially affect the base-line assumption.

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#### 6.5.5 Asset disposals disclosures

IM clause 5.4.15 requires the value of asset disposals on an allocated and unallocated basis to be separately identified for:

- Assets expected to be sold to a related party
- Assets transferred to another part of the EDB
- All other disposed assets.

Forecast asset disposals consists only of network assets that are directly attributable and none of the asset disposals are forecast to be disposed of to a related party or another part of the EDB. Accordingly the assets expected to be sold to a related party and asset transferred to another part of the EDB is nil and the unallocated opening RAB values and opening RAB values of all other disposed assets is the same.

#### **Box 6.6: Asset disposals IM requirement**

Determination of revenue requirement - clause 5.3.6

Disclosure requirement – clause 5.4.15

## 7 OPERATING EXPENDITURE

### Key Points

- The operating expenditure allowance is based on our forecast Opex as outlined in the Main Proposal.
- The operating expenditure allowance has been adjusted to allocate shared costs to the regulated portion of the business and escalated to take into account forecast general price increases and any additional increases in the cost of specific inputs.

Forecast operating expenditure reflects our Opex forecast for the next period in accordance with clause 5.3.2(6)(a) of the IMs. This has not yet been assessed by the Commission against the expenditure objectives, as described in clause 5.3.2(6)(b) of the IMs.

The forecast operating expenditure for the CPP period is shown below.

Table 7.1: Forecast operating expenditure

REAL 2016 \$M	FY19	20	21	22	23
Operating expenditure	93.3	98.9	101.3	100.5	100.3

Further explanation of the forecast Opex in real 2016\$ is included in the Main Proposal.

A summary of our real forecast Opex and how this is inflated into nominal dollars is demonstrated in worksheet '3.2 Opex price escalation in our CPP financial model.

The remainder of this chapter outlines how the cost allocators have been applied to the expenditure forecasts and how the real 2016\$ forecast expenditure has been escalated to nominal dollars.

### 7.1 Cost escalation

We escalate our forecasts of Opex from 2016 real dollars into nominal dollars in module 3.1 Opex aggregation.

We have chosen to split our real Opex forecasts into two components: Labour and other. The split between components is determined in each Opex portfolio with regard to the underlying expenditure. For example, a portfolio that is entirely salary costs would be given a component split of 100% labour and 0% other. The component splits are detailed in worksheet 3.2 Opex price escalation inputs.

For the CPP period we apply separate escalators to the two components. For labour we use a forecast of the all industries Labour Cost Index (LCI) and for the non-labour component we use a forecast of the all industries Producer Price Index (PPI).

The forecasts have been developed independently by NZIER for the purposes of our proposal. Their forecasts are summarised in the following table.

Table 7.2: NZIER Opex escalators

	FY19	20	21	22	23
LCI - All sectors	1.8%	2.0%	2.0%	1.9%	2.0%
PPI - Inputs	2.2%	2.4%	2.3%	2.0%	2.0%

Opex during the assessment period has been escalated using CPI and no other cost escalator. This aligns with our FY17 actual spend and FY18 budget, both of which are constrained by the DPP Capex allowance.

**Box 7.1: Operating expenditure IM requirement**

Determination of revenue requirement - clause 5.3.2(6)

Disclosure requirement – clause 5.4.7(2)(c)

**7.2 Cost allocation – Opex**

As outlined and discussed in section 0, we deliver two regulated services. This section outlines how we allocate, in accordance with the regulatory requirements, Opex that are shared in delivering the two regulated services.

In accordance with IM clause 5.3.5 the cost allocation ratios applied in allocating shared Opex throughout the next period are the ratios we used to allocate those costs in the March 2016 disclosures.

The value of our shared Opex is \$29.6m and the allocated value represents 35.3% of total Opex for the year ended 31 March 2016.

In applying the regulatory requirements in determining our allocations for the 2016 disclosure, we note that:

- We applied the information disclosure cost allocation input methodologies, being IM clauses 2.2.1-2.1.5;
- We elected to apply the accounting-based allocation approach (ABAA);
- Consistent with the IMs we have applied causal allocators where available and proxy allocators where a causal relationship cannot be established because there is no determinable cost driver that leads to these operating costs being incurred. The table below outlines the allocators used;
- The allocators applied in our electricity distribution services disclosure are consistent with the allocators applied in our disclosure of gas distribution services. No shared operating costs have been allocated to non-regulated services due to the application of ACAM;
- The values allocated to regulated services do not exceed the total regulated service asset values.

Table 7.2: Opex allocators

SHARED COST	ALLOCATOR	ALLOCATOR TYPE <sup>13</sup>
Network IS management	Fixed asset NBV	Proxy
Corporate services	Distribution line charge revenue	Proxy
Human resources	Employee numbers	Proxy
Regulatory management	Time spent/ Fixed asset NBV	Proxy
Insurance	Indemnity value/ Vehicle numbers/ Employee numbers	Causal
Facility costs	Employee numbers/ Fixed assets NBV	Causal
Information systems and projects	Fixed assets NBV	Proxy

<sup>13</sup> The Schedule B disclosure of our Application outlines our rationale for the proxy allocators.

In accordance with IM clause 5.4.9 and the modification as outlined below, Schedule B includes information supporting the current cost allocators applied to the Opex forecast. In accordance with the modification we confirm that the allocation methodology used for the Opex for the year ended 31 March 2017 is to be the same as the allocation methodology used for the Opex for the year ended 31 March 2016.

We also confirm:

- there is no material sale of assets, between the start of the assessment period and the date of the CPP application, or is highly probable. Accordingly, there has not been any change to cost allocations as a result - as per IM clause 5.3.5(2); and
- no alternative methodologies with equivalent effect have been applied for cost allocation and accordingly there is no cost allocation disclosure made consistent with clause 5.4.33.

### 7.2.1 Cost allocation disclosure modification

Clause 5.4.9(4)(d) requires that the cost allocation information in Schedule B must be provided for the disclosure year prior to submitting the CPP proposal (which, based on a submission date on or around 12 June 2017, is the year ended 31 March 2017) if it has not already been disclosed in accordance with an ID determination at the time the CPP proposal is submitted.

We sought, and the Commission has provided a modification to this requirement so that:

1. In our CPP proposal it:
  - a. Provides the information in Schedule B for the year ended 31 March 2016 instead of the year ended 31 March 2017; and
  - b. Confirms that the cost allocation methodology for the 2016/2017 RAB will be the same as that used for the 2015/2016 RAB or indicate in proposed changes in the methodology.
2. We will provide Schedule B information for the year ending 31 March 2017 as soon as it is available.

The modification was requested on the basis that we would have insufficient time to complete our financial information on an audited basis prior to the date we submitted the CPP proposal.

We have also sought a modification to clause 5.4.9(4)(d)(ii) so that only information on the cost allocations applied to the value of commissioned assets are required to be disclosed. The modification was sought on the basis that disclosing information for all assets and for each of the disclosures years would be onerous and challenging and would include a hybrid of allocation rates applied to existing and commissioned assets that would be of little value to the reader.

The cost allocation disclosure modifications apply to cost and asset allocation disclosures.

#### Box 7.2: Cost allocation IM requirements

Determination of revenue requirement - clause 5.3.5

Disclosure requirement – clause 5.4.9 and subsequent modification

### 7.3 Schedule E: Opex disclosure modification

We have sought a modification to the requirements to allow us to disclose Opex expenditure in Schedule E consistent with our portfolio disclosures. This was provided on the basis that that supporting information will be available if the Commission wishes to drill down into the numbers once they receive our proposal, and on our advice that our categorisation of Opex, for both historical data and forecast data, is consistent and that we have used our “preventive maintenance/corrective maintenance” categories for this schedule across all applicable years. We confirm that we have met all our requirements relating to the above modification.

## 8 REGULATORY TAX ALLOWANCE

### Key Points

- The regulatory tax allowance is an allowance for the tax expense we are expected to incur.
- It is calculated based on a formula prescribed in the IM requirements. The main driver being forecast regulated profit/(loss) derived from forecast revenues and expenses as outlined earlier in this document.
- The regulatory tax calculation also requires forecasts for such things as temporary and permanent differences in taxable income. Where such forecasts are required, we have applied a base-step-trend approach.

The regulatory tax allowance is the tax expense the regulated entity is expected to incur if it was a stand-alone business. Accordingly it is determined based on the regulated profit/(loss) and adjusted for permanent and timing tax differences.

The below table outlines the regulatory tax allowance calculation and includes references to where each part of the calculation is discussed in the chapter.

Table 8.1: Regulatory tax allowance calculation

\$M	FY17	18	19	20	21	22	23	SECTION REFERENCE
Regulatory profit/(loss) before tax	96.6	99.8	108.6	120.7	118.8	127.3	135.5	8.1
Permanent differences	0.1	0.1	0.1	0.1	0.1	0.1	0.1	8.2
Regulatory tax adjustments	- 25.2	- 25.7	- 27.2	- 30.8	- 29.6	- 31.6	- 33.8	8.3
<b>Regulatory taxable income</b>	<b>71.5</b>	<b>74.3</b>	<b>81.6</b>	<b>90.0</b>	<b>89.4</b>	<b>95.9</b>	<b>101.8</b>	
Utilised tax losses	-	-	-	-	-	-	-	8.4
<b>Regulatory net taxable income</b>	<b>71.5</b>	<b>74.3</b>	<b>81.6</b>	<b>90.0</b>	<b>89.4</b>	<b>95.9</b>	<b>101.8</b>	
Corporate tax rate	28%	28%	28%	28%	28%	28%	28%	8.5
<b>Regulatory tax allowance</b>	<b>20.0</b>	<b>20.8</b>	<b>22.8</b>	<b>25.2</b>	<b>25.0</b>	<b>26.8</b>	<b>28.5</b>	

Regulatory taxable income is defined in IM clause 5.3.13(3) as:

*Regulatory profit / (loss) before tax + permanent differences + regulatory tax adjustments*

Regulatory net taxable income is defined in IM clause 5.3.13(2) as:

*Regulatory taxable income - utilised tax losses.*

Regulatory tax allowance is defined in IM clause 5.3.13(1) as:

*where regulatory net taxable income is-*

*(a) nil or a positive number, the tax effect of regulatory net taxable income; and*

*(b) a negative number, nil.*

Section 8.6 of this chapter also discusses the deferred tax balance, which is included in the RIV and forms part of the return on allowance calculation.

### 8.1 Regulatory profit/(loss) before tax

The regulated profit/ (loss) is determined from the forecast revenue and expenses as outlined earlier in this document. The table below outlines the regulatory profit/ (loss) calculation and references where each of the components are discussed in the document.

Table 8.2: Regulatory profit/(loss) before tax

\$M	FY17	18	19	20	21	22	23	REFERENCE
BBAR before tax	235.3	242.8	266.4	288.6	294.2	307.0	319.8	Chapter 4
Operating expenditure	- 77.5	- 80.8	- 93.3	- 98.9	- 101.3	- 100.5	- 100.3	Chapter 7
Total depreciation	- 61.2	- 62.2	- 64.5	- 69.0	- 74.0	- 79.2	- 84.0	Section 0
<b>Regulatory profit/(loss) before tax</b>	<b>96.6</b>	<b>99.8</b>	<b>108.6</b>	<b>120.7</b>	<b>118.8</b>	<b>127.3</b>	<b>135.5</b>	

Clause 5.4.19 requires forecast tax information relating to 'other regulated income' to be provided for each year in the CPP period. We sought, and the Commission provided an exemption on the basis that the tax information relating to 'other regulated income' will not be necessary or useful to the Commission's consideration of the CPP proposal.

### Box 8.1: Regulatory tax allowance IM requirement

Determination of revenue requirement - clauses 5.3.13

Disclosure requirement – clause 5.4.19 and subsequent modification

## 8.2 Permanent differences

Permanent differences accounts for differences between regulatory profit and regulatory taxable income that are not timing differences.

Forecast permanent differences for the next period are presented below.

Table 8.3: Permanent differences

\$M	FY17	18	19	20	21	22	23
Non-deductible entertainment	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Total positive permanent differences</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
Negative permanent differences	-	-	-	-	-	-	-
<b>Permanent differences</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>

Positive permanent differences comprise non-deductible entertainment. These are forecast using a base-step-trend methodology. We have not forecast an increase in the base year assumption.

Consistent with historical disclosures there are no negative permanent differences forecast during the next period.

### Box 8.2: Permanent differences IM requirement

Determination of revenue requirement - clauses 5.3.15

Disclosure information – clause 5.4.21

## 8.3 Regulatory tax adjustments

Regulatory tax adjustments are defined in IM clause 5.3.16 as:

*Amortisation of initial differences in asset values + amortisation of revaluations – notional deductible interest*

Each of the regulatory tax adjustment components are discussed below.

### 8.3.1 Amortisation of initial differences in asset values

This regulatory tax adjustment adjusts the regulatory tax expense for the effect of initial differences between the sum of the initial RAB values and the sum of the regulatory tax asset values at 1 April 2009.

Forecast amortisation of initial differences in asset values for the CPP period is presented below.

Table 8.4: Amortisation of initial differences in asset values

\$M	FY17	18	19	20	21	22	23
Amortisation of initial differences in asset values	10.4	10.4	10.3	10.2	10.2	10.1	10.0

These values are determined in accordance with the calculation prescribed in clause 5.3.17 of the IMs. The main inputs assumptions being the amortised opening initial difference and weighted average remaining life of relevant assets. The opening initial difference was set on 1 April 2009. Opening weighted average remaining life of 26 years was determined at the beginning of the amortisation period and reduces by 1 each year.

The amortised roll-forward also includes a minor adjustment for the effect of asset disposals. This is forecast consistent with the disposals forecast (section 6.5).

Clause 5.4.22(1) requires the opening unamortised balance of the initial difference in asset values to be disclosed by asset category. We sought, and the Commission provided a modification to this requirement so that it provides the initial difference in asset values at an aggregate level. We sought this modification on the basis that information by asset category is overly complex, unreasonable and unnecessary.

### 8.3.2 Amortisation of revaluations

Forecast amortisation of revaluations for the CPP period is presented below.

Table 8.5: Amortisation of revaluations

\$M	FY17	18	19	20	21	22	23
Total depreciation	61.2	62.2	64.5	69.0	74.0	79.2	84.0
Adjusted depreciation	- 57.1	- 56.8	- 57.8	- 61.2	- 64.9	- 68.6	- 72.1
<b>Amortisation of revaluations</b>	<b>4.1</b>	<b>5.4</b>	<b>6.7</b>	<b>7.8</b>	<b>9.2</b>	<b>10.6</b>	<b>11.9</b>

Amortisation of revaluations reflects the difference between RAB depreciation and adjusted depreciation. Adjusted depreciation is defined as total depreciation for all assets, calculated as if no amount of revaluation is included in the calculation of any opening RAB value following the determination of the initial RAB.

RAB depreciation is described in section 0. Adjusted depreciation is calculated on the same basis but with no revaluations included in the asset value. This calculation is included in worksheet '4.4 RAB excl revals roll' of the CPP financial model.

The unamortised balance of revaluations throughout the CPP period is summarised in the following table.



Table 8.6: Unamortised balance of revaluations

\$M - EXCEPT WHERE NOTED	FY17	18	19	20	21	22	23
Opening RAB	1,528.0	1,600.3	1,679.0	1,865.2	2,000.3	2,139.7	2,310.1
Opening RAB excluding revaluations	- 1,429.3	- 1,474.4	- 1,524.7	- 1,683.2	- 1,789.0	- 1,898.2	- 2,037.3
<b>Unamortised balance of revaluations</b>	<b>98.7</b>	<b>126.0</b>	<b>154.3</b>	<b>182.0</b>	<b>211.2</b>	<b>241.5</b>	<b>272.8</b>
Average weighted remaining useful life (years)	25.0	25.7	26.0	27.0	27.0	27.0	27.5

We consider that the unamortised balance of revaluations has the same weighted average remaining life as the assets in the opening RAB. We have therefore calculated this by dividing opening RAB by total depreciation in each year consistent with the modification sought.

### 8.3.3 Notional deductible interest

Notional deductible interest adjusts regulated profit/(loss) before tax for deductible interest we are assumed to incur and therefore would get a tax deduction for.

Notional deductible interest is defined in IM clause 5.3.16(2) as:

$$\frac{(((\text{regulatory investment value} + \text{RAB proportionate investment}) \times \text{leverage} \times \text{cost of debt}) + \text{TCSD})}{\sqrt{1 + \text{cost of debt}}}$$

The table below shows notional deductible interest for the CPP period.

Table 8.7: Notional deductible interest

\$M	FY17	18	19	20	21	22	23	REFERENCE
Regulatory investment value	1,478.7	1,540.9	1,615.3	1,794.8	1,918.7	2,044.1	2,197.1	Section 0
RAB proportionate investment <sup>14</sup>	50.8	53.3	83.3	80.1	78.6	89.7	76.8	CPP financial model 1.0TAXx row 80
Leverage	42%	42%	42%	42%	42%	42%	42%	Refer below
Cost of debt	6.09%	6.09%	6.09%	6.09%	5.70%	5.70%	5.70%	Refer below
TCSD	1.9	1.9	2.1	2.3	2.5	2.6	2.8	Section 9.1
<b>Notional deductible interest</b>	<b>39.8</b>	<b>41.5</b>	<b>44.2</b>	<b>48.8</b>	<b>48.9</b>	<b>52.3</b>	<b>55.7</b>	

We have used leverage of 42% in our notional deductible interest calculation consistent with clause 2.4.2(1).

We have used 6.09% for the cost of debt from FY17 - 20 which is consistent with the cost of debt used in the DPP determination for this period.

For the period from FY21 - 23 we have used 5.70% which is consistent with our reforecast of WACC for this period. Chapter 5 provides further details on the cost of capital rates applied in our proposal.

<sup>14</sup> RAB proportionate investment is the net of assets commissioned and disposed during the year proportionate to when the assets were commissioning or disposal during the year.

**Box 8.3: Regulatory tax adjustment IM Requirements**

Determination of the price path - clauses 5.3.16 - 5.3.18

Price path information – clauses 5.4.22 - 5.4.23 and subsequent modification

**8.4 Tax losses**

There are no opening or current period tax losses. We have not forecast any tax losses during the next period.

**8.5 Corporate Tax Rate**

The calculation uses a corporate tax rate of 28% for the entire next period consistent with the definition of corporate tax rate as specified in IM clause 1.1.4.

**8.6 Deferred tax**

Deferred tax accounts for the value of timing differences in regulatory profits compared to regulatory tax income. The deferred tax balance is part of RIV (section 4.1.1).

Consistent with IM clause 5.3.19(2) the deferred tax roll-forward for each year of the next period is shown below.

Table 8.8: Deferred tax roll-forward

\$M	FY17	18	19	20	21	22	23
Opening deferred tax	- 49.3	- 59.4	- 63.7	- 70.4	- 81.6	- 95.5	- 113.0
less: tax effect of amortisation of initial difference in asset values	2.9	2.9	2.9	2.9	2.8	2.8	2.8
less: deferred tax balance relating to asset disposed	- 0.7	- 0.7	- 0.8	- 1.0	- 1.0	- 1.1	- 1.1
add: tax effect of depreciation temporary differences	- 8.1	- 2.4	- 5.0	- 9.6	- 12.5	- 16.1	- 19.2
add: tax effect of positive temporary differences	0.3	0.3	0.3	0.4	0.4	0.4	0.4
less: tax effect of negative temporary differences	-	-	-	-	-	-	-
<b>Closing deferred tax</b>	<b>- 59.4</b>	<b>- 63.7</b>	<b>- 70.4</b>	<b>- 81.6</b>	<b>- 95.5</b>	<b>- 113.0</b>	<b>- 133.5</b>

The table below outlines where each of the components of the deferred tax roll-forward are discussed in this chapter.

Table 8.9: References to deferred tax roll-forward components

DEFERRED TAX ROLL-FORWARD COMPONENT	REFERENCE
Tax effect of amortisation of initial difference in asset values	Section 8.3.1
Deferred tax balance relating to assets disposed	Section 8.6.2
Tax effect of depreciation temporary differences	Section 8.6.3
Tax effect of positive temporary differences	Section 8.6.1
Tax effect of negative temporary differences	Section 8.6.1

### 8.6.1 Temporary differences

Forecast temporary differences for the CPP period and their tax effect are presented below.

Table 8.10: Temporary differences

\$M – EXCEPT AS NOTED	FY17	18	19	20	21	22	23
Provisions	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Gain/(loss) on sale of assets	0.7	0.7	0.8	1.0	1.0	1.1	1.1
<b>Positive temporary differences</b>	<b>1.0</b>	<b>1.0</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>
multiplied by corporate tax rate	28%	28%	28%	28%	28%	28%	28%
<b>Tax effect of positive temporary differences</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
Negative temporary differences	-	-	-	-	-	-	-
multiplied by corporate tax rate	28%	28%	28%	28%	28%	28%	28%
<b>Tax effect of negative temporary differences</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Positive temporary differences comprise of provisions and gain/loss of sale of assets. These are forecast using a base-step-trend methodology. The provision forecast assumes no change from the base year assumption. Forecast changes in the gain/loss on sale are consistent with our forecast increases in asset disposals.

Consistent with historical disclosures, there are no negative temporary differences forecast during the next period.

#### Box 8.4: Deferred tax IM requirement

Determination of revenue requirement - clause 5.3.19 - 5.3.21

Disclosure requirement – clauses 5.4.24 - 5.4.25

### 8.6.2 Regulatory tax asset values

The primary purpose of the regulatory tax asset value forecast is to determine tax depreciation which is applied in the roll-forward of the deferred tax balance.

The regulatory tax asset values roll-forward for the next period are presented below.

Table 8.11: Regulatory tax asset values roll-forward

\$M	FY17	18	19	20	21	22	23
Opening regulatory tax asset value	952.4	968.5	1,010.4	1,145.5	1,216.0	1,279.7	1,356.9
less: Regulatory tax value of disposals	8.7	8.8	10.1	11.9	12.8	13.2	13.5
add: Regulatory tax value of commissioned assets	110.9	116.0	220.8	178.0	186.2	216.5	223.0
less: Tax depreciation	86.1	65.4	75.5	95.7	109.7	126.1	140.6
add: Change in cost allocation	-	-	-	-	-	-	-
<b>Closing regulatory tax asset value</b>	<b>968.5</b>	<b>1,010.4</b>	<b>1,145.5</b>	<b>1,216.0</b>	<b>1,279.7</b>	<b>1,356.9</b>	<b>1,425.8</b>

We have forecast the regulatory tax value of disposals using a base step trend approach. Forecast changes in the regulatory tax value of disposals are consistent with our forecast increases in asset disposals.

The forecast regulatory tax value of commissioned assets is calculated like the forecast value of commissioned assets. However, unlike the forecast value of commissioned assets, the tax value excludes any cost of finance.

Tax depreciation is calculated in accordance with tax legislation using the rates specified by Inland Revenue. We use the diminishing value method in FY2017 then the straight line method from FY2018 to FY2023. This is consistent with our approach for calculating income tax and therefore consistent with the IMs.

Consistent with the requirements of clause 5.3.6, we have assumed no change in cost allocation for existing assets during the next period.

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### 8.6.3 Tax effect of depreciation temporary differences

The tax effect of depreciation temporary differences is the tax effect of the difference between the adjusted depreciation (regulatory depreciation excluding revaluations) and tax depreciation.

#### **Box 8.5: Regulatory tax asset values IM requirement**

Determination of revenue requirement - clause 5.3.21

Disclosure requirement – clauses 5.4.26

## 9 OTHER COMPONENTS

This chapter discusses the TCSD allowance included in other allowance in the building blocks allowance calculation and timing factors applied in that calculation.

### 9.1 TCSD allowance

The TCSD is an allowance in the BBAR calculation to cover the estimated costs a regulated entity would incur if they have debt securities that are for longer than the years assumed in the cost of capital calculation.

IM clause 5.3.23 defines how the TCSD is determined. The table below includes the key input assumptions. The calculation is included in worksheet 4.5 TCSD of the CPP financial model.

Table 9.1: TCSD and input assumptions

\$M – EXCEPT WHERE NOTED	FY19	20	21	22	23
Opening RAB	1,679.0	1,865.2	2,000.3	2,139.7	2,310.1
Closing RAB	1,865.2	2,000.3	2,139.7	2,310.1	2,483.4
Average RAB	1,772.1	1,932.7	2,070.0	2,224.9	2,396.7
Total book value of interest bearing debt	1,495.4	1,630.9	1,746.7	1,877.4	2,022.5
Input methodology leverage	42%	42%	42%	42%	42%
Gross TCSD	4.2	4.6	4.9	5.3	5.7
<b>TCSD allowance</b>	<b>2.1</b>	<b>2.3</b>	<b>2.5</b>	<b>2.6</b>	<b>2.8</b>

In forecasting the TCSD we have assumed:

- Debt maturing in each of the forecast years is assumed to roll over for the same amount and same term. This is consistent with our internal debt forecasting approach;
- Total qualifying debt is forecast to remain proportional to average opening and closing RAB values;
- Gross TCSD is forecast to remain proportional to total qualifying debt;
- Total book value of interest bearing debt is forecast to remain proportionate to total qualifying debt;
- Gearing assumption is 42%, consistent with IM update and CPP WACC; and
- We meet the threshold for qualifying debt >5 years each year - based on debt replacement being like-for-like.

#### Box 9.1: TCSD IM requirements

Determination of the price path - clause 5.3.23

Price path information – clause 5.4.7(2)(d) and 5.4.27(3)

### 9.2 Timing factors

Timing factors are applied within the BBAR calculation to reflect when, on average, the income and expenses are deemed to be incurred during the year.

The BBAR formula incorporates the following cash flow timing assumptions:

- TFVCA which is applied to the total value of commissioned assets, and which also incorporates the PVVCA term;
- TFrev which is applied to the total revaluation building block; and
- TF which is applied to the remaining BBAR building blocks.

The table below summarises the timing factors included in the BBAR before tax series. The timing assumptions calculation is included in worksheet 1.0BBARx of the CPP financial model.

Table 9.2: Timing factors

	FY19	20	21	22	23
TFVCA	1.0277	1.0342	1.0305	1.0293	1.0248
TF	1.0352	1.0352	1.0333	1.0333	1.0333
TFrev	1.0286	1.0286	1.0270	1.0270	1.0270

### 9.2.1 TFVCA and PVVCA

TFVCA is the timing factor adjustment term which adjusts the value of commissioned assets to year-end terms. Its value depends on the commissioning dates of the new assets added to the RAB each year.

TFVCA is defined as  $PVVCA \times (1 + \text{cost of capital}) / \text{total value of commissioned assets}$ . PVVCA is the total value of commissioned assets in year-start terms.

### 9.2.2 TFREV

TFREV is the timing factor adjustment term which adjusts revenue to year-end terms. It is defined as  $(1 + \text{cost of capital})^{148/365}$ .

### 9.2.3 TF

TF is the timing factor adjustment term for all other building block components, and converts them to year-end terms. It applies to the TCSD allowance, forecast operating expenditure and regulatory tax building blocks. TF is defined as  $(1 + \text{cost of capital})^{182/365}$ .

#### Box 9.2: Timing factors IM requirement

Determination of revenue requirement - clause 5.3.2(4)

Price path information – clause 5.4.7(2)(b)

## 10 HISTORICAL EXPENDITURE

Historical Opex and Capex are shown in our proposal consistent with how we have prepared our forecasts. To align our historical expenditure to forecast expenditure we have:

- Applied the cost allocation and internal cost capitalisation methodologies used in the expenditure forecast;
- Classified expenditure consistent with how our forecasts have been prepared; and
- Escalated historical expenditure to real 2016 dollars.

We have forecast expenditure, and disclosed our historical expenditure, consistent with how we manage our business (portfolios). This can be reconciled to how we are required to disclose our expenditure under information disclosure regulation. Schedule E, included in the Application, discloses our historical and forecast Capex consistent with the information disclosure requirements. Schedule E Opex disclosures are aligned to our portfolio classifications, consistent with the modification provided by the Commission.

The structure of this chapter is as follows:

- Section 10.1 outlines how we have adjusted our historical disclosures to align with the methodologies used in forecasting our expenditure.
- Section 10.2 outlines how we have escalated historical costs to real 2016 dollars.
- Section 10.3 demonstrates how total historical expenditure reconciles to our historical portfolio disclosures.
- Section 10.4 reconciles the Schedule E disclosures, by expenditure category (pre escalation and adjustments) with expenditure previously disclosed in accordance with the information disclosure requirements.

### 10.1 Historical disclosure adjustments

Historical Opex and Capex have been adjusted to align disclosures with the methodologies that have been applied in the forecast. Table 10.1 and Table 10.2 outline the adjustments made to Opex and Capex respectively.

Table 10.1: Opex historical costs adjustment

REAL 2016 \$M	FY12	13	14	15	16
Historical Information disclosure	64.1	65.4	67.8	65.5	69.4
Internal cost capitalisation adjustment	- 3.7	- 3.5	- 2.8	-	-
SONS cost allocation	0.3	0.1	- 0.0	- 0.1	-
Business support cost allocation	- 0.3	- 0.5	- 0.5	- 0.2	-
Escalation	2.1	1.6	0.8	0.2	-
<b>Adjusted Historical Information Disclosure</b>	<b>62.6</b>	<b>63.1</b>	<b>65.3</b>	<b>65.5</b>	<b>69.4</b>

Table 10.2: Capex historical costs adjustment

REAL 2016 \$M	FY12	13	14	15	16
Historical Information Disclosure	77.0	83.5	98.7	103.2	112.0
Non-network cost allocation adjustment	- 0.5	0.1	0.1	-	-
Escalation	2.7	2.1	1.2	0.3	-
<b>Adjusted Historical Information Disclosure</b>	<b>79.2</b>	<b>85.7</b>	<b>100.0</b>	<b>103.5</b>	<b>112.0</b>

### 10.1.1 Changes in cost allocation methodologies

Over the historical disclosure period we have changed and refined the cost allocation methodologies applied to Opex and Capex disclosures. The historical expenditure disclosures included in our proposal have been determined consistent with the allocation methodologies applied to forecast expenditure and using inputs relevant to each year.

### 10.1.2 Change in internal capitalisation methodology

Historical Opex disclosures have been adjusted to reflect the methodology applied to forecast expenditure in determining internally capitalised costs. During the historical expenditure disclosure period we have refined the methodology to more accurately reflect the staff costs associated with the development of assets. The refinement is consistent with the change applied in the statutory financial statements.

Historical Capex has not been adjusted for the change in the internal cost capitalisation methodology as it would be challenging to apply and the adjustment would be immaterial to the Capex disclosures.

## 10.2 Historical expenditure escalation

Historical Opex and Capex have been escalated to real 2016 dollars using the IM specification for the CPP inflation rate as outlined in clause 5.3.4(9). This is based on historical quarterly CPI rates published by Statistics New Zealand.

Table 10.3: Historical expenditure escalation rates

	FY12	13	14	15	16
CPI inflation rate	0.88%	1.30%	0.91%	0.33%	0.00%
Escalation index	0.9665	0.9750	0.9877	0.9967	1.0000

### 10.3 Disclosure consistent with how we manage our business

Forecast Opex and Capex are disclosed within the Main Proposal are consistent with how we manage our business. Accordingly, historical Opex and Capex have also been disclosed on the same basis.

The table below shows how adjusted historical Opex has been allocated to the Opex portfolios.



Table 10.4: Historical Opex by portfolio

\$M	FY12	13	14	15	16
<b>Total Opex – consistent with ID</b>	<b>62.6</b>	<b>63.1</b>	<b>65.3</b>	<b>65.5</b>	<b>69.4</b>
Corrective maintenance	9.8	8.0	11.5	10.3	9.0
Preventative maintenance and inspection	8.5	10.3	8.4	6.5	7.5
Reactive maintenance	6.5	5.5	6.5	7.0	6.7
System operations and network support	7.0	7.8	8.6	9.8	10.8
Vegetation management	6.6	5.7	4.8	5.0	6.0
Non-network Opex	24.2	25.9	25.5	26.8	29.3
<b>Total Opex – portfolio structure</b>	<b>62.6</b>	<b>63.1</b>	<b>65.3</b>	<b>65.5</b>	<b>69.4</b>

In disclosing Capex consistent with our portfolio structure we disclose expenditure net of capital contributions. Disclosures made in accordance with the information disclosure categories are disclosed gross of capital contributions.

Table 10.5: Historical Capex by portfolio

\$M	FY12	13	14	15	16
<b>Total Capex – consistent with ID</b>	<b>79.2</b>	<b>85.7</b>	<b>100.0</b>	<b>103.5</b>	<b>112.0</b>
Renewal Capex	39.1	41.6	52.7	51.7	59.0
Major projects	11.1	4.3	3.1	9.2	2.1
Minor growth and security	15.0	24.8	26.3	22.4	23.2
Reliability	2.1	2.0	2.3	3.7	5.0
Other network Capex	5.7	6.6	6.4	11.0	15.0
Non-network Capex	6.3	6.5	6.1	4.4	5.8
Cost of finance	–	–	3.0	1.3	2.0
<b>Total Capex – portfolio structure</b>	<b>79.2</b>	<b>85.7</b>	<b>100.0</b>	<b>103.5</b>	<b>112.0</b>

Section 26.5 of the 2017 AMP outlines how our expenditure is categorised internally and how this relates to the information disclosure requirement categories.

## 10.4 Reconciliation to historical information disclosure

How we have disclosed historical expenditure in Schedule E is different to how we originally disclosed the expenditure because:

- The Commission has changed the expenditure categories and their definitions during the current period; and
- As a result of us forecasting expenditure consistent with how we manage our business, we have refined how we classify costs within the specified definitions.

The tables below reconcile the Schedule E disclosures, by category, to the disclosures previously made in accordance with the information disclosure requirements applicable at the time.

Table 10.6: Opex reclassifications

REAL 2016 \$M	FY12	13	14	15	16
<b>VEGETATION MANAGEMENT DISCLOSURE</b>					
Vegetation management	6.4				
Routine and corrective maintenance and inspection	- 6.4				
<b>ALIGNMENT OF BS AND SONS COSTS DISCLOSURE</b>					
SONS	1.5	1.4	- 0.1		
Business support	- 1.5	- 1.4	0.1		
<b>ASSET REPLACEMENT AND RENEWALS RECLASSIFICATION</b>					
Asset replacement and renewals	-	-	3.6	2.4	2.3
Routine and corrective maintenance and inspection	-	-	- 3.6	- 2.4	- 2.3

The Opex reclassifications include:

- Separate vegetation management costs in 2012 as previously this was not a separate ID category;
- Business support and SONS reclassification as a result of a change in the information disclosure definition in 2013; and
- Asset replacement and renewals reclassification as a result of a refinement in our interpretation of the scope of the information disclosure definitions.

Historical Opex disclosures have been made consistent with the Opex categorisation outlined in Section 7.3.

The table below reconciles the Schedule E Capex disclosures, by category, to the disclosures previously made in accordance with the information disclosure requirements applicable at the time.

Table 10.7: Capex reclassifications

\$M	FY12	13	14	15	16
System growth	7.3	3.6	- 0.6	4.3	3.6
Asset replacement and renewals	6.3	10.2	9.3	5.5	6.4
Quality of supply	- 13.6	- 13.8	- 1.4	- 2.3	- 2.9
Other reliability, safety and environment			- 7.3	- 7.5	- 7.1

The reclassifications to historical disclosures related to:

- Quality of supply now only including projects that have the primary purpose of improving network reliability or quality of supply and where this need was not growth driven.
- Other reliability, safety and environment now only including projects primarily intended for upgrades/modifications for safety and environmental benefits, with no like-for-like or modern renewal component.

## 11 PASS-THROUGH AND RECOVERABLE COSTS

Pass-through and recoverable costs is a regulatory mechanism that allows us to recover costs that are outside our control and are uncertain in terms of the amount. The Commission has put these costs into two categories. The first category is called 'pass-through costs' and the second is called 'recoverable costs'.

Pass-through costs are those costs that are outside the control of the supplier and can be passed through to consumers without the Commission needing to undertake any assessment of these costs.

Recoverable costs are not completely outside the control of the supplier and there may be judgement involved as to how much should be passed through. Recoverable costs include such things as regulatory incentives, wash-ups and cost incurred in the development of a CPP proposal.

The regulatory mechanism allows these costs to be added to our revenue requirement.

### 11.1 How do pass-through and recoverable cost effect prices

Pass through and recoverable costs are included in final prices and are in addition to the required revenue as outlined in Chapter 2.

Pass-through and recoverable costs are typically excluded from revenue requirement discussions due to the uncertainty of amount. This approach is consistent with the Commission's price setting practices.

### 11.2 Pass-through and recoverable costs disclosure

#### 11.2.1 Pass-through costs

IM clause 5.4.31 requires information on proposed new pass-through costs to be disclosed. We do not propose any new pass-through costs in our CPP.

#### 11.2.2 Recoverable costs

IM clause 5.4.32 requires the disclosure of information of proposed recoverable costs defined in 3.1.3(1)(j) verifier fees, 3.1.3(1)(k) auditor's costs and 3.1.3(1)(l) fees payable to an engineer.

We have not incurred any fees payable to an engineer for the purpose of meeting a requirement of clause 5.4.12(4)(b).

The recoverable costs we propose for CPP audit and verifier fees is summarised in the following table:

Table 11.1: Proposed recoverable costs

TYPE OF RECOVERABLE COST	RECOVERABLE COST AMOUNT	IM CLAUSE
Verifier fee for CPP proposal	\$369,286	3.1.3(1)(j)
Auditor fee for CPP proposal	\$375,314	3.1.3(1)(k)

The following information relating to proposed recoverable costs is contained in Appendix B:

- RFP documents
- Terms of reference for the work undertaken
- Invoices for services undertaken in respect of the work; and
- Receipts for payment we have made.

**Box 11.1: IM Requirements relevant to regulatory tax asset values**

Determination of the price path - clause 3.1.3(1)

Price path information – clauses 5.4.31 and 5.4.32

## APPENDIX A COMPLIANT REVENUE REQUIREMENT DISCLOSURE

As outlined in Section 5.2, the revenue requirement and supporting disclosures presented in the body of this document reflects the impact of a WACC change reopener in FY21. This appendix presents all tables from the body of this document as if we had not taken into account the WACC change reopener.

Table 3.1A: Maximum allowable revenue

\$M	1-APR-18	FY19	20	21	22	23
MAR before tax		288.0	294.2	300.4	306.5	312.6
MAR after tax		265.2	269.0	273.2	277.5	282.1
PV of annual allowable revenues	1,256.5					

Table 3.2A: Maximum allowable revenue assumptions

\$M - EXCEPT WHERE NOTED	1-APR-18	FY19	20	21	22	23
MAR before tax		288.0	294.2	300.4	306.5	312.6
Discounting assumption - Cost of Capital		7.19%	7.19%	7.19%	7.19%	7.19%
PV of annual allowable revenues	1,256.5					
CPI		2.11%	2.15%	2.10%	2.03%	2.00%
X Factor		-	-	-	-	-
Increase in allowable revenue		7.9%				

Table 3.3A: Cost of Capital

	FY19	20	21	22	23
Cost of Capital	7.19%	7.19%	7.19%	7.19%	7.19%

Table 4.1A: Building blocks allowable revenue

\$M	1-APR-18	FY19	20	21	22	23
BBAR before tax		266.4	288.6	305.0	317.8	330.5
Regulatory tax allowance		- 22.8	- 25.2	- 27.2	- 28.9	- 30.5
<b>BBAR after tax</b>		<b>243.6</b>	<b>263.4</b>	<b>277.8</b>	<b>288.9</b>	<b>300.0</b>
PV of annual allowable revenues	1,256.5					

Table 4.2A: Building blocks allowances

\$M	FY19	20	21	22	23
Return on investment allowance	165.7	183.0	194.9	208.2	221.8
Return of investment allowance - depreciation	61.7	65.8	70.5	75.2	79.8
Return of investment allowance - revaluations	- 47.5	- 51.2	- 53.4	- 57.1	- 61.6
Operating expenditure allowance	94.1	99.8	102.3	101.4	101.2
Tax adjustments allowance	- 10.6	- 12.0	- 12.8	- 13.7	- 14.6
Other allowances	3.0	3.2	3.4	3.7	4.0
<b>BBAR before tax</b>	<b>266.4</b>	<b>288.6</b>	<b>305.0</b>	<b>317.8</b>	<b>330.5</b>

Table 4.3A: Regulatory investment value

\$M	FY17	18	19	20	21	22	23
Opening RAB	1,528.0	1,600.3	1,679.0	1,865.2	2,000.3	2,138.8	2,308.7
Opening deferred tax	- 49.3	- 59.4	- 63.7	- 70.4	- 81.6	- 95.5	- 113.0
<b>RIV</b>	<b>1,478.7</b>	<b>1,540.9</b>	<b>1,615.3</b>	<b>1,794.8</b>	<b>1,918.7</b>	<b>2,043.2</b>	<b>2,195.7</b>

Table 4.4A: Building block input assumptions

\$M - EXCEPT WHERE NOTED	FY19	20	21	22	23	REFERENCE
<b>RETURN ON INVESTMENT</b>						
Opening RAB	1,679.0	1,865.2	2,000.3	2,138.8	2,308.7	Section 6.1
Opening deferred tax	63.7	70.4	81.6	95.5	113.0	Section 8.6
Commissioned assets	226.5	179.1	186.9	221.1	226.4	Section 0
Cost of capital	7.19%	7.19%	7.19%	7.19%	7.19%	Chapter 5
<b>RETURN OF INVESTMENT</b>						
Depreciation	64.5	69.0	74.0	79.1	84.0	Section 0
Revaluations	35.1	37.8	39.4	42.2	45.5	Section 6.2
<b>OPERATING EXPENDITURE</b>						
Operating expenditure	93.3	98.9	101.3	100.5	100.3	Chapter 7
<b>TAX ADJUSTMENTS</b>						
Permanent differences	0.1	0.1	0.1	0.1	0.1	Section 8.2
Regulatory tax adjustments	27.2	30.8	32.7	34.9	37.3	Section 8.3
Regulatory tax allowance	22.8	25.2	27.2	28.9	30.5	Chapter 8
<b>OTHER COMPONENTS</b>						
TCSD allowance	2.1	2.3	2.5	2.6	2.8	Section 9.1
<b>TIMING ASSUMPTIONS</b>	(refer Table 9.2A)					Section 9.2

Table 6.1A: RAB roll-forward

\$M	FY17	18	19	20	21	22	23
Opening RAB	1,528.0	1,600.3	1,679.0	1,865.2	2,000.3	2,138.8	2,308.7
Value of commissioned assets	110.9	116.0	226.5	179.1	186.9	221.1	226.4
Depreciation	- 61.2	- 62.2	- 64.5	- 69.0	- 74.0	- 79.1	- 84.0
Revaluations	32.0	34.4	35.1	37.8	39.4	42.2	45.5
Disposals	- 9.4	- 9.5	- 11.0	- 12.9	- 13.8	- 14.3	- 14.6
<b>Closing RAB</b>	<b>1,600.3</b>	<b>1,679.0</b>	<b>1,865.2</b>	<b>2,000.3</b>	<b>2,138.8</b>	<b>2,308.7</b>	<b>2,482.1</b>

Table 6.2A: Revaluations

\$M	FY17	18	19	20	21	22	23
Revaluations	32.0	34.4	35.1	37.8	39.4	42.2	45.5

Table 6.3A: CPP revaluation rate

	FY17	18	19	20	21	22	23
CPP revaluation rate	2.11%	2.17%	2.11%	2.06%	2.00%	2.00%	2.00%

Table 6.4A: Depreciation

\$M	FY17	18	19	20	21	22	23
Depreciation for existing CPP assets	61.2	59.6	58.9	56.9	57.0	56.9	56.1
Depreciation for additional CPP assets	-	2.6	5.6	12.2	17.0	22.2	27.9
<b>Total depreciation</b>	<b>61.2</b>	<b>62.2</b>	<b>64.5</b>	<b>69.0</b>	<b>74.0</b>	<b>79.1</b>	<b>84.0</b>

Table 8.1A: Regulatory tax allowance calculation

\$M – EXCEPT WHERE NOTED	FY17	18	19	20	21	22	23	SECTION REFERENCE
Regulatory profit/(loss) before tax	96.6	99.8	108.6	120.7	129.6	138.1	146.2	8.1
Permanent differences	0.1	0.1	0.1	0.1	0.1	0.1	0.1	8.2
Regulatory tax adjustments	- 25.2	- 25.7	- 27.2	- 30.8	- 32.7	- 34.9	- 37.3	8.3
<b>Regulatory taxable income</b>	<b>71.5</b>	<b>74.3</b>	<b>81.6</b>	<b>90.0</b>	<b>97.1</b>	<b>103.3</b>	<b>109.1</b>	
Utilised tax losses	-	-	-	-	-	-	-	8.4
<b>Regulatory net taxable income</b>	<b>71.5</b>	<b>74.3</b>	<b>81.6</b>	<b>90.0</b>	<b>97.1</b>	<b>103.3</b>	<b>109.1</b>	
Corporate tax rate	28%	28%	28%	28%	28%	28%	28%	8.5
<b>Regulatory tax allowance</b>	<b>20.0</b>	<b>20.8</b>	<b>22.8</b>	<b>25.2</b>	<b>27.2</b>	<b>28.9</b>	<b>30.5</b>	

Table 8.2A: Regulatory profit/(loss) before tax

\$M	FY17	18	19	20	21	22	23	REFERENCE
BBAR before tax	235.3	242.8	266.4	288.6	305.0	317.8	330.5	Chapter 4
Operating expenditure	- 77.5	- 80.8	- 93.3	- 98.9	- 101.3	- 100.5	- 100.3	Chapter 7
Total depreciation	- 61.2	- 62.2	- 64.5	- 69.0	- 74.0	- 79.1	- 84.0	Section 0
<b>Regulatory profit/(loss) before tax</b>	<b>96.6</b>	<b>99.8</b>	<b>108.6</b>	<b>120.7</b>	<b>129.6</b>	<b>138.1</b>	<b>146.2</b>	

Table 8.5A: Amortisation of revaluations

\$M	FY17	18	19	20	21	22	23
Total depreciation	61.2	62.2	64.5	69.0	74.0	79.1	84.0
Adjusted depreciation	- 57.1	- 56.8	- 57.8	- 61.2	- 64.9	- 68.6	- 72.1
<b>Amortisation of revaluations</b>	<b>4.1</b>	<b>5.4</b>	<b>6.7</b>	<b>7.8</b>	<b>9.2</b>	<b>10.5</b>	<b>11.8</b>

Table 8.6A: Unamortised balance of revaluations

\$M – EXCEPT WHERE NOTED	FY17	18	19	20	21	22	23
Opening RAB	1,528.0	1,600.3	1,679.0	1,865.2	2,000.3	2,138.8	2,308.7
Opening RAB excluding revaluations	- 1,429.3	- 1,474.4	- 1,524.7	- 1,683.2	- 1,789.0	- 1,898.2	- 2,037.3
<b>Unamortised balance of revaluations</b>	<b>98.7</b>	<b>126.0</b>	<b>154.3</b>	<b>182.0</b>	<b>211.2</b>	<b>240.6</b>	<b>271.4</b>
Average weighted remaining useful life (years)	25.0	25.7	26.0	27.0	27.0	27.0	27.5

Table 8.7A: Notional deductible interest

\$M – EXCEPT WHERE NOTED	FY17	18	19	20	21	22	23
Regulatory investment value	1,478.7	1,540.9	1,615.3	1,794.8	1,918.7	2,043.2	2,195.7
RAB proportionate investment	50.8	53.3	83.3	80.1	78.6	89.7	76.8
Leverage	42%	42%	42%	42%	42%	42%	42%
Cost of debt	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%
TCSD	1.9	1.9	2.1	2.3	2.5	2.6	2.8
<b>Notional deductible interest</b>	<b>39.8</b>	<b>41.5</b>	<b>44.2</b>	<b>48.8</b>	<b>52.0</b>	<b>55.5</b>	<b>59.2</b>

Table 9.1A: TCSD and input assumptions

\$M – EXCEPT WHERE NOTED	FY19	20	21	22	23
Opening RAB	1,679.0	1,865.2	2,000.3	2,138.8	2,308.7
Closing RAB	1,865.2	2,000.3	2,138.8	2,308.7	2,482.1
Average RAB	1,772.1	1,932.7	2,069.5	2,223.7	2,395.4
Total book value of interest bearing debt	1,495.4	1,630.9	1,746.4	1,876.5	2,021.3
Input methodology leverage	42%	42%	42%	42%	42%
Gross TCSD	4.2	4.6	4.9	5.3	5.7
<b>TCSD allowance</b>	<b>2.1</b>	<b>2.3</b>	<b>2.5</b>	<b>2.6</b>	<b>2.8</b>

Table 9.2A: Timing factors

	FY19	20	21	22	23
TFVCA	1.0277	1.0342	1.0323	1.0310	1.0262
TF	1.0352	1.0352	1.0352	1.0352	1.0352
TFrev	1.0286	1.0286	1.0286	1.0286	1.0286



## APPENDIX B RECOVERABLE COSTS

SUPPLIER	SUPPLIER INVOICE NUMBER	AMOUNT	INVOICE DATE
<b>Audit fees</b>			
Deloitte Auckland	893970	15,000	31/01/2017
Deloitte Auckland	893973	40,000	31/01/2017
Deloitte Auckland	902168	67,194	28/02/2017
Deloitte Auckland	907644	45,000	31/03/2017
Deloitte Auckland	917507	70,120	30/04/2017
Deloitte Auckland	920873	73,000	31/05/2017
Deloitte Auckland	Accrual	65,000	
Total CPP audit fees		375,314	
<b>Verifier fees</b>			
Farrier Swier Consulting	201705	26,307	12/01/2017
Farrier Swier Consulting	201717	58,924	1/03/2017
Farrier Swier Consulting	201744	113,601	24/04/2017
Farrier Swier Consulting	201744	52,627	24/04/2017
Farrier Swier Consulting	Accrual	117,827	
Total CPP verifier fees		369,286	

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