March 2020

PR19 Reconciliation Rulebook Consultation – reconciliation model guidance

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About this document

This document provides a guide to the PR19 reconciliation models we propose to use to calculate the reconciliations which will be required during, and at the end of, the 2020-25 price control period.

It provides clarity on:

- the purpose of the models;
- policy decisions and background; and
- inputs, outputs and calculations.

PR14 represented a significant evolution of Ofwat's historical approach to reconciliation of price controls. Our approach at PR19 reflects a further development in how we undertake reconciliations, through:

- additional and better targeted reconciliations, to ensure companies' allowed revenues are appropriate; and
- more in-period reconciliations to ensure changes to allowed revenue are undertaken in a more timely way.

The 'PR19 reconciliation rulebook consultation – reconciliation model guidance' is part of a suite of complementary documents and spreadsheets which should be considered together and comprises:

- this document, the 'PR19 reconciliation rulebook consultation – reconciliation model guidance' which contains detailed chapters on each reconciliation model and the mechanics of how they work including inputs, outputs and calculations;
- the 'PR19 reconciliation rulebook consultation – proposed approach and policy' which details our proposed approach and policy decisions relating to the reconciliations that will be required during, and at the end of, the 2020-25 price control period; and
- a series of reconciliation models which demonstrate the practical operation of the PR19 reconciliation mechanisms. These models are referred to throughout this document.

This document is structured with a detailed chapter for each model which we will use to reconcile companies' performance over the 2020-25 period and also includes details of reconciliations that are specific to individual companies. It should be read alongside the PR19 reconciliation rulebook consultation – proposed approach and policy document which provides an introduction and background to the reconciliation

models, covers our overview and approach to implementing the reconciliation and also discusses some of our policy decisions.

We ask for comments from stakeholders by 29 April 2020. We will publish our final ‘PR19 reconciliation rulebook – reconciliation model guidance’ by Autumn 2020 after considering consultation responses.

Contents

Responding to this consultation

This document invites comments on our proposed PR19 reconciliation rulebook models and this model guide.

We invite stakeholders to comment on the proposed modifications by **29 April 2020**. Responses can be emailed to PR19Reconciliationrulebook@ofwat.gov.uk and copied to Cheryl.Steventon@Ofwat.gov.uk or posted to:

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We will publish responses to this document on our website at www.ofwat.gov.uk. Information provided in response to this consultation, including personal information, may be published or disclosed in accordance with access to information legislation – primarily the Freedom of Information Act 2000 (FoIA), data protection legislation and the Environmental Information Regulations 2004.

If you would like the information that you provide to be treated as confidential, please be aware that, under the FoIA, there is a statutory 'Code of Practice' that deals, among other things, with obligations of confidence. In view of this, it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that we can maintain confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on Ofwat.

1. Purpose and scope of this document

This document consults on the PR19 reconciliation rulebook guide and models. The rulebook comprises:

- this document, the 'PR19 reconciliation rulebook consultation – reconciliation model guidance' which contains detailed chapters on each reconciliation model and the mechanics of how they work including inputs, outputs and calculations;
- the 'PR19 reconciliation rulebook consultation – proposed approach and policy' which details our proposed approach and policy decisions relating to the reconciliations that will be required during, and at the end of, the 2020-25 price control period; and
- a series of reconciliation models which demonstrate the practical operation of the PR19 reconciliation mechanisms. These models are referred to throughout this document.

Our approach to reconciliations at PR19 marks a significant evolution on our approach from PR14. To be as transparent as possible we have already provided detailed information on how we would undertake the PR19 reconciliation including publishing draft reconciliation models as they have been developed during the PR19 process. This document contains a detailed chapter for each reconciliation model which we will use to reconcile companies' performance over the 2020-25 period and also includes details of reconciliations that are specific to individual companies. It brings together the detailed design of each of the reconciliation models in one place, explains how we foresee these models interact, and sets out the overall process we intend to follow for both in-period and end-of-period reconciliation adjustments.

It should be read alongside, PR19 reconciliation rulebook consultation – proposed approach and policy which gives the background and context of the PR19 reconciliations, sets out our approach to implementing the reconciliation and brings together the overarching policy decisions on how we propose to treat issues like tax, inflation and time value of money in the reconciliation process.

Providing companies with additional clarity on our approach to PR19 reconciliations at an early stage helps to:

- fulfil our role of being as transparent as possible by bringing together overarching policy decisions, details of each of the reconciliations and interactions;
- promote predictable and transparent regulation;
- increase confidence across the sector; and
- ensure the process is administered efficiently.

As these reconciliations require data that we do not currently collect we are publishing this consultation on the reconciliation rulebook before the Regulatory Accounting Guidelines consultation. Our Regulatory Accounting Guidelines (RAGs) define in detail the treatment of particular items (for example, revenue and interest) where Ofwat disclosure and accounting requirements differ from those normally required under UK accounting standards and applicable legislation. Companies use these guidelines to complete their annual performance report (APR). We then use the information in the annual performance report to monitor performance and to inform future policy in relation to the regulated activities. The RAGs for 2020-25 will need to ensure companies report all the information which is necessary to enable and facilitate the reconciliations. It is particularly important at this stage to ensure this provides the data to facilitate in-period reconciliations.

Table 1 lists and summarises the draft PR19 reconciliation models. It also provides links to the latest versions of the models on our website.

Table 1: Summary of the common PR19 reconciliations and links to the draft models

Reconciliation	Summary of the reconciliations' purpose
In-period reconciliations	
In-period adjustments model	This model adjusts price controls to reflect in-period outcome delivery incentives including the customer measure of experience (C-MeX) and the developer services measure of experience (D-MeX).
PR19 blind year ODI difference model	This model calculates the difference between the net outcome delivery incentives (ODIs) for 2019-20 for each price control as forecast for our PR19 final determinations and the net ODI payments for each price control that would have been calculated if actual performance for 2019-20 had been known.
PR19 revenue forecasting incentive model	This model shows how we will apply the revenue forecasting incentive (RFI). The RFI is a symmetric revenue adjustment applied in-period to reconcile any revenue under or over-recovery in an earlier year. Where differences between actual and allowed revenues are greater than 2%, the RFI applies a financial penalty. The RFI is applied to the network plus and water resources controls. Appendix 7 (wholesale revenue incentives) of our PR19 Methodology provides background information with further changes available in our PR19 final determination.
Customer measure of experience – C-MeX	The customer measure of experience (C-MeX) is designed to incentivise companies to provide excellent levels of service to their residential customers. Based on its relative performance, each company can receive outperformance or incur underperformance payments each year. Find out more information on our webpage for C-MeX and D-MeX.
Developer measure of experience – D-MeX	The developer services measure of experience (D-MeX) is designed to incentivise companies to provide excellent levels of service to their developer customers. Based on its relative performance, each company can receive outperformance or incur underperformance payments each year.

	Find out more information on our webpage for C-MeX and D-MeX.
Bilateral entry adjustment (BEA)	This model shows how we will adjust relevant companies' revenues should bilateral entry in the water resources market occur. Appendix 5 (water resources control) of our PR19 Methodology provides background information.
Bioresources revenue reconciliation model	This model shows how the bioresources revenue reconciliation will work over 2020-2025. It combines and simplifies the previously published 'Bioresources modified revenue model', the 'Bioresources in-period revenue correction model' and the 'Bioresources forecasting accuracy incentive model'. The model shows how we modify the average revenue control each year based on the difference between outturn and forecast sludge production. In addition, the model shows how we adjust allowed bioresources revenue in one year to correct for any under or over-recovery of revenue in earlier years. Finally, it also shows how we apply the bioresources forecasting accuracy incentive. Appendix 6 (bioresources control) of our PR19 Methodology provides background information.
In-period and end-of-period reconciliations	
ODI performance model	This model will determine how the outcome delivery incentives (ODI) payments that have been accrued by companies in each year of performance, based on the performance commitment set in the PR19 final determinations.
End-of-period reconciliations	
Residential retail reconciliation model	This model shows how we will reconcile residential retail revenues over the PR19 period at PR24.
PR19 Water trading incentive model	This model calculates PR19 water trading incentives for qualifying trades starting in 2020-2025.
Developer services model	This model is designed to reconcile developer services revenues within the network-plus control for PR19. We explain further details in 'PR19 final determinations: Our approach to regulating developer services'.
Water industry national environment programme (WINEP) reconciliation model	The purpose of this model is to account for the impact of ministerial decisions on the scale of companies' environmental enhancement programmes where this differs from our assumptions made at final determinations. Chapter 9 and Appendix 11 (Securing cost efficiency) of our PR19 Methodology and section 11.5 of our PR19 final determinations - Securing cost efficiency technical appendix provide background information.
Cost of new debt reconciliation model	This model, which is an updated version of the one which was published alongside the final methodology, will index the cost of new debt by reference to a market benchmark in 2020-25, with an end of period reconciliation adjustment
Gearing outperformance sharing mechanism	We explained our proposed default Gearing Outperformance Sharing mechanism in our 'Putting the sector in balance' position statement, published in July 2018. We revised the mechanism in the final determination to include a glide path for the trigger, as described in the 'Aligning risk and return technical appendix', published in December 2019. This reconciliation model contains the calculations that underpin the updated mechanism.

Cost reconciliations	This is the model we will use at PR24 to reconcile actual performance against the totex allowances from PR19. An early version of this model was published on 13th December 2017.
Tax reconciliation	Our PR19 methodology introduced a tax reconciliation mechanism, which will take account of any changes to corporation tax or capital allowance rates. We will make tax reconciliation adjustments at the end of the period, at the same time as we make reconciliation adjustments in respect of the cost of debt. In order to do this we will recalculate the tax allowance for each year, to reflect changes to either the headline corporation tax rate or to the writing down allowances available on capital expenditure. To do this, we will rerun the PR19 financial model using the totex allowances, PAYG and RCV run-off rates (set out in the final determination).
Land sales	This model calculates the adjustment to the regulatory capital value (RCV) for any disposal of interests in land by the regulated business in the years from 2020-21 to 2024-25.
RPI-CPIH wedge reconciliation model	This is the model we will use in PR24 to reconcile for the difference between the actual RPI-CPIH (measures of inflation) wedge observed over the price control period, and the RPI-CPIH wedge included in the final determination. It calculates the annual difference in the wedge and its impact on the RCV, allowed run-off revenue and allowed return revenue. Our methodology for the 2019 price review Appendix 12 (aligning risk and return) provides background information.
Strategic regional water resources reconciliation model	This model reconciles revenue allowances for the strategic regional water resource options. The reconciliation accounts for the extent of progression of strategic options through the gated approval process. More information about our final approach to strategic options is set out in 'PR19 final determinations: Strategic regional water resource solutions appendix'.
Innovation competition	In December 2019, we confirmed our decision to make up to £200m available for innovation activities for the 2020-25 period through the introduction of an innovation competition. The model calculates the total amount of unused funds to be redistributed to individual companies' customers. This is done in line with the original allocation methodology set out in PR19 Final Determinations. This is an emerging area where we will continue to consult separately in more detail.

This document discusses details of the reconciliations which are common across all companies in section 2 while section 3 includes details of reconciliations that are specific to individual companies.

2. Details of common reconciliations

The following sections consider each common reconciliation model in detail and raise questions in this consultation.

The main purpose of this document is to allow companies to engage with the detailed nature of the PR19 reconciliation modelling suite and understand the relevant requirements to run every reconciliation model on an annual basis. Each chapter is structured as follows:

- a summary of the adjustments that the model applies;
- the background and purpose of the model;
- the nature of reconciliation adjustment;
- overview of the structure of the mechanism;
- the outputs;
- the input lines, including an explanation of their source;
- a detailed overview of the relevant calculations; and
- implementation issues.

For all models we are asking:

Do you agree with our proposed approach to reconciliation for this area?

For the WINEP model in particular we would also like to know:

Do you agree that for simplicity, 100% of any adjustment is treated as an RCV adjustment?

2.1 Cost reconciliations

2.1.1 Summary

This is the model we will use at PR24 to reconcile actual performance against the totex allowances from PR19. An early version of this model was published on 13 December 2017.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	RCV and Revenue	RCV and Revenue adjustments feeder model	2017-18 FYA CPIH deflated prices	Water Network Plus, Water Resources, Wastewater Network Plus	Company-specific wholesale allowed return on capital

- The PR19 cost sharing mechanism promotes high quality business plans and efficient operations. It also supports effective financial risk management.
- The cost sharing mechanism applies to the PR19 total revenue price controls, but not the average revenue price controls.
- Companies will bear some over expenditure and retain some under expenditure based on the cost sharing rates set out in table 3.7 of their final determinations.
- Where an ex ante cost sharing adjustment was made at PR19 this will be taken into account in the overall adjustments to be applied at PR24. Adjustments will be split between adjustments to allowed revenue and adjustments to RCV additions reflecting each company's PR19 opex/capex profile.
- There are special sharing rates for over/under expenditure against allowances for business rates and Environment Agency abstraction charges.
- There is an additional reconciliation for the difference between the real price affect factors for wage costs that we included in PR19 totex allowances and the outturn real price effects revealed by the change in the ASHE index.
- Adjustment calculations will be carried out in the cost sharing reconciliation model. They will include time value of money adjustments discounted to 2024-25 present values and be stated in 2017-18 prices.

2.1.2 Background and purpose

In a price control we set cost and revenue allowances five years in advance. There are always uncertainties about the future, and therefore a risk that we have set an allowance that will turn out to be either too low or too high. Cost sharing is an important mechanism by which this risk is shared between customers and shareholders. Cost sharing enables us to rely less on other uncertainty mechanisms, such as interim determinations, which means that our price control provides stronger cost efficiency incentives and lower regulatory burden.

The cost sharing mechanism works as follows: when a company over or underspends its cost allowance during the price control period, it will share the over or underspend with customers through the end of period reconciliation.

At PR14, to minimise reconciliation adjustments at PR19, we included an 'ex ante' adjustment to some companies' allowed revenues. The ex-ante adjustment was calculated by assuming that companies' outturn expenditure levels would match their own business plan forecasts. For most companies we have not applied an ex ante adjustment to our PR19 allowed revenue determinations and a full reconciliation adjustment will be applied at PR24. We have retained the ex-ante adjustment solely for companies whose business plan totex is below our view of efficient costs, as we consider that companies tend to outperform their business plan submissions, and an upfront payment could lead to an even greater negative adjustments at PR24 than without it. This upfront payment will be taken into account in our reconciliation.

The total adjustment value for each company will be split between a profiled adjustment to allowed revenues for PR24, and an adjustment to RCV additions at PR24. The split will reflect the opex/capex profile in the company's PR19 business plans[1]. The revenue allowance/RCV split is considered to be neutral with respect to the net present value of adjustments.

Our PR19 cost sharing approach applies to the total revenue controls – water resources; water network plus; and wastewater network plus. It does not apply to the average revenue controls – retail and bioresources.

Our PR19 final determinations also confirmed that we would apply an adjustment at PR24 for the difference between our assumptions about real price effect impacts on wage costs and the outturn position revealed by the ASHE index published by the Office for National Statistics.

[1] The opex/capex split takes account of the treatment of operating leases.

2.1.3 Nature of the reconciliation

The cost sharing reconciliation means that companies will bear a proportion of any over expenditure versus their PR19 totex allowances (with only a portion being reimbursed at PR24), but will be allowed to retain a proportion of under expenditure (with only a portion being reclaimed for customers at PR24).

The proportions of over/under expenditure that companies will bear/retain are expressed as percentages and were included in the cost sharing model for each company published as part of our PR19 final determinations. Broadly speaking, the higher a company's view of its totex requirements in its business plans was, compared to our view, the greater the proportion of over expenditure it will bear, and the smaller the proportion of under-expenditure it will retain at PR24. Further details are set out in the PR19 final determinations 'Securing cost efficiency technical appendix.

Over/under expenditure totals for the water resources and water network plus price controls for each company are considered together. Over/under expenditure totals for the wastewater network plus price control for each company are considered separately. The outcomes for each company are combined to give an overall cost sharing adjustment for PR24.

We will apply financial reconciliation adjustments at PR24 calculated using the mechanism and the cost sharing reconciliation model outlined below. The adjustments will be split into revenue and RCV adjustments for each control, using weighted average PAYG rates for each control.

Our PR19 final determinations included uncertainty mechanism reconciliations for business rates and Environment Agency abstraction licence costs. These provide for a symmetrical 25% company sharing rate to apply to companies' over/under expenditure against their allowances for these items. Details are set out in the PR19 final determinations 'Aligning risk and return technical appendix'2. We will calculate and apply the reconciliation adjustments for business rates and Environment Agency abstraction licence costs in conjunction with totex sharing reconciliation adjustments as set out below.

The reconciliation for real price effects on wage costs will apply an adjustment for the difference between the uplift for real price effects we applied at PR19 based on forecasts by the Office for Budget Responsibility and the real price effect revealed by

[2] https://www.ofwat.gov.uk/publication/pr19-final-determinations-aligning-risk-and-return-technical-appendix/

the change in the ASHE index. Further details are set out in the PR19 final determinations 'Securing cost efficiency technical appendix'.

2.1.4 Mechanism structure - overview

Our PR19 final determinations for each company included totex allowances for each of the total revenue controls. These reflect our view of efficient expenditure requirements.

We also determined the percentage of over expenditure that each company should bear and the percentage of under expenditure that each company should be allowed to retain as part of the final determinations. The totex cost sharing for each company for the water resources, water network plus and wastewater network plus controls are provided in table 3.7 of each company's final determinations.

Time value of money adjustments have been made to prior to the application of sharing rates to avoid any potential incentive to delay expenditure to the later years. We are conscious that this is one approach that could be followed, others include calculating the sharing adjustment on a year by year basis, and are interested in views on this approach.

For business rates and Environment Agency abstraction licence fees, all companies will bear/retain 25% of any efficient over/under expenditure compared to the allowance for those items included in our PR19 final determinations. These costs are excluded from the main totex sharing calculation. The reconciliation amounts for business rates and abstraction licence fees will applied as a revenue adjustment.

The reconciliation for real price effects on wage costs will apply an adjustment for the difference between:

- the uplift for real price effects we applied at PR19 based on forecasts by the Office for Budget Responsibility, being the wedge between forecast CPIH and forecast wage cost changes; and
- the real price effect revealed by the change in the ASHE index, being the value of the wedge between that change and the change in the CPIH index.

The difference value is multiplied by 38.6% of the totex allowance for each year of the 2020-25 period, being the percentage of totex we assumed relates to wage costs.

The reconciliation amount for each, whether positive of negative, will be applied as revenue adjustment because wage costs are considered to be opex in nature.

2.1.5 Mechanism structure – calculations

Outputs

The outputs below will be the same for water resources, water network plus and wastewater network plus controls. All outputs have been adjusted for the time value of money.

#	Output	Description	Units
1	Active adjustment for cost sharing for wage adjustment	The total adjustment related to the reconciliation of actual and forecast wage related totex.	£m in [2017-18 prices]
2	Total adjustment for cost sharing after ex ante allowance	The total adjustment related to the reconciliation of actual and forecast net totex for cost sharing. Any ex ante applied in the PR19 final determinations is taken into account when calculating this value.	£m in [2017-18 prices]
3	Active adjustment for cost sharing business rates and abstraction	The total adjustment related to the reconciliation of actual and forecast business rates and abstraction charges totex.	£m in [2017-18 prices]
4	Total adjustments for cost sharing	The sum of outputs 1 – 3 above.	£m in [2017-18 prices]
5	Total revenue adjustment for cost sharing	The total cost sharing adjustment that is linked to revenue.	£m in [2017-18 prices]
6	Total RCV adjustment for cost sharing	The total cost sharing adjustment that is linked to RCV.	£m in [2017-18 prices]

Inputs

Input values will be obtained from the PR19 final determinations, companies' annual performance reports and, as appropriate, from data submissions required for PR24.

#	Input	Description	Source	Units
1	Base costs	Allowed base costs for PR19 totex.	PR19 final determinations for company.	£m in 2017-18 prices
2	Metering (excluding new connections)	Allowed metering costs (excluding new connections) for meters requested by optants, customers and businesses (Only applicable for water network plus controls).	PR19 final determinations for company.	£m in 2017-18 prices
3	WINEP / NEP ~ In-the-Round	Allowed WINEP / NEP enhancement costs.	PR19 final determinations for company.	£m in 2017-18 prices
4	Opex split profile	Opex profile for base opex after known adjustments.	PR19 opex/capex model	%
5	Capex split profile	Capex profile for base capex after known adjustments.	PR19 opex/capex model	%
6	Business Rates & Abstraction Charges forecast profile	Business Rates & Abstraction Charges forecast profile as per PR19 final determination.		%
7	Net totex for cost sharing reconciliation	Company's actual totex for water resources and water network plus controls, net of grants and contributions, totex for business rates and Environment Agency abstraction licence fees. Value required for each year from 2020-21 to 2024-25.	Annual performance reporting (Fountain) /company's PR24 data submissions.	£m in 2017-18 prices
8	Net totex available for cost sharing	Company's allowed totex for water resources and water network plus controls, net of grants and contributions, allowed totex for business rates and Environment Agency abstraction licence fees.	PR19 final determinations for company.	£m in 2017-18 prices

		Value required for each year from 2020-21 to 2024-25.		
9	Business rates - Forecast	Company's totex allowance for business rates. Value required for each year from 2020-21 to 2024-25.	PR19 final determinations for company.	£m in 2017-18 prices
10	Abstraction charges - Forecast	Company's totex allowance for Environment Agency abstraction licence fees. Value required for each year from 2020-21 to 2024-25.	PR19 final determinations for company.	£m in 2017-18 prices
11	Business rates - Actual	Company's actual business rate costs. Value required for each year from 2020-21 to 2024-25.	Annual performance reporting (Fountain) /company's PR24 data submissions.	£m in 2017-18 prices
12	Abstraction charges - Actual	Company's actual Environment Agency abstraction licence fee costs. Value required for each year from 2020-21 to 2024-25.	Annual performance reporting (Fountain) /company's PR24 data submissions.	£m in 2017-18 prices
13	Weighted average PAYG rate	Weighted average PAYG rate as calculated in the PR19 PAYG model.	PR19 PAYG model	%
14	Ex-ante allowance above Ofwat forecast	Ex ante cost sharing adjustment for PR19 allowed totex.	PR19 final determinations for company.	£m in 2017-18 prices
15	Inflation	CPIH inflation index values.	ONS data publication.	Index value
16	OBR Forecast wage growth	OBR Forecast wage growth used in PR19 final determinations.	PR19 cost assessment technical appendix.	%.

17	ASHE Gross Hourly Wage All	ASHE Gross hourly wage growth used for actual wage growth calculations.	ONS ASHE Table 4.1a	£ / hour in outturn prices
18	Percentage totex linked to wage growth	The percentage of totex assumed to be wage costs.	Set at 38.6% in PR19 final determinations.	%
19	Outperformance Rate	The company's totex sharing percentage for over expenditure.	PR19 final determinations cost sharing model	%
20	Underperformance Rate	The company's totex sharing percentage for under expenditure.	PR19 final determinations cost sharing model	%
21	Cost sharing rates Abstraction and Business rates – Overperformance / Underperformance	Sharing percentage for under / over expenditure on business rates and Environment Agency abstraction licence fees.	Set at 25% in PR19 final determinations.	%
23	WACC	Company's specific WACC value.	Derived from PR19 final determination	%

We will set out our approach for reconciliation adjustments relating to the PR24 blind year (2024-25) in our methodology for PR24.

Calculations

The calculations below follow the same principles for water resources, water network plus and wastewater network plus controls.

#	Calculation overview	Calculation detail
Adjustment For Wage Growth		
1	Cumulative actual real wage growth	ASHE hourly wages in nominal terms are adjusted for inflation to calculate actual wages in real terms. Cumulative wage growth is calculated on the real wages during the period.
2	Real adjustment factor for wage growth	An adjustment factor is calculated based on the difference between the cumulative forecast

		wage growth used in the PR19 final determinations and the actual wage growth calculated in step 1.
3	Totex for wage adjustment	Total of base costs, metering costs (water network only) and WINEP/NEP costs to find totex available for wage indexation adjustment.
4	Profile for totex for wage adjustment	Profile totex base on the base totex profile from the PR19 opex/capex model.
5	Totex applicable for wage adjustment by year	For each year from 2020-21 to 2024-25, multiply the company's totex allowance by 38.6%.
6	Adjustment factor for wage linked totex	Apply adjustment calculated in point 2.
7	Variance to forecast wage linked totex	Calculate variance between calculated forecast wage totex in step 5 and adjusted wage totex for actual wage growth in step 6.
8	Variance to forecast wage linked totex - Time adjusted	Apply a time value of money variance in wage related totex using the company specific WACC for PR19.
9	Under / Overperformance on wage linked totex	Calculate whether there has been under/overperformance against the PR19 forecast allowance for wage related totex and apply the appropriate cost sharing rate to the variance calculated in step 8.
Cost sharing on net totex for cost sharing		
10	Profile forecast net totex for cost sharing	Profile totex based totex profile from the PR19 opex/capex model.
11	Variance to forecast net totex for cost sharing	Calculate variance between profiled forecast in step 10 and actual net totex for cost sharing.
12	Variance to forecast net totex for cost sharing - Time adjusted	Apply a time value of money adjustment using the company specific WACC for PR19.
13	Under / Overperformance on net totex for cost sharing	Calculate whether a company has under/overperformed against the PR19 totex allowance and apply the appropriate cost sharing rate to the variance calculated in step 12.
Cost sharing on business rates and abstraction charges		

14	Business rates & abstraction charges totex	Sum the business rates and abstraction charge forecast from PR19 final determinations and company actuals from annual performance report data.
15	Profile total forecast business rates and abstraction charges	Profile forecast business rates and abstraction charges based on the PR19 FD.
16	Variance to forecast business rates and abstraction charges	Calculate variance between profile forecast business rates and abstraction charges (step 15) and actual business rates and abstraction charges.
17	Variance to forecast business rates and abstraction charges – Time adjusted	Apply a time value of money adjustment to the variance between forecast and actual business rates and abstraction totex using the company specific WACC for PR19.
18	Under / Overperformance business rates and abstraction charges	Calculate whether a company has under/overperformed against the PR19 allowance and apply the appropriate cost sharing rate to the variance calculated in step 17.
Apportion Revenue and RCV adjustments		
19	Total adjustments for cost sharing	Sum of time adjusted wage adjustment, net totex and business rates and abstraction charges for each control.
20	Revenue cost sharing adjustment	Apply average PAYG rate to the net totex for cost sharing adjustment (line 13) and add the wage adjustment and business rates and abstraction charges adjustments (lines 9 and 18).
21	RCV cost sharing adjustment	Apply the remaining net totex for cost sharing to RCV adjustments.

2.2 Innovation Competition

2.2.1 Summary

In December 2019, we confirmed our decision to make up to £200m available for innovation activities for the 2020-25 period through the introduction of an innovation competition. The model calculates the total amount of unused funds to be redistributed to individual companies' customers. This is done in line with the original allocation methodology set out in PR19 Final Determinations. This is an emerging area where we will continue to consult separately in more detail.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue	Revenue adjustments feeder model	2017-18 FYA CPIH deflated	Water network plus, wastewater network plus, water resources and bioresources	Company-specific wholesale allowed return on capital

2.2.2 Background and purpose

We believe that the adoption of innovative approaches is key to delivering long-term resilience and great customer service at an affordable price, and the sector will need to step up and increase innovation in order to meet the strategic challenges it faces in a cost-effective and sustainable way. We also want to see companies work more effectively together and with their supply chains to better tackle these challenges.

In December 2019, we confirmed our decision to make up to £200m available for innovation activities for the period 2020-25 through the introduction of an innovation competition.

As highlighted in our decision document, our expectation is that funding will be ring fenced, pooled into a single pot, and administered such that it cannot be used for purposes other than the innovation competition. In order to smooth the impact on

bills, we envisage that companies will collect funding from their customers evenly over the period 2020-25.

2.2.3 Nature of the reconciliation

We will need to make a number of adjustments at the end of the period to achieve the following objectives:

- **Objective 1**. Where companies have not spent the totality of the innovation competition funding provided through PR19, either because there have not been sufficient projects/projects of sufficiently high quality to be awarded all the funding, the competition is halted or because individual projects have experienced an underspend, all unused funds will be returned to customers, except insofar as:

  - a decision is made by Ofwat and/or any independent entity involved in the decision-making process that an individual project may receive funding beyond 2021-25. This may be the case in particular for projects funded towards the end of the 2020-25 period; or
  - a decision is made by Ofwat and/or any independent entity involved in the decision-making process that the funding may be used to cover any well-justified overspend on individual projects.

  The amount returned to each company's customers will be proportionate to the amount they originally funded. We would expect to apply inflation and financing adjustments when calculating this.

- **Objective 2**. The innovation competition will involve continual assessment and monitoring to ensure the projects funded are of value to customers. If we decide to halt the innovation competition before the end of the 2020-25 period, any unspent funds will be returned to customers in line with the methodology outlined for Objective 1.

- **Objective 3**. As part of the continuous monitoring and assessment, we may decide to make adjustments where we have considered that funds have been misspent and/or projects do not comply with funding conditions without reasonable justification. Unspent funds and/ or inefficient expenditure will be treated as unused funds and returned to customers in line with the methodology outlined for Objective 1.

- **Objective 4.** Royalties or any other revenue earned through the innovation competition may be returned in part or in full to customers in line with the terms of any funding decision.

- **Objective 5.** We will ensure that companies do not benefit financially from having collected money from their customers that they have either (i) not spent/paid into the fund, or (ii) spent/paid into the fund in a later year than it was collected.

We are in the process of finalising the framework for the innovation competition, which may include further details on the circumstances in which innovation funding will be returned to customers. There will be further consultation as required.

The innovation competition reconciliation model is an **end-of-period reconciliation** that takes the form of a **revenue adjustment**. This means any adjustment required will be made at PR24 and would affect companies' allowed revenue over the 2025-30 period.

2.2.4 Mechanism structure – calculations

The model is a whole of industry model with inputs and outputs for all companies housed within one model. Inputs and calculations are in outturn prices before being converted into real terms 2017-18 CPIH FYA. A time value of money adjustment is also made discounted to 2024-25 prices.

Outputs

#	Output	Description	Units
1	Total funds to be redistributed - Total	The total funds remaining from the fund to be redistributed across the industry.	£m in 2017-18 prices.
2	Total funds to be redistributed - Company	The total funds remaining from the fund to be redistributed on a company by company basis.	£m in 2017-18 prices.

Inputs

#	Input	Source	Units
1	Allocated Funding - for each company in each year 2020-21 to 2024-25	Annual performance reporting (Fountain)	£m in Nominal prices.
2	Total Funding transferred to innovation fund - for each company in each year 2020-21 to 2024-25	Annual performance reporting (Fountain)	£m in Nominal prices.

3	Bids Accepted - for each company in each year 2020-21 to 2024-25	Annual performance reporting (Fountain)	£m in Nominal prices.
4	Total project spend to date - for each company in each year 2020-21 to 2024-25	Annual performance reporting (Fountain)	£m in Nominal prices.
5	Allowed Future expenditure - for each company in each year 2020-21 to 2024-25	Annual performance reporting (Fountain)	£m in Nominal prices.
6	Company's specific WACC value.	Derived from PR19 final determination	%
7	Indexation CPIH	Consumer Price Index (including housing costs) as published	Index

Calculations

#	Calculation overview	Calculation detail
1	Total to be redistributed	Calculates the total amount to be redistributed to individual companies' customers in line with the original allocation methodology set out in PR19 Final Determinations.
2	Adjustment from nominal to real prices	Inflation values are used to convert values from outturn prices into real 2017-18 FYA CPIH

2.3 ODI performance model

2.3.1 Summary

This model will determine the level of outcome delivery incentives (ODI) payments that have been accrued by companies in each year of performance, based on the performance commitments set in the PR19 final determinations for each company.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
In-period and End-of-period	RCV and Revenue	In-period adjustments model; PR24 revenue adjustments feeder model; and/or PR24 RCV adjustments feeder model	2017-18 FYA CPIH deflated	Water resources, water network plus, wastewater network plus, bioresources, residential retail, business retail, Thames Tideway Tunnel	NA

2.3.2 Background and purpose

Each company's outcomes performance commitment appendix in the PR19 final determinations sets out its performance commitments for the 2020-25 period.

There are 675 performance commitments across the 17 largest water companies. 461 performance commitments have financial outcome delivery incentives (ODIs), which means that companies can receive outperformance payments or incur underperformance payments based on their level of performance.

Excluding C-MeX and D-MeX, which are calculated separately from this model, 368 performance commitments have 'in-period ODIs' which bring ODI payments closer in time to when customers experience a given level of performance. This means we will adjust companies' allowed revenue during the 2020-25 period to reflect performance in previous years. We will normally do this through an annual reconciliation process between July and November following the relevant reporting year.

59 performance commitments have end-of-period ODIs, which means while performance is measured each year, revenue and/or RCV adjustments will be made at PR24 and implemented during the 2025-30 period.

As set out in the PR19 final determinations, outperformance payments above 3% of a company's wastewater or water return on regulatory equity (RoRE) for that year are shared with customers. This means companies receive 50% of outperformance payments above this threshold. This aggregate sharing mechanism applies to all ODI payments except to C-MeX, D-MeX and those allocated to retail price controls.

2.3.3 Nature of the reconciliation

This model calculates the overall ODI payments accrued by companies, based on their performance in the relevant reporting year, broken down as follows (per price control):

- revenue adjustments to be applied in the following reporting year;
- revenue adjustments to be applied at the end of the 2020-25 period; and
- RCV adjustments to be applied at the end of the 2020-25period.

This model flows through into the in-period adjustments model which will operate for the first three years and the last year of the 2020-25 period. The in-period adjustments model will apply adjustments for inflation and taxation, as well as any deferrals of ODI payments to subsequent years, including time value of money adjustments (see PR19 reconciliation rulebook consultation – proposed approach and policy).

Due to the timing of adjustments, calculations from this model will also feed into the relevant models at PR24 for performance in 2023-24.

All end of period adjustments will be applied through the relevant models at PR24.

2.3.4 Mechanism structure – overview

Standardised and non-standardised ODI calculations

Unlike previous price reviews, most ODIs in the PR19 final determinations follow a standardised calculation approach. This means that the difference between the performance commitment level set out in the PR19 final determinations and actual performance in the reporting year is multiplied by the relevant outperformance or

underperformance rate, accounting for the presence of any deadbands. Caps and collars on payments are applied where they exist.

As a result, the model calculates the outperformance or underperformance payments earned or incurred for each performance commitment using this standardised calculation approach. For the few ODIs where the calculation is not in the standardised form, companies are able to input alternative ODI payments to those that would be calculated using the standardised approach. We would expect companies to provide an accompanying explanation showing how those alternative payments have been calculated, using a version of the pro-forma set out in appendix 1 of 'PR19 reconciliation rulebook – proposed approach and policy'.

Companies should not use this override function in this model where they want to under-recover potential outperformance payments. Instead, companies should use the abatement function in the in-period adjustments model.

Enhanced ODIs

Enhanced ODIs also use a standardised methodology. This applies additional enhanced outperformance or underperformance rates for performance beyond a threshold, with enhanced caps and collars applied to those enhanced ODI payments.

As set out in the PR19 final determinations, enhanced caps for each relevant performance commitment are set to ensure enhanced outperformance payments do not exceed 1% of water or wastewater return on regulatory equity (RoRE).

Once calculated, enhanced ODI payments are added to standard ODI payments.

End of period ODIs

Some performance commitments have ODI payments that will be applied at the end of the 2020-25 period ('end of period').

Unless stated otherwise in the performance commitment definition in the PR19 final determinations, outperformance or underperformance payments based on company performance are calculated each year.

All end of period ODI payments will be applied through the relevant models at PR24. To enable this companies should submit an additional copy of the ODI performance model for forecast performance in 2024-25 which only includes end of period ODIs so that we can apply this adjustment as part of PR24. Due to the timing of this adjustment, we expect a blind year adjustment may apply in the 2025-30 period

where outturn performance differs from forecast performance. We will set out further details about this, and the circumstances in which it is necessary, at PR24.

Aggregate sharing mechanism

In the PR19 final determinations we said companies should share 50% of their outperformance payments with customers once the outperformance payments in any year reach 3% of their water or wastewater RoRE for that year. We said this should be in-period rather than apply to the whole of the 2020-25 period and be calculated on a gross basis, such that it relates to outperformance payments only.

In the model we apply this customer protection policy to all outperformance payments earned in the reporting year, including those which are due to be paid at the end of the period. We consider this to be appropriate to ensure that customers are protected and there are sufficient incentives on companies to avoid poor performance regardless of the timing of ODI payments.

Because we are applying this threshold to ODI payments that will be in 2017-18 prices, we need to base this aggregate sharing threshold on a financial year average of notional regulatory equity, deflated to 2017-18 prices. To do this we consider it appropriate to use the values included in our annual publication of 'Regulatory capital values', which is aligned to the final determination view of the RCV. For the 2020-25 period we will produce this on a price control basis as well as at an appointee level.

Additional cost recovery ODI rates

Some performance commitments have additional ODI rates that apply alongside standard ODI rates. Normally, these are designed to return funding to customers through underperformance payments as a result of the under- or non-delivery of certain outputs.

When prompted, the model applies these additional rates in addition to standard rates to the difference between the performance commitment level set out in the PR19 final determinations and actual performance in the reporting year, after accounting for deadbands, caps and collars. Some performance commitments have in-period standard ODIs with additional cost recovery ODI rates to be applied at PR24 (that is, end of period). Because these additional payments may have an interaction with cost assessment for the 2025-30 period that can be taken into account at PR24, companies should include these additional rates when submitting an additional copy of the ODI performance model for forecast performance in 2024-25 which only includes end of period ODIs.

Timing of in-period adjustments

As with reconciliations for the 2015-20 period, because ODI payments relate to previous company performance there is a delay between the reporting year and the timing of the in-period adjustment to allowed revenues.

We set out how we intend the timing of in-period adjustments to operate in the 2020-25 period in Table 2.

Table 2: How in-period adjustments will be applied each year

Year of performance	In-period adjustment applied
2020-21	Allowed revenues for 2022-23 using the PR19 in-period adjustments model
2021-22	Allowed revenues for 2023-24 using the PR19 in-period adjustments model
2022-23	Allowed revenues for 2024-25 using the PR19 in-period adjustments model
2023-24	Allowed revenues for 2025-26 using the relevant PR24 models, potentially with bill profiling over the 2025-30 period
2024-25	Allowed revenues for 2026-27 using the PR19 in-period adjustments model

In line with our PR14 approach, because these payments are applied in the year they are intended to be applied, we will not adjust these payments for the time value of money except under our approach to deferrals (see section 2.4) or potentially as part of bill profiling in PR24 should revenue adjustments fall in the 2025-30 period.

Reconciling 2024-25 performance

In the summer of 2025, companies will complete an ODI performance model based on their performance in 2024-25. This will at least include in-period ODIs. We will consider at PR24 if any correction for end of period ODIs that we will have applied as part of the PR24 final determinations in late 2024 is also required. Regardless of that decision, the model will still include any end of period ODIs that lead to an outperformance payment in 2024-25. This is to ensure the aggregate sharing mechanism can be calculated in a consistently with previous years (i.e. it is applied to the sum of outperformance payments that paid in-period or end of period).

2.3.5 Mechanism structure – calculations

Outputs

‘Model outputs’ worksheet

#	Output	Description	Units
1	Net ODI payments to be applied in-period (revenue) for each relevant price control	The in-period revenue adjustments to be made as a result of ODI performance between 2020-21 and 2024-25 for each relevant price control.	£m, 2017-18 prices
2	Net ODI payments to be applied end-of-period (revenue) for each relevant price control	The end-of-period revenue adjustments to be made as a result of ODI performance between 2020-21 and 2024-25 for each relevant price control.	£m, 2017-18 prices
3	Net ODI payments to be applied end-of-period (RCV) for each relevant price control	The end-of-period RCV adjustments to be made as a result of ODI performance between 2020-21 and 2024-25 for each relevant price control.	£m, 2017-18 prices

Inputs

'InpCompany' worksheet

#	Input	Description	Source	Units
1	Company name	Company name to be selected from the dropdown menu.	Company input	N/A
2	Ofwat company acronym	Automatically generated acronym based on company name selected for input 1.	Calculated	N/A
3	Reporting year	Reporting year which the company should select from the dropdown menu.	Company input	Financial year
4	Price base for ODI rates	Preselected reporting year is 2017-18 and should not be changed.	Ofwat	Financial year
5	Units and price base for ODI payments	Automatically generated units (£m) and price base year.	Calculated	Text
6	Water resources RCV (financial year average, 2017-18 prices)	Company input of its water resources RCV in line with the final determinations, averaged between the reporting year's opening and closing balance, in 2017-18 prices.	Company input	£m (2017-18 prices)
7	Water network plus RCV (financial year average, 2017-18 prices)	Company input of its water network plus RCV in line with the final determinations, averaged between the reporting year's	Company input	£m (2017-18 prices)

#	Input	Description	Source	Units
		opening and closing balance, in 2017-18 prices.		
8	Wholesale water RCV (financial year average, 2017-18 prices)	Sum of inputs 6 and 7.	Calculated	£m (2017-18 prices)
9	Wastewater network plus RCV (financial year average, 2017-18 prices)	Company input of its wastewater network plus RCV in line with the final determinations, between the reporting year's opening and closing balance.	Company input	£m (2017-18 prices)
10	Bioresources RCV (financial year average, 2017-18 prices)	Company input of its bioresources RCV in line with the final determinations, between the reporting year's opening and closing balance.	Company input	£m (2017-18 prices)
11	Wholesale wastewater RCV (financial year average, 2017-18 prices)	Sum of inputs 9 and 10.	Calculated	£m (2017-18 prices)
12	Regulatory equity (notional)	Prepopulated regulatory gearing for the 2020-25 period – 40%.	Ofwat	%
13	Enhanced ODI caps (% of water or wastewater RoRE)	Prepopulated basis for enhanced ODIs for the 2020-25 period – 1%.	Ofwat	%
14	Customer sharing rate	Prepopulated proportion of outperformance payments to be shared with customers for the 2020-25 period – 50%.	Ofwat	%
15	Sharing threshold (% of water or wastewater RoRE)	Prepopulated threshold for the aggregate sharing mechanism for the 2020-25 period – 3%.	Ofwat	%

'InpPerformance' worksheet

#	Input	Description	Source	Units
1	Performance commitment reference	Performance commitment reference as per the PR19 final determination 'Outcomes performance commitment appendix' for each company.	PR19 final determination – outcomes performance commitment appendix	Text
2	Performance commitment name	Performance commitment name as per the final determination 'Outcomes performance commitment appendix' for each company.	PR19 final determination – outcomes performance	Text

#	Input	Description	Source	Units
			commitment appendix	
3	Actual performance	Actual, outturn performance in the relevant reporting year to be reported by the company.	Company input	Performance commitment unit
4	Standard outperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
5	Enhanced outperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
6	Additional outperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
7	Standard underperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
8	Enhanced underperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
9	Additional underperformance payments - override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
10	Pre-populated inputs (multiple rows)	Prepopulated inputs in line with each company's performance commitment appendix in the PR19 final determinations.	PR19 final determination – outcomes performance commitment appendix	Various

Calculations

'Performance' worksheet

#	Calculation overview	Calculation detail
1	Does the company have outperformance payments?	If there is a non-zero standard outperformance payment rate in the model then this returns a value of TRUE. Otherwise it returns a value of FALSE.
2	Has the company outperformed?	If there is a non-zero standard outperformance payment rate then this calculation checks whether actual performance is better than the performance commitment

		level. If this is the case then it returns a value of TRUE. Otherwise it returns a value of FALSE.
3	Outperformed and beyond deadband?	If there is a non-zero standard outperformance payment rate then this calculation checks whether actual performance is better than the outperformance payment deadband. If this is the case then it returns a value of TRUE. Otherwise it returns a value of FALSE.
4	Applying outperformance cap (if relevant)	If actual performance is better than the outperformance cap level then this formula will select the outperformance cap level for subsequent use in calculating the outperformance payment.
5	Applying outperformance deadband (if relevant)	Difference between actual performance and outperformance deadband, if the deadband is applicable.
6	Standard outperformance payments	This formula calculates the outperformance payment due for the performance commitment.
7	Does the company have underperformance payments?	If there is a non-zero standard underperformance payment rate in the model then this returns a value of TRUE. Otherwise it returns a value of FALSE.
8	Has the company underperformed?	If there is a non-zero standard underperformance payment rate then this calculation checks whether actual performance is worse than the performance commitment level. If this is the case then it returns a value of TRUE. Otherwise it returns a value of FALSE.
9	Underperformed and beyond deadband?	If there is a non-zero standard underperformance payment rate then this calculation checks whether actual performance is worse than the underperformance payment deadband. If this is the case then it returns a value of TRUE. Otherwise it returns a value of FALSE.
10	Applying underperformance collar (if relevant)	If actual performance is worse than the underperformance collar level then this formula will select the underperformance collar level for subsequent use in calculating the underperformance payment.
11	Applying underperformance deadband (if relevant)	Difference between actual performance and underperformance deadband, if the deadband is applicable.
12	Standard underperformance payments	This formula calculates the underperformance payment due for the performance commitment.
13	Use water or wastewater RCV?	If an enhanced ODI is applicable to this performance commitment then the formula will select the relevant RCV (wholesale water or wholesale wastewater).
14	Enhanced outperformance cap	If an enhanced ODI is applicable then this formula calculates the level of the enhanced outperformance cap that would apply by limiting maximum enhanced outperformance payments. It divides 1% of wholesale water or wholesale wastewater regulatory equity by the enhanced outperformance rate to establish the appropriate level of the cap.
15	Enhanced outperformance?	This formula checks whether actual performance is better than the enhanced outperformance threshold. If this is the case then it returns a value of TRUE. Otherwise it returns a value of FALSE.

16	Applying enhanced outperformance cap	If actual performance is better than the enhanced outperformance cap level then this formula will select the enhanced outperformance cap level for subsequent use in calculating the outperformance payment.
17	Enhanced outperformance range	Difference between enhanced outperformance cap and enhanced outperformance threshold, if applicable.
18	Enhanced outperformance payments	This formula calculates the enhanced outperformance payment due for the performance commitment.
19	Enhanced underperformance?	This formula checks whether actual performance is worse than the enhanced underperformance threshold. If this is the case then it returns a value of TRUE. Otherwise it returns a value of FALSE.
20	Applying enhanced underperformance collar	If actual performance is worse than the enhanced underperformance collar level then this formula will select the enhanced underperformance collar level for subsequent use in calculating the underperformance payment.
21	Enhanced underperformance range	Difference between enhanced underperformance collar and enhanced underperformance threshold, if applicable.
22	Enhanced underperformance payments	This formula calculates the enhanced underperformance payment due from this performance commitment.
23	Cost recovery mechanism applies this year?	This restates whether a cost recovery mechanism is applicable from above in the model.
24	Additional outperformance payments (for cost recovery)	If a cost recovery mechanism is applicable, and there is a non-zero additional ODI outperformance rate, then this formula multiplies the ODI rate by the outperformance payment range. Otherwise it returns a value of zero.
25	Additional underperformance payments (for cost recovery)	If a cost recovery mechanism is applicable, and there is a non-zero additional ODI underperformance rate, then this formula multiplies the ODI rate by the underperformance payment range. Otherwise it returns a value of zero.
26	Total outperformance payments	This formula calculates the total outperformance payments: standard plus enhanced plus cost recovery, and replaces any of them with the company's overrides values (if used).
27	Total underperformance payments	This formula calculates the total underperformance payments: standard plus enhanced plus cost recovery, and replaces any of them with the company's overrides values (if used).
28	Total outperformance payments earned this reporting year	This block of formulae takes the total outperformance payments earned in the reporting year and multiplies it by the price control % allocations for all seven price controls.
29	Total underperformance payments earned this reporting year	This block of formulae takes the total underperformance payments earned in the reporting year and multiplies it by the price control % allocations for all seven price controls.
30	Total outperformance payments to be applied in-period	This block of formulae takes the total outperformance payments to be applied in-period and multiplies it by the price control % allocations for all seven price controls.

31	Total underperformance payments to be applied in-period	This block of formulae takes the total underperformance payments to be applied in-period and multiplies it by the price control % allocations for all seven price controls.
32	Outperformance payments to be paid at end of the period	This block of formulae subtracts the in-period outperformance payments from the total outperformance payments earned in the year, which gives the outperformance payments to be paid at the end of the period.
33	Underperformance payments to be paid at end of the period	This block of formulae subtracts the in-period underperformance payments from the total underperformance payments earned in the year, which gives the underperformance payments to be paid at the end of the period.
34	Proportion of outperformance payments to be paid in-period	This block of formulae calculates the in-period outperformance payments as a percentage of the total outperformance payments earned in the year.
35	Proportion of underperformance payments to be paid in-period	This block of formulae calculates the in-period underperformance payments as a percentage of the total underperformance payments earned in the year.
36	Proportion of end of period outperformance payments to be paid through the RCV	This block of formulae calculates the end-of-period RCV outperformance payments as a percentage of the total end-of-period outperformance payments.
37	Proportion of end of period underperformance payments to be paid through the RCV	This block of formulae calculates the end-of-period RCV underperformance payments as a percentage of the total end-of-period underperformance payments.

‘Sharing mechanism’ worksheet

#	Calculation overview	Calculation detail
1	Total outperformance payments per aggregate control	Sum of all outperformance payments for wholesale water, wholesale wastewater and excluded controls (individually).
2	Aggregate sharing threshold	Wholesale RCV multiplied by regulatory equity multiplied by aggregate sharing threshold per aggregate control.
3	Outperformance payments exceed threshold?	If total outperformance payments per aggregate control exceed the aggregate sharing threshold then this returns a value of TRUE. Otherwise it returns a value of FALSE.
4	Outperformance payments shared with customers	If outperformance payments exceed the threshold then this formula takes the amount by which the threshold has been exceeded and multiplies it by the customer sharing rate. Otherwise it returns a value of zero.
5	Proportion of outperformance payments per price control	This block of formulae expresses the outperformance payments per price control as percentages of the relevant aggregate control.
6	Outperformance payments shared with customers	This block of formulae calculates how much of the outperformance payments shared with customers should be allocated to each price control.

7	Company's outperformance payments after sharing	This block of formulae calculates how much of the company's outperformance payments are left after sharing with customers.
8	Outperformance payments after sharing (to be applied in-period)	This block of formulae calculates how much of the company's outperformance payments which are left after sharing with customer should be applied in-period.
9	Outperformance payments after sharing (to be applied end-of-period)	This block of formulae calculates how much of the company's outperformance payments which are left after sharing with customer should be applied end-of-period.

'Aggregate calculations' worksheet

#	Calculation overview	Calculation detail
1	Net ODI payments (to be applied in-period)	This block of formulae sums the outperformance and underperformance payments after sharing to be applied in-period, giving the net position.
2	Outperformance payments (revenue)	This block of formulae calculates how much of the end-of-period outperformance payments after sharing are applied as revenue adjustments.
3	Outperformance payments (RCV)	This block of formulae calculates how much of the end-of-period outperformance payments after sharing are applied as RCV adjustments.
4	Underperformance payments (revenue)	This block of formulae calculates how much of the end-of-period underperformance payments after sharing are applied as revenue adjustments.
5	Underperformance payments (RCV)	This block of formulae calculates how much of the end-of-period underperformance payments after sharing are applied as RCV adjustments.
6	Net ODI payments to be applied at the end of the period (revenue adjustments)	This block of formulae sums the outperformance and underperformance payments after sharing to be applied at the end of the period, which therefore gives the net revenue adjustment by price control.
7	Net ODI payments to be applied at the end of the period (RCV adjustments)	This block of formulae sums the outperformance and underperformance payments after sharing to be applied at the end of the period, which therefore gives the net RCV adjustment by price control.

2.3.6 Implementation

We expect companies to use this model to calculate ODIs each year. ODIs for each performance commitment are reported in the annual performance report and we are considering if this model should be integrated into the regulatory accounting tables in order to simplify the flow of information. We will consult on this issue in the RAGs consultation.

The outputs of the net adjustment for each price control for in-period ODIs from this model will flow into the in-period adjustments model. We will make our decisions as part of our approach to in-period determinations.

For the end of period ODIs calculated in this model, we will apply those adjustments in the relevant PR24 model.

2.4 In-period adjustments model

2.4.1 Summary

This model adjusts price controls to reflect in-period outcome delivery incentives including the customer measure of experience (C-MeX) and the developer services measure of experience (D-MeX).

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
In-period	Revenue	Revenue forecasting incentive model	Nominal	Water resources, water network plus, wastewater network plus, bioresources, residential retail, business retail, Thames Tideway Tunnel	Wholesale allowed return for the wholesale controls, appointee allowed return for the retail controls

2.4.2 Background and purpose

Each company's final determination includes a revenue allowance for the 2020-25 period. For the water resources, water network plus, wastewater network plus and Thames Tideway Tunnel controls are expressed in factors of K. The residential retail, business retail and bioresources controls are expressed as average controls.

In our PR19 final determinations, all companies have performance commitments with in-period outcome delivery incentives (ODIs) which require the revenue allowances for all of these controls to be adjusted during the 2020-25 period to account for outperformance or underperformance payments earned or incurred from each company's performance during the period. This model adjusts price controls to reflect in-period ODIs.

Because in-period ODIs apply to a greater range of controls than at PR14, this model replaces the previous K-factor model for in-period ODIs which was used during the 2015-20 period.

2.4.3 Nature of the reconciliation

This model takes outputs from the ODI performance model (see section 2.3) as well as the C-MeX and D-MeX models (see sections 2.5 and 2.6) and applies adjustments for inflation and tax in line with our approach for the 2015-20 period.

In addition, this model enables companies to propose to not collect outperformance payments ('abatements') or delay when the adjustment will be made ('deferrals'). We consider the details of this in the next section.

Each year we will take into account the representations made by companies as part our process for making in-period determinations.

2.4.4 Mechanism structure – overview and specific considerations

We primarily maintain our approach to in-period ODIs from the 2015-20 period. For each item we set out what we have done before and how we intend to reconcile in-period ODIs in the 2020-25 period.

Inflation

Consistent with our general approach in the PR19 final determinations, all ODI rates were specified in 2017-18 prices. This means that ODI payments for in-period ODIs need to be translated into future year price bases.

As we set out in PR19 reconciliation rulebook consultation – proposed approach and policy', we will use a forecast of lagged November to November CPIH. We do not propose to reconcile this again during the period. When preparing their submissions companies should submit a forecast of the forthcoming November CPIH index, and when making an in-period determination we will apply a uniform November forecast CPIH across all companies, using the most recent forecast available to us.

Tax

For the 2015-20 period we applied a tax adjustment for in-period ODIs, primarily for consistency and to avoid complexity.

We continue to consider that it is appropriate to make an adjustment for the marginal rate of corporation tax on in-period ODI payments. This ensures that companies receive the level of ODI payments as envisaged in the PR19 final determinations, maintaining an appropriate strength of incentives.

Companies should forecast the marginal rate of corporation tax that will apply to them in the year that the adjustment will be applied. We will consider this as part of our in-period determinations.

Time value of money

In the PR19 final methodology we said that ODIs should not be adjusted for the time value of money if they are applied in the year they are intended to be applied. We noted that in-period ODIs are intended to be applied two years after the year in which the performance occurred. However, we said an adjustment would be required where companies request to defer payments to ensure the effective size of incentives is not reduced due to deferrals.

We continue to consider it appropriate to not apply any discount factors for in-period ODIs, except where they are deferred to future years. As set out in PR19 reconciliation rulebook consultation – proposed approach and policy, section 3.1, we use the wholesale allowed return on capital for the wholesale controls – water resources, water network plus, wastewater network plus and the Thames Tideway Tunnel – and the appointee allowed return on capital for the residential and business retail controls.

Abatements

Some companies may decide not to receive some outperformance payments. For example, in 2015-16, Severn Trent Water forewent outperformance payments based on its performance in supply interruptions in 2015-16 in recognition of a small number of high-impact incidents which affected some of its customers during the reporting year.

We recognise that this can be an important part of customer protection and include the ability for companies to choose to abate payments each year in the model. We expect companies to provide appropriate explanation and confirmation that it is a deliberate decision to not receive outperformance payments. We will make the final decision as part of our in-period determinations.

Deferrals

Some companies may decide to defer the application of ODI payments during the 2020-25 period. A number of companies did so during the 2015-20 period, as a one-off adjustment would otherwise have adversely affected customers through significant bill movements.

We continue to consider an option of deferrals is appropriate. In 'PR19 final determinations: Policy summary' we set out that where ODI adjustments exceed ±1% of notional regulatory equity, companies can ask us to defer the excess to a subsequent year, to mitigate extreme cashflow and bill volatility. In line with our approach to the aggregate sharing mechanism, this threshold will be based on a financial year average of notional regulatory equity, deflated to 2017-18 prices. We consider it appropriate to use the values included in our annual publication of 'Regulatory capital values', which is aligned to the final determination view of the RCV. For the 2020-25 period we will produce this on a price control basis as well as at an appointee level.

We will consider such requests in light of the company's expected performance and our statutory duties in the round. We include the ability for companies to request a deferral or ODI payments in the model. We will make the final decision as part of our in-period determinations.

Specific control adjustments

This model applies a revenue adjustment for each price control that we set in the PR19 final determinations.

For the **K-based controls** – water resources, water network plus, wastewater network plus and the Thames Tideway Tunnel – because of how these controls are calculated (with a 'K factor' that increases or decreases wholesale price limits based on the allowance in the previous year) we need to update the values of K for subsequent years as well as K for the relevant year. The model therefore takes ODI payments (in £m) and outputs new K values for the rest of the 2020-25 period.

For the **average revenue controls** – residential retail, bioresources and business retail – we need to adjust a fixed element of the control instead of the variable elements. This means adjusting them in the following way:

- for the **residential retail control**, we add net ODI payments to $\mathbf{TR_t}$ where $\mathbf{TR_t}$ is the total unadjusted allowed revenue for the relevant year;
- for the **bioresources control**, we add net ODI payments to $\mathbf{UR_t}$ where $\mathbf{UR_t}$ is unadjusted revenue for the relevant year; and
- for the **business retail control**, we add net ODI payments to the $\mathbf{rc_t}$ of each customer type where $\mathbf{rc_t}$ is the allowed average retail cost component; as set out in section 3.1 we apply this to group 1 customers only and distribute the net ODI payment proportionately based on the proportion of revenue expected to be collected from each customer type.

PR24 blind year adjustment

At PR19 we set revenues for the 2020-25 period based on a forecast of ODI performance in 2019-20. Because we made our determination before the end of the 2019-20 reporting year, the outturn performance is likely to differ from forecast. We therefore will undertake a 'blind year' adjustment to correct for the difference between forecast and actual performance in 2019-20.

However for in-period ODIs we do not expect to make a blind year adjustment for performance in 2024-25. This is because we intend to use this model to inform our in-period determination in late 2025 which will adjust allowed revenues in 2026-27. This avoids the need to set revenues for 2025-30 using forecast performance in 2024-25 and have to make any subsequent blind year adjustment.

Interactions with other mechanisms

There is an interaction between in-period ODIs and the RFI. The impact of in-period ODI payments in the year they are applied will be reflected in a company's allowed and recovered revenues in the RFI. On this basis, in-period ODIs do not provide additional incentive to over or under recover within the RFI calculation.

2.4.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1	K-based controls	The revised K factors for the water resources, water network plus, wastewater network plus, and dummy price controls, for the reporting years 2021-22 to 2024-25.	% to two decimal places
2	Bioresources (sludge) – revised total revenue	The revised total bioresources revenue, in £m, in nominal prices, for the reporting year 2022-23.	£m, nominal prices
3	Residential retail – revised total revenue	The revised total residential retail revenue, in £m, in nominal prices, for the reporting year 2022-23.	£m, nominal prices
4	Business retail – revised allowed average retail cost component	The business retail revised allowed average retail cost component, by customer type, in £, in nominal prices, for the reporting year 2022-23.	£, nominal prices
5	ODI payments deferred until next reporting year	ODI payments deferred until next reporting year, by price control, in £m, in 2017-18 prices.	£m, 2017-18 prices

Inputs

#	Input	Description	Source	Units
1	Company name	Company name to be selected from the dropdown menu.	Company input	N/A
2	Ofwat company acronym	Automatically generated acronym based on company name selected for input 1.	Calculated	N/A
3	Reporting year	Reporting year which the company should select from the dropdown menu.	Company input	Financial year
4	Price base for ODI rates	Preselected reporting year is 2017-18 and should not be changed.	Ofwat	Financial year
5	Units and price base for ODI payments	Automatically generated units (£m) and price base year.	Calculated	Text
6	ODI payments – water resources	Company input of its water resources ODI payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
7	ODI payments – water network plus	Company input of its water network plus ODI payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
8	ODI payments – wastewater network plus	Company input of its wastewater network plus ODI payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
9	ODI payments – bioresources (sludge)	Company input of its bioresources ODI payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
10	ODI payments – residential retail	Company input of its residential retail ODI payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
11	ODI payments – business retail	Company input of its business retail ODI payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
12	ODI payments – dummy control	Company input of its dummy control (where applicable) ODI payment, in £m and 2017-18 prices	Company input	£m (2017-18 prices)
13	Other in-period adjustments: C-MeX	Company input of its in-period C-MeX payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
14	Other in-period adjustments: D-	Company input of its in-period D-MeX (water network plus) payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)

	MeX (water network plus)			
15	Other in-period adjustments: D-MeX (wastewater network plus)	Company input of its in-period D-MeX (wastewater network plus) payment, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
16	ODI payments deferred from previous reporting year – water resources	Company input of its water resources ODI payments deferred from the previous reporting year, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
17	ODI payments deferred from previous reporting year – water network plus	Company input of its water network plus ODI payments deferred from the previous reporting year, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
18	ODI payments deferred from previous reporting year – wastewater network plus	Company input of its wastewater network plus ODI payments deferred from the previous reporting year, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
19	ODI payments deferred from previous reporting year – bioresources (sludge)	Company input of its bioresources ODI payments deferred from the previous reporting year, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
20	ODI payments deferred from previous reporting year – residential retail	Company input of its residential retail ODI payments deferred from the previous reporting year, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
21	ODI payments deferred from previous reporting year – business retail	Company input of its business retail ODI payments deferred from the previous reporting year, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
22	ODI payments deferred from previous reporting year – dummy control	Company input of its dummy control (where applicable) ODI payments deferred from the previous reporting year, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
23	Voluntary abatements – water resources	Company input of its voluntary abatements for water resources, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)

24	Voluntary abatements – water network plus	Company input of its voluntary abatements for water network plus, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
25	Voluntary abatements – wastewater network plus	Company input of its voluntary abatements for wastewater network plus, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
26	Voluntary abatements – bioresources (sludge)	Company input of its voluntary abatements for bioresources, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
27	Voluntary abatements – residential retail	Company input of its voluntary abatements for residential retail, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
28	Voluntary abatements – business retail	Company input of its voluntary abatements for business retail, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
29	Voluntary abatements – dummy control	Company input of its voluntary abatements for its dummy control (where applicable), in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
30	Voluntary deferrals – water resources	Company input of its voluntary deferrals for water resources, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
31	Voluntary deferrals – water network plus	Company input of its voluntary deferrals for water network plus, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
32	Voluntary deferrals – wastewater network plus	Company input of its voluntary deferrals for wastewater network plus, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
33	Voluntary deferrals – bioresources (sludge)	Company input of its voluntary deferrals for bioresources, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
34	Voluntary deferrals – residential retail	Company input of its voluntary deferrals for residential retail, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
35	Voluntary deferrals – business retail	Company input of its voluntary deferrals for business retail, in £m and 2017-18 prices.	Company input	£m (2017-18 prices)
36	Voluntary deferrals – dummy control	Company input of its voluntary deferrals for its dummy control (where applicable), in £m and 2017-18 prices.	Company input	£m (2017-18 prices)

37	Discount rate – wholesale WACC, real CPIH	Prepopulated based on the company's final determination.	Ofwat	Percentage
38	Discount rate – appointee WACC, real CPIH	Prepopulated based on the company's final determination.	Ofwat	Percentage
39	Years of delay for referrals	Preselected number is 1 and should not be changed.	Ofwat	Number
40	Marginal tax rate	Company input of its expected marginal rate of corporation tax for the relevant year.	Company input	Percentage
41	November CPIH index	Company input of the lagged November to November CPIH index, using last available forecasts where relevant	Company input	Number to one decimal place
42	Water resources - allowed revenue starting point in FD	Company input of water resources allowed revenue in 2019-20 from its final determination.	Company input	£m, 2019-20, nominal
43	Water resources – K factors (last determined)	Company input of its water resources K factors from 2020-21 to 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	Percentage
44	Water network plus - allowed revenue starting point in FD	Company input of water network plus allowed revenue in 2019-20 from its final determination.	Company input	£m, 2019-20, nominal
45	Water network plus – K factors (last determined)	Company input of its water network plus K factors from 2020-21 to 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	Percentage
46	Wastewater network plus - allowed revenue starting point in FD	Company input of wastewater network plus allowed revenue in 2019-20 from its final determination.	Company input	£m, 2019-20, nominal
47	Wastewater network plus – K factors (last determined)	Company input of its wastewater network plus K factors from 2020-21 to 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	Percentage

48	Bioresources – total revenue (URt in last determination)	Company input of bioresources total revenue in 2022-23, 2023-24 or 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	£m, 2017-18 prices
49	Residential retail – total revenue (TRt in last determination)	Company input of residential retail revenue in 2022-23, 2023-24 or 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	£m, nominal prices
50	Business retail allowed average retail cost component (rct in last determination)	This block of inputs requires a company to input its allowed average retail cost component by customer type for 2022-23, 2023-24 or 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	£, nominal
51	Business retail number of customers (cnt in last determination)	This block of inputs requires a company to input its customer numbers by customer type for 2022-23, 2023-24 or 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	Number
52	Business retail proportion of revenue expected to be collected (rct in last determination)	This block of inputs requires a company to input its proportion of revenue expected to be collected by customer type for 2022-23, 2023-24 or 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	Percentage
53	Dummy control - allowed revenue starting point in FD	Company input of dummy control allowed revenue in 2019-20 from its final determination.	Company input	£m, 2019-20, nominal
54	Dummy control – K factors (last determined)	Company input of its dummy control K factors from 2020-21 to 2024-25 from its final determination or as updated following any interim or in-period determinations in the 2020-25 period.	Company input	Percentage

Calculations

Abatements and deferrals worksheet

#	Calculation overview	Calculation detail
1	Net payments by price control	This block of formulae adds the ODI payments earned in the year to the other in-period adjustments (where applicable) and ODI payments deferred from the previous reporting year to give the net payments by price control.
2	Payments after abatements	This block of formulae calculates the payments after voluntary abatements have been taken into consideration.
3	Payments after abatements and deferrals	This block of formulae calculates the payments after voluntary abatements and voluntary deferrals have been taken into consideration.
4	Deferred payments for next reporting year (wholesale controls)	This block of formulae applies a time value of money adjustment to the deferred payments for the next reporting year for the wholesale controls.
5	Deferred payments for next reporting year (retail controls)	This block of formulae applies a time value of money adjustment to the deferred payments for the next reporting year for the retail controls.

Water resources worksheet (calculation overview and detail are the same for water network plus, wastewater network plus and the Thames Tideway Tunnel controls).

#	Calculation overview	Calculation detail
1	Year of performance	This selects the reporting year column which corresponds to the reporting year selected.
2	Year of adjustment to be applied	This selects the reporting year which is two years later than the year of performance, which is the default year for the application of ODI payments to customers' bills.
3	ODI payments for this price control	This shows the ODI payment due in the particular reporting year.
4	Allowed revenue starting point in FD	The sum of the individual reporting years' allowed revenues.
5	Allowed revenue	Equal to the allowed revenue starting point in FD, inflated and including K factors.
6	ODI value nominal prices	This converts the ODI payment due in the particular reporting year into a nominal figure.
7	Tax on Tax geometric uplift	Calculates the uplift required to maintain the level of revenue net of the marginal tax rate.
8	Tax on nominal ODI	This formula applies the uplifted tax rate to the nominal ODI payment value to give the amount of tax levied.

9	Total value of ODI	This formula adds the ODI value in nominal prices to the tax on nominal ODI to give the total value of the ODI payment.
10	Revised total nominal revenue	This formula adds the nominal total ODI value to the original nominal revenue requirement to give the revised total nominal revenue.
11	Allowed revenue percentage movement	This formula calculates the percentage change in allowed revenue from the previous year.
12	Year that price limits should be recalculated	This flags if the year is one in which price limits can be changed.
13	Allowed revenue percentage movement (Nov-Nov CPIH deflated)	If price limits can be changed this formula deducts inflation from the nominal revenue movement.
14	Revised K	This formula calculates the K so that allowed revenues are at least equal to the revised revenue requirement.

Residential retail worksheet

#	Calculation overview	Calculation detail
1	Year of performance	This selects the reporting year column which corresponds to the reporting year selected.
2	Year of adjustment to be applied	This selects the reporting year which is two years later than the year of performance.
3	ODI payments for this price control	This shows the ODI payment due in the particular reporting year.
4	ODI value nominal prices	This converts the ODI payment due in the particular reporting year into a nominal figure.
5	Tax on Tax geometric uplift	Calculates the uplift required to maintain the level of revenue net of the marginal tax rate.
6	Tax on nominal ODI	This formula applies the uplifted tax rate to the nominal ODI payment value to give the amount of tax levied.
7	Total value of ODI	This formula adds the ODI value in nominal prices to the tax on nominal ODI to give the total value of the ODI payment.
8	Revised total revenue (TRt)	This formula adds the total value of the ODI (including tax adjustment) to the total revenue in the last determination to give the revised total revenue.

Business retail worksheet

#	Calculation overview	Calculation detail
1	Year of performance	This selects the reporting year column which corresponds to the reporting year selected.

2	Year of adjustment to be applied	This selects the reporting year which is two years later than the year of performance.
3	ODI payments for this price control	This shows the ODI payment due in the particular reporting year.
4	ODI value nominal prices	This converts the ODI payment due in the particular reporting year into a nominal figure.
5	Tax on Tax geometric uplift	Calculates the uplift required to maintain the level of revenue net of the marginal tax rate.
6	Tax on nominal ODI	This formula applies the uplifted tax rate to the nominal ODI payment value to give the amount of tax levied.
7	Total value of ODI	This formula adds the ODI value in nominal prices to the tax on nominal ODI to give the total value of the ODI payment.
8	Customer type – ODI payment	This block of formulae allocates the total value of the ODI between the customer types based on the proportion of revenue expected to be collected.
9	Customer type – allowed retail cost component in £m	This block of formulae takes the allowed average retail cost component (in £), by customer type, and multiplies it by the number of customers of each type, to get the allowed retail cost component.
10	Customer type – revised allowed retail cost component in £m	This block of formulae adds the ODI payment to the allowed retail cost component, to give the revised allowed retail cost component, by customer type.
11	Customer type – revised allowed average retail cost component (in £)	This block of formulae calculates the revised allowed average retail cost component in £, by customer type.

Bioresources (sludge) worksheet

#	Calculation overview	Calculation detail
1	Year of performance	This selects the reporting year column which corresponds to the reporting year selected.
2	Year of adjustment to be applied	This selects the reporting year which is two years later than the year of performance.
3	ODI payments for this price control	This shows the ODI payment due in the particular reporting year.
4	ODI value nominal prices	This converts the ODI payment due in the particular reporting year into a nominal figure.
5	Tax on Tax geometric uplift	Calculates the uplift required to maintain the level of revenue net of the marginal tax rate.
6	Tax on nominal ODI	This formula applies the uplifted tax rate to the nominal ODI payment value to give the amount of tax levied.

7	Total value of ODI	This formula adds the ODI value in nominal prices to the tax on nominal ODI to give the total value of the ODI payment.
8	ODI value in original prices	This formula returns the ODI value to the original price base of the bioresources control (2017-18 prices for the 2020-25 period).
9	Revised total revenue (URt)	This formula adds the total value of the ODI (including tax adjustment) to the total revenue in the last determination to give the revised total revenue.

2.4.6 Implementation

We will use this model as part of our in-period determinations during the 2020-25 period. We expect companies to submit this to us as early as possible, but at the latest by 15 August each year as part of their request for an in-period determination. Companies should set out any proposed abatements or deferrals with appropriate justification or explanation.

2.5 Customer measure of experience (C-MeX)

2.5.1 Summary

The customer measure of experience (C-MeX) is designed to incentivise companies to provide excellent levels of service to their residential customers. Based on its relative performance, each company can receive outperformance or incur underperformance payments each year.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
In-period	Revenue	In-period adjustments model; and/or PR24 revenue adjustments feeder model.	2017-18 FYA CPIH deflated	Residential retail	NA

2.5.2 Background and purpose

The customer measure of experience (C-MeX) is a common performance commitment designed to incentivise excellent levels of service for residential customers in the water sector.

Companies receive an annual C-MeX score based on the methodology set out in our PR19 final determinations. Each company can receive outperformance payments or incur underperformance payments based on its annual C-MeX score compared to other companies. These payments are made through a **revenue adjustment** to each company's **residential retail control**.

2.5.3 Nature of the reconciliation

The C-MeX model will determine how we will reconcile outperformance and underperformance payments for C-MeX which are applied in-period.

It implements the decisions we announced when we published our PR19 final determinations; we have not made any changes to these decisions in the design of this model.

As with other in-period outcome delivery incentives, the outputs from this model will flow into the in-period adjustments model which will apply adjustments for issues such as inflation, tax and time value of money (see 'PR19 reconciliation rulebook consultation – proposed approach and policy').

2.5.4 Mechanism structure – overview

We set out how we calculate each company's C-MeX score, and its outperformance and underperformance payments, in the C-MeX policy appendix and each company's outcomes performance commitment appendix in our PR19 final determinations.

Standard payments are based on each company's performance relative to the highest performing company, the lowest performing company and the median company.

To receive higher outperformance payments in addition to standard payments, a company must meet the following gates:

- the company is one of the top three performers by C-MeX score;
- the company is at or above a cross-sector threshold of customer satisfaction performance based on the all-sector upper quartile (ASUQ) of the UK Customer Satisfaction Index (UKCSI); and
- the company has lower than the industry average number of household complaints (per 10,000 connections).

2.5.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1	Performance payments (total)	Revenue adjustment to reflect outperformance or underperformance payments from C-MeX in the current reporting year.	£m

Inputs

#	Input		Description	Source	Units
1	Policy decisions – Weightings	Calculation of C-MeX	Decided by Ofwat in the PR19 final determinations	Ofwat	%
2		Weighting of C-MeX components	Decided by Ofwat in the PR19 final determinations	Ofwat	%
3		Online correction factor	Decided by Ofwat in the PR19 final determinations	Ofwat	%
4		Available contact channels	Decided by Ofwat in the PR19 final determinations	Ofwat	Number
5	Policy decisions – Maximum and minimum payments	Maximum outperformance or underperformance payments	Decided by Ofwat in the PR19 final determinations	Ofwat	%
6	Policy decisions – Gates for higher performance payments	One of the top 'x' performers on C-MeX	Decided by Ofwat in the PR19 final determinations	Ofwat	Number
7		Higher performance payments for top ranked companies	Decided by Ofwat in the PR19 final determinations	Ofwat	%
8	Company data – Company name		Company names	Company	Text
9	Company data – Company type		Water and sewerage company (WASC) or water only company (WOC)	Company	Text
10	Company data – Customer service survey	Billing	Scores for components of billing calculations: telephone; online	Agent	Number
11		Operations	Scores for components of operations calculations: telephone water; online water; telephone wastewater; online wastewater	Agent	Number
12		Proportion of online contacts	Proportions of online contacts for: billing; operations		%

			water; operations wastewater		
13	Company data – Customer experience survey		Customer experience survey score	Agent	Number
14	Customer data – Contact channels available		Number of contact channels the company has made available	Company	Number
15	Industry data – Annual C-MeX scores		Annual C-MeX scores for each company	Agent	Number
16	Industry data – Company UKCSI scores		Each company's UKCSI score from the relevant UKCSI release	UKCSI/Ofwat	Number
17	Industry data – Upper quartile of all sector UKCSI scores		An upper quartile of all-sector UKCSI scores from the relevant UKCSI release	UKCSI/Ofwat	Number
18	Industry data – Number of complaints		Each company's total household complaints per 10,000 connections	Companies	Number
19	Industry data – Allowed revenue		Each company's annual allowed residential retail revenue for the year of performance	Ofwat	£m

Calculations

#	Calculation overview	Calculation detail
1	Rank	Ranks companies by their C-MeX score
2	Difference from median	Company's score minus the median company
3	Standard payments	As set out in our PR19 final determinations: $if\ score > median : (score - median) * (6\%/(maximum - median))$ $if\ score < median : (score - median) * (12\%/(median - minimum))$ $if\ score = median : 0\%$

		where: • 'score' is the company's C-MeX score; • 'median' is the median of all companies' C-MeX scores; • 'maximum' is the maximum of all companies' C-MeX scores; and • 'minimum' is the minimum of all companies' C-MeX scores.
4	C-MeX all-sector upper quartile threshold	Calculates the all-sector upper quartile threshold as follows: $C\text{-}MeX\ ASUQ = C\text{-}MeX\ mean + (UKCSI\ ASUQ - UKCSI\ mean)\ /\ UKCSI\ SD * C\text{-}MeX\ SD$ where: • 'C-MeX Mean' is the mean average of all water companies' C-MeX scores; • 'UKCSI ASUQ' is the upper quartile of the CSI scores of all companies in the UKCSI report relating to the relevant year (eg for C-MeX in 2020-21, the UKCSI ASUQ would be based on data from the July 2021 UKCSI surveys); • 'UKCSI Mean' is the mean average score of water companies in the UKCSI report relating to the relevant year; • 'UKCSI SD' is the standard deviation of water companies' scores in the UKCSI report relating to the relevant year; and • 'C-MeX SD' is the standard deviation of the C-MeX scores of all water companies.
5	Higher payments gates – top three companies in C-MeX	Calculates whether the company's C-MeX score is in the top three C-MeX scores
6	Higher payments gates – complaints	Calculates whether the company's C-MeX score is above the average for complaints per 10,000 connections
7	Higher payments gates – UKCSI	Calculates whether the company's C-MeX score is above the all-sector UKCSI threshold
8	Ranking of companies that achieve all three gates	If more than one company passes the three higher performance gates, calculates which company receives +6% +4% or +2% in higher performance payments

2.5.6 Implementation

We or the survey agent acting on our behalf will provide companies with their survey scores shortly after the end of the reporting year.

In line with the regulatory accounting guidelines, companies will publish their C-MeX scores in their annual performance report.

We expect companies to use this model to inform their request for an in-period determination. The outputs from this model will flow into the in-period adjustments model. As with all performance commitments that have in-period outcome delivery incentives, we will make our decisions as part of our in-period determinations.

2.6 Developer services measure of experience (D-MeX)

2.6.1 Summary

The developer services measure of experience (D-MeX) is designed to incentivise companies to provide excellent levels of service to their developer customers. Based on its relative performance, each company can receive outperformance or incur underperformance payments each year.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
In-period	Revenue	In-period adjustments model; and/or PR24 revenue adjustments feeder model	2017-18 FYA CPIH deflated	Water network plus, wastewater network plus	NA

2.6.2 Background and purpose

The developer services measure of experience (C-MeX) is a common performance commitment designed to incentivise excellent levels of service for developer services customers in the water sector.

Companies receive an annual D-MeX score based on the methodology set out in the PR19 final determinations. Each company can receive outperformance payments or incur underperformance payments based on its annual D-MeX score compared to other companies. These payments are made through a **revenue adjustment** to each company's **water network plus** and/or **wastewater network plus** controls.

2.6.3 Nature of the reconciliation

The D-MeX model will determine how we will reconcile outperformance and underperformance payments for D-MeX which are applied in-period.

It implements the decisions we announced when we published our PR19 final determinations; we have not made any changes to these decisions in the design of this model.

As with other in-period outcome delivery incentives, the outputs from this model will flow into the in-period adjustments model which will apply adjustments for issues such as inflation, tax and time value of money (for details, see 'PR19 reconciliation rulebook consultation – proposed approach and policy').

2.6.4 Mechanism structure – overview

We set out how we calculate each company's D-MeX score, and its outperformance and underperformance payments, in the D-MeX policy appendix and each company's outcomes performance commitment appendix in our PR19 final determinations.

Standard payments are based on each company's performance relative to the highest performing company, the lowest performing company and the median company.

2.6.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1	Performance payments (water)	Revenue adjustment to the water network plus control to reflect outperformance or underperformance payments from D-MeX in the current reporting year	£m
2	Performance payments (wastewater)	Revenue adjustment to the wastewater network plus control to reflect outperformance or underperformance payments from D-MeX in the current reporting year	£m
3	Performance payments (total)	Total revenue adjustment to reflect outperformance or underperformance payments from D-MeX in the current reporting year	£m

Inputs

#	Input	Description	Source	Units

1	Policy decisions – weighting between qualitative and quantitative components	Decided by Ofwat in the PR19 final determinations	Ofwat	%
2	Policy decisions – maximum and minimum payments	Decided by Ofwat in the PR19 final determinations	Ofwat	%
3	Industry qualitative data	The survey score out of 100 for each company in the reporting year	Agent	Number
4	Industry quantitative data	The performance data of each relevant for each company in the reporting year, as set out by Ofwat in the PR19 final determinations	Company	%
5	Industry developer services revenue (water)	Actual developer services revenue collected by each company in the report for water services.	Company	£m
5	Industry developer services revenue (wastewater)	Actual developer services revenue collected by each company in the report for wastewater services.	Company	£m

Calculations

#	Calculation overview	Calculation detail
1	Calculating each company's D-MeX score	Using the weighting between the qualitative and quantitative component, calculates the company's score based on its results for each component.
2	Payment calculations – Rank	Ranks companies by their C-MeX score
3	Payment calculations – Difference from median	Company's score minus the median company
4	Payment calculations – Total performance payments (%)	As set out in our PR19 final determinations: $if\ score > median : (score - median) * (6\%/(maximum - median))$ $if\ score < median : (score - median) * (12\%/(median - minimum))$ $if\ score = median : 0\%$ where: • 'score' is the company's C-MeX score; • 'median' is the median of all companies' C-MeX scores; • 'maximum' is the maximum of all companies' C-MeX scores; and

		'minimum' is the minimum of all companies' C-MeX scores.
4	Payment calculations – Total performance payments (£m, water)	Using the proportion of actual revenues collected for each of water and wastewater services, calculates total performance payments in £m for the water network plus control.
6	Payment calculations – Total performance payments (£m, wastewater)	Using the proportion of actual revenues collected for each of water and wastewater services, calculates total performance payments in £m for the wastewater network plus control.

2.6.6 Implementation

We or the survey agent acting on our behalf will provide companies with their survey scores shortly after the end of the reporting year.

In line with the regulatory accounting guidelines, companies will publish the survey results, performance against the quantitative component of D-MeX, and overall D-MeX scores in their annual performance report.

We expect companies to use this model to inform their request for an in-period determination. The outputs from this model will flow into the in-period adjustments model. As with all performance commitments that have in-period outcome delivery incentives, we will make our decisions as part of our in-period determinations.

2.7 Residential retail reconciliation model

Summary

This model shows how we will reconcile revenues over the PR19 period at PR24.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue	Revenue adjustments feeder model	2024-25 FYA CPIH deflated	Residential retail	Company-specific appointee allowed return on capital

2.7.1 Background and purpose

Our **residential retail control** covers activities relating to the supply of water to household premises (as defined in section 17C of the Water Industry Act 1991). We provide regulatory protection over residential retail prices to these customers by setting an **average revenue control**.

The average revenue control ensures companies' allowed revenues change if there is a difference between actual and forecast customer numbers. Our control is set out in companies' 'Notification of the PR19 final determination of Price Controls'.

As discussed in our PR19 final determinations, we set companies' residential retail controls at PR19 based on our view of efficient costs. Companies' residential retail controls do not distinguish between classes of customer, reflecting our assessment of companies' costs.

2.7.2 Nature of the reconciliation

We need to undertake a reconciliation related to the residential retail control to:

- ensure companies' allowed revenues reflect their actual customer numbers;

- ensure companies' allowed revenues reflect in-period determinations, such as ODI and C-MeX adjustments;
- ensure any differences between companies' allowed and actual revenues can be subsequently corrected; and
- incentivise companies to collect an appropriate amount of revenue by potentially applying a 'financing adjustment' if they collect an inappropriate amount of revenue.

For the residential retail control we use an **end-of-period reconciliation** that takes the form of a **revenue adjustment**. This means any adjustment required will be made at PR24 and would affect companies' allowed revenue over the 2025-30 period.

2.7.3 Mechanism structure - overview

Reflecting actual customer numbers

We set out the calculation for companies' allowed revenue for their residential retail controls in companies' 'Notification of the PR19 final determination of Price Controls'. Allowed revenue (R_t) is calculated according to the following formula:

$$R_t = TR_t + (AC_t - FC_t) \times M_t \times 1000$$

Where:

TR_t is Total Revenue; AC_t is Actual Customers; FC_t is Forecast Customers and M_t is the Modification Factor. Our reconciliation calculations reflect this approach (see calculations below).

Blind year adjustment

As explained in PR19 reconciliation rulebook consultation – proposed approach and policy, we will apply the PR19 blind year adjustment related to the residential retail control as an end-of-period revenue adjustment at PR24. We will apply inflation and time value of money adjustment from the base year of the blind year adjustment 2019-20 to the end of the 2020-25 price control period.

Other adjustments

Companies' residential retail controls could be adjusted in-period through future determinations. For example, by the customer measure of experience (C-MeX) and

other financial outcome delivery incentives (ODIs) allocated to the residential retail control. Our approach to reconciliation provides the flexibility to make such changes.

The final residential retail revenue adjustments will be calculated in the in-period adjustments model which will apply the adjustment by determining an updated Total Revenue (TR_t) consistent with the outcome of the in-period determination for these residential retail revenue adjustments (see section 2.4 for more details).

Reconciliation for over/under recovery of revenue

We expect companies to adjust their charges based on their annual reforecast of customer numbers. Therefore, on the basis of this annual reforecasting, we expect any adjustment at the end of the period to be small. Where there is any difference between allowed and actual revenues, the position will be corrected by altering allowed revenues at PR24. We do not apply any inflation or time value of money adjustments automatically to this imbalance, reflecting that these are not a feature of our control. Finally, we have allowed for the possibility of companies making a 'revenue sacrifice'. This is revenue that companies have committed not to collect in relation to social tariffs or revenue voluntarily foregone, including for Dŵr Cymru the revenue it committed to forego as part of its final determination.

Application of any time value of money adjustment

Where there are material variances in companies' residential revenues, we may apply a time value of money adjustment at PR24. We will consider applying a time value of money adjustment beyond 2% of residential retail revenue. This is broadly in line with the approach taken for variances in wholesale revenues under the RFI.

2.7.4 Mechanism structure - calculations

Outputs

#	Output	Description	Units
1	Residential retail revenue adjustment at the end of AMP7	The revenue adjustment for residential retail that will be applied at PR24. It is the total of the annual calculations (see below) over the 2020-25 period.	£m, 2024-25 FYA CPIH deflated

This output will feed into the PR24 financial model through the revenue adjustments feeder model.

Inputs

#	Input	Description	Source	Units
1	Total revenue (**TR**)	The total unadjusted allowed revenue	Table 6 of companies' 'Notification of the PR19 final determination of Price Controls'	£m, Outturn
2	Actual customers (**AC**)	Actual customer numbers i.e. the average number of individual household premises supplied or served by the Appointed Business in a Charging Year. Household premises are defined in section 17C of the Water Industry Act 1991.	Company regulatory reporting	Number
3	Forecast customers (**FC**)	Forecast customer numbers	Table 6 of companies' 'Notification of the PR19 final determination of Price Controls'	Number
4	Reforecast customers	Each company will submit new customer number forecasts for the ongoing Charging Year at the time of its APR submission	Company regulatory reporting	Number
5	Revenue Recovered (**RR**)	The revenue that each company actually collected in a given charging year	Company regulatory reporting	£m, Outturn
6	Revenue sacrifice	A positive number reflecting the revenue voluntarily foregone by companies, for example through customer discounts and in the case of Dŵr Cymru, revenue it committed to forego as part of its final determination	Company regulatory reporting. For Dŵr Cymru, this is the annual value of the commitment set out in the final determination inflated by CPIH	£m, Outturn
7	Modification factor (**M**)	The modification factor	Table 6 of companies' 'Notification of the	£, Outturn

#	Input	Description	Source	Units
			PR19 final determination of Price Controls'	
8	Total Blind year adjustment (**TBYA**)	Total blind year adjustment for 2019-20 applicable to residential retail	Output of in-period blind year adjustment determination for 2019-20	£, Outturn
9	Materiality threshold	The materiality threshold which is set at 2%	Ofwat	%
10	Discount rate	The discount rate used to provide a time value of money adjustment for the incentive reward / penalty	This is the appointee allowed return on capital.	%
11	CPIH: FYA index inflating from 2019/20	One plus the percentage change in the Consumer Prices Index (H) between the average index published for the relevant charging year and that published for the 2019-20 charging year.	ONS	%
12	Forecast period factor	A number to enable calculation of Residential retail revenue adjustment at the end of AMP7. We set this as follows for these charging years: 4 for 2020; 3 in 2021; 2 in 2022, 1 in 2024 and 0 in 2025	Ofwat	Number
13	AMP 7 charging year	This is the year in which the relevant charging year begins – for example: • for the charging year 2022-23, T = 2022; • for the charging year 2023-24, T = 2023; and • for the charging year 2024-25, T = 2024.	N/A	Number

Calculations

All calculations are made for each charging year over the 2020-25 period unless otherwise state.

#	Calculation overview	Calculation detail
Blind year adjustment		
1	Blind year adjustment	This is Total Blind year adjustment (**TBYA**) applied as an end-of-period adjustment in the 2024-25 charging year
2	Blind year adjustment incl. financing adjustment	This is Blind year adjustment (profiled) multiplied by (1 plus Discount rate)^(AMP 7 charging year - 2019)
3	Blind year adjustment inc. financing and inflation adjustment	This is Blind year adjustment incl. financing adjustment multiplied by CPIH: FYA index inflating from 2019/20
Allowed Revenue (actual customer numbers)		
4	Allowed revenue (**R**)	This is Total revenue (**TR**) plus (Actual customers (**AC**) minus Forecast customers (**FC**)), multiplied by the Modification factor (**M**)
Allowed Revenue (reforecast customer numbers)		
5	Allowed revenue (reforecast)	This is Total revenue (**TR**) plus ((Reforecast customers minus Forecast customers (**FC**), multiplied by the Modification factor (**M**))
Calculation of Actual Revenue Collected (net)		
6	Actual revenue (net)	The Revenue Recovered (**RR**) plus Revenue Sacrifice
Net adjustment		
7	Net adjustment	This is the Allowed revenue (**R**) minus Actual Revenue (net)
Calculation of threshold for financing adjustment		
8	% Net difference (reforecast)	This is (Actual revenue (net) minus Adjusted allowed revenue (reforecast)) divided by Adjusted allowed revenue
9	% Net difference (reforecast) ABS	This is the absolute value of % Net difference (reforecast)
10	Threshold triggered	A boolean value that is returned if % Net difference (reforecast) ABS is greater than the Materiality threshold and we decide a penalty is appropriate
Total retail revenue adjustments applied at the end of AMP7		
11	Residential retail revenue adjustment (excl. BYA)	This is the Residential retail revenue adjustment if the Threshold triggered = 0. Where Threshold triggered = 1, then Net adjustment in the above calculation is multiplied by (1 + Discount rate)Forecast period factor

12	Residential retail revenue adjustment at the end of AMP7	This is Residential retail revenue adjustment (excl. BYA) plus Blind year adjustment inc. financing and inflation adjustment

2.8 Revenue forecasting incentive model

2.8.1 Summary

This model shows how we will apply the Revenue Forecasting Incentive (RFI). The RFI is a symmetric revenue adjustment applied in-period to reconcile any revenue under or over-recovery in an earlier year. Where differences between actual and allowed revenues are greater than 2%, the RFI applies a financial penalty. The RFI is applied to the network plus and water resources controls. Appendix 7 (wholesale revenue incentives) of our PR19 Methodology provides background information with further changes available in our PR19 final determination.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
In-period	Revenue	Revenue adjustments feeder model	2024-25 FYA CPIH deflated	Water Network Plus, Water Resources, Wastewater Network Plus, Thames Tideway Tunnel	Company specific wholesale allowed return on capital

2.8.2 Background and purpose

We provide regulatory protection over wholesale prices to customers by setting a **total revenue control** for each of these groups of activities. These controls do not relate to non-price control items such as excluded charges. Our revenue forecasting incentive (RFI) relates to price controlled activities related to **water network plus**, **wastewater network plus**, **water resources** and **Thames Tideway Tunnel (TTT)**. It replaces the WRFIM we used at PR14.

In our PR19 methodology we said that we would introduce the RFI to apply a revenue correction adjustment and a financial incentive to set charges so that revenue recovered is in line with allowed revenue for the network plus and water resources controls. On 18 July 2019 we consulted on a licence change that allows

us to set an RFI formula as part of companies' final determinations that incentivises water companies to recover shortfalls in revenue in previous charging years. All companies agreed to this licence change. We subsequently made this licence modification on 4 November 2019 and it came into effect on 10 November 2019. We subsequently notified companies of the RFI formula for the 2020-25 period by setting it out in annex 3 to companies' notifications of the final determination of price controls.

The RFI encourages companies to collect an appropriate amount of revenue by potentially applying a penalty rate if the revenue companies collect is different from their adjusted allowed revenue.

Companies' water network plus, wastewater network plus and water resources controls could be adjusted in-period through future determinations. For example, through applying outperformance or underperformance payments related to in-period outcome delivery incentives. We would apply such adjustments through changes to 'K', calculated in the in-period adjustments model (see section 2.4 for more details). As described below, 'K' is an input into reconciliation calculations and therefore we do not have a separate input line related to such determinations.

2.8.3 Nature of the reconciliation

We need to undertake a reconciliation related to the RFI to:

- allow adjustments to allowed revenues to make any correction related to the PR19 blind year;
- incentivise companies to correct differences between their adjusted allowed revenues and actual revenues in a timely way; and
- incentivise companies to recover an appropriate amount of revenue each year by potentially applying a financial penalty if they collect an inappropriate amount of revenue.

The RFI is an **in-period reconciliation** that takes the form of a **revenue adjustment**. This means that we will adjust allowed revenue:

- during the 2020-25 period – these relate to the first three years of the AMP7 control and are implemented with a two-year lag due to regulatory reporting reasons; and
- at PR24 the output from the PR19 reconciliation models will be reflected in the PR24 financial model which we will develop alongside the PR24 methodology.

2.8.4 Mechanism structure - overview

Adjusted allowed revenue

Companies' allowed revenues, R_t, are set out in their 'Notification of the PR19 final determination'. Annex 3 of that document sets out how we will adjust allowed revenue (AR_t). We will do this according to following formula:

$$AR_t = R_t + BYA_t + RFI_t$$

Where:

BYA_t is the blind-year adjustment.

PR19 Blind year adjustment

Our overall approach to the blind year is discussed in section 2 above.

As set out in companies' 'Notification of the PR19 final determination' we calculate the blind year adjustment during the 2021-25 period for the relevant controls according to the following formula:

$$BYA_t = TBYA \times Y_t \times \left(1 + \frac{D}{100}\right)^{T - 2019} \times \text{CPIH adjustment factor}_t$$

Where:

TBYA is the Total Blind Year Adjustment. Y_t is the Blind Year Profiling Factor. This allows the company to spread the impact of the blind year adjustment over the relevant years. **T** is the relevant charging year in the price control period (2020, 2021, etc.).

Reconciliation for over/under recovery of revenue

We will calculate the RFI adjustment according to the following formula:

$$RFI_t = -\left(RR_{t-2} - AR_{t-2}\right) \times \left(1 + \frac{D}{100}\right)^2 \times \left(1 + CPIH_{t-1}\right) \times \left(1 + CPIH_t\right)$$

Application of financial penalty

Where there are material variances in companies' relevant revenues, we will apply a financial penalty according to the following formula:

$$-PS_{i,t} \times \frac{PR}{100} \times \left| RR^{*}_{t-2} - AR^{*}_{t-2} \right| \times \left(1 + \frac{D}{100} \right) \times \left(1 + CPIH_{t-1} \right) \times \left(1 + CPIH_{t} \right)$$

Where:

RR^{*}_{t-2} and AR^{*}_{t-2} have the same meaning as RR_{t-2} and AR_{t-2} respectively except in this case the relevant controls this applies to are the sum of both the water network-plus and water resource controls.

PR This is the penalty rate.

PS is the share of the penalty allocated to the relevant controls such that **PS** values must sum to one for each charging year. We expect the company to provide evidence to support its decision of how it proposes to allocate any applicable penalty across the water resources and water network plus controls.

2.8.5 Mechanism structure - calculations

Outputs

#	Output	Description	Units
1	Total adjustment at the end of AMP7	The total revenue adjustment for the relevant control to be made at PR24.	£m, Outturn

Inputs

#	Input	Description	Source	Units
The inputs below apply to all of the controls unless otherwise stated				
1	Actual CPIH: Nov - Nov percentage increase	The percentage change in the Consumer Prices Index (H) between that published for the month of November in the Prior Year and that published for the immediately preceding November.	ONS	%

#	Input	Description	Source	Units
2	CPIH: Nov - Nov index inflating from 2019-20	One plus the percentage change in the Consumer Prices Index (H) between that published for the month of November in the Prior Year and that published for November 2018	ONS	%
3	CPIH: Nov - Nov index inflating from 2017-18	One plus the percentage change in the Consumer Prices Index (H) between that published for the month of November in the Prior Year and that published for November 2016	ONS	%
4	Penalty rate: minimum threshold	The level at which forecast errors (whether positive or negative) would result in a penalty. This is equal to 2%.	Ofwat	%
5	Penalty rate: maximum threshold	The level at which forecast errors (whether positive or negative) would result in a maximum penalty rate being applied. This is equal to 3%.	Ofwat	%
6	Penalty level	The maximum penalty rate that could apply. This is equal to 3%.	Ofwat	%
7	Discount rate	The discount rate used to provide a time value of money adjust of the incentive reward / penalty	This is the wholesale allowed return on capital.	%
8	Threshold for additional variance analyses	The level of forecast error (whether positive or negative) which would result in additional variance analysis. This is equal to 6%.	Ofwat	%
9	Actual revenue (**RR**)	The revenue recovered by the Appointed Business in a Charging Year in outturn prices	Company regulatory reporting	£m, Outturn
10	Allowed revenue	Revenue allowed, **R**, to the Appointed Business in a Charging	'Notification of the PR19 final determination of Price Controls'	£m, 2019-20 Nov-Nov

#	Input	Description	Source	Units
		Year by a Price Control in respect of the activities concerned		
11	Bilateral entry adjustment (**BEA**)	The revenue adjustment arising from the Bilateral entry adjustment model (see section 4.11) applicable to the water resources control	Bilateral entry adjustment model	£m, 2017-18 CPIH deflated FYA
12	K	This is the K number for each control.	'Notification of the PR19 final determination of Price Controls' in 2020-21 and 2021-22. Output of In-period adjustments model for 2022-2025.	Number
13	Proportion of penalty allocated to Water-N+ (**PS**)	Proportion of the RFI penalty allocated to water network plus	Company	%
14	Total blind year adjustment	This is the blind year adjustment stated by Ofwat in 2017-18 year FYA prices (**TBYA**) converted to a different price base.	Any such adjustment would be made by a future determination.	£m, 2019-20 Nov-Nov
15	Blind year profiling factor (**Y**)	This is Y_t i.e. the percentage of the blind year adjustment that the company has elected to receive in period t of the price control period.	Company discretion. Values must: • sum to one, if the blind year adjustment is negative; • sum to one or less, if the blind year adjustment is positive; and • be greater than or equal to zero.	%
16	AMP 7 charging year	This is the year in which the relevant charging year begins – for example: • for the charging year 2022-23, T = 2022;	N/A	Number

#	Input	Description	Source	Units
		• for the charging year 2023-24, T = 2023; and • for the charging year 2024-25, T = 2024.		

Calculations

#	Calculation overview	Calculation detail
Allowed revenue (these calculations apply to all of the controls)		
1	Revenue indexation	This is 1 plus K plus CPIH: Nov - Nov index inflating from 2019-20
2	Allowed revenue	This is Allowed revenue in the first charging year. For subsequent charging years this is Allowed revenue in the previous charging year multiplied by Revenue indexation
Bilateral entry adjustment (these calculations apply to the water resources control)		
3	Bilateral entry adjustment - with financing adjustment	This is Bilateral entry adjustment (**BEA**), multiplied by (1 plus Discount Rate)^2
4	Bilateral entry adjustment - with financing adjustment and inflation adjustment	This is Bilateral entry adjustment - with financing adjustment in a charging year, multiplied by the value of CPIH: Nov - Nov index inflating from 2017-18 two charging years later
5	Bilateral entry adjustment - as incurred	This is Bilateral entry adjustment - with financing adjustment and inflation adjustment applied with a lag of two charging years
Blind year adjustment (these calculations apply to all of the controls)		
6	Blind year adjustment (profiled)	This is Blind year adjustment for year 2019/2020 multiplied by Blind year profiling factor

#	Calculation overview	Calculation detail
7	Blind year adjustment inc. financing rate adjustment (base year 2019/2020)	This is Blind year adjustment (profiled), multiplied by (1 + Discount rate)^(AMP 7 charging year - 2019)
8	Blind year adjustment inc. financing rate and inflation adjustment (**BYA**)	This is Blind year adjustment inc. financing rate adjustment (base year 2019/2020) multiplied by CPIH: Nov - Nov index inflating from 2019/20
Revenue correction (these calculations apply to all of the controls)		
9	Adjusted allowed revenue	For network plus, this is Allowed revenue plus Blind year (profiled) inc. financing rate and inflation adjustment (**BYA**) plus RFI For water resources, this is Allowed revenue plus Blind year adjustment inc. financing rate and inflation adjustment (**BYA**) plus Bilateral entry adjustment - as incurred plus RFI
10	Revenue Imbalance	This is Adjusted allowed revenue minus Actual Revenue
11	Main revenue adjustment - with financing adjustment	For years 2020-23, this is Revenue Imbalance, multiplied by (1 plus Discount rate)^2. For 2023-25, this is zero.
12	Main revenue adjustment - with financing adjustment & 2 year lag of inflation	This is Main revenue adjustment - with financing adjustment in a charging year multiplied by Actual CPIH: Nov - Nov percentage increase in the subsequent two charging years
Wholesale water calculations (these calculations apply to water resources and water network plus controls)		
13	Revenue Imbalance - Wholesale Water	This is sum of the Revenue Imbalance for the water resources and water network plus controls
14	Adjusted allowed revenue - Wholesale Water	This is the sum of the Adjusted allowed revenue for both the water resources and water network plus controls

#	Calculation overview	Calculation detail
Penalty calculation (these calculations apply to wholesale water and wastewater network-plus calculations)		
15	Forecast error	This is the absolute value of the Revenue Imbalance divided by Adjusted allowed revenue
16	Penalty applicable	This is equal to 1 where Forecast error exceeds Penalty rate: minimum threshold
17	Error magnitude	Where Penalty applicable equals 1, this is (Forecast error minus Penalty rate: minimum threshold) divided by (Penalty rate: maximum threshold minus Penalty rate: minimum threshold). Otherwise, this is equal to zero
18	Penalty rate (**PR**)	This is Penalty level multiplied by the lesser of Error magnitude or one
19	Penalty adjustment POS	This is Penalty rate (**PR**) multiplied by the absolute value of Revenue Imbalance
20	Penalty adjustment	This is -1 multiplied by Penalty adjustment POS
21	Penalty adjustment - with financing adjustment	This is Penalty adjustment multiplied by (1 + Discount rate)
22	Penalty adjustment - with financing adjustment & 2 year lag of inflation	This is Penalty adjustment - with financing adjustment in a charging year, multiplied by Actual CPIH: Nov - Nov percentage increase in the subsequent two charging years
23	Performance variance level alert	This is equal to 1 if Forecast error is greater than Threshold for additional variance analyses and zero otherwise
Allocation of penalty calculation (these calculations apply to water resources and water network plus controls)		
24	Proportion of penalty allocated to Water Res	This is 1 minus Proportion of penalty allocated to Water-N+

#	Calculation overview	Calculation detail
25	Penalty adjustment - with financing adjustment & 2 year lag of inflation - Water-N+	This is the wholesale water Penalty adjustment - with financing adjustment & 2 year lag of inflation, multiplied by Proportion of penalty allocated to Water-N+
26	Penalty adjustment - with financing adjustment & 2 year lag of inflation – Water Res	This is the wholesale water Penalty adjustment - with financing adjustment & 2 year lag of inflation, multiplied by Proportion of penalty allocated to Water Res
RFI calculation (these calculations apply to all of the controls)		
26	RFI	This is Main revenue adjustment - with financing adjustment & 2 year lag of inflation plus Penalty adjustment - with financing adjustment & 2 year lag of inflation applied with a lag of two charging years
Application of adjustment for last two years at the end of AMP7		
27	Bilateral entry adjustment (**BEA**)	This is Bilateral entry adjustment (**BEA**), multiplied by CPIH: Nov - Nov index inflating from 2019-20
28	Penalty adjustment – Water-N+	This is Penalty adjustment, multiplied with Proportion of penalty allocated to Water-N+ (**PS**)
29	Value of year 4 main revenue adjustment at the end of AMP7 - Water-N+	This is Revenue imbalance – Water-N+ in year t-1, multiplied by Actual CPIH: Nov - Nov percentage increase in year t, multiplied by (1 plus Discount rate)
30	Value of year 4 penalty adjustment at the end of AMP7 - Water-N+	This is Penalty adjustment – Water-N+ in year t-1, multiplied by Actual CPIH: Nov - Nov percentage increase in year t, multiplied by (1 plus Discount rate)
31	Value of year 4 RFI adjustments at the end of AMP7 - Water-N+	This is Value of year 4 main revenue adjustment at the end of AMP7 - Water-N+ plus Value of year 4 penalty adjustment at the end of AMP7 - Water-N+

#	Calculation overview	Calculation detail
32	Penalty adjustment - Water Res	This is Penalty adjustment, multiplied with Proportion of penalty allocated to Water Res
33	Value of year 4 main revenue and BEA adjustment at the end of AMP7 - Water Res	This is (Revenue Imbalance - Water Res plus Bilateral entry adjustment (**BEA**)) in year t-1, multiplied by Actual CPIH: Nov - Nov percentage increase in year t, multiplied by (1 plus Discount rate)
34	Value of year 4 penalty adjustment at the end of AMP7 - Water Res	This is Penalty adjustment - Water Res in year t-1, multiplied by Actual CPIH: Nov - Nov percentage increase in year t, multiplied by (1 plus Discount rate)
35	Value of year 4 RFI adjustments at the end of AMP7 - Water Res	This is Value of year 4 main revenue and BEA adjustment at the end of AMP7 - Water Res plus Value of year 4 penalty adjustment at the end of AMP7 - Water Res
36	Value of year 5 RFI adjustments at the end of AMP7 - Water-N+	This is Revenue imbalance – Water-N+ plus Penalty adjustment – Water-N+
37	Value of year 5 RFI adjustments at the end of AMP7 - Water Res	This is Revenue Imbalance - Water Res plus Bilateral entry adjustment (**BEA**) plus Penalty adjustment - Water Res
38	Total adjustment at the end of AMP7 - Water-N+	This is Value of year 4 RFI adjustments at the end of AMP7 - Water-N+ plus Value of year 5 RFI adjustments at the end of AMP7 - Water-N+
39	Total adjustment at the end of AMP7 - Water Res	This is Value of year 4 RFI adjustments at the end of AMP7 - Water Res plus Value of year 5 RFI adjustments at the end of AMP7 - Water Res
40	Value of year 4 main revenue adjustment at the end of AMP7 – WW-N+	This is Revenue imbalance – WW-N+ in year t-1, multiplied by Actual CPIH: Nov - Nov percentage increase in year t, multiplied by (1 plus Discount rate)
41	Value of year 4 penalty adjustment at the end of AMP7 – WW-N+	This is Penalty adjustment – WW-N+ in year t-1, multiplied by Actual CPIH: Nov - Nov percentage increase in year t, multiplied by (1 plus Discount rate)

#	Calculation overview	Calculation detail
42	Value of year 4 RFI adjustments at the end of AMP7 - WW-N+	This is Value of year 4 main revenue adjustment at the end of AMP7 – WW-N+ plus Value of year 4 penalty adjustment at the end of AMP7 – WW-N+
43	Value of year 5 RFI adjustments at the end of AMP7 - WW-N+	This is Revenue imbalance – WW-N+ plus Penalty adjustment – WW-N+
44	Total adjustment at the end of AMP7 - WW-N+	This is Value of year 4 RFI adjustments at the end of AMP7 - WW-N+ plus Value of year 5 RFI adjustments at the end of AMP7 - WW-N+

2.8.6 Implementation

Discretion to allocate any penalty related to wholesale water revenue imbalances

The calculation of the penalty for the water resources and water network-plus control is based on the sum of the water resources and water network-plus controls. We would generally expect companies to allocate the penalty proportionately to the control causing the imbalance. However, we have provided discretion to companies to allocate the penalty between the water resources and water network-plus control. In any case, we expect companies to provide evidence to support their decision of how they propose to allocate any applicable penalty across the water resources and water network plus controls and be clear on why they have chosen their preferred approach.

Ex post review of any penalties

We will not waive the RFI penalty *ex post*, for example in light of exceptional weather. We allow for some variation in companies' revenues around their allowed revenue by setting a deadband. We consider that generally companies should be able to collect revenue within this range.

Flexibility to apply the penalty in light of changes to developer services revenue

The RFI encourages companies to collect an appropriate amount of revenue by potentially applying a penalty rate if their revenue over- or under-recovery is too great. It also encourages companies to correct any over- or under-recovery during the 2020-25 period.

As part of our final determinations, we published a technical appendix 'PR19 final determinations: Our approach to regulating developer services'. In this document, we noted that some companies had raised concerns that they might be penalised by the RFI if their developer services revenue was different from their allowed revenue. We considered that this was unlikely to be a significant issue, because our proposed approach to cost modelling addressed key concerns with our previous approach, which some companies argued led to an inaccurate forecast of developer services revenue. However, we also said that if there was a significant difference between actual and allowed developer services revenue then, potentially, we could apply discretion in applying a penalty under the RFI.

We consider that there may be a case for considering an adjustment to how we would apply any penalties, if we agreed with a company that a change in their planned bill profile would be in customers' interests. For example, if a company foresees revenue from developer services being much lower than forecast in a forthcoming charging year and considers that it would be better to smooth over-recovery from other customers in the remaining years of the 2020-25 period.

The way we would apply such flexibility would be by altering the relevant measure of 'adjusted allowed revenue' (and thereby the calculation of the 'forecast error' and also 'penalty') in the RFI reconciliation calculations. Shifting the penalty deadband in this way, rather than eliminating the risk of a penalty altogether, ensures that a company would still face a potential penalty if it does not recover the right revenue and maintains the incentive on companies to engage with developers.

To maintain the right incentives and avoid a significant administrative burden, we propose applying the following criteria for making such changes.

- **Company ownership**: We consider that the onus should be on companies to propose the basis for any adjustment. This would include explaining how such a change would be applied and providing appropriate justification.

- **Materiality:** We would only consider changes if there is a significant potential benefit to customers and if a company faces a significant risk of an RFI penalty if no changes were made. Therefore, we propose only considering a change if a company predicts that its developer services revenue will be different from the forecasts used to set allowed revenue by more than 1% of:

i) in the case of water, 'Adjusted allowed revenue – wholesale water'; or
ii) in the case of wastewater, 'Adjusted allowed revenue'.

- This approach ensures we would only consider a change if more than half of the original RFI penalty rate threshold of 2% is eroded by a change in developer services revenue.

- We would also consider the potential bill instability if we did not make such a change.

- **Focused:** The focus of this flexibility is to address specific issues that might arise during the 2020-25 period. We will not revisit decisions made during PR19. The purpose of such flexibility would be to address issues arising from large changes in developer services revenue that might lead to bill instability.

- **Aligned with companies' other regulatory requirements.** Companies would need to manage this process in a way that is consistent with our charging rules. This includes the requirement on companies to consult with relevant stakeholders in a timely and effective manner. Customer support for a proposed adjustment to a company's bill profile would be important in justifying such a change.

- **Timeliness:** We consider companies should make any request to us for such a change by 15 August preceding the beginning of the relevant charging year. We would then make our decision by 15 November. This aligns to the dates related to in-period determinations. This timing would ensure companies would know our decision sufficiently in advance of the forthcoming charging year.

Thames Tideway Tunnel

We determined Thames Water's price control for its Thames Tideway Tunnel (TTT) activities in Notification of the PR19 final determination of Price Controls for Thames Water (the Price Control for Sewerage Services for the Thames Tideway Tunnel Project). In annex 3 of this document, we acknowledged that we had not formally consulted before on the application of the RFI in relation to the Price Control for the Thames Tideway Tunnel. We said our starting assumption was that it would apply to the price control for the 2020-25 period in the same way as the Wholesale Revenue Forecasting Incentive (WRFIM) applied in relation to the 2015-20 price control period. Therefore, we set the RFI formula for the Thames Tideway Tunnel control

and said we would consult on how to apply the incentives at PR24 in our PR19 reconciliation rulebook.

We consider that the approach we set out in Thames Water's final determination remains appropriate, because it:

- maintains the incentive on Thames Water to avoid any over- or under-recovery of revenues;
- ensures that revenue cannot pass between the Thames Water's main wastewater network-plus control and the Thames Tideway Tunnel control; and
- ensures that any revenue imbalance in any other of Thames Water's price controls cannot be offset with revenue from the Thames Tideway Tunnel control for the purposes of calculating the penalty.

Unlike Thames Water's control for TTT activities, we consider that the revenue that Thames Water collects on behalf of the TTT Infrastructure Provider should be excluded from the RFI, because the TTT Infrastructure Provider is regulated separately by Ofwat.

Havant Thicket Activities

The RFI will not apply to activities designated to be Havant Thicket Activities in Notification of the PR19 final determination of Price Controls for Portsmouth Water (please refer to section 3.3 for more details on the Havant Thicket reconciliation).

2.9 Developer services revenue adjustment mechanism

2.9.1 Summary

This model is designed to reconcile developer services revenues within the network-plus control for PR19. We explain further details in 'PR19 final determinations: Our approach to regulating developer services'.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue	Revenue adjustments feeder model	2017-18 FYA CPIH deflated	Water Network Plus, Wastewater Network Plus	Company-specific wholesale allowed return on capital

2.9.2 Background and purpose

Water companies must allow new connections to their networks. A major demand for new connections comes from new housing developments

The **water network plus** and **wastewater network plus** controls are total revenue controls. Companies' costs can be affected by the number of properties they connect to their network. When we set the allowed revenue for companies at PR19 we took account of our forecasts for the number of these connections.

We set out our planned approach to regulating developer services in our PR19 methodology document and in particular in Appendix 7. In December 2019 we published PR19 final determinations: Our approach to regulating developer services - this set out our decision to:

- implement a simpler developer services end-of-period reconciliation based on a single band for each service - a volume-based symmetric revenue correction for

developer services within a total revenue control to encourage timely and quality new connections; and
- not to apply a forecasting incentive as set out in the PR19 Final Methodology as we are using our own view of forecast total number of connections in the final determination.

Nature of the reconciliation

We need to undertake a reconciliation related to developer services to ensure companies' allowed revenue reflects the actual number of new connections.

The developer services reconciliation is an **end-of-period** reconciliation that takes the form of a **revenue adjustment**. This means any adjustment required will be made at PR24 and would affect companies' allowed revenue over the 2025-30 period.

2.9.3 Mechanism structure – overview

We set out the calculation for companies' Developer Services Revenue Adjustment Mechanism (DSRA) in PR19 final determinations: Our approach to regulating developer services. The allowed revenue adjustments are calculated according to the following formula for the number of water and wastewater connections:

$$\text{DSRA} = \sum_{t=1}^{5} (AC_t - FC_t) \times \text{Unit Rate}_t \times \left(1 + \frac{D}{100}\right)^{5-t}$$

Where:

t is each charging year of the price control period with the first year starting on 1 April 2020 (year 1) and the last year starting on 1 April 2024 year 5. AC_t is the actual number of new properties connected for the relevant service occurring in charging year **t**[3]. FC_t is our forecast number of new properties connected for the relevant service occurring in charging year **t**[4]. **Unit Rate** is a number relating to the relevant service in charging year **t**.

[3] This includes properties connected by NAVs and SLPs so that the full impact of local infrastructure reinforcement is matched with the total new properties connected.
[4] This includes properties connected by NAVs and SLPs so that the full impact of local infrastructure reinforcement is matched with the total new properties connected.

2.9.4 Mechanism structure – calculations

Outputs

#	Output	Description	Units
There is a separate output for water and wastewater			
1	DSRA incl. financing adjustment	The end-of-period revenue adjustment applied to network plus revenue in PR24 to reconcile for any difference between forecast and actual connections for which services will be provided each year.	£m, 2017-18 FYA CPIH deflated

The outputs will feed into the financial model in PR24 through the revenue adjustments feeder model.

Inputs

#	Input	Description	Source	Units
These inputs are repeated for both water and wastewater connections				
1	Forecast number of connections (**FC**)	Our forecast number of new properties connected for the relevant service occurring in a given charging year	Set out in the appendix of PR19 Final Determinations: Our approach to regulating developer services	Thousands
2	Actual number of connections (**AC**)	The actual number of new properties connected for the relevant service occurring in charging year	Company regulatory reporting	Thousands
3	Revenue per connection (**Unit Rate**$_t$)	The allowed revenue per connection in a given Charging Year	Set out in the appendix of PR19 final determinations: Our approach to regulating developer services	£, 2017-18 FYA CPIH deflated
These inputs will apply to both the water and wastewater calculations				

#	Input	Description	Source	Units
These inputs are repeated for both water and wastewater connections				
4	Discount rate (**D**)	The discount rate used to apply a time value of money adjustment applicable to the developer services reconciliation adjustments	This is the wholesale allowed return on capital	%

Calculations

All calculations are made for each charging year over the 2020-25 period unless otherwise stated.

#	Calculation overview	Calculation detail
These calculations apply to water and wastewater connections		
1	Difference in volume between actual and forecast figures	This is Actual number of connections (**AC**) minus Forecast number of connections (**FC**)
2	Developer services revenue adjustment mechanism (DSRA)	This is Revenue per connection (**Unit Rate**$_t$) multiplied by Difference in volume between actual and forecast figures
3	DSRA incl. financing adjustment	This is Developer services revenue adjustment mechanism (DSRA) adjusted for time value of money by multiplying with (1 plus Discount rate (**D**)) $^{5-t}$

2.9.5 Implementation

Ex post assessment of companies' costs

We considered whether it would be appropriate to do a case-by-case reconciliation at the end of the period that would allow us to consider each companies' application on its merits in the technical appendix PR19 final determinations: Our approach to regulating developer services that we published alongside our final determinations.

We decided we would not undertake any ex post of assessment of companies' costs, as this would not be in customers' interests. Our reasoning is set out in the technical appendix.

*Verification of forecast number of connections (**FC**)*

When we set the forecast number of connections to inform the developer service reconciliation, we noted that these numbers had been based on companies' forecasts of their 'total properties connected'. Given this definition, we have assumed companies have included self-lay organisations (SLOs) and NAVs within this data. However, we have not verified this. Therefore, we said that we may take steps to check this before applying these numbers in our reconciliation. Where necessary, we will adjust these numbers to ensure that the definition of actual and forecast numbers is undertaken on a consistent basis.

2.10 Bioresources revenue reconciliation model

2.10.1 Summary

This model shows how the bioresources revenue reconciliation will work over 2020-2025. It combines and simplifies the previously published 'Bioresources modified revenue model', the 'Bioresources in-period revenue correction model' and the 'Bioresources forecasting accuracy incentive model'. The model shows how we modify the average revenue control each year based on the difference between outturn and forecast sludge production. In addition, the model shows how we adjust allowed bioresources revenue in one year to correct for any under or over-recovery of revenue in earlier years. Finally, it also shows how we apply the bioresources forecasting accuracy incentive. Appendix 6 (bioresources control) of our PR19 Methodology provides background information.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
In period	Revenue	Revenue adjustments feeder model	2024-25 FYA CPIH deflated and 2017-18 FYA CPIH deflated	Bioresources	Company-specific wholesale allowed return on capital

2.10.2 Background and purpose

Our **bioresources control** covers activities relating to the supply of bioresources services to customers. We provide regulatory protection of wholesale prices for bioresources services to customers by setting by setting an **average revenue control**.

This control has allowed revenue adjusted to reflect the difference between forecast and actual sludge volumes based on the variable cost of sludge. There is also a revenue adjustment mechanism to account for any imbalance between allowed

revenues and revenues actually recovered – this is applied with a two year lag due to reporting reasons. Our control is set out in companies' 'Notification of the PR19 final determination of Price Controls'.

As discussed in our PR19 final determinations, we set companies' bioresources revenue controls at PR19 based on our view of efficient costs. The bioresources revenue allowance is built up using our standard building-block approach to revenue controls.

2.10.3 Nature of reconciliation

We need to undertake a reconciliation related to the bioresources control to:

- ensure companies' allowed revenue reflects the actual level of sludge production;
- ensure companies' allowed revenue reflects in-period determinations, such as ODI adjustments;
- ensure companies' allowed revenue includes any profit from bioresources trading when the company uses appointed assets for non-appointed activities;
- ensure any differences between companies' allowed and actual recovered revenues can be subsequently corrected; and
- apply the bioresources forecasting accuracy incentive penalty which is an **end-of-period adjustment** applicable where the absolute difference between actual sludge production and forecast sludge production determined in PR19 is more than 6%.

For the bioresources revenue control we use **in-period** and **end-of-period reconciliations** which take the form of revenue adjustments. In-period adjustments will be applied in the 2020-25 period with a two-year lag and cover all bioresources reconciliations with the exception of the application of the forecasting accuracy incentive penalty. The forecasting accuracy incentive penalty is an **end-of-period adjustment** which will be made at PR24 and would affect companies' allowed revenue over the 2025-30 period.

2.10.4 Mechanism structure – overview

We set out the calculation for companies' allowed revenue for bioresources revenue controls in companies' 'Notification of the PR19 final determination of Price Controls'. Allowed revenue is calculated according to the following formula:

$$R_t = MR_t - ABR_t - \left[T_{t-2} \times \left(1 + \frac{CPIH_{t-1}}{100} \right) \times \left(1 + \frac{CPIH_t}{100} \right) \right]$$

Where:

$$MR_t = \left[UR_t + \left(ATDS_t - FTDS_t \right) x\ VR \right] \times \text{CPIH adjustment factor}_t$$

$$ABR_t = \left(RR_{t-2} - R_{t-2} \right) \times \left(1 + \frac{D}{100} \right)^2 \times \left(1 + \frac{CPIH_{t-1}}{100} \right) \times \left(1 + \frac{CPIH_t}{100} \right)$$

And where:

UR_t is Unadjusted revenue; **MR_t** is modified revenue; **ABR_t** is bioresources revenue adjustment. **T_{t-2}** is profit from bioresources trading. **$ATDS_t$** is actual volume of sludge (TDS). **$FTDS_t$** is forecast volume of sludge (TDS) produced in year t. **VR** is variable revenue. **D** is discount rate. **CPIH adjustment factor$_t$** is an indexation factor inflating from 2017-18.

Reconciliation for differences between actual and forecast sludge production

The average revenue control provides for the allowed revenue to be adjusted to reflect the difference between forecast and actual sludge volumes based on the variable cost of sludge. We set out the variable revenue in 'Notification of the PR19 final determination of Price Controls'. The modified revenue is determined on a NPV neutral basis over the control period in the Bioresources revenue reconciliation model.

In-period reconciliation for over/under recovery of revenue

We expect companies to adjust their bioresources charges so as to limit the difference between recovered revenues (**RR**) and allowed revenues (**R**) in all years from 2020-25. Any revenue imbalance will be recovered **in-period** in the first three years of the control period by adjusting allowed revenues (**R**) with a two year lag. Revenue imbalances in the last two years of the price control period are corrected by altering allowed bioresources revenues at PR24.

We apply inflation and time value of money adjustments automatically to all imbalances, reflecting a key feature of our approach to wholesale revenue controls. We do not apply financing adjustments to the profit from bioresources trading (**T**).

Other in-period adjustments

Companies' bioresources revenue controls could be adjusted in-period through future determinations. The ODIs earned on performance commitments allocated to the bioresources revenue control as set out in the companies' 'Notification of the PR19 final determination of Price Controls' would lead to in-period revenue adjustments. Our approach to reconciliation provides the flexibility to make such changes.

Through the in-period determination, we will set out an updated value of the unadjusted revenue (**UR_t**) in the in-period adjustment model which will take account of any applicable in-period ODI adjustments (see section 2.4). This will be applied in the Bioresources revenue reconciliation model in-period with a lag of two years.

Application of the bioresources forecasting accuracy incentive

In addition to the reconciliation of bioresources revenue, our mechanism applies the bioresources forecasting accuracy incentive penalty (BFAI) which is an **end-of-period adjustment** applicable where the absolute difference between actual sludge production and forecast sludge production is more than 6%.

$$\mathbf{BFAI} = -(\mathbf{PR} \times \mathbf{UR}) \times \left| \frac{(\mathbf{ATDS} - \mathbf{FTDS})}{\mathbf{FTDS}} \right|$$

Where **ATDS** and **FTDS** are as defined above but covering the entire period 2020-25 and:

> **UR_t** is Unadjusted revenue; **PR Penalty rate** is equal to 10%. The penalty would only occur when the difference between actual sludge produced (**ATDS**) over the control period is more than 6% greater or less than the company's forecast sludge production (**FTDS**):
>
> $$\left| \frac{\mathbf{ATDS-FTDS}}{\mathbf{FTDS}} \right| \geq \mathbf{0.06}$$

2.10.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1	Total bioresources revenue adjustment to be applied in PR24	The end-of-period revenue adjustment applied to bioresources revenue in PR24 for any under/over-recovery of revenue in 2023-24 and 2024-25.	£m, 2024-25 FYA CPIH deflated
2	Bioresources forecasting accuracy incentive penalty - 2017/18 FYA (CPIH deflated)	The penalty of the bioresources forecasting accuracy incentive applied as an end-of-period revenue adjustment to bioresources revenue. It depends on the level of difference between outturn and forecast sludge production from 2020-25.	£m, 2017-18 FYA CPIH deflated

The outputs will feed into the financial model in PR24 through the revenue adjustments feeder model.

Inputs

#	Input	Description	Source	Units
1	Forecast volume of sludge (**FTDS**)	Company forecast sludge production in a given Charging Year.	Table 5 of companies' 'Notification of the PR19 final determination of Price Controls'	ttds
2	Actual volume of sludge (**ATDS**)	Company actual sludge production in a given Charging Year.	Company regulatory reporting	ttds
3	Variable revenue (**VR**)	The adjustment to allowed revenue reflecting differences between outturn sludge production and forecast sludge production.	Table 5 of companies' 'Notification of the PR19 final determination of Price Controls'	£/TDS, 2017-18 FYA CPIH deflated, £/TDS
4	Recovered revenue for bioresources (**RR**)	Revenue recovered for bioresources services in a given Charging Year.	Company regulatory reporting	£m, Outturn
5	Total bioresources	Total revenue allowed to the company in a given Charging Year based on the forecast amount of	PR19 final determinations:	£m, 2017-18 FYA

#	Input	Description	Source	Units
	revenue allowance	sludge produced (calculated prior to adjusting for NPV neutrality).	Allowed revenue appendix	CPIH deflated
6	Profit from bioresources trading (**T**)	The profits from bioresources trading will be the margin element of the transfer prices earned for trading bioresources when appointed assets are used to treat sludge imports.	Company regulatory reporting	Outturn, £m
7	In-period ODI adjustments	In-period ODI rewards allocated to the bioresources price control.	Output from In-period adjustments model	£m, 2017-18 FYA CPIH deflated
8	Discount rate (**D**)	The discount rate used to provide a time value of money adjustment.	This is the wholesale allowed return on capital	%
9	Penalty rate	The penalty rate that the company incurs if the difference between the company forecast of sludge and the outturn sludge produced exceeds the deadband. This is equal to 10%.	Ofwat	%
10	Deadband	The percentage level which the company must exceed in order to be subject to a penalty rate. This is equal to 6%.	Ofwat	%
11	Actual CPIH: Nov-Nov percentage increase	The percentage change in the Consumer Prices Index (H) between that published for the month of November in the Prior Year and that published for the immediately preceding November.	ONS	%
12	CPIH: Nov - Nov index inflating from 2017-18	One plus the percentage change in the Consumer Prices Index (H) between that published for the month of November in the Prior Year and that published for November 2016.	ONS	%

Calculations

All calculations are made for each charging year over the 2020-25 period unless otherwise stated.

#	Calculation overview	Calculation detail
Calculation of average revenue control		
1	Discount factor for NPV for five-year average revenue control	This uses Discount rate (**D**) to calculate a discount factor for a time value of money adjustment with a base year of 2019-20
2	Discounted forecast of sludge produced	This is Discount factor for NPV for five-year average revenue control, multiplied by the Forecast volume of sludge (**FTDS**)
3	Total discounted sludge produced for forecast period	This is the sum of discounted forecast of sludge produced over all years
4	Discounted total revenue requirement - 2017-18 FYA (CPIH deflated)	This is Discount factor for NPV for five-year average revenue control, multiplied by the Total bioresources revenue allowance.
5	Total discounted revenue requirement for forecast period - 2017-18 FYA (CPIH deflated)	This is the sum of Discounted revenue requirements for forecast period for all years
6	Standard average revenue control for five-year period (SAR) - 2017-18 FYA (CPIH deflated)	This is Total discounted revenue requirement for forecast period, divided by Total discounted sludge produced for forecast period
7	Unadjusted revenue by year - 2017-18 FYA (CPIH deflated)	This is Standard average revenue control for five-year period (SAR) - 2017-18 FYA (CPIH deflated), multiplied by Forecast volume of sludge (**FTDS**)
8	Revised unadjusted revenue by year - 2017-18 FYA (CPIH deflated)	This is Unadjusted revenue by year - 2017-18 FYA (CPIH deflated) plus In-period ODI adjustments - 2017-18 FYA (CPIH deflated)
9	Discounted unadjusted revenue by year - 2017-18 FYA (CPIH deflated)	This is Unadjusted revenue by year - 2017-18 FYA (CPIH deflated), multiplied by the Discount factor for NPV for five-year average revenue control

#	Calculation overview	Calculation detail
Company fixed and variable elements of revenue adjustment		
10	Revenue to remunerate variable costs by year - 2017-18 FYA (CPIH deflated)	This is Variable revenue (**VR**), multiplied by Forecast volume of sludge (**FTDS**)
11	Discounted variable element revenue by year - 2017-18 FYA (CPIH deflated)	This is Revenue to remunerate variable costs by year - 2017-18 FYA (CPIH deflated), multiplied by the Discount factor for NPV for five-year average revenue control
12	Discounted fixed element revenue by year - 2017-18 FYA (CPIH deflated)	This is Discounted unadjusted revenue by year - 2017-18 FYA (CPIH deflated), minus the Discounted variable element revenue by year - 2017-18 FYA (CPIH deflated).
13	Total discounted fixed element revenue for period - 2017-18 FYA (CPIH deflated)	This is the sum of the discounted fixed element revenues by year for all years
14	Total discounted variable element revenue for period - 2017-18 FYA (CPIH deflated)	This is the sum of the Discounted variable element revenue by year - 2017-18 FYA (CPIH deflated) for all years
15	Discounted variable revenue - 2017-18 FYA (CPIH deflated)	This is Total discounted variable element revenue for period - 2017-18 FYA (CPIH deflated), divided by Total discounted sludge produced for forecast period
16	Discounted fixed revenue - 2017-18 FYA (CPIH deflated)	This is Total discounted fixed element revenue for period - 2017-18 FYA (CPIH deflated), divided by the Total discounted sludge produced for forecast period
Calculation of modified revenue		
17	Discounted outturn sludge produced	This is Actual volume of sludge (**ATDS**), multiplied by Discount factor for NPV for five-year average revenue control
18	Modified revenue - 2017-18 FYA (CPIH deflated)	This is (Actual volume of sludge (**ATDS**) minus Forecast volume of sludge (**FTDS**)), multiplied by Discounted variable revenue - 2017-18 FYA (CPIH deflated). This result is then added to Revised unadjusted revenue by year - 2017-18 FYA (CPIH deflated)

#	Calculation overview	Calculation detail
19	Modified revenue	This is Modified revenue - 2017-18 FYA (CPIH deflated), multiplied by CPIH: Nov - Nov index inflating from 2017-18
Allowed revenue - application of an in-period revenue correction		
20	Allowed revenue	This is the modified revenue, plus the Total adjustment to allowed revenue including over / under recovery reconciliation (calculation 26 which is the output from calculations 21-25 below)
21	Revenue imbalance	This is Allowed revenue minus Recovered revenue for bioresources (**RR**)
22	Bioresources revenue adjustment (ABR) - with financing adjustment	This multiplies the Revenue imbalance by (1 plus Discount rate (**D**))^2 to apply a time value of money adjustment for two years due to the 2-year lag
23	Bioresources revenue adjustment (ABR) - with financing adjustment & 2 year lag of inflation	This multiplies the Bioresources revenue adjustment (ABR) - with financing adjustment by the Actual CPIH: Nov-Nov percentage increase for the subsequent two charging years. This calculation is done for the first three years of the price control period
24	Profit from bioresources trading - with 2 year lag of inflation	This multiplies the Profit from bioresources trading (**T**) by the Actual CPIH: Nov-Nov percentage increase for the subsequent two charging years. This calculation is done for the first three years of the price control period
25	Total revenue adjustment	This is minus Bioresources revenue adjustment (ABR) - with financing adjustment & 2 year lag of inflation minus Profit from bioresources trading - with 2 year lag of inflation
26	Total adjustment to allowed revenue including over / under recovery reconciliation	This calculates the application of Total revenue adjustment with a two year lag. The result is applied in calculation 20
Application of adjustments in last two years at the end of AMP7		
27	Value of year 4 bioresources revenue adjustment (ABR) to be applied in PR24	This is Revenue imbalance in 2023-24, multiplied by Actual CPIH: Nov-Nov percentage increase in the subsequent charging year and (1 plus Discount rate (**D**))^2

#	Calculation overview	Calculation detail
28	Value of other year 4 revenue adjustments to be applied in PR24	This is -1 multiplied by the multiplication of Profit from bioresources trading (**T**) in 2023-24 and Actual CPIH: Nov-Nov percentage increase in the subsequent charging year
29	Value of year 4 total bioresources revenue adjustment to be applied in PR24	This is the Value of year 4 bioresources revenue adjustment (ABR) to be applied in PR24, plus the Value of other year 4 revenue adjustments to be applied in PR24
30	Value of year 5 total bioresources revenue adjustment to be applied in PR24	This is minus the Revenue imbalance minus Profit from bioresources trading (**T**), all in 2024-25
31	Total bioresources revenue adjustment to be applied in PR24	This is Value of year 4 total bioresources revenue adjustment to be applied in PR24, plus the Value of year 5 total bioresources revenue adjustment to be applied in PR24
Bioresources FAIM calculation		
32	Absolute Forecast Error	This is Actual volume of sludge (**ATDS**) minus Forecast volume of sludge (**FTDS**)
33	Forecast Error %	This is (Actual volume of sludge (**ATDS**) minus Forecast volume of sludge (**FTDS**)) divided by Forecast volume of sludge (**FTDS**)
34	Penalty required?	This is a check whether the Forecast Error % is greater than or equal to the Deadband
35	Bioresources forecasting accuracy incentive penalty - 2017/18 FYA (CPIH deflated)	This checks if a penalty is required, and if so, multiplies Penalty rate by the Unadjusted revenue by year - 2017-18 FYA (CPIH deflated) and Forecast Error %

2.11 Bilateral entry adjustment (BEA)

2.11.1 Summary

Further to the final determination and in line with our final methodology for the 2019 price review, we established a separate **water resources control**. Appendix 5 (water resources control) sets out our final methodology for the water resources control in the 2019 price review (PR19) and the adjustment mechanism for changes to water companies' allowed revenue once the bilateral market opens.

In line with the above publications, we published an illustrative Bilateral entry adjustment (BEA) model on 11 April 2019 that shows how we will adjust relevant companies' revenues should bilateral entry in the water resources market occur.

While there have been no methodological changes to the model, we have published an updated BEA model on 16 December 2019 to take account of presentational changes to make the model more FAST compliant and to clarify that the outputs from this model will flow into the RFI model that will take account of the adjustment to reflect two years of real financing costs and inflation adjustments.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
In-period	Revenue	PR19 Revenue forecasting incentive model	2017-18 FYA CPIH deflated	Water Resources	n/a

2.11.2 Background and purpose

Our **water resources control** covers activities carried out as part of the Appointed Business that fall within the definitions of the following services in RAG 4.08 – Guideline for the table definitions in the annual performance report (March 2019):

- Water resources – Abstraction licences; and
- Water resources – Raw water abstraction.

For companies whose areas are wholly or mainly in England, a bilateral market would allow business retailers to procure water resources directly from third parties and to seek ways to meet customers' demand for water more efficiently. Bilateral market entry may, therefore, decrease the investment a company needs to make to provide enough capacity to meet future demand. To reflect this, where bilateral market entry displaces the need for the incumbent's capacity, it will trigger an in-period revenue adjustment. Otherwise, customers would be funding duplicate investment in water resources and we would be protecting companies from exposure to the bilateral market.

We therefore include an in-period revenue adjustment mechanism to accommodate the potential development of the bilateral market in 2020-25 and to protect customers from the impacts of the bilateral market entry.

Our adjustment mechanism is based on the water resources yield displaced by unanticipated bilateral market entry. The revenue adjustment evaluates the ratio between forecast additional capacity needed and the additional capacity that was actually provided (including capacity provided by third parties). The adjustment only accounts for bilateral entry risk and not the risks associated with the company having to make significant investment in new water resources. The financial value of the adjustment reflects the costs of the post-2020 capacity funded through the control.

Adjustments will be based on the difference between forecast and actual bilateral market entry, but will only be made if a company planned to invest in new water resource capacity after 1 April 2020.

Our control allows for the possibility that the bilateral market will open in the 2022-23 charging year. We envisage that the in-period adjustment for bilateral entry will have a two-year timing delay between the charging year when any entry occurs and the charging year allowed revenues could change. This is because any difference between forecast and actual bilateral entry will not be reported by water companies until after the relevant charging year when it occurs; and it would be only practical for any adjustment to allowed revenues to take effect the year after this report.

Our control is set out in companies' 'Notification of the PR19 final determination of Price Controls'.

2.11.3 Nature of the reconciliation

We need to calculate the in-period adjustment to the price control for water resources activities to:

- accommodate the development of the bilateral market in 2020-25 and to protect customers from the impacts of the bilateral market entry;
- ensure that it only applies to incumbents whose areas are wholly or mainly in England[5];
- ensure that it will only apply after the English bilateral market, enabled by the Water Act 2014, opens;
- ensure that it will be based on the difference between forecast and actual bilateral market entry, but will only be made if a company had planned to invest in new water resource capacity after 1 April 2020; and
- ensure that it is undertaken at a zonal level and, where it comprises of more than one water resource zone (WRZ), will be aggregated to apply at an incumbent level.

For the water resources control we use an **in-period reconciliation** that takes the form of a **revenue adjustment**. This means that any adjustment required will be applied in the 2020-25 period with a two-year lag.

2.11.4 Mechanism structure – overview

We set out the calculation for companies' **in-period adjustment to the price control for water resources activities to account for bilateral entry** in companies' 'Notification of the PR19 final determination of Price Controls'.

The adjustment is calculated according to the following formula:

$$BEA_t = \sum_{WRZ_{i=1}}^{WRZ_n} [\, ICC_{i,t} \times AUC_{i,t} \times BEF_{i,t} \,]$$

$$BEF_{i,t} = \left(\frac{TCC_{i,t}}{ICC_{i,t} + BCCa_{i,t}} \right) - 1$$

$$TCC_{i,t} = ICC_{i,t} + BCCf_{i,t}$$

[5] The Welsh Government has decided not to introduce upstream competition. The bilateral market model for water resources that we are putting in place for companies whose areas are wholly or mainly in England will, therefore, not apply to incumbent companies whose areas are wholly or mainly in Wales.

For companies who have only one relevant WRZ for this calculation, the adjustment can be simplified as follows:

$$BEA_t = ICC_t \times AUC_t \times BEF_t$$

$$BEF_t = \left(\frac{TCC_t}{ICC_t + BCCa_t}\right) - 1$$

$$TCC_t = ICC_t + BCCf_t$$

Where:

BEA_t is Bilateral Entry Adjustment; **WRZ_n** is Water Resource Zone; **ICC_t** is Incumbent Cumulative Capacity; **AUC_t** is Annualised Unit Cost; **BEF_t** is Bilateral Entry Forecast Factor; **TCC_t** is Total Cumulative Capacity; **$BCCa_t$** is Bilateral Cumulative Capacity – Actual; **$BCCf_t$** is Bilateral Cumulative Capacity – Forecast

2.11.5 Mechanism structure – calculations

Outputs

For incumbents that operate across more than one WRZ, any adjustments at the level of WRZs will be aggregated to provide an incumbent-level adjustment.

#	Output	Description	Units
1	Bilateral entry adjustment (**BEA**)	This is the companies' in-period adjustment for bilateral entry adjustment to the price control for water resources activities to account for bilateral entry. This is calculated as the product of Capacity ~ WRZ [1 to 28] forecasts – Post-2020 incumbent cumulative capacity (**ICC**), WRZ [1 to 28] - Annualised unit cost (**AUC**) of post-2020 capacity and the Bilateral entry forecast (**BEF**) factor.	£m (2017-18 CPIH deflated FYA)

Inputs

#	Input	Description	Source	Units
1	Capacity ~ WRZ [1 to 28] forecasts – Post-2020 incumbent	This is the individual WRZ available post-2020 capacity, as measured using water resources yield. The post-2020 capacity is based on the incremental water resources	Table 4 of companies' 'Notification of the PR19	Ml/d

#	Input	Description	Source	Units
	cumulative capacity (**ICC**)	yield funded through the water resources control after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYAA planning period.	final determination of Price Controls'	
2	Capacity ~ WRZ [1 to 28] forecasts – Post-2020 bilateral cumulative capacity – forecast (**BCCf**)	This is the individual WRZ available post-2020 third party bilateral capacity, as measured using water resources yield. The post-2020 third party bilateral capacity is based on the incremental water resources yield provided by bilateral entrants after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYAA planning period.	Table 4 of companies' 'Notification of the PR19 final determination of Price Controls'	Ml/d
3	WRZ [1 to 28] - Annualised unit cost (**AUC**) of post-2020 capacity	This is the annualised unit cost of cumulative post-2020 capacity expressed in 2017-18 FYA CPIH deflated prices.	Table 4 of companies' 'Notification of the PR19 final determination of Price Controls'	£/ Ml/d
4	Capacity ~ WRZ [1 to 28] actual – Post-2020 bilateral cumulative capacity - actual (**BCCa**)	This is the individual WRZ actual post-2020 third party bilateral capacity, as measured using water resources yield. The post-2020 third party bilateral capacity is based on the incremental water resources yield provided by bilateral entrants after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These actuals should be provided for the DYAA planning period.	Company's APR table 4P[6]	Ml/d

[6] These are not yet in the published RAGs or submitted in current APRs, but will be consulted on in 'RAGs consultation for the reporting year 2020-21' which is scheduled for publication in February 2020.

Calculations

All calculations are made for each charging year over the 2020-25 period unless otherwise stated.

#	Calculation overview	Calculation detail
1	Total cumulative capacity (**TCC**)	This is the total forecast cumulative post-2020 capacity for the relevant year (t). This is calculated as the sum of Capacity ~ WRZ [1 to 28] forecasts – Post-2020 incumbent cumulative capacity (**ICC**) and Capacity ~ WRZ [1 to 28] forecasts – Post-2020 bilateral cumulative capacity - forecast (**BCCf**).
2	Bilateral entry forecast (**BEF**) factor	This is calculated as Total cumulative capacity (**TCC**) / (Capacity ~ WRZ [1 to 28] forecasts – Post-2020 incumbent cumulative capacity (**ICC**)plus Capacity ~ WRZ [1 to 28] actual – Post-2020 bilateral cumulative capacity - actual (**BCCa**)) minus 1. The Bilateral entry forecast (**BEF**) factor is capped at 0 (that is, it would be zero or a negative financial adjustment).

2.12 Cost of new debt reconciliation model

2.12.1 Summary

For PR19 final determinations we have set an initial allowed cost of new debt of 0.53% in CPIH terms. This allowance is based on our assessment of the average value of our benchmark index over 2020-25, adjusted for an 'outperformance wedge' representing our assessment of the ability of the notional company to outperform this index. We will carry out a reconciliation adjustment as part of PR24 based on the actual evolution of our benchmark index over 2020-25.

We propose that the reconciliation adjustment will be applied to revenues for the 2025-30 period. This chapter sets out in detail how our proposed reconciliation will work.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue	Revenue adjustments feeder model	2017-18 FYA CPIH deflated	Water Network Plus, Wastewater Network Plus, Water Resources, Bioresources, Dummy	Company-specific appointee allowed return on capital

2.12.2 Background and purpose

Our **cost of new debt allowance** aims to remunerate companies for efficiently-incurred interest costs associated with issuing debt over the period 2020-25. Arguably, in past price controls, our use of a fixed ex-ante allowance for the cost of new debt has failed to be reflective of an efficient cost of new debt for the sector.

We set out in our final methodology that we would set an initial, fixed allowance which will be reconciled to reflect the actual path of our benchmark index over 2020-25, as part of PR24. This approach reduces forecasting error in setting the new debt

allowance by ensuring that movements in economy-wide interest rates are passed through to customer bills.

As part of our PR19 methodology we published an earlier version of this model; the model published alongside this rulebook reflects comments we received as part of that exercise. Prior to the publication of our PR19 methodology we consulted on options for indexing the cost of debt.

2.12.3 Nature of the reconciliation

We need to undertake a reconciliation related to the allowed cost of new debt to:

- ensure companies' allowed revenue is consistent with our view of the efficient new debt cost allowance over the 2020-25 period;
- provide companies with visibility around the magnitude of the expected reconciliation to revenues, for planning purposes;

For the cost of new debt reconciliation model we use an **end-of-period** reconciliation that takes the form of a **revenue adjustment**. This means that any adjustment required will be made at PR24 and would affect companies' allowed revenue over the 2025 to 2030 period.

The model's calculations operate on inputs in 2017-18 CPIH-deflated prices. We apply a discount factor to convert the reconciliation figures from various years into a 2024-25 net present value. The discount factor we use is the appointee-level CPIH-deflated allowed return on capital from PR19 final determinations (2.96%). We will set out our approach to the reconciliation adjustment involving the PR24 blind year (2024-25) in our forthcoming methodology for PR24.

2.12.4 Mechanism structure – overview

The reconciliation adjustment **'R'** is governed by the following formula:

$$R = \sum_{t=1}^{5} (I_t(RCV_t \times G_{FD} \times N_t) - A_{FD}(RCV_t \times G_{FD} \times N_{FD})) \times (1+D)^{5-t}$$

Where:

I_t = The value of the extending trailing average of our benchmark index in year 't'

A_{FD} = Allowed cost of new debt at final determinations

RCV_t = Average Regulatory Capital Value in year 't'

G_{FD} = Notional gearing assumed at final determinations

N_{FD} = Notional share of new debt assumed at final determinations

N_t = Notional share of new debt in year 't'

D = Discount rate

All financial figures are in CPIH-deflated terms, with deflation from nominal figures assuming a long-run figure for CPIH of 2.0%. Our index value is based on our benchmark index, which is a synthetic index derived as the average of the A and BBB rated IHS Markit iBoxx non-financial 10 years+ indices (henceforth the 'iBoxx A/BBB'). We calculate our index value as an extending trailing average of the financial year average of the iBoxx A/BBB.

2.12.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1.	Revenue adjustment from cost of new debt reconciliation	The revenue adjustment that will be applied at PR24 for all wholesale controls. It is the total of the annual calculations (see below) over the 2020-25 period.	2017-18 CPIH-deflated prices, 2024-25 present values
2.	Outturn weighted average cost of debt	The outturn weighted-average cost of debt based on actual iBoxx A/BBB figures.	% nominal

The revenue adjustment 1) will feed into the revenue adjustment feeder model as part of PR24, while the outturn weighted average cost of debt 2) will be used as an input to the tax reconciliation model's calculations.

Inputs

#	Input	Description	Source	Units
1.	Allowed cost of new debt (A_{FD})	The allowed cost of new debt from final determinations (0.53%).	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	% (CPIH)
2.	iBoxx yields	The annualised yields for our benchmark index.	IHS Markit	%, nominal
3.	Long-term CPIH assumption	The Bank of England (2.0%) CPI target. Used to deflate annualised iBoxx yields to a CPIH basis.	PR19 Final Determinations: Allowed Revenue Appendices	%
4.	Regulatory Capital Value (RCV_{FD})	Regulatory Capital Value set at PR19 final determinations.	PR19 Final Determinations: Allowed Revenue Appendices	£m, (2017/18 CPIH)
5.	Notional gearing (G_{FD})	Notional gearing set at PR19 final determinations (60%).	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
6.	Notional % of new debt over period (N_{FD})	The notional share of new debt in total debt set at PR19 final determinations (20%).	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
7.	Notional % of new debt in year t (N_t)	The notional share of new debt in year t, based on a straight-line increasing profile (see below section).	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
8.	Ex ante 'outperformance wedge' for the notional company	The figures are as follows: New debt: 0.15% Embedded debt: 0.25%	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%

#	Input	Description	Source	Units
9.	Company-specific adjustment for new and embedded debt	The figures are as follows: New debt: 0.25% Embedded debt: 0.35%	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
10.	Company specific adjustment flags	A flag which, if triggered, results in a reconciliation adjustment which includes a company-specific adjustment to allowed return on new debt for the control concerned.	This applies to South Staffs Water and Portsmouth Water (excepting the Havant Thicket control)	Binary
11.	Discount rate (**D**)	The appointee-level allowed return on capital from final determinations (2.96%).	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	% (CPIH)

Calculations

The index value at year 't' (I_t) is calculated as an extending trailing average of the financial year average levels of our benchmark indices (the iBoxx A/BBB). In deriving the extending trailing average for a given year, we weight all years apart from the final one equally. For the final year we assign only a 50% weighting, reflecting that debt issued in the most recent year will tend not to have a full year's worth of interest cost associated with it. For example, the reconciliation payment for I_3 (the 2022-23 financial year) is derived as:

$$I_3 = (1 \times X_1) + (1 \times X_2) + (0.5 \times X_3)$$

Where:
X_1 = The financial year average of the iBoxx A/BBB for 2020-21
X_2 = The financial year average of the iBoxx A/BBB for 2021-22
X_3 = The financial year average of the iBoxx A/BBB for 2022-23

(All figures are deflated using a long-term CPIH assumption of 2.0%)

The share of new debt, N_t, is assumed to grow at a constant rate over the period, opening at 0% at the start of 2020-21, and hitting 20% in the middle of 2020-23. This means that its path is consistent with the 20% average share of new debt over 2020-25 assumed at final determinations.

2.13 Gearing outperformance sharing mechanism

2.13.1 Summary

In our PR19 Final Determinations, we set out an updated version of our default mechanism from our July 2018 document 'Putting the sector in balance: position statement'. The mechanism was updated in our Final Determinations to include a glide path on the level of gearing which triggers sharing payments. This mechanism is applicable to all companies in 2020-25, with any sharing payments applied in the form of a reconciliation adjustment to revenues at PR24.

We provide the background and purpose for the glide path gearing outperformance sharing mechanism in this section. We also cover the mechanism structure and calculations.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue	Revenue adjustments feeder model	2024-25 present value, 2022-23 FYA CPIH deflated	Appointee level calculation applied to the water network plus and wastewater network plus controls.	Company-specific appointee allowed return on capital

2.13.2 Background and purpose

Companies and their investors are responsible for decisions made about actual financial structure. However, where companies adopt high levels of gearing, they may reduce financial resilience and transfer some risk to customers and / or potentially taxpayers in the event that a company fails. In our July 2018 publication 'Putting the sector in balance: position statement', we said that companies should share the benefits of high levels of gearing with customers. We provided an illustrative mechanism explaining how we intended this to take place, and subsequently published a model alongside the slow track company draft determination, explaining how the reconciliation would work.

Taking account of company representations, we amended the mechanism in our final determination to include a glide path on the level of gearing which would trigger sharing payments.

2.13.3 Nature of the reconciliation

Our reconciliation mechanism will:

- calculate the value of gearing outperformance payments over 2020-25 to be shared with customers as part of PR24;
- facilitate the monitoring and tracking of the amount to be shared with customers so that companies can plan for PR24.

For the gearing sharing outperformance mechanism we use an **end-of-period reconciliation** that takes the form of a **revenue adjustment**. This means any adjustment required will be made at PR24 and would affect companies' allowed revenue over the 2025 to 2030 period.

2.13.4 Mechanism structure – overview

The reconciliation adjustment to revenues is the sum of the gearing outperformance sharing mechanism payment amounts over the 2020-25 period which are triggered in any given year when gearing exceeds the trigger point. The sharing payment **S** associated with year '**t**' is governed by the following formula:

$$S_t = (RCV_t \times (G_t - RP) \times SR \times (CoE_{FD} - CoD_t)) \times (1+D)^{5-t}$$

Where:

G_t = gearing: book value net debt from the annual performance report divided by RCV;

RP = the reference point;

SR = the sharing rate;

CoE_{FD} = the notional nominal cost of equity;

CoD_t = indicative weighted average nominal interest rate;

D = the discount rate, and

RCV_t = closing RCV in nominal terms.

As set out in the 'Aligning risk and return technical appendix' for the final determination, the trigger point starts at 74% for the year 2020-21 and will reduce by 1% each year, ending at 70% for the year 2024-25. The reference point = 65%, sharing rate = 50% and notional nominal cost of equity is 6.27%.

Which simplifies the formula to the below:

$$R_t = RCV_t \times (G_t - 65\%) \times 50\% \times (6.27\% - CoD_t) \times (1+D)^{5-t}$$

Values are converted to 2024-25 present values using the PR19 appointee nominal allowed return on capital as the discount rate, and expressed in 2022-23 CPIH-deflated terms using the level of the financial year average CPIH index. The sum of the discounted, constant-prices values from 2020-25 is the total value of the reconciliation.

2.13.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1	Revenues for reconciliation adjustment	The adjustment to revenues that will be applied at PR24. It is the total of the annual calculations (R_t) over the 2020-25 period.	Outturn, 2024-25 present value, 2022-23 FYA CPIH deflated, £m

This output will feed into the revenue adjustments feeder model.

Inputs

#	Input	Description	Source	Units
1	Gearing: Net Debt/RCV (1E L7) (G_t)	Gearing as at 31 March reported in the Annual Performance Report	Table 1E Line 7	Outturn, %
2	Gearing Outperformance Sharing Mechanism Trigger Threshold	The gearing level at which the mechanism is triggered for a financial year, which is 74% for the financial year ending 2021 and reduces by 1% each year, ending at 70% for the financial year ending 2025	'Aligning risk and return technical appendix'	%
3	Reference Point	The gearing level which is used to calculate the quantum of RCV on which gearing outperformance benefits are earned (65%)	'Aligning risk and return technical appendix'	%
4	Notional Nominal Cost of Equity from Final Determination (CoE_{FD})	Notional nominal cost of equity from final determinations (6.27%)	'Aligning risk and return technical appendix'	%
5	Indicative Weighted Average Nominal Interest Rate (CoD_t)	Indicative weighted average nominal debt reported in the Annual Performance Report	Table 1E Line 11	Nominal, %
6	Sharing Rate	The percentage amount of outperformance to be shared with customers (50%)	'Aligning risk and return technical appendix'	%
7	Closing RCV Nominal (RCV_t)	Closing nominal RCV value from yearly published RCV figures from Ofwat	Yearly published RCV figures from Ofwat Link - 2018 example	Nominal, £m
8	Appointee PR19 WACC (Nominal)	The PR19 nominal allowed return on capital for the appointee set at final determinations (5.02%). Used to convert to 2024-25 present values	'Aligning risk and return technical appendix'	%
9	Financial year average CPIH index value	Financial year average CPIH index as reported on the Office for National Statistics website	ONS CPIH Index	Index

2.14 Tax reconciliation

2.14.1 Summary

Our methodology for the 2019 price review proposed a tax reconciliation mechanism, which will take account of any changes to corporation tax or capital allowance rates after we make our final determinations, as these are significant drivers of the tax allowance.

In line with the above publications, we published an illustrative Tax Reconciliation tool on 18 July 2019 that calculates the change in the tax allowance for each year, to reflect changes to either the headline corporation tax rate or to the writing down allowances available on capital expenditure.

The chapter below sets out in detail how we propose our tax reconciliation will work.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue	Revenue adjustments feeder model	2017-18 FYA CPIH deflated	Water Network Plus, Wastewater Network Plus, Water Resources, Bioresources, Dummy	Company-specific wholesale allowed return on capital[7]

2.14.2 Background and purpose

Changes in tax rates are matters that are beyond company control. Therefore, for 2020-25 our methodology for the 2019 price review introduced a tax reconciliation mechanism, which will take account of any changes to corporation tax or capital

[7] Wholesale allowed return on capital for Havant Thicket Activities calculations for Portsmouth Water

allowance rates after we make our final determinations, as these are significant drivers of the tax allowance.

2.14.3 Nature of the reconciliation

We calculate allowances for tax in our determinations based on the projected taxable profits for the appointed business. Tax is calculated in the financial model that accompanies each company's final determination based on allowed revenues, costs and expected tax deductions. We apply current and enacted corporation tax rates and associated reliefs and allowances as set out in the UK tax legislation at the time of our final determination.

We consulted on the tax reconciliation mechanism in the PR19 methodology consultation and our final methodology includes a reconciliation mechanism to account for changes in the corporation tax rate and writing down allowances under the capital allowance regime. Our PR19 methodology confirmed that when calculating the reconciliation adjustments for corporation tax, we will also take into account the impact on the tax charge arising from changes to the cost of debt, derived from the cost of new debt index mechanism.

Our PR19 methodology also set out that companies should pay full tax value for any group losses that they utilise (or charging full tax value for any losses surrendered to other group companies). Where companies do not do this, we will reclaim any tax allowances that were not needed through our price determinations. The tax reconciliation tool will also capture and calculate any adjustment required.

The tax reconciliation is an **end-of-period** reconciliation that takes the form of a **revenue adjustment**. This means any adjustment required will be made at PR24 and would affect companies' allowed revenue over the 2025-30 period. This will ensure:

- customers will not pay more than is needed if corporation tax rates fall; and
- companies will be properly funded if rates rise.

2.14.4 Mechanism structure – overview

We will recalculate the tax allowance for each year, to reflect changes to either the headline corporation tax rate or to the writing down allowances available on capital expenditure only. The tax reconciliation tool confirms the inputs that may be changed in the PR19 financial model if applicable. We will rerun the PR19 financial model

using the totex allowances, PAYG and RCV run-off rates (set out in the final determination) and any adjustments required under the cost of debt mechanism that impact on the allowed returns or assumed interest rates. The tax reconciliation tool will then compare the tax allowance outputs from this revised PR19 financial model to the original PR19 financial model, to calculate the value of the adjustment necessary.

The reconciliation tool also contains input lines to enable a company to capture any adjustments necessary if it hasn't paid full tax value for any group losses utilised in 2020-25 (or where it hasn't charged full tax value for any losses surrendered to other group companies).

2.14.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1	Water Resources	The adjustment to Water Resource revenues that will be applied at PR24.	£m
2	Water Network	The adjustment to Water Network revenues that will be applied at PR24.	£m
3	Wastewater Network	The adjustment to Waste water Network revenues that will be applied at PR24.	£m
4	Bioresources	The adjustment to Bioresources revenues that will be applied at PR24.	£m
5	Dummy	The adjustment to Dummy control revenues that will be applied at PR24.	£m

Inputs – to be taken from both the PR19 financial model (final determination) and the PR19 financial model with revised inputs

#	Input	Description	Source	Units
1	Tax WR - real	Tax allowance calculated for water resources	PR19 Financial model (FD & Revised)	£m

#	Input	Description	Source	Units
2	Tax WN - real	Tax allowance calculated for water network	PR19 Financial model (FD & Revised)	£m
3	Tax WWN - real	Tax allowance calculated for wastewater network	PR19 Financial model (FD & Revised)	£m
4	Tax BR - real	Tax allowance calculated for bioresources	PR19 Financial model (FD & Revised)	£m
5	Tax DMMY - real	Tax allowance calculated for dummy control	PR19 Financial model (FD & Revised)	£m
6	WACC - WR	WACC used for water resources control	PR19 Financial model - FD	£m
7	WACC - WN	WACC used for water network control	PR19 Financial model - FD	£m
8	WACC - WWN	WACC used for wastewater network control	PR19 Financial model - FD	£m
9	WACC - BR	WACC used for bioresources control	PR19 Financial model - FD	£m
10	WACC – DMMY	WACC used for dummy control	PR19 Financial model - FD	£m

Manual Inputs

#	Input	Description	Source	Units
1	Manual adjustment - WR - real	Adjustment to reflect the difference between full tax value and the value paid/received of any tax losses received/surrendered to the group (negative number) – Water resources	Manual input	£m

#	Input	Description	Source	Units
2	Manual adjustment - WN - real	Adjustment to reflect the difference between full tax value and the value paid/received of any tax losses received/surrendered to the group (negative number) – Water network	Manual input	£m
3	Manual adjustment - WWN - real	Adjustment to reflect the difference between full tax value and the value paid/received of any tax losses received/surrendered to the group (negative number) - Wastewater network	Manual input	£m
4	Manual adjustment - BR - real	Adjustment to reflect the difference between full tax value and the value paid/received of any tax losses received/surrendered to the group (negative number) - Bioresources	Manual input	£m
5	Manual adjustment - DMMY - real	Adjustment to reflect the difference between full tax value and the value paid/received of any tax losses received/surrendered to the group (negative number) - Dummy	Manual input	£m

Calculations

The tax reconciliation tool calculates the net present value of differences between the tax allowance for each wholesale control calculated by the FD model and a version of the FD model that has been updated with any changes to corporation tax rates or writing down allowances for capital allowances. Taking the difference between the tax allowances in each model for each wholesale control, it applies a time value of money adjustment based on the specific allowed return on capital relating to each control. It also includes an adjustment if necessary for any group

losses utilised in 2020-25 where full tax value hasn't been paid (or where a company hasn’t charged full tax value for any losses surrendered to other group companies).

2.15 RPI-CPIH wedge reconciliation model

2.15.1 Summary

This is the model we will use in PR24 to reconcile for the difference between the actual RPI-CPIH (measures of inflation) wedge observed over the price control period, and the forecast RPI-CPIH wedge. It calculates the annual difference in the wedge and its impact on the RCV, allowed run-off revenue and allowed return revenue. Our methodology for the 2019 price review Appendix 12 (aligning risk and return) provides background information.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue and RCV	Revenue adjustments feeder model, RCV adjustments feeder model	2017-18 FYA CPIH deflated	Water resources, Water network plus, Wastewater network plus, Bioresources, Dummy	Company-specific allowed return on capital

2.15.2 Background and purpose

In PR19 the wholesale price controls are indexed to CPIH. From 1 April 2020, we index 50% of the RCV for each of the wholesale price controls to RPI. The rest, including all new RCV added after 1 April 2020, is indexed to CPIH. This increases the proportion of RCV that is linked to CPIH through the price control.

Indexing different elements to different indices exposes companies to the potential risk that the actual difference between the indices ('wedge') is different to that which was forecast in setting price limits. This exposes companies to the potential risk that the actual difference between the indices is different to that which was forecast in setting price limits. As companies would be exposed to the actual and forecast wedge between RPI and CPIH, the PR19 methodology confirmed we will reconcile for the difference between the actual RPI-CPIH wedge observed over the price control period, and the forecast wedge, when we make final determinations in 2024.

Our methodology for the 2019 price review Appendix 12 (aligning risk and return) provides background information on the move away from RPI to CPIH for indexing price controls.

2.15.3 Nature of the reconciliation

The RPI-CPIH wedge reconciliation is a comparison of the final determination against what it would have been if the actual RPI-CPIH wedge had been known in PR19, all other things equal. This comparison calculates the annual revenue difference in respect of the RPI-indexed RCV run-off and RPI-indexed RCV return. It also calculates the correct annual closing value of the RPI-indexed RCV.

We expect to publish the RCV taking account of the actual CPIH-RPI wedge each year on our website. This is consistent with our current approach and will ensure there is transparency over the RCV on an ongoing basis through the price control period.

2.15.4 Mechanism structure – overview

2.15.5 Mechanism structure – calculations

Outputs

The outputs below will be the same for water resources, water network plus, wastewater network plus, bioresources and Thames Tideway controls. All revenue outputs have been adjusted for the time value of money.

#	Output	Description	Units
1	Revenue adjustment for RCV run-off	Revenue adjustment in respect of RCV run-off reflecting difference between final determination and actual RPI-CPIH wedge indexation.	£ million 2017-18 FYA CPIH deflated
2	Revenue adjustment for return	Revenue adjustment in respect of return reflecting difference between final determination and actual RPI-CPIH wedge indexation.	£ million 2017-18 FYA

#	Output	Description	Units
			CPIH deflated
3	RCV adjustment at end of period	End of period adjustment to year average RCV reflecting difference between final determination and actual RPI-CPIH wedge indexation and run-off.	£ million 2017-18 FYA CPIH deflated

Inputs

Input values will be obtained from the PR19 final determinations, ONS website and, as appropriate, from data submissions required for PR24.

#	Input	Description	Source	Units
1	Forecast Nominal RCV - initial balance	Opening RPI-indexed RCV as at 1 April 2020.	PR19 Financial model - FD	£ million
2	RPI - final determination	RPI monthly index values included in final determination.	PR19 Inflation model - FD	Index
3	CPIH - final determination	CPIH monthly index values included in final determination.	PR19 Inflation model - FD	Index
4	RPI - actual	RPI for each month available on the ONS website. Requires forecast values to March 2025 where published index values are not available from ONS.	ONS website for published values	Index
5	CPIH - actual	CPIH for each month available on the ONS website. Requires forecast values to March 2025 where published index values are not available from ONS.	ONS website for published values	Index

#	Input	Description	Source	Units
6	RCV run-off rate	RCV run-off rate included in final determination.	PR19 Financial model - FD	%
7	Real RPI based WACC	Real RPI based WACC included in final determination.	PR19 Financial model - FD	%
8	Real CPIH based WACC	Real CPIH based WACC included in final determination. Used for time value of money adjustment.	PR19 Financial model - FD	%

Calculations

The RPI-CPIH wedge reconciliation model calculates the net present value of differences between the run-off and return allowances based on the wedge allowed in the final determination and what the allowances would have been based on the observed actual wedge. It applies a time value of money adjustment to the differences based on the allowed return on capital. The model also calculates the indexation difference required to correct the closing value of the RPI-indexed RCV.

2.16 WINEP/NEP reconciliation model

2.16.1 Summary

The purpose of this model is to account for the impact of ministerial decisions on the scale of companies' environmental enhancement programmes where this differs from our assumptions made at final determinations. Chapter 9 and Appendix 11 (Securing cost efficiency) of our PR19 Methodology provides background information.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	RCV	RCV adjustments feeder model	2017-18 FYA CPIH deflated	Water Network Plus, Wastewater Network Plus, Water Resources, Bioresources	N/A

2.16.2 Background and purpose

We provide regulatory protection over wholesale prices to customers by setting revenue controls for different groups of activities. The WINEP reconciliation will affect price controlled activities related to **water network plus**, **wastewater network plus**, **water resources** and **bioresources**.

We need to reconcile for the impact of ministerial decisions on the scale of companies' environmental enhancement programmes where this differs from the assumptions we made in our final determinations.

A large portion of enhancement expenditure is driven by environmental requirements. The current view of these requirements is set out in the latest release of the 'Water Industry National Environment Programme' (WINEP) in England which was issued on 29 March 2019, and the 'National Environment Programme' (NEP) in Wales, which was issued on a company specific basis between March and July 2018. However, we do not expect some requirements, principally related to the Water Framework Directive (WFD), to be confirmed until December 2021. This

means that these requirements – termed ‘Amber’ schemes - were uncertain when we made our final determinations in December 2019.

This was an issue we faced at PR14, when decisions on the scale of the environmental programmes were not due to be made until a year after price limits were set. At PR19, the gap between our final determinations and the finalisation of the WFD’s programme of measures will be two years. This means there was more uncertainty about the actions required of companies at the time we made our final determinations.

2.16.3 Nature of the reconciliation

In our final determinations we funded the anticipated programme, as long as companies proposed an appropriate cost adjustment mechanism to account for a potential discrepancy between the scale of the assumed and confirmed programmes. We asked companies to link expenditure for unconfirmed requirements to a measure and a unit cost per measure. We will use our view of the efficient unit cost to make an adjustment at the end of the control period, based on the volume of work that is eventually confirmed as required and delivered by the company.

We need to reconcile to ensure companies’ allowed totex in the PR19 control period: does not include allowances for Amber schemes that are not required;

- does include allowances for Amber schemes that are delivered but which were not allowed for in our final determination cost allowance; and
- only includes an allowance for the proportion of the measure the Environment Agency or Natural Resources Wales confirms is required following ministerial decision.

Once the schemes to be delivered are confirmed in December 2021 we assume a flat cost profile over the final three years of the PR19 control period, 2023 to 2025, for schemes that are not delivered. We make an opposite adjustment for schemes that are to be delivered but which weren’t costed in our final determinations. We use an **end-of-period reconciliation** that takes the form of an **RCV adjustment**. This means any adjustment required will be made at PR24 and would affect companies’ allowed revenue over the 2025-30 period.

2.16.4 Mechanism structure – overview

The WINEP reconciliation is calculated according to the following formula:

WINEP Reconciliation, £m

= -1 * (1 - **PC**) * (**ATUR** * **Quantity**), if the scheme is in our FD

= **PC** * **ATUR** * **Quantity**, if the scheme is not in our FD

where:

PC is Proportion Confirmed, which is the proportion of the scheme delivered as confirmed by the Environment Agency / Natural Resources Wales in the final release of WINEP / NEP,

ATUR is Allowed Totex Unit Rate, which is our view of the unit cost in our final determinations, and

Quantity is the measure of units to be delivered, for example length of river improved (LORI) in km.

Worked Examples

Scheme	Allowed Totex Unit Rate (ATUR), £m	Quantity	Calculated Allowance £m	Proportion Confirmed (PC)	Confirmed Allowance £m	In FD?	WINEP Reconciliation, £m
A	1.2	17	20.40	15 of 17 (88.24%)	18.00	Yes	-2.4
B	4.0	3	12.00	0%	0	No	0
C	6.0	1	6.00	100%	6.00	No	6.00

Applying the reconciliation

We will calculate the reconciliation for each wholesale control; **water network plus**, **wastewater network plus**, **water resources** and **bioresources**. We will average the reconciliation across the last three years of the price control period, 2022-23 to

2024-25, and apply it at the end of the period as RCV adjustments. Adjustments will include time value of money adjustments discounted to 2024-25 present values and be stated in 2017-18 prices.

Applying the end of period adjustment

Ideally we would split the adjustment between RCV and revenue in the same proportion as the capex-opex ratio of the relevant scheme(s)' efficient costs. However, while the totex allowance is likely to be dominated by capex, the precise ratio is not readily known. Therefore, for simplicity, we propose to make any required end of period reconciliation adjustments as a 100% RCV adjustment for each price control. We seek stakeholders' views on whether this is a balanced and proportionate approach relative to the more burdensome alternative of splitting the adjustment between RCV and revenue in the reconciliation.

2.16.5 Mechanism structure – calculations

The price base in the company's business plan data tables for WINEP/NEP costs from 2021 to 2025 is 2017-18 FYA (CPIH deflated). All prices in the WINEP reconciliation model are 2017-18 FYA (CPIH deflated).

Outputs

We will use these four outputs to adjust our assumption of allowed totex against which we will reconcile actual expenditure for cost sharing purposes.

#	Output	Description	Units
1	WINEP Reconciliation, water resources	Annual adjustment to water resources totex in each of the last 3 years of the price control period.	£m
2	WINEP Reconciliation, water network	Annual adjustment to water network plus totex in each of the last 3 years of the price control period.	£m
3	WINEP Reconciliation, wastewater network	Annual adjustment to wastewater network plus totex in each of the last 3 years of the price control period.	£m
4	WINEP Reconciliation, bioresources	Annual adjustment to bioresources totex in each of the last 3 years of the price control period.	£m

The four outputs below will be applied at the end of the period as RCV adjustments.

#	Output	Description	Units
5	WINEP Reconciliation, water resources - adjusted for time value of money	The annual adjustment calculated in 1 adjusted for time value of money to 2024/25 present values	£m
6	WINEP Reconciliation, water network - adjusted for time value of money	The annual adjustment calculated in 2 adjusted for time value of money to 2024/25 present values	£m
7	WINEP Reconciliation, wastewater network - adjusted for time value of money	The annual adjustment calculated in 3 adjusted for time value of money to 2024/25 present values	£m
8	WINEP Reconciliation, bioresources - adjusted for time value of money	The annual adjustment calculated in 4 adjusted for time value of money to 2024/25 present values	£m

Inputs

#	Input	Description	Source	Units
1	WINEPID	Unique WINEP Identifier	WINEP / NEP	text
2	Unique ID	Unique Site Identifier	WINEP / NEP	text
3	Scheme category / name	Name that identifies the WINEP scheme, e.g. scheme name, name of investigation, site name	WINEP / NEP	text
4	Unit	Unit description	Cost Efficiency Final Determination Appendix	text
5	Unit Conversion to £m	Conversion factor to convert Unit to £m	Cost Efficiency Final Determination Appendix	Scale (no unit)

#	Input	Description	Source	Units
6	Allowed totex unit rate	OFWAT allowed totex unit rate	Cost Efficiency Final Determination Appendix	£m
7	Quantity	Number of units at this Allowed totex unit rate e.g. population equivalent, number of benefit points, LORI	Cost Efficiency Final Determination Appendix	To be entered
8	1 = In plan 0 = Not in plan	Whether the scheme cost was included in our FD	Cost Efficiency Final Determination Appendix	1 or 0
9	Proportion Confirmed	The proportion of the Quantity confirmed as being progressed in the price control period.	To be provided by company and confirmed by Environment Agency / Natural Resources Wales	%
10	Price Control	The price control that the expenditure was allocated to in our FD	To be derived	WR, WN, WWN or BR
11	Discount rate	Company's specific WACC value.	Derived from PR19 final determination	%

Calculations

#	Calculation overview	Calculation detail
WINEP Reconciliation, if the Amber scheme is in our FD		
1	WINEP reconciliation	This is the Allowed totex unit rate multiplied by the Quantity multiplied by (1 minus the Proportion Confirmed) multiplied by -1
WINEP Reconciliation, if the Amber scheme is not in our FD		
2	WINEP reconciliation	This is the Allowed totex unit rate multiplied by the Quantity multiplied by the Proportion Confirmed

#	Calculation overview	Calculation detail
Time value of money, applied to WINEP reconciliation		
3	Apply time value of money adjustment for WINEP reconciliation	Apply a time value of money adjustment to the adjustments for WINEP using the company specific WACC for PR19.

2.17 PR19 Water trading incentive model

2.17.1 Summary

This model calculates PR19 water trading incentives for qualifying trades starting in 2020-2025.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue	Revenue adjustments feeder model	2017-18 FYA CPIH deflated	Water network plus, Water resources	Company-specific wholesale allowed return on capital

2.17.2 Background and purpose

At PR14 we introduced water trading incentives to encourage companies to trade water where it is beneficial to do so. Analysis by other stakeholders, our own research and consultation with stakeholders identified that there are significant barriers to water trading and that these barriers mean that companies do not always trade water where it would be beneficial for them, customers and the environment to do so.

In our PR19 Final Methodology, we set out our decision to retain water trading incentives for qualifying trades starting in 2020-25 at the same level as in PR14. Under this approach, for all new qualifying trades in 2020-25, we would allow exporters to retain 50% of the lifetime economic profits[8]. Importers would benefit from an import incentive of 5% of the cost of water imported under new agreements during 2020-25.

To claim PR19 water trading incentives, companies are required to produce a trading and procurement code and submit it for approval by Ofwat. These should contain

[8] Economic profit in this context is defined as the profits above the normal return on capital invested. The normal return represents the revenue allowances associated with the overall outturn totex requirement to operationalise the trade i.e. opex and the funding of the RCV-related building blocks of the revenue allowances.

simple obligations in respect of definitions of trades, non-discriminatory procurement and economic and environmentally rational trading. The conditions that must be included in a trading and procurement code and our advice on principles were initially set out in Appendix 3 of our PR14 methodology. We subsequently consulted on and published an updated guidance in May 2018 (see Trading and procurement codes – guidance on requirements and principles).

2.17.3 Nature of reconciliation

We need to undertake a reconciliation related to the **water resources** and/or **water network plus** controls to:

- ensure companies can retain an export incentive of 50% of the NPV of the lifetime economic profits for new qualifying exports in 2020-25;
- ensure companies can retain an import incentive of 5% of the cost of the water imported for new qualifying imports in 2020-2025;

We will apply these adjustments as **end-of-period reconciliations** which take the form of **revenue adjustments**. They will be made at PR24 and would affect companies' allowed revenue over the 2025-30 period.

2.17.4 Mechanism structure – overview

Export incentive

For all new qualifying exports that start during 2020-25, we will allow exporters to retain 50% of the lifetime economic profits. New agreements will be defined in a company's trading and procurement code. Companies will receive an export incentive payment at PR24 equal to 50% of the full discounted economic profit for the forecast life of the export with a cap of 100% of the economic profit for the years the export operates in 2020-25. Any amount beyond the cap will be rolled forward to the next price control.

Import incentive

All new qualifying imports will benefit from an import incentive payment of 5% of the costs of water imported under new agreements. New agreement to import water will be defined in a company's trading and procurement code. Import incentive payments will be subject to a cap of 0.1% of the importer's wholesale water (i.e. sum of water resources and water network plus) revenue allowance set out in the PR19 final

determinations in each year of the price control period. The import incentive payments are accrued annually during 2020-25 with the cap applying in each year.

Applicability

Water trading incentives are primarily aimed at trades between large appointed companies. In February 2016 we clarified how water trading incentives will apply to possible transactions between large appointed companies, small appointed companies[9] and third parties for the 2015-20 price control period.

For these transactions the export incentive does not apply, except in two specific circumstances:

- when a large appointed water company exports to a small appointed company whose area is surrounded by another large company's appointed area; or
- when a large appointed water company exports to a third party and it is a regulated activity.

The import incentive can apply when a large appointed company imports from a small water company or from a third party. Full details of the applicability of water trading incentives are given in table 6 of our February 2016 update to the PR14 reconciliation rulebook policy document.

We are retaining the same rules for applicability of water trading incentives for trades commencing in the 2020-25 period. To qualify for PR19 water trading incentives, a company must comply with its Ofwat-approved trading and procurement code. The payments will be allocated between the water resources and network plus water control depending on the nature of the transfer (see appendix 5 of our final methodology for guidance on the allocation).

Reporting and updating trading and procurement code

To claim incentives for new water trades that begin in 2020-25, incumbents will have to submit their claim as part of their business plans for PR24. To submit a claim, incumbents will need to have an Ofwat-approved trading and procurement code. Incumbents should submit:

- the PR19 water trading incentives model; and
- a short report setting out how the trades meet the criteria set out in their approved trading and procurement code. This should include an overview of the

[9] By small appointed water companies, we mean undertakers that, because of their size, are not subject to full price controls.

trade itself, which explains the assets used across the water resources and network plus water control. Justification should also be provided for the proposed split between the water resources and network plus water controls.

We will shortly consult on an updated guidance on trading and procurement codes which will replace Trading and procurement codes – guidance on requirements and principles we issued in May 2018. The updated guidance will reflect on lessons learnt from the experiences we had with PR14 water trading incentive claims we received in PR14, some of which are set out in this consultation document. Therefore, all companies will need to resubmit updated trading and procurement codes further to our guidance which is a process we expect to be finalised by the end of the year. We consider that a timely completion of this process is essential in order to provide the necessary information and certainty for companies at an early stage in order for them to be able to prepare their PR19 water trading incentives claims accordingly.

2.17.5 Mechanism structure – calculations

All the calculations below are expressed in 2017-18 FYA CPIH deflated prices.

Outputs

#	Output	Description	Units
1	Water trading incentives to be paid to the water resources control at PR24	The end-of-period revenue adjustment applied to water resources revenue in PR24 to account for any export, import incentives earned on qualifying trades over the 2020-25 period and any outstanding incentives balance from PR19	£m
2	Water trading incentives to be paid to the network plus water control at PR24	The end-of-period revenue adjustment applied to water network plus revenue in PR24 to account for any export, import incentives earned on qualifying trades over the 2020-25 period and any outstanding incentives balance from PR19	£m
3	Total export incentives to be paid to the water resources control after PR24	The total end-of-period revenue adjustment to the water resources control to account for export incentives beyond the relevant cap to be made after PR24.	£m
4	Total export incentives to be paid to the network plus water control after PR24	The total end-of-period revenue adjustment to the network plus water control to account for export	£m

#	Output	Description	Units
		incentives beyond the relevant cap to be made after PR24.	

The outputs will feed into the financial model in PR24 through the revenue adjustments feeder model.

Inputs

#	Input	Description	Source	Units
1	Discount rate	The discount rate used to provide a time value of money adjustment for export and import incentives which is Wholesale allowed return on capital	PR19 final determinations: Allowed revenue appendix	%
2	Does the company have an Ofwat-approved trading and procurement code	True/False flag	Company	N/A
Export incentive inputs (inputs 6-10 below are repeated for three export trades in the reconciliation model[10])				
3	Proportion of NPV of economic profit for the company	The proportion of the NPV of the economic profit from a water trade that the exporting company is allowed to keep. This is equal to 50%.	Ofwat	%
4	Total value of export incentive to be paid after PR19	The total value of the export incentive balance remaining from the previous price control period 2015-20	PR14 water trading incentive model published in PR19 final determinations	£m

[10] In the unlikely event that a company has more than three new exports in 2020-25 for which it wants to claim water trading incentives, it should submit a sufficient number of separate reconciliation models to cover all trades.

#	Input	Description	Source	Units
5	Proportion of export incentive to be paid after PR19 allocated to the water resources control	The total value of the export incentive balance remaining from the previous price control period 2015-20, that is allocated to the water resources control	PR14 water trading incentive model published in PR19 final determinations	%
6	Name/reference of export trade	Name or reference of a water export	Company	Text
7	Has the company produced a report to evidence that an export is a new export and complies with its Ofwat-approved trading and procurement code?	True/False flag	Ofwat	N/A
8	Proportion of the incentive allocated to the water resources control for an export	The proportion of the export incentive for an export that is allocated to the water resources control	Company	%
9	Outturn revenue from an export	The outturn revenue derived from an export under the bulk supply agreement to export water	Company regulatory reporting	£m
10	Outturn cost (inclusive of return on capital) of an export	The outturn cost (inclusive of the return on capital) of an export. This is equal to the revenue allowance associated with the overall outturn totex requirement to operationalise the trade i.e. opex and the funding of the RCV	Company regulatory reporting	£m

#	Input	Description	Source	Units
Import incentive inputs (inputs 14-16 below are repeated for three import trades in the reconciliation model[11])				
11	Import incentive rate (%)	The proportion of the cost of water imported through an import that the importer can retain as an import incentive. This is equal to 5%.	Ofwat	%
12	Company's wholesale water allowed revenue	The company's allowed revenue for wholesale water consisting of the sum of the water resources and water network plus revenue allowances	PR19 final determinations: Allowed revenue appendix	£m
13	Cap rate (%)	Cap on import incentive payments as a proportion of Company's wholesale water allowed revenue. It is equal to 0.1%.	Ofwat	%
14	Name/reference of import trade	Name or reference of a water import	Company	Text
15	Has the company produced a report to evidence that an import is a new import and complies with its Ofwat-approved trading and procurement code?	True/False flag	Ofwat	N/A
15	Proportion of the incentive allocated to the water resources	The proportion of the import incentive for an import that is allocated to the water resources control	Company	%

[11] In the unlikely event that a company has more than three new imports in 2020-25 for which it wants to claim water trading incentives, it should submit a sufficient number of separate reconciliation models to cover all trades.

#	Input	Description	Source	Units
	control for an import			
16	Cost of water imported under a new import	The cost of the water imported through an import.	Company	£m

Calculations

All calculations are made for each charging year over the 2020-25 period unless otherwise stated.

#	Calculation overview	Calculation detail
Time value of money calculations		
1	Year for discounting purposes	This is equal to zero in 2020-21 and subsequently increases by one every charging year
2	Discount factor for year	This is equal to 1 divided by (1 plus Discount rate)^Year for discounting purposes
3	Years for time value of money calculation	This is the number of years until the end of the price control period for which a time value of money adjustment is provided. In 2020-21, it is equal to 4. In 2021-22, it is equal to 3. In 2022-23, it is equal to 2. In 2023-24, it is equal to 1. In 2024-25, it is equal to zero
Export incentives calculations (calculations 4-23 below are made for one of the three trades included in the reconciliation model)		
4	Economic profit for an export	This is the Outturn revenue from an export minus the Outturn cost (inclusive of return on capital) of an export
5	Discounted economic profit for an export	This is Economic profit for an export multiplied by Discount factor for year

#	Calculation overview	Calculation detail
6	Total NPV of economic profit for an export	This is the sum of Discounted economic profit for an export over the price control period
7	50% of NPV of economic profit for an export	This is Total NPV of economic profit for an export, multiplied by the Proportion of NPV of economic profit for the company
8	Include in cap calculation for an export	This is a Boolean value equal to 1 during the price control period (2020-25) and zero otherwise
9	Discounted economic profit for cap for an export	This is equal to Discounted economic profit for an export for 2020-25 and serves as a cap on the total value of export incentive that can be claimed at PR24
10	Total discounted economic profit for cap for an export	This is the sum of Discounted economic profit for cap for an export over 2020-25
11	Export incentive for an export to be paid at PR24	This is equal to the lower of 50% of NPV of economic profit for an export and Total discounted economic profit for cap for an export, if this is larger than zero. If not, equal to zero
12	Export incentive for an export to be paid after PR24	This is equal to the lower of 50% of NPV of economic profit for an export minus Export incentive for an export to be paid at PR24, if this is larger than zero. If not, equal to zero
13	Export incentive for an export to be paid at PR24 incl. financing adjustment	This is Export incentive for an export to be paid at PR24, multiplied by (1 plus Discount rate)^ Years for time value of money calculation
14	Export incentive for an export to be paid after PR24 incl. financing adjustment	This is Export incentive for an export to be paid after PR24, multiplied by (1 plus Discount rate)^ Years for time value of money calculation
15	Export incentive for an export to be paid to the water resources control at PR24	This is Export incentive for an export to be paid at PR24 incl. financing adjustment, multiplied by the Proportion of the incentive allocated to the water resources control for an export
16	Export incentive for an export to be paid to the network plus water control at PR24	This is Export incentive for an export to be paid at PR24 incl. financing adjustment multiplied by 1 minus the Proportion of the incentive allocated to the water resources control for an export

#	Calculation overview	Calculation detail
17	Export incentive for an export to be paid to the water resources control after PR24	This is Export incentive for an export to be paid after PR24 incl. financing adjustment multiplied by Proportion of the incentive allocated to the water resources control for an export
18	Export incentive for an export to be paid to the network plus water control after PR24	This is Export incentive for an export to be paid after PR24 incl. financing adjustment multiplied by 1 minus the Proportion of the incentive allocated to the water resources control for an export
19	Compliance with trading and procurement code	This is a check that Does the company have an Ofwat-approved trading and procurement code and Has the company produced a report to evidence that an export is a new export and complies with its Ofwat-approved trading and procurement code? are both TRUE which is a formal requirement on companies to be able to claim water trading incentives
20	Export incentive for an export to be paid to the water resources control at PR24	This combines check for Compliance with trading and procurement code and Export incentive for an export to be paid to the water resources control at PR24 and returns zero if a company fails the compliance check
21	Export incentive for an export to be paid to the network plus water control at PR24	This combines check for Compliance with trading and procurement code and Export incentive for an export to be paid to the network plus water control at PR24 and returns zero if a company fails the compliance check
22	Export incentive for an export to be paid to the water resources control after PR24	This combines check for Compliance with trading and procurement code and Export incentive for an export to be paid to the water resources control after PR24 and returns zero if a company fails the compliance check
23	Export incentive for an export to be paid to the network plus water control after PR24	This combines check for Compliance with trading and procurement code and Export incentive for an export to be paid to the network plus water control after PR24 and returns zero if a company fails the compliance check
24	Export incentives rolled forward from PR19 to be paid to the water resources control	This is Total value of export incentive to be paid after PR19, multiplied by Proportion of export incentive to be paid after PR19 allocated to the water resources control
25	Export incentives rolled forward from PR19 to be paid to the network plus water control	This is Total value of export incentive to be paid after PR19, multiplied by 1 minus Proportion of export

#	Calculation overview	Calculation detail
		incentive to be paid after PR19 allocated to the water resources control
24	Total export incentives to be paid to the water resources control at PR24	This is the sum of Export incentive for an export to be paid to the water resources control at PR24 for all three trades included in the reconciliation model
25	Total export incentives to be paid to the network plus water control at PR24	This is the sum of Export incentive for an export to be paid to the network plus water control at PR24 for all three trades included in the reconciliation model
26	Total export incentives to be paid to the water resources control after PR24	This is the sum of Export incentive for an export to be paid to the water resources control after PR24 for all three trades included in the reconciliation model
27	Total export incentives to be paid to the network plus water control after PR24	This is the sum of Export incentive for an export to be paid to the network plus water control after PR24 for all three trades included in the reconciliation model
Import incentives calculations (calculations 28-34 below are made for one of the three trades included in the reconciliation model)		
28	Compliance with trading and procurement code for an import	This is a check that Does the company have an Ofwat-approved trading and procurement code and Has the company produced a report to evidence that an import is a new import and complies with its Ofwat-approved trading and procurement code? are both TRUE which is a formal requirement on companies to be able to claim water trading incentives
29	Cost of water imported under a new import	This combines check for Compliance with trading and procurement code for an import and Cost of water imported under a new import and returns zero if a company fails the compliance check
30	Proportion of the incentive allocated to the network plus water control for an import	This is 1 minus Proportion of the incentive allocated to the water resources control for an import
31	Import - water resources share	This is Proportion of the incentive allocated to the water resources control for an import, multiplied by the Cost of water imported under a new import

#	Calculation overview	Calculation detail
32	Import - network plus water share	This is Proportion of the incentive allocated to the network plus water control for an import, multiplied by the Cost of water imported under a new import
33	Import incentive payment before application of the cap	This is Import incentive rate, multiplied by the sum of Cost of water imported under a new import for all three trades included in the reconciliation model
34	Monetary value of cap	This is Company's wholesale water allowed revenue, multiplied by the Cap rate
35	Import incentive payment after application of the cap	This is the lower value of Import incentive payment before application of the cap and Monetary value of cap
36	Total water resources share	This is sum of Import - water resources share for all three trades included in the reconciliation model
37	Total network plus water share	This is sum of Import - network plus water share for all three trades included in the reconciliation model
38	Total import costs	This is Total water resources share plus Total water network plus share
39	Overall proportion for water resources	This is Total water resources share, divided by Total import costs
40	Overall proportion for network plus water	This is Total network plus water share, divided by the Total import costs
41	Time value of money factor	This is (1 + Discount rate)^Years for time value of money calculation
42	Import incentive payment incl. financing adjustment	This is Time value of money factor, multiplied by Import incentive payment after application of the cap
43	Total Import incentive payment incl. financing adjustment	This is the sum of Import incentive payment incl. financing adjustment over 2020-25
43	Total import incentives to be paid to the water resources control at PR24	This is Total Import incentive payment incl. financing adjustment, multiplied by the Overall proportion for water resources
44	Total import incentives to be paid to the network plus water control at PR24	This is Total Import incentive payment incl. financing adjustment, multiplied by the Overall proportion for network plus water

#	Calculation overview	Calculation detail
Total water trading incentives to be paid at PR24		
45	Water trading incentives to be paid to the water resources control at PR24	This is the sum of Total export incentives to be paid to the water resources control at PR24, Total import incentives to be paid to the water resources control at PR24 and Export incentives rolled forward from PR19 to be paid to the water resources control
46	Water trading incentives to be paid to the network plus water control at PR24	This is the sum of Total export incentives to be paid to the network plus water control at PR24, Total import incentives to be paid to the network plus water control at PR24 and Export incentives rolled forward from PR19 to be paid to the network plus water control

2.17.6 Implementation

Modification of existing trades

During PR19, we received a PR14 water trading incentives claim on a trade which represents a modification of an existing trade. We intervened to disallow this claim in our PR19 final determinations. The policy intent of the PR14 water trading incentives was to encourage new transfers of water between water companies. We consider that the effect of an updated bulk supply agreement to modify an existing trade and a subsequent claim for water trading incentives from the participating exporter and importer is not aligned with this policy intent. In other words, we consider that a modification of an existing trade cannot qualify as a new trade for the purposes of claiming water trading incentives. This is consistent with the requirements set out in Trading and procurement codes – guidance on requirements and principles.

Therefore, in assessing future claims for PR19 water trading incentives for trades commencing in the 2020-25 price control period, we'll automatically disqualify trades which represent a modification of an existing trade. We are setting this out for the avoidance of doubt in order to ensure we do not receive similar claims for PR19 water trading incentives in the future.

Matching forecast bulk supply revenues in PR19 and the PR19 water trading incentive for exports

The provision of bulk supplies of water to neighbouring water companies (i.e. exporting) typically uses the existing assets of the appointed company and is part of its regulated business. The costs of providing bulk supplies to another water undertaker fall within the scope of the wholesale price controls. Investment associated with bulk supplies is included within totex allowances and added to the regulatory capital value (RCV).

While the costs of providing bulk supplies fall within the scope of the price controls, bulk supply charges are not regulated in the same way as other charges. Revenues from bulk supply charges are outside the scope of wholesale price controls. Instead, our approach is to net-off the expected revenues from bulk supply charges when determining the level of the wholesale water price controls. This means that expected revenues from the provision of bulk supplies offset the costs of the regulated business. Customers benefit as economic profits are passed to them through lower bills. Our water trading incentives allow companies to share a proportion of the economic profits from this bulk supply export arrangement.

This presents a key practical challenge in the application of export incentives because of the time lag between the time when customers and companies claim the benefits from new exports. To give an example, consider PR19 export incentives:

- we can assess company submissions on the **forecast revenues** from the bulk supply at the time of our PR19 final determinations and net them off wholesale price controls over the price control period 2020-25;
- company claims the export incentive based on **actual revenues** and costs over 2020-25 (and an estimate for future years) in PR24.

This creates a significant risk that new trades which are likely to be concluded in 2020-25 are not properly taken into account when setting price controls due to the significant uncertainty of the final terms of the bulk supply, including volume traded and commercial terms. Therefore, in the absence of a further intervention, there is scope for a company to:

- retain the full value of the revenues derived under the bulk supply agreement (since a forecast of those revenues was not netted off in PR19); and
- claim for an export incentive in PR24 for 50% of the value of actual economic profit (even though it has already retained 100% of the revenues earned under the bulk supply).

Therefore, in this extreme scenario, a company is able to claim more than the full value of the economic profits from exporting water without sharing any of the

proceeds with customers. We consider that this is a key aspect that our PR19 water trading incentives policy should clarify.

In circumstances where a potential new trade is not included in the relevant company's business plan, but ends up going ahead and the company is eligible for export incentives, we would net off the forecast revenues derived by the company over 2020-25 from the final awarded incentive in PR24 to take account of the fact that these revenues were not taken into account in our final determination. We want to keep the policy consistent with the PR19 framework of returning the 50% of the expected profits from bulk supply exports to customers. Therefore, we require companies to report to us on the expected revenues from the trade that wasn't included in the business plan as soon as these become clear (e.g. when the bulk supply agreement is signed), which may be well in advance of the bulk supply commencing. This information is to be provided along with the company's Annual Performance Report (APR) submission in the first July after agreeing the bulk supply. We'll assess the robustness of the company's forecast as appropriate and take account of the final expected revenues which we will net off from any PR19 water trading incentives claim by the company in PR24.

Robust identification and reporting of costs for exports

The calculation of the PR19 export incentive is linked to the level of outturn economic profits from an export which consists of the revenues derived under the bulk supply agreement net of the revenue allowance building blocks associated with the outturn totex incurred. To calculate this, it is essential that companies have robust information on the underlying outturn totex attributable to the export. This is reflected in principle 9 in Trading and procurement codes – guidance on requirements and principles which states that:

> "The trading and procurement code should provide reassurance that the costs of the export arrangement have been accurately estimated and will be fully recovered from the export agreement."

Our work on assessing PR14 water trading incentive claims has identified some gaps in the assessment and reporting of these costs. Therefore, to support potential PR19 water trading incentive claims, we expect companies to account for costs on a more detailed basis and report to us on the breakdown of the costs when submitting their claims. We expect this information to be included in the report that sets out the trade's compliance with the company's trading and procurement code. We will also include these costs in annual APR reporting which will further aid transparency of the costs on an annual basis.

2.18 Land sales

2.18.1 Summary

This model calculates the adjustment to the Regulatory Capital Value (RCV) for any disposal of land by the regulated business in the years from 2020-21 to 2024-25.

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	RCV	RCV adjustments feeder model	2017-18 FYA CPIH deflated 2022-23 FYA CPIH deflated	Water resources, Water network plus, Wastewater network plus, Thames Tideway Tunnel (TTT)	Company-specific wholesale level allowed return on capital

2.18.2 Background and purpose

This model calculates the adjustment to the RCV for any disposal of land by the regulated business in the years from 2020-21 to 2024-25 at PR24.

An early version of this model was published on 20 December 2019 to give companies clarity on the calculations.

We have updated this model further to take account of presentational changes to make the model more FAST compliant. We have also changed the way we consider indexation in the model and have moved away from the approach we took in previous price reviews where we calculated the NPV effect of customers' share of proceeds from disposals of interest in land that applied the price control specific discount factor based on the nominal discount rate (i.e. the real allowed return for the wholesale controls adjusted for inflation).

For clarity, we have calculated the net present value at 2024-25 in base year prices (2017-18 and 2022-23). While we recognise that this treatment of indexation is different from the way we calculated it at previous price reviews, it is consistent with the time value of money calculations across all other PR19 reconciliation models.

We may consolidate it into the RCV adjustments model at a later date.

Our control is set out in companies' 'Notification of the PR19 final determination of Price Controls'.

2.18.3 Nature of the reconciliation

When a company disposes of land, the licence requires that the net proceeds are split equally between shareholders and customers. The mechanism for doing this is through the RCV. The customers' share of any net proceeds is deducted from the RCV. Any net proceeds from land sales are shared 50:50 with customers, so 50% of the net proceeds from 2020-25 will be deducted from the RCV[12].

As set out in companies' 'Notification of the PR19 final determination of Price Controls', for the purposes of the PR19 final determination, Ofwat gave notice that for each of the five consecutive charging years starting on or after 1 April 2020:

- the value attributable to relevant disposals of land allowed for in making the determination is zero; and
- variations in value received or expected to be received from relevant disposals of land shall constitute a relevant change of circumstance.

2.18.4 Mechanism structure – overview

The model calculates the adjustment to the RCV to share any proceeds from disposals of interest in land with customers as set out in the company licence.

For each PR19 price control that the adjustment applies to, the model:

- Compares the actual land sales with the forecasted land sales at PR19 for each of the years in 2020-25 and calculates the customers' share of any net proceeds of land sales as set out in the company licence;
- It calculates the present value of the customers' share of any net proceeds from disposals of interests in land in years 2020-25 using the price control specific discount factor based on the nominal discount rate (i.e. the real allowed return for the wholesale controls adjusted for CPIH); and
- It calculates the net present value adjustment to deduct from the RCV to apply at PR24.

[12] For land sales relating to the Thames Tideway Tunnel control, customers will experience 100% of net proceeds or losses instead of the 50:50 sharing as per all other land sales.

2.18.5 Mechanism structure – calculations

Outputs

For each of the PR19 price controls that the adjustment applies to, the model generates the following outputs:

#	Output	Description	Units
The outputs below apply to the water resources, water network, wastewater, and dummy controls			
1	NPV effect of customers' share of net proceeds from disposals of interest in land (Real 2017-18 CPIH - NPV adjusted)	This is the customers' share of any net proceeds from disposals of interest in land that is deducted from the RCV. It is the net present value adjustment for the RCV. This is the sum of the PV effect of customers' share of proceeds from disposals of interest in land (Real 2017-18 CPIH - NPV adjusted) with signage reversed.	£m, 2017-18 CPIH deflated FYA
2	NPV effect of customers' share of net proceeds from disposals of interest in land (Real 2022-23 CPIH - NPV adjusted)	This is the customers' share of any net proceeds from disposals of interest in land that is deducted from the RCV. It is calculated from NPV effect of customers' share of proceeds from disposals of interest in land (Real 2017-18 CPIH - NPV adjusted) and is rebased to 2022-23 prices using CPIH: Financial year average indices.	£m, 2022-23 CPIH deflated FYA

The outputs from this model will feed into the RCV adjustments model.

Inputs

For each of the PR19 price controls that the adjustment applies to, the model requires the following inputs:

#	Input	Description	Source	Units
The inputs below apply to the water resources, water network, wastewater, and dummy controls				
1	Land sales - wholesale allowed return	This is the applicable real allowed return for the wholesale controls that applied at PR19.	PR19 final determination	%

#	Input	Description	Source	Units
		This was 2.92% for all companies apart from South Staffs Water and Portsmouth Water which was 3.11%.		
2	The customers' share of any net proceeds from disposals of interest in land	This is the customers' share of any net proceeds from disposals of interest in land that is deducted from the RCV as set out in the company licence. Any net proceeds from land sales are shared 50:50 with customers, so 50% of the net proceeds from 2020-25 will be deducted from the RCV. Tideway customers will experience 100% of net proceeds or losses instead of the 50:50 sharing as per all other land sales.	This is consistent with the provision of the licence	%
3	Land sales - Forecast at previous review	This is the land sales forecasted in the PR19 final determination.	Annex 1 of companies' 'Notification of the PR19 final determination of Price Controls'	£m
4	Proceeds from disposals of protected land	This is the proceeds from land sales (net of associated offsetting costs). Years 2020-21 to 2022-23 reflects actual data reported in APR table 2E. Forecasts are required for 2023-25.	Company's APR table 2E[13] PR24 Business Plan	£000
5	Consumer price index (including housing costs)	These are the consumer price index including housing costs (CPIH) for each month available on the ONS website.	ONS website for published values	Index

[13] These are not yet in the published RAGs or submitted in current APRs, but will be consulted on in 'RAGs consultation for the reporting year 2020-21'.

#	Input	Description	Source	Units
		For 2023-24 and onwards, companies should provide forecast CPIH values for each month in the PR24 Business Plan.	PR24 Business Plan	

Calculations

For each of the PR19 price controls that the adjustment applies to, the model has the following calculations:

#	Calculation overview	Calculation detail
The calculations below apply to the water resources, water network, wastewater, and dummy controls		
1	Customers' share of net proceeds from disposals of interest in land (outturn)	This is calculated as the difference between actual land sales (Proceeds from disposals of protected land) and forecasted land sales (Land sales - Forecast at previous review), multiplied by The customers' share of any net proceeds from disposals of interest in land.
2	CPIH: Financial year average indices	This is the financial year average indices calculated by taking an average of the Consumer price index (including housing costs) over 12 months from April to March.
3	CPI(H): Fin year average - conversion from outturn to base year 2017-18 average	This is calculated from CPIH: Financial year average indices and is centred on the base year 2017-18.
4	Customers' share of net proceeds from disposals of interest in land (2017-18 prices)	This is the Customers' share of net proceeds from disposals of interest in land (outturn) rebased to 2017-18 prices by dividing it by CPI(H): Fin year average - conversion from outturn to base year 2017-18 average.
5	PV discount factor (aka Time value of money factor)	This is the discount factor to calculate the PV effect of customers' share of proceeds from disposals of interest in land (Real 2017-18 CPIH - NPV adjusted) to year 2024-25 and is based on the price control specific Land sales - wholesale allowed return.

#	Calculation overview	Calculation detail
6	PV effect of customers' share of proceeds from disposals of interest in land (Real 2017-18 CPIH - NPV adjusted)	This is the present value of the customers' share of the cash flow arising from the land sales. It is calculated as Customers' share of net proceeds from disposals of interest in land (2017-18 prices) multiplied by the price control specific PV discount factor (aka Time value of money factor).
7	NPV effect of customers' share of net proceeds from disposals of interest in land (Real 2017-18 CPIH - NPV adjusted)	This is the customers' share of any net proceeds from disposals of interest in land that is deducted from the RCV. It is the net present value adjustment for the RCV. This is the sum of the PV effect of customers' share of proceeds from disposals of interest in land (Real 2017-18 CPIH - NPV adjusted) with signage reversed.
8	NPV effect of customers' share of net proceeds from disposals of interest in land (Real 2022-23 CPIH - NPV adjusted)	This is the customers' share of any net proceeds from disposals of interest in land that is deducted from the RCV. It is calculated from NPV effect of customers' share of proceeds from disposals of interest in land (Real 2017-18 CPIH - NPV adjusted) and is rebased to 2022-23 prices using CPIH: Financial year average indices.

2.19 Strategic regional water resources

This model reconciles revenue allowances for the strategic regional water resource options. The reconciliation accounts for the extent of progression of strategic options through the gated approval process. More information about our final approach to strategic options is set out in 'PR19 final determinations – Strategic regional water resource solutions appendix'.

2.19.1 Summary

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue and RCV	Revenue adjustments feeder model	2017-18 FYA CPIH deflated	Water network plus, Water resources	Company-specific wholesale allowed return on capital

2.19.2 Background and purpose

In our final determination, we proposed funding development work for a number of strategic regional water resources solutions identified in the latest water resources management plans and company business plans. The total funding of £469 million in final determination is provided to companies to help them investigate and develop integrated strategic regional water solutions during 2020-25. This will enable companies to develop solutions on behalf of customers that are 'construction ready' for the 2025-30 period, and that protect and enhance the environment and benefit wider society. This intervention further demonstrates our commitment to supporting long-term resilience and innovation.

Based on company submissions, we identify 17 solutions for the initial stage of this process with development funding divided between nine companies, who we expect to work together (and with third parties) to deliver this work. There are 11 source-type solutions, which include reservoirs and effluent reuse, and six transfer-type solutions, utilising river, canal and pipeline transfer routes.

Delivery of these solutions will be subject to a formal gated process. There are four gateways in 2020-25 where regulators will review progress and determine how and if solutions should proceed further through the process. We define standard gate timings for the solutions with gate one submission being 5 July 2021. The standard gate timings align with other processes such as the water resources management plans. Southern Water's need for large scale water resources occurs earlier than for other companies, as a result we define accelerated gate timings for solutions that can benefit its customers, with gate one on 28 September 2020. This funding is subject to an end of period reconciliation mechanism which will adjust the RCV/revenue associated with this development programme based on decisions made at each gate.

Any funding allowance we make provides companies with the ability and certainty to further investigate, develop projects and engage with third parties through a flexible process that accelerates developing a selection of robust and deliverable solutions that are in the regional and national interest. Progressing more solutions in parallel, rather than just one for a specific scenario, enables flexibility to meet the resilience challenges of the future. The additional water provided by these regional solutions could be over 1500 Ml/d which exceeds the needs identified in the 2018 report 'Preparing for a drier future' by the National Infrastructure Commission. These regional and inter-regional solutions are complemented by the delivery of other solutions identified in companies' business plans within supply-demand balance enhancement programmes which include smaller supply options, improved connectivity of networks, water efficiency programmes and leakage management.

We have established the Regulatory Alliance for Progressing Infrastructure Development (RAPID) an alliance of three water industry regulators: Ofwat, the Environment Agency and Drinking Water Inspectorate - to support and oversee the development of these regional solutions. This will help ensure consistent decisions are made across regulators, allowing the broader public interest to be taken into account, instead of a narrow focus on local or regional activities which can limit solutions for the common good. RAPID will address significant 'barriers and gaps' in the regulatory process to ensure solutions are developed in a consistent, timely and co-ordinated way, in addition to ensuring that customers and the environment are protected.

2.19.3 Nature of the reconciliation

We need to undertake an end of period reconciliation to the **water resources** and **water network plus** controls to reflect the participating companies' progression of

each solution through the gated process. The reconciliation mechanism allows the following decisions to be implemented at the end of the period:

- **Solution discontinued** - returns future funding where a solution is cancelled at a gate decision partway through the process. The funding will be returned to customers through end of period reconciliation. Decisions will be made in-period and aligned with gate timescales.
- **Solution substitution and reallocation** – allows transfer of development funding to a substitute solution, where it proves to be of better value than the rejected solution, up to and including gate three.
- **Partner substitution and reallocation** - enables reallocation of funding for changes in solutions or solution partners, including those not identified at this stage, up to and including gate three.
- **Delivery penalties** - applies penalties for late submission and delivery of poor quality (incorporating completion of gate activities and expected certainty of outputs) deliverables. Decisions regarding penalties will be made at each gateway in-period but applied at the end of period.

We will apply these adjustments as **end-of-period reconciliations** which take the form of **RCV adjustments** and **revenue adjustments**. They will be made at PR24 and would affect companies' allowed revenue over the 2025-30 period.

2.19.4 Mechanism structure – overview and specific considerations

Gates

There are four gates at which outputs need to be delivered by participating water companies. Each gate is associated with a proportion of the development allowance for the company:

- Gate one – 10%,
- Gate two – 15%,
- Gate three – 35%; and
- Gate four – 40%.

These gate allocations are common across companies and solutions.

Totex sharing

We allocate the development funding to companies in full from the start of the 2020-25 period to encourage progress with the evaluation of these solutions. It is allowed

on the assumption that the gate activities can be delivered for the allocated proportions of the total allowance. Any efficient spend on these activities up to gate decision point is allowed, and is in general not subject to recovery (subject to the maximum development allowance at each gate and any delivery incentives that may be applied). This funding is for the development of the joint solutions listed as part of the formal gated process. Any spend on activities outside the gate activities for these solutions (or solutions that transfer in) will be considered as inefficient and be returned to customers. We will consider whether gate activity is efficient by considering the relevance, timeliness, completeness, and quality of the submission which should be supported by benchmarking and assurance.

We will apply cost sharing following completion of gate two. However, for solutions that do not progress beyond gate two any overspend or underspend at gate one and gate two is fully borne by the companies involved. This can be considered as full cost sharing with customers. For solutions that progress beyond gate two cost sharing is applied to the ring-fenced development allowance for each solution on a cumulative basis. This cumulative cost sharing after gate two applies to efficient underspend or overspend and will use a 50% sharing rate with customers. The cumulative nature of the cost sharing (after gate two) allows potential underspend in the early gates to offset overspend at later gates, and vice versa.

The cost allocations to each gate reflect the future costs that can be returned to customers through the end of period reconciliation mechanism if solutions do not progress through this programme of work. Future gate allowances for solutions that do not progress are fully returned to customers (with no cost sharing) regardless of the gate that the solution fails to progress beyond. This aspect of the mechanism protects customers from paying for gate allowances for future activities that, following a gate decision, are no longer necessary due to the discontinuation of the solution's development (in this process). Although the decision to not further progress a solution will be made transparently using the outputs of the gate activities in-period, the adjustment will not be made at this point. Future gate activity funding allocations will be returned to customers at the start of the 2025-30 period through the end of the period reconciliation mechanism.

Application of the end of period adjustment

The mechanism uses an adjustment of company revenues and regulated capital value in the same proportions as other company totex allowances. Therefore, we will use companies' water resources and water network plus final determination PAYG ratios to allocate any required end of period reconciliation adjustments into RCV and revenue adjustments of the water resources and water network plus price controls. The only exception to this allocation is in relation to the time value of money

adjustment we will make to take account of the time lag between the gate at which a solution is discontinued and when our revenue controls return funding to customers. We will apply the time value of money adjustment as 100% revenue adjustment because we consider it inappropriate to subtract a time value of money adjustment from the RCV.

Unfunded solutions

We recognise the potential for companies to identify new solutions, in addition to those currently identified and which we provide development funding for, as a result of continued analysis and the regional solution identification process. Therefore, where a solution is deemed to be unsuitable to progress further at a gate (up to gate three), the future development allowance for this discontinued solution can be transferred, with our agreement, if there is a compelling substitute solution. This transfer can be between companies when combined with the partner substitution function and not limited to within an individual company's allowance. It is possible that the substituting solution has a higher or lower total cost. However, given the potential late stage of the substitution, we consider the development allowances are appropriate to cover remaining activities to gate four, to the degree that decisions can be made prior to future business plan submissions.

To understand if a solution is of better value than the rejected solution and on a level playing field with others still in the process, we expect that gate activity deliverables up to the point of substitution will be available for the transferring-in solution to allow us to make a decision whether this is a suitable use of funds. It is expected that development cost is part of normal company activity, such as investigations for solutions for submission in water resources management plans and business plans. Therefore, any costs incurred prior to a decision to transfer in is made will not be recovered through the end of period reconciliation mechanism.

2.19.5 Mechanism structure – calculations

All calculations below are expressed in 2017-18 FYA CPIH deflated prices unless stated otherwise.

Outputs

#	Output	Description	Units
Funded scheme adjustments (calculations are made both for water resources and water network plus)			
1	Company revenue adjustment for [funded scheme] incl. financing adjustment	This is the overall end-of-period revenue adjustment for a funded scheme depending on progression through the gated process	£m
2	Company RCV adjustment for [funded scheme]	This is the overall end-of-period RCV adjustment for a funded scheme depending on progression through the gated process	£m
Unfunded scheme adjustments (calculations are made both for water resources and water network plus)			
3	Company revenue adjustment for [unfunded scheme] incl. financing adjustment	This is the overall end-of-period revenue adjustment for an unfunded scheme depending on progression through the gated process	£m
4	Company RCV adjustment for [unfunded scheme]	This is the overall end-of-period RCV adjustment for an unfunded scheme depending on progression through the gated process	£m

Inputs

#	Input	Description	Source	Units
The non-generic inputs are relevant for the water resources and water network plus controls				
1	Proportion of costs allocated to gate	An overview of the proportion of the cost allowance allocated to each gate	Ofwat	%
2	Totex sharing rate	The totex sharing rate applicable to under or overspend compared to the allocated allowance	Ofwat	%

#	Input	Description	Source	Units
3	Totex sharing threshold – cumulative spend	The cumulative proportion of costs beyond which we apply totex sharing – equivalent to cumulative allowance to gate 2	Table 3.4 of 'PR19 final determinations: Strategic regional water resource solutions'	%
4	Discount rate	The discount rate used to provide a time value of money adjustment	This is the wholesale allowed return on capital	%
Funded schemes inputs				
5	Gate funded scheme has progressed to (up to gate 4)	The final gate to which the funded scheme has progressed to	Ofwat	#
6	Company cumulative percentage of allocated spend given gate reached	The cumulative percentage of the allocated spend that the company is eligible for given the gate the funded scheme it participates in has reached	Table 3.4 of 'PR19 final determinations: Strategic regional water resource solutions'	%
7	Company totex allowance for funded scheme	The full totex allowance for a funded scheme for the company	Table 3.3 of 'PR19 final determinations: Strategic regional water resource solutions'	£m
8	Company PAYG ratio	The overall PAYG ratio of the company for 2020-25	Tables 2.1 and 2.2 of companies' 'PR19 final determinations: Allowed revenue appendix'	%
9	Company outturn totex for funded scheme	The actual totex for a funded scheme for the company	Company regulatory reporting	£m
10	Company penalty for funded scheme	A penalty deducted from a company's development allowance for a funded solution based on gate deliverables	RAPID	£m

#	Input	Description	Source	Units
Unfunded schemes inputs				
11	Gate unfunded scheme has progressed to (up to gate 4)	The final gate to which the unfunded scheme has progressed to	Ofwat	#
12	Company cumulative percentage of allocated spend given gate reached	The cumulative percentage of the allocated spend that the company is eligible for given the gate the unfunded scheme it participates in has reached	Table 3.4 of 'PR19 final determinations: Strategic regional water resource solutions'	%
13	Company totex allowance for unfunded scheme	The full totex allowance for an unfunded scheme for the company	RAPID	£m
14	Company PAYG ratio	The overall PAYG ratio of the company for 2020-25	Tables 2.1 and 2.2 of companies' 'PR19 final determinations: Allowed revenue appendix'	%
15	Company outturn totex for unfunded scheme	The actual totex for an unfunded scheme for the company	Company regulatory reporting	£m
16	Company penalty for unfunded scheme	A penalty deducted from a company's development allowance for an unfunded solution based on gate deliverables	RAPID	£m

Calculations

#	Calculation overview	Calculation detail
Calculation of adjustments for a funded scheme example. These calculations can be applied to any scheme, company and revenue control combination.		
1	Total totex allowance, [funded scheme]	This is Company 1 totex allowance for [funded scheme], plus Company 2 totex allowance for [funded scheme]
2	Totex sharing application	This is Boolean logic value that checks if Cumulative percentage of allocated spend given gate reached for [funded scheme] is greater than the Totex sharing threshold - cumulative spend to determine whether totex sharing needs to be applied
3	Company totex allowance for [funded scheme] given gate reached	This is Company totex allowance for [funded scheme], multiplied by the Company cumulative percentage of allocated spend given gate reached for [funded scheme]
4	Company unspent totex clawback for [funded scheme] given gate reached	This is Company totex allowance for [funded scheme], minus the Company totex allowance for [funded scheme] given gate reached
5	Company totex adjustment for [funded scheme] with no totex sharing	This is Company outturn totex for [funded scheme], minus Company totex allowance for [funded scheme] given gate reached, if the result is less than zero. If the result is greater than or equal to zero, value is zero
6	Company totex adjustment for [funded scheme] with totex sharing	This is Company outturn totex for [funded scheme], minus the Company totex allowance for [funded scheme] given gate reached, all multiplied by the Totex sharing rate
7	Company totex sharing adjustment for [funded scheme]	This value is dependent on the value of Totex sharing application. If Totex sharing application is equal to 1, it takes the value of Company totex adjustment for [funded scheme] with totex sharing. If not, it takes the value of Company totex adjustment for [funded scheme] with no totex sharing
8	Company total totex adjustment for [funded scheme]	This is Company unspent totex clawback for [funded scheme] given gate reached, plus Company totex sharing adjustment for [funded scheme]

9	Company total totex adjustment for [funded scheme] financing adjustment	If Gate [funded scheme] has progressed to (up to gate 4) is equal to 4, value is zero. If not, value is equal to Company total totex adjustment for [funded scheme], multiplied by (1 plus Discount rate)^(5-Gate reached) minus Company total totex adjustment for [funded scheme]
10	Company revenue adjustment for [funded scheme] incl. financing adjustment	This is Company PAYG ratio, multiplied by the sum of Company total totex adjustment for [funded scheme] financing adjustment and Company penalty for [funded scheme 1], plus the Company total totex adjustment for [funded scheme] financing adjustment
11	Company RCV adjustment for [funded scheme]	This is 1 minus the Company PAYG ratio multiplied by the sum of the Company total totex adjustment for [funded scheme] and Company penalty for [funded scheme]
Calculation of adjustments - unfunded scheme example. These calculations can be applied to any company and any revenue control combination.		
12	Total totex allowance, [unfunded scheme]	This is Company 1 totex allowance for [unfunded scheme], plus the Company 2 totex allowance for [unfunded scheme]
13	Totex sharing application	This is Boolean logic value that checks if Cumulative percentage of allocated spend given gate reached for [unfunded scheme] is greater than the Totex sharing threshold - cumulative spend to determine whether totex sharing needs to be applied
14	Company totex allowance for [unfunded scheme] given gate reached	This is Company totex allowance for [unfunded scheme] multiplied by Cumulative percentage of allocated spend given gate reached for [unfunded scheme]
15	Company totex sharing adjustment for [unfunded scheme]	This value is dependent on the value of Totex sharing application. If Totex sharing application is equal to 1, it takes the value of Company outturn totex for [funded scheme] minus Company totex allowance for [unfunded scheme] given gate reached all multiplied by Totex sharing rate. If not, it takes the value of zero
16	Company total totex adjustment for [unfunded scheme]	This is Company totex allowance for [unfunded scheme] given gate reached, plus Company totex sharing adjustment for [unfunded scheme]

17	Company totex allowance adjustment for [unfunded scheme] financing adjustment	This is Company totex allowance for [unfunded scheme] given gate reached, multiplied by (1 + Discount rate)^5, minus Company totex allowance for [unfunded scheme] given gate reached
18	Company totex sharing adjustment for [unfunded scheme] financing adjustment	If Gate [unfunded scheme 1] has progressed to (up to gate 4) is equal to 4, value is zero. If not, value is equal to Company totex sharing adjustment for [unfunded scheme], multiplied by (1 plus Discount rate)^(5-Gate reached) minus Company totex sharing adjustment for [unfunded scheme]
19	Company totex adjustment for [unfunded scheme] financing adjustment	This is Company totex allowance adjustment for [unfunded scheme] financing adjustment, plus Company totex sharing adjustment for [unfunded scheme] financing adjustment
20	Company revenue adjustment for [unfunded scheme] incl. financing adjustment	This is equal to the sum of Company total totex adjustment for [unfunded scheme] and Company penalty for [unfunded scheme], multiplied by the Company PAYG ratio, plus the Company totex adjustment for [unfunded scheme] financing adjustment
21	Company RCV adjustment for [unfunded scheme]	This is 1 minus the Company PAYG ratio, multiplied by the sum of the Company total totex adjustment for [unfunded scheme] and the Company penalty for [unfunded scheme]

Implementation

Final form of the reconciliation model

The reconciliation model we have published alongside this consultation does not include the calculation of the RCV and revenue adjustments for every solution we identified in the final determination (see 'PR19 final determinations - Strategic regional water resource solutions appendix' for more information). Instead, the model is illustrative of how the reconciliations could work for two distinct scenarios of one funded solution (i.e. a solution for which we provided an allowance in our PR19 final determinations) and one unfunded solution (i.e. a transferring-in solution). We consider it's not practical to publish a model containing all solutions because:

- Certain elements of the framework e.g. related to the calculation of delivery incentives could evolve over time as the work on the gated process continues;
- The additional complexity this would introduce without any corresponding benefit in the short-term;
- Our inability to include potential unfunded solutions, the details of which will only become clear by gate three; and
- Our inability to allow for potential additional participants in the funded solutions which could result in reallocation of development allowances and added complexity.

Therefore, we propose to include all solutions and the end of period revenue and RCV adjustments for all companies in a single reconciliation model once there is certainty on all solutions which will be around the deadline for gate three submissions (since no further amendments will be possible past gate three). This would have the benefit of streamlining the reconciliation process which will be undertaken in PR24.

3. Our approach to company-specific reconciliations

There are a number of reconciliations that do not apply to all companies. These are summarised in Table 3.

Table 3: Company-specific reconciliations covered in this section

Reconciliation	Companies affected	Summary of the reconciliations' purpose
In-period reconciliations		
Havant Thicket	Portsmouth Water	To reconcile revenue allowances for the activities related to the Havant Thicket reservoir ("Havant Thicket Activities").
End-of-period reconciliations		
Business retail controls	Hafren Dyfrdwy, Dŵr Cymru	We will check compliance with the business retail controls by collecting additional information.
Gloucester and Sharpness Canal notified item	Bristol Water	To set out the details of the Notified Item for Bristol Water relating to Gloucester and Sharpness Canal abstraction charges.

3.1 Business retail controls for Welsh companies

Unlike the business retail customers of companies wholly or mainly in England ("English companies") wastewater business retail customers of companies whose areas are wholly or mainly in Wales ("Welsh companies") – and water business retail customers of Welsh companies using less than 50 megalitres a year – do not have access to competition. These customers require price and service level protection in a similar way to residential customers.

As a result, at PR19 we set average revenue controls for these customers, using a cost to serve and net margin approach. Consequently, the rest of this section only relates to Dŵr Cymru and Hafren Dyfrdwy.

3.1.1 Application of in-period ODIs

At PR19 we set performance commitments in relation to the satisfaction of Welsh companies' business retail customers, with in-period outcome delivery incentives (ODIs) with outperformance and underperformance payments based on how companies performed against their performance commitment levels.

As set out in the PR19 final determinations, these ODIs are to be reconciled through each company's business retail control.

We consider that any outperformance or underperformance payments related to these ODIs should be applied only to customers who are not eligible for competition (rather than customers who are eligible for competition) because:

- since they are not protected by competition, it is these customers that would gain or lose depending on companies' performance in relation to these ODIs;
- applying an ODI through a change to the gross margin which caps the default tariffs for customers eligible for competition may:

    i. not have the intended effect, because these customers' charges could be below the gross margin cap (so changes to the gross margin cap may not lead to changes in revenue for the appointee); and
    ii. risk distorting competition.

We would expect that any outperformance or underperformance payments arising from these business retail ODIs would be applied through a common increase across each of the appointee's default tariffs. We propose that this is achieved

through a change in the allowed average retail cost component ('**rc**') of the price controls. This ensures these are not unduly focused on a subset of customers.

Our proposed approach is consistent with how we reconciled outperformance and underperformance payments related to the PR14 business retail service incentive mechanism (SIM) for Welsh companies which was incorporated into the default tariffs we set for these companies in the PR19 final determinations (see section 3.6 of the 'Accounting for past delivery technical appendix').

3.1.2 Checking compliance with the controls

Companies will need to provide such information as Ofwat reasonably requires to demonstrate compliance with their price controls. We chose not to specify such requirements in the final determination and any such requirements will therefore need to be set out separately (e.g. through annual regulatory reporting requirements).

We consider that it is important to check compliance with the business retail controls for the Welsh companies, because:

- most business customers of Welsh companies are protected by regulation, rather than competition; and
- we are applying the PR14 business retail SIM and potentially in-period ODIs related to these customers' default tariffs.

We propose to check compliance with the business retail controls through the annual reporting process. Therefore, we are consulting on revised tables that we would require companies to populate within our proposed Regulatory Accounting Guidelines.

3.2 Notified Item for Bristol Water relating to Gloucester and Sharpness Canal abstraction charges

3.2.1 Notified Item overview

Our PR19 final determination for Bristol Water included a Notified Item in respect of the uncertainty associated with charges from the Canal and River Trust (CRT) for abstraction from the Gloucester and Sharpness Canal. Costs associated with these charges come under the Water Resources price control for Bristol Water.

At the time of our PR19 final determination a review of charge levels was subject to an ongoing formal arbitration process.

The reconciliation provisions in this section will only apply in the event of an interim determination that refers to the Notified Item or an "agreed reduction" as set out below.

An interim determination would only reflect incremental changes in Bristol Water's costs resulting from changes to annual and volumetric charges for the period from 1 April 2020 to 31 March 2025. However, increased costs resulting from changes to annual and volumetric charges for the period after 31 March 2025, may be taken into account for the purpose of the materiality test referred to in Condition B of Bristol Water's Appointment. Any changes to costs relating to charges for water abstracted from the Gloucester and Sharpness Canal that are not reflected in an interim determination will go through the standard PR19 cost sharing mechanism for Bristol Water. Conversely, any costs that are reflected in an interim determination will be excluded from the standard PR19 cost sharing mechanism.

An interim determination could be initiated by Bristol Water or it could be instigated by Ofwat[14] in the event of a change in the relevant CRT charge levels (whether an increase or a decrease). The interim determination would set out the basis for changes to Bristol Water's revenue allowances for the subsequent Charging Year(s) in the price control period ending on 31 March 2025. An interim determination cannot be triggered during the last Charging Year of the price control period (2024-25).

Three important factors in relation to the PR19 final determination for Bristol Water and the Notified Item are that:

- costs or savings would be shared between customers and the Appointee on a 75% (customers) / 25% (the Appointee) basis;

[14] See also reference to the symmetrical nature of the sharing of costs and savings below.

- an interim determination would adjust revenue allowances by the full relevant amount implied by the change in costs being taken into account (subject to any relevant off-setting items); and

- an interim determination would include adjustments for any elapsed years in the period from 2020-25 and include forecast amounts for any subsequent years in the period.

Bristol Water has committed to increase or decrease its charges by 75% of the amount of any increase or decrease in its revenue allowances ("the 75% commitment").

In the event that we are in a position to reduce Bristol Water's revenue allowances through an interim determination, we might decide not to instigate an interim determination process if Bristol Water agrees to reduce its charges by an amount equivalent to 75% of the saving resulting from changes to annual and volumetric charges for the period from 1 April 2020 to 31 March 2025 ("an agreed reduction").

In the event of an interim determination, or an agreed reduction:

- We will amend the RFI model so that it will not apply a penalty to Bristol Water in respect of over/under recoveries of revenue attributable solely to the 75% commitment or, as applicable, the agreed reduction.

- Our PR24 determination for Bristol Water will include reconciliation adjustments to revenue allowances, as required, to:

    - nullify any residual over or under recovery of balances resulting from the 75% commitment or, as applicable, the agreed reduction (including for the purposes of RFI reconciliations); and

    - take account of any difference between forecast volumetric charges allowed for in an interim determination and actual outturn volumetric charges.

- We will confirm how we will take account of any difference between forecast volumetric charges allowed for in an interim determination and actual outturn volumetric charges for Charging Year 2024-25 in our PR24 determination for Bristol Water.

If applicable, we will set out a detailed basis for the reconciliation adjustment calculations, on a net present value neutral basis, at the time of any interim determination or agreed reduction.

3.3 Havant Thicket reconciliation model

3.3.1 Summary

Timing of adjustment	Nature of adjustment (RCV, Revenue, or both)	Which model(s) is this model outputting to?	What is the price base of the output?	What PR19 revenue controls does it affect?	What allowed return on capital does the model use?
End of period	Revenue and RCV	PR29 RCV and Revenue adjustments feeder models	2017-18 FYA CPIH deflated and 2029-30 FYA CPIH deflated	Havant Thicket Activities	Wholesale allowed return on capital

3.3.2 Background and purpose

We have challenged water companies to assess a wide range of options for securing water supply resilience including investment in new infrastructure and water transfers. Southern Water faces significant water resources deficits in the west of its region after tight limits were imposed by the Environment Agency on the amount of water it can take from environmentally sensitive rivers in Hampshire. Southern Water must take steps to improve water efficiency, reduce leakage and invest in new water sources to maintain secure water supplies for its customers.

Portsmouth Water benefits from having a modest water resource surplus and has been working collaboratively with Southern Water to increase water transfers. Portsmouth Water has ambitious proposals to adopt supply-side and demand-side solutions to increase the amount of surplus water that it can provide to Southern Water, including proposals to build the Havant Thicket Winter Storage Reservoir ("Havant Thicket reservoir") to generate an additional 21Ml/d of available water to be traded with Southern Water. Overall, Portsmouth Water intends to increase its water transfers to 60Ml/d which will make a significant contribution to Southern Water meeting the water needs of its customers.

The provision of bulk supplies of water to neighbouring water companies typically uses the existing assets of the appointed company and is part of its regulated business. The costs of providing bulk supplies to another water undertaker fall within

the scope of the wholesale price controls. Investment associated with bulk supplies is included within totex allowances and added to the regulatory capital value (RCV).

While the costs of providing bulk supplies fall within the scope of the price controls, bulk supply charges are not regulated in the same way as other charges. Revenues from bulk supply charges are outside the wholesale price controls. Instead, we net-off the expected revenues from bulk supply charges when determining the level of the price controls. This means that revenues from the provision of bulk supplies offset the costs of the regulated business. Customers benefit as economic profits are passed to them through lower bills. Our water trading incentives allow companies to share a proportion of the economic profits from new bulk supply arrangements.

We do not limit the prices of bulk supplies through price controls. They are normally negotiated between water undertakers as part of the bulk supply agreement. We expect bulk supply prices to be consistent with our bulk supply pricing policy principles. If companies do not agree the prices and conditions of new bulk supply agreements, then they can, in some circumstances, be referred to Ofwat for a determination under section 40 of the Water Industry Act 1991.

The proposed water transfers between Portsmouth Water and Southern Water are ambitious and unusual in that a large proportion of the overall bulk supply of water to Southern Water depends on the construction of the Havant Thicket reservoir in Portsmouth Water's area.

Portsmouth Water and Southern Water are negotiating commercial arrangements to deal with the complex allocation of costs and risks associated with the construction of the reservoir as well as the core aspects of bulk supplies. The allocation of costs and risks between Portsmouth Water and Southern Water needs to ensure that customers are adequately protected, avoiding inappropriate transfers of risks to customers that should be borne by the companies and their investors.

The regulatory framework must protect the customers of Portsmouth Water and Southern Water and encourage efficient behaviour. Our regulatory framework sets price limits and provides a package of cost and performance incentives to ensure companies deliver wholesale water services to their customers. We need to make sure that the protections and incentives in the price control framework appropriately reflect the complex allocation of costs and risks for the development of the Havant Thicket reservoir.

We made changes to Portsmouth Water's conditions of appointment which came in to effect on 25 November 2019. These licence modifications allowed us to determine a separate 10 year price control for activities related to the Havant Thicket reservoir

('Havant Thicket Activities'). The scope of Havant Thicket Activities is set out in 'Notification of the final determination of price controls for Portsmouth Water'.

The main purpose of the Havant Thicket reconciliation model is to apply the regulatory framework of the separate 'Havant Thicket Activities' price control as set out in our final determination in 'PR19 final determinations - Havant Thicket appendix'.

3.3.3 Nature of the reconciliation

We need to undertake a reconciliation related to the Havant Thicket Activities control to:

- calculate cost under- or outperformance over the 2020-30 period;
- determine adjustments for sharing of economic profits under the bulk supply with Portsmouth Water's customers in line with our PR19 water trading incentives policy;
- apply adjustments for the indexation of the cost of new debt;
- apply adjustment in line with our approach to tax reconciliation in PR19;
- apply any underperformance payments arising from the outcome delivery incentives related to delivery of the reservoir;
- apply reconciliation adjustments where Portsmouth Water under or over-recovers its allowed revenue from its customers;
- apply a volumetric cost adjustment to the cost allowance to reflect the outturn volume of water traded; and
- apply an adjustment to claw back any unspent totex in relation to the construction of the reservoir on 31 March 2030.

For the Havant Thicket Activities control, we use **in-period** and **end-of-period reconciliations** which take the form of **revenue** and **RCV adjustments**.

We introduced a gated process to allow for an update to cost allowances in respect of Havant Thicket Activities based on tender outcomes once these materialise around 2022. The gated process assists in mitigating the significant cost uncertainty associated with the construction of the Havant Thicket reservoir at the time of the PR19 final determination.

We will perform a mid-period reconciliation of allowed revenue for the Havant Thicket price control at the time of the PR24 determinations. The mid-period determination will be calculated through our PR24 financial model. This will take into account the outputs of the gated cost process, the cost of new debt indexation reconciliation and

tax reconciliation adjustments to determine the revised building blocks of the calculation for the Havant Thicket control. In PR29, The Havant Thicket reconciliation model will calculate the sharing of economic profit between Portsmouth Water's shareholders and customers, the totex sharing, the unspent totex clawback and any necessary revenue adjustments due to under or over-recovery of revenues which will all be inputs into the financial model at PR29.

Cost of new debt indexation for the 2025-30 period and tax reconciliation for the 2025-30 period will also be applied as reconciliation adjustments in PR29 to the extent that these mechanisms are adopted for other wholesale controls at PR24. Finally, the outcome delivery incentive will also be applied as a reconciliation adjustment in PR29. Similarly to the mid-period adjustment, these changes do not feed into the Havant Thicket reconciliation model but will instead be direct inputs into the PR29 financial model.

The reconciliation adjustments will be applied as **revenue adjustments** with the exception of the totex clawback and totex sharing adjustments which will be applied as **RCV adjustments**.

3.3.4 Mechanism structure – overview and specific considerations

We set out the calculation of allowed revenue for the Havant Thicket Activities price control in 'Notification of the final determination of price controls for Portsmouth Water'. Allowed revenue is calculated according to the following formula:

$$\mathbf{Rt = UR_t \times CPIH\ adjustment\ factor_t}$$

Where:

UR_t means the total unadjusted allowed revenue.

3.3.5 Mechanism structure – calculations

All calculations below are expressed in 2017-18 FYA CPIH deflated prices unless stated otherwise.

Outputs

#	Output	Description	Units
Economic profit sharing with customers			
1	Total customer share of after-tax NPV of economic profit incl. financing adjustment to 2030	This is the share of the economic profit derived from the export under the bulk-supply agreement that is returned to Portsmouth Water's customers	£m
Tax allowance to cover tax on economic profits			
2	Total tax allowance to cover tax on economic profit	This is the adjustment to company allowed revenues to allow Portsmouth Water to recover tax on economic profit derived under the bulk supply agreement	£m
Cost sharing and clawback			
3	Totex sharing adjustment to Southern Water's relevant water controls at PR29	This is the adjustment to Southern Water's relevant water controls at PR29 that represents the company share of totex under or outperformance over the price control period	£m
4	Totex clawback adjustment	This is a totex clawback adjustment which is applicable where Portsmouth Water doesn't fully complete the construction of the Havant Thicket reservoir by the end of the 10 year price control period on 31 March 2030	£m
True-up reconciliation at PR29			
5	Revenue adjustment to Portsmouth Water's relevant water controls at PR29 incl. financing and inflation adjustments	This is the revenue adjustment for Portsmouth Water that reflects a reconciliation of revenue recovery imbalances where the company has under or over-recovered revenue from its customers over the price control period	£m, 2029-30 FYA CPIH deflated

Inputs

#	Input	Description	Source	Units
1	Does the company have an Ofwat-approved trading and procurement code	True/False flag	Company	N/A
2	Has the company produced a report to evidence that an export is a new export and complies with its Ofwat-approved trading and procurement code?	True/False flag	Ofwat	N/A
3	Discount rate (2020-2025)	The discount rate used to provide a time value of money adjustment in the period 2020-25	Table 6.5 in 'PR19 final determinations: Portsmouth Water - Allowed revenue appendix'	%
4	Discount rate (2025-2030)	The discount rate used to provide a time value of money adjustment in the period 2025-30	Ofwat	%
5	Proportion of NPV of economic profit for the company	The share of the economic profit derived from the export under the bulk-supply agreement that Portsmouth Water is allowed to retain	Ofwat	%
6	Corporation tax rate	The corporation tax rate	Company regulatory reporting	%
7	Outturn revenue from bulk supply agreement	The actual revenue earned from the bulk supply agreement	Company regulatory reporting	£m

#	Input	Description	Source	Units
8	Forecast cost (inclusive of return on capital)	The forecast cost (inclusive of a return on capital) of the bulk supply trade	Company regulatory reporting	£m
9	FD OPEX allowance - to be updated in 2022	Company operating expenditure allowance	'Cost adjustment claim feeder model Havant Thicket (PRT) separate control'	£m
10	FD CAPEX allowance - to be updated in 2022	Company capital expenditure allowance	'Cost adjustment claim feeder model Havant Thicket (PRT) separate control'	£m
11	Outturn OPEX	Outturn company operating expenditure	Company regulatory reporting	£m
12	Outturn CAPEX	Outturn company capital expenditure	Company regulatory reporting	£m
13	Cost sharing rate	Totex cost sharing rate for totex under or outperformance	Ofwat	%
14	Proportion of Havant Thicket construction programme not delivered by 31 March 2030	Percentage of the Havant Thicket construction incomplete by the end of the price control period on 31 March 2030	Company regulatory reporting	%
15	Forecast volume of water traded through bulk supply at FD - to be updated in 2022	The forecast volume of water traded under the bulk supply agreement. The value is illustrative and based on historical volume data for the other existing bulk supply agreements between Portsmouth Water and Southern Water	'Havant Thicket reconciliation model'	m^3
16	Outturn volume of water traded	The outturn volume of water traded under the bulk supply agreement.	Company regulatory reporting	m^3

#	Input	Description	Source	Units
	through bulk supply			
17	Allowed revenue - Havant Thicket	The revenue Portsmouth Water is allowed to recover as a result of the Havant Thicket construction.	Table 4A in 'Notification of the final determination of price controls for Portsmouth Water'	£m
18	Recovered revenue - Havant Thicket	The revenue Portsmouth Water actually recovers as a result of the Havant Thicket construction.	Company regulatory reporting	Outturn, £m
19	CPIH: Nov - Nov index inflating from 2017-18	One plus the percentage change in the Consumer Prices Index (H) between that published for the month of November in the Prior Year and that published for November 2016.	ONS	%
Inputs 19-23 are not inputs into the Havant Thicket reconciliation model. They input directly into the PR24 financial model. They are set out here for transparency of all adjustments that impact the Havant Thicket Activities price control				
20	PR24 Cost of new debt reconciliation adjustment (2024-25 FYA CPIH deflated)	The value of any adjustment to allowed revenues that accounts for changes in the cost of new debt in the period 2020-25.	Output from 'Cost of new debt reconciliation model'	£m, (2024-25 FYA CPIH deflated)
21	PR24 Tax adjustment	The value of any adjustment to allowed revenues that accounts for changes in corporation tax rate and capital allowances in the period 2020-25.	Output from 'Tax reconciliation model'	£m
22	PR29 Delivery bespoke PC ODI	The value of any adjustment to allowed revenues that accounts for under or outperformance payments in relation to the bespoke performance commitment related to the delivery of the Havant Thicket reservoir (PR19PRT_15)[15]	Company regulatory reporting	£m

[15] See 'PR19 final determinations: Portsmouth Water – Outcomes performance commitment appendix'

#	Input	Description	Source	Units
23	PR29 Cost of new debt reconciliation adjustment	The value of any adjustment to allowed revenues that accounts for changes in the cost of new debt in the period 2025-30 (if adopted for other wholesale controls at PR24)	Ofwat	£m
24	PR29 Tax adjustment	The value of any adjustment to allowed revenues that accounts for changes in corporation tax rate and capital allowances in the period 2025-30 (if adopted for other wholesale controls at PR24)	Ofwat	£m

Calculations

All calculations are made for each charging year over the 2020-30 period unless otherwise stated.

#	Calculation overview	Calculation detail
Volumetric charges totex adjustment		
1	Totex allowance adjustment for volumetric costs	This is the difference between Outturn volume of water traded through bulk supply and Forecast volume of water traded through bulk supply at FD - to be updated in 2022, multiplied by Forecast unit cost rate (UR) of Havant Thicket bulk supply in FD - to be updated in 2022
Bulk supply		
2	Meets all trading and procurement checks?	This is a check that Does the company have an Ofwat-approved trading and procurement code and Has the company produced a report to evidence that an import is a new import and complies with its Ofwat-approved trading and procurement code? are both TRUE which is a formal requirement on companies to be able to claim water trading incentives

3	Economic profit	This is the Outturn revenue from bulk supply agreement minus the Forecast cost (inclusive of return on capital) minus the Totex allowance adjustment for volumetric costs
4	Years for time value of money calculation	This is the number of years between the relevant charging year and the end of the price control period for which a time value of money adjustment is provided
5	NPV of economic profit incl. financing adjustment to 2030	This is Economic profit, multiplied by (1 plus Discount rate)^Years for time value of money calculation
6	Total NPV of economic profit incl. financing adjustment to 2030	This is the sum of NPV of economic profit incl. financing adjustment to 2030 over the price control period
7	After-tax NPV of economic profit incl. financing adjustment to 2030	This is NPV of economic profit incl. financing adjustment to 2030, multiplied by (1 minus the Corporation tax rate)
8	Total after-tax NPV of economic profit incl. financing adjustment to 2030	This is the sum of After-tax NPV of economic profit incl. financing adjustment to 2030 over the price control period
9	50% of after-tax NPV of economic profit incl. financing adjustment to 2030	This is Total after-tax NPV of economic profit incl. financing adjustment to 2030, multiplied by the Proportion of NPV of economic profit for the company
10	Total customer share of after-tax NPV of economic profit incl. financing adjustment to 2030	This checks if Meets all trading and procurement checks? is TRUE or FALSE and returns -1 multiplied by 50% of after-tax NPV of economic profit incl. financing adjustment to 2030 if TRUE and -1 multiplied by Total after-tax NPV of economic profit incl. financing adjustment to 2030 if FALSE
11	Total tax allowance to cover tax on economic profit	This is Total NPV of economic profit incl. financing adjustment to 2030, minus Total after-tax NPV of economic profit incl. financing adjustment to 2030

Totex sharing and totex clawback

12	Adjusted FD TOTEX allowance	This is FD TOTEX allowance - to be updated in 2022, plus Totex allowance adjustment for volumetric costs
13	Cost performance	This is Adjusted FD TOTEX allowance minus Outturn TOTEX
14	Cost performance incl. financing adjustment	This is Cost performance, multiplied by (1+ Discount rate (2020-2025))^Years for time value of money calculation for charging years 2020-25 and Cost performance, multiplied by (1+ Discount rate (2025-2030))^Years for time value of money calculation for charging years 2025-30
15	Total cost performance incl. financing adjustment	This is the sum of Cost performance incl. financing adjustment over the price control period
16	Totex sharing adjustment to Southern Water's relevant water controls at PR29	This is Total cost performance incl. financing adjustment multiplied by Cost sharing rate
17	Totex clawback adjustment	This is -1 multiplied by Proportion of Havant Thicket construction programme not delivered by 31 March 2030, FD TOTEX allowance - to be updated in 2022 and Cost sharing rate
PR29 Reconciliation adjustments		
18	Allowed revenue - Havant Thicket	This is Allowed revenue - Havant Thicket (2017-18 CPIH deflated), multiplied by CPIH: Nov - Nov index inflating from 2017-18
19	Revenue imbalance	This is Allowed revenue - Havant Thicket minus Recovered revenue - Havant Thicket
20	Revenue adjustment incl. financing adjustment	This is Revenue imbalance, multiplied by (1 plus Discount rate)^Years for time value of money calculation
21	Revenue adjustment to Portsmouth Water's relevant water controls at PR29 incl. financing and inflation adjustments	This is Revenue adjustment incl. financing adjustment multiplied by the ratio of CPI(H) base year 2016: November - indexation factor – CALC in 2029-30 and CPI(H) base year 2016: November - indexation factor – CALC in the relevant charging year

4. Glossary

Term	Acronym	Definition
Annual Survey for Hours and Earnings	**ASHE**	Annual estimates of paid hours worked and earnings for UK employees by sex, and full-time and part-time published by the Office for National Statistics.
Bioresources		Bioresources refers to wastewater sludge transport, treatment, recycling and disposal.
Blind year		The last charging year of a price review period, during which a new price review is finalised. For example, the PR19 blind year is 2019-20. It is termed the 'blind year' because outturn financial and performance data for that year is not available to use in the price review assessments and determinations. This means that forecast data is used in our final determinations, with finalised values taken into account at a later stage.
Consumer Prices Index (H)	**CPIH**	Consumer Prices Index including owner occupiers' housing costs.
FAST Standard	**FAST**	Flexible appropriate structured transparent design rules for financial modelling published by the by the FAST Standard Organisation.
Office for National Statistics	**ONS**	The Office for National Statistics is the UK's largest independent producer of official statistics and the recognised national statistical institute of the UK. It is responsible for collecting and publishing statistics related to the economy, population and society at national, regional and local levels. It plays a leading role in national and international good practice in the production of official statistics.
Weighted average cost of capital	**WACC**	The weighted average cost of capital is calculated as the cost of equity multiplied by the percentage of equity assumed for the notional company plus the cost of debt multiplied by the percentage of debt assumed for the notional company. It represents the allowed return for the providers of equity and debt finance.

Ofwat (The Water Services Regulation Authority)
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We regulate the water sector in England and Wales.

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