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PR19 Reconciliation Rulebook: Guidance Document

Ofwat

About this document

Our approach to price control reconciliations at PR19 is a significant evolution of our approach at PR14. It reflects 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.

This document provides guidance about how PR19 reconciliations should be implemented during, and at the end of, the 2020-25 price control period. It provides clarity on:

- how we will make changes to companies' allowed revenue and/or RCV;
- which price controls are potentially affected; and
- when and how we will administer the process.

This document brings together the overall approach and policy[1] with more detailed model guidance[2]. It is accompanied by a series of reconciliation models[3] which show the practical operation of the PR19 reconciliation mechanisms.

The final version of this document was published on 2 December 2020. Updates to this version were published on 4 August 2021 and 30 August 2023. A description of the changes made is set out in appendix 3.

[1] Our proposed approach was published in PR19 Reconciliation Rulebook consultation – proposed approach and policy. Note that we previously consulted on matters related to the PR19 Blind Year adjustment. This work has now concluded and we published our final decisions on 13 November 2020.
[2] Our proposed approach was published in PR19 Reconciliation Rulebook consultation - reconciliation model guidance.
[3] We published draft versions of these models in March 2020 to accompany PR19 Reconciliation Rulebook consultation – proposed approach and policy and PR19 Reconciliation Rulebook consultation – reconciliation model guidance.

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1. Introducing the PR19 reconciliation rulebook

This section sets out:

- the role of the reconciliation process;
- our approach to developing the PR19 Reconciliation Rulebook; and
- the status of this document.

1.1 The role of the reconciliation process

Water companies are monopolies. Our price reviews protect customers from potential abuse of water companies' market power. Price reviews set the price, service and incentive package for the following five year period. This sets out the allowed revenues, expected levels of service and the set of financial and reputational incentives for each company. We set out the price, service and incentive package for the 2020-25 control period in the 2019 price review (PR19) final determinations.

As part of PR19 we set a series of incentives to encourage cost efficiency and delivery of outcomes that customers want. We also set a series of reconciliation mechanisms, to ensure that risks are properly allocated between companies and their customers and that customers' interests are appropriately protected. It is appropriate to amend companies' allowed revenues for a number of reasons, for example where:

- a company's performance means it is subject to outcome performance commitment outperformance or underperformance payments;
- a company has collected too much or too little revenue compared to what we have allowed;
- a change of circumstances outside of management control has affected a company's costs (such as changes in the cost of new debt) and it is appropriate for the amount of revenue it is ultimately allowed to recover to change; or
- differences between the necessary assumptions a company made about its performance in the year in which we are the setting final determinations (the so-called 'blind year') and its actual performance.

Amendments are made to companies' allowed revenues through a 'reconciliation' process. Our reconciliations therefore form an important part of the way in which we regulate water companies. For example, the way we implement our reconciliations incentivises companies to:

- collect the right amount of revenue;
- minimise bill volatility; and

- deliver on, and potentially exceed, their stretching performance commitments.

This document provides guidance on the overall process and detailed mechanics for each reconciliation for both in-period and end-of-period reconciliation adjustments.

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

- increase policy transparency by bringing together overarching policy decisions, details of each of the reconciliations and interactions;
- promote predictable regulation;
- increase confidence across the sector; and
- ensure the process is administered efficiently.

Table 1 lists and summarises the PR19 reconciliations. Links to the latest versions of all of the models can be found on our website.

Table 1: Summary of the PR19 reconciliations

Reconciliation	Summary of the reconciliations' purpose
In-period reconciliations	
In-period adjustments	This 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).
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) incentivises 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.
Developer measure of experience – D-MeX	The developer services measure of experience (D-MeX) incentivises 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.

Bilateral entry adjustment (BEA)	This shows how we 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	This shows how the bioresources revenue reconciliation will work over 2020-2025. It shows how we modify the average revenue control each year based on the difference between outturn and forecast sludge production. In addition, it 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	This will determine how we will reconcile 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	This shows how we will reconcile residential retail revenues over the PR19 period at PR24.
PR19 Water trading incentive	This calculates PR19 water trading incentives for qualifying trades starting in 2020-2025.
Developer services revenue adjustment mechanism	This reconciles actual with forecast developer services connections within the network-plus control. We provide further details in 'PR19 final determinations: Our approach to regulating developer services'.
Water industry national environment programme (WINEP) reconciliation	The purpose of this reconciliation 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	This indexes 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 will be used at PR24 to reconcile actual performance against the totex allowances from PR19.
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 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	We will use this 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	This 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 fund and 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 a collectively-funded innovation competition. This reconciliation 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.

Company-specific reconciliation (in-period)	
Havant Thicket	This reconciles revenue allowances for the activities related to the Havant Thicket reservoir. More information about our approach is set out in 'PR19 final determinations – Havant Thicket appendix'.

1.2 Our approach to developing the PR19 Reconciliation Rulebook

We previously published our PR14 reconciliation rulebook for the 2015-2020 period. In cases where our approach to reconciliation in PR19 represents a broad continuation of our PR14 reconciliations policy, we have used the PR14 approach as the starting point and build on it to reflect the updated regulatory framework. However our approach to reconciliations at PR19 marks a significant evolution on our approach from PR14. Our PR19 reconciliation model suite is significantly wider than at PR14 and includes a number of new reconciliation mechanisms covering issues such as cost of new debt, tax and gearing outperformance.

We have developed our approach to PR19 reconciliations in a number of ways:

- the PR19 final methodology set out how we intended to operate the price controls, including key reconciliations relevant to the 2020-25 period;
- where appropriate, we have introduced new reconciliations as we went through the process of making our PR19 determinations; and
- in some areas which we discuss in more detail below, we have further refined our approach,
- where appropriate, we have introduced new reconciliations as we went through the process of making our PR19 determinations; and
- we to developed, updated and published illustrative draft reconciliation models in the FAST modelling standard[4] in the period since the publication of our methodology, consulting on the draft design with companies on an ongoing basis, and
- published a formal consultation on our proposed approach and policy, draft model guidance and models[5].

[4] The FAST modelling standard is the most widely adopted, independently administered financial modelling standard in use today. FAST stands for Flexible, Appropriate, Structured and Transparent models.
[5] Our responses to stakeholders' views on the consultation are set out in PR19 reconciliation rulebook consultation – final policy approach and response document. More detailed comments, for example about specific model issues, are addressed in the minor issues log annex to the responses document.

1.3 The status of this document

There are benefits to maintaining a consistent approach, therefore we will avoid undue changes to our PR19 Reconciliation Rulebook. However, there may be exceptional circumstances where changes are appropriate, for example, due to Competition and Markets Authority (CMA) redeterminations in the case of the four companies concerned or if a change due to any impact of the COVID-19 pandemic is warranted.

We are publishing the PR19 Reconciliation Rulebook as a standalone document and set of models; this will make any updates easier to make. We will consider how best to reflect any changes to our reconciliations as they arise; for example whether to change the PR19 Reconciliation Rulebook or produce bespoke, supplementary guidance for specific companies.

In letters to the sector of 19 March and 14 July 2020 we explained that we would consider the need for any ex post adjustments to our regulatory system following an in the round assessment as part of our normal reconciliation process. We stand by this commitment and so will consider the need for any ex post adjustments once there has been sufficient time to understand the impacts of the COVID-19 pandemic.

2. Implementation

This section discusses the nature of the reconciliation adjustments and provides an overview of the reconciliation process.

2.1 Nature of the reconciliation adjustments

Reconciliation adjustments can apply in three ways:

- in-period revenue adjustments which apply to revenues during the next control period, and in general will apply two years after the event has occurred;
- end-of-period revenue adjustments which will apply to revenues in the next control period, which runs from 2025 to 2030; and
- RCV adjustments which are applied through midnight RCV adjustments prior to the start of the next control period and recovered over time through the run-off of the RCV and the recovery of the allowed return on capital on the RCV balance.

Reconciliation adjustments apply to specific price controls. All water companies have a water resources, water network plus and residential retail control. Water and wastewater companies also have a wastewater network plus and bioresources control since they offer both water and wastewater services to customers. Companies wholly or mainly in Wales also have a separate business retail control due to the limited extent of competition for the business retail customers they serve.

Sections 3 and 4 of this document set out the detailed mechanics of the reconciliations. They describe the outputs, inputs and calculations involved each model. The source for each input is set out and, where the input is in a company's annual performance report (APR), it provides a reference to the relevant table and line within that table. The references are to the tables as set out in 2020-21 Regulatory Accounting Guidelines (RAGs)[6]. There will be updates to the RAGs in future years and therefore these references may not remain up to date and the source for each input should be confirmed as being correct at the point of use[7].

Table 2 lists the common PR19 reconciliations and describes:

- whether they would lead to an adjustment to revenue, RCV or both; and
- which controls the adjustments apply to.

[6] Companies must use the RAGs when completing their APRs.
[7] All references to RAG 4 in this document are to version 4.11, published on 31 March 2023 and updated 1 June 2023.

In the case of the end-of-period reconciliations, Table 2 is indicative only. We may review our approach in future, for example as part of setting the methodology for PR24.

There are also separate controls for individual companies reflecting significant investments that these companies are undertaking, including Havant Thicket Activities (for Portsmouth Water) and the Thames Tideway Tunnel (for Thames Water).

Table 2: Overview of the common[8] PR19 reconciliations

Reconciliation	Adjustment	Controls affected
In-period reconciliations		
In-period adjustments model	Revenue	Water network plus, wastewater network plus, water resources and bioresources, residential retail, business retail and the Thames Tideway Tunnel
Revenue forecasting incentive model	Revenue	Water network plus, wastewater network plus, water resources and the Thames Tideway Tunnel
Customer measure of experience – C-MeX	Revenue	Residential retail
Developer measure of experience – D-MeX	Revenue	Water network plus and wastewater network plus
Bioresources revenue reconciliation model	Revenue	Bioresources
Reconciliation	Adjustment	Controls affected
In-period and end-of-period reconciliations		
ODI performance model	Revenue (in-period and end of period) RCV (end of period)	Water network plus, wastewater network plus, water resources, bioresources, residential retail, business retail and the Thames Tideway Tunnel
End-of-period reconciliations		
Residential retail reconciliation model	Revenue	Residential retail

[8] These are reconciliations that apply to all companies or, in the case of reconciliations that apply to wastewater network plus and bioresources controls, all water and wastewater companies.

PR19 Water trading incentive model	Revenue	Water network plus and water resources
Developer services model	Revenue	Water network plus and wastewater network plus
WINEP reconciliation model	RCV	Water network plus, Wastewater network plus, water resources and bioresources
Cost of new debt reconciliation model	Revenue	Water network plus, Wastewater network plus, water resources and bioresources and Havant Thicket Activities
Gearing outperformance sharing mechanism	Revenue	Water network plus and wastewater network plus
Cost reconciliations	RCV and Revenue	Water network plus, wastewater network plus and water resources
Tax reconciliation	Revenue	Water network plus, Wastewater network plus, water resources and bioresources and Havant Thicket Activities
Land sales	RCV	Water network plus, wastewater network plus, water resources and the Thames Tideway Tunnel
RPI-CPIH wedge reconciliation model	RCV and Revenue	Water network plus, wastewater network plus, water resources and bioresources
Strategic regional water resources reconciliation model	RCV and Revenue	Water network plus and water resources
Innovation fund and competition	Revenue	Water network plus, wastewater network plus, water resources and bioresources

2.2 Overview of the reconciliation process

The reconciliation of incentives is, by definition, dependent on performance in previous years. The monetary impact of reconciliations will therefore change over the course of the 2020-25 period as actual data becomes available on an annual basis.

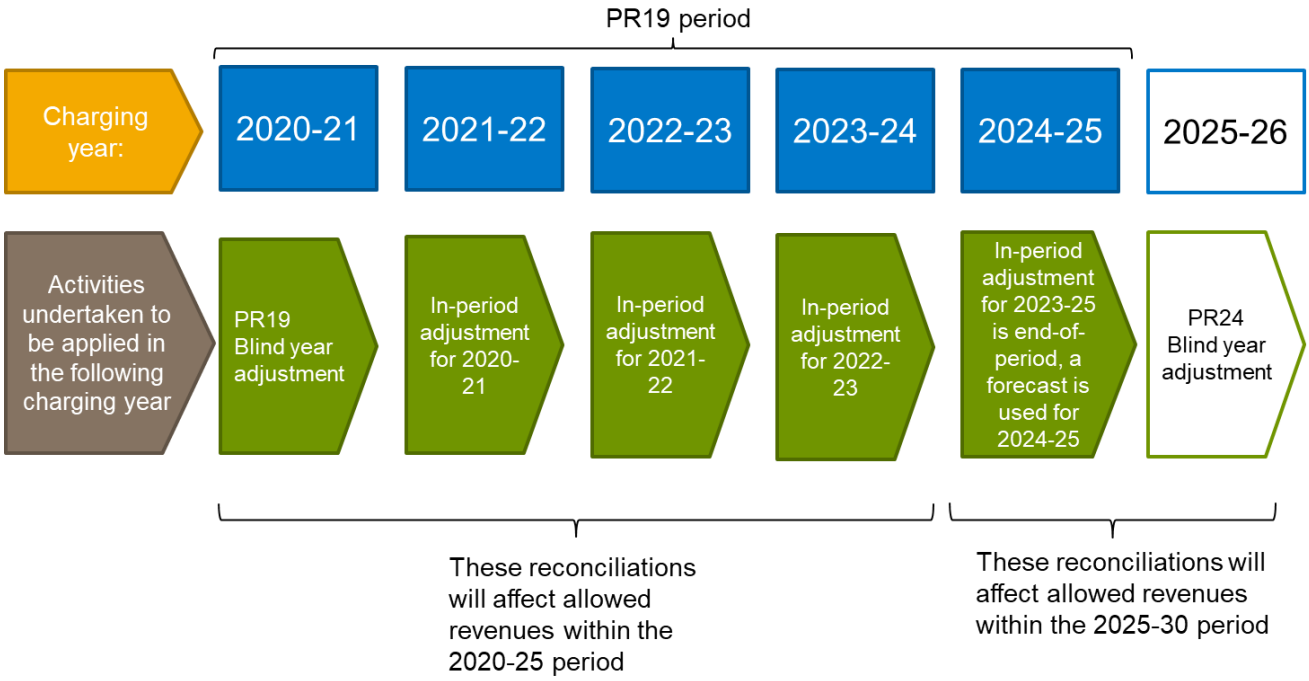
During 2020-21, the first year of the current price control period, we undertook the PR19 blind year adjustment. This reconciled company performance in 2019-20 using the end of period reconciliations from the PR14 period, taking account of actual data which became available in July 2020.

The following three charging years from 2021-22 to 2023-24 will adjust revenues for in-period adjustments. For example, in 2021-22 there will be an in-period reconciliation adjustment for company performance in 2020-21. These adjustments will be applied to revenues in 2022-23. Therefore, there will be a two-year lag between company performance and the application of adjustments to allowed revenues. A similar process will be followed in 2022-23 and 2023-24.

In 2024-25 the in-period adjustments that would apply for years 4 and 5 of the price control period (2023-24 and 2024-25) and the end-of-period adjustments will need to be calculated. These adjustments will affect allowed revenues in the 2025-30 period. In 2025-26 we expect to adjust for the 2024-25 blind year in a similar way to the adjustments for 2019-20.

Figure 1 provides an overview of the reconciliation process for the 2020-25 period. This does not include the in-period determination for ODI performance in 2024-25 which we expect will not use forecast information and instead be fully reconciled in the autumn of 2025-26.

Figure 1: Overview of the reconciliation process



2.3 The annual process

Similar to the 2019-20 blind year process, for each of the first three years of the price control period (2020-21, 2021-22 and 2022-23) we will need to adjust revenues through an annual revenue reconciliation process. This annual process involves companies submitting relevant data for all in-period reconciliations alongside their APRs.

For in-period ODIs, companies can request or Ofwat must initiate the in-period determination process by 15 August, and we must publish our in-period determination by 15 November so that companies can reflect any changes to price controls in the forthcoming charging year.

The fourth year of the price control period (2023-24) will be reconciled as part of the PR24 process which will have different timelines aligned with the wider PR24 timetable. As set out in sections 3.3 and 3.4, for in-period ODIs we intend for there to be an in-period determination for performance in the fifth year of the price control (2024-25).

Table 3 gives an overview of the key dates for the reconciliations affecting revenues within the 2020-25 period. These dates are set out in companies' licences.

Table 3: Overview of the intended annual process for 2020-23

Date	Activity
By 15 July	As set out in RAG 3.12, companies must submit data as part of the APR process to Ofwat. This data will enable the reconciliation activity to take place with updates to price controls applicable from the next charging year i.e. with a two year lag.
By 15 August	In the case of in-period ODIs, if a company seeks an in-period determination, it must ask Ofwat to do so by this date. Ofwat can also make a determination on its own initiative. We encourage companies to make applications as early as possible.
By 15 November	As set out in each company's licence, in the case of in-period ODIs, Ofwat will make the relevant determinations by this date.

We will set out further details of this process in due course.

2.4 Time value of money, inflation and taxation

2.4.1 Time value of money

We use discount rates in our reconciliations to take account of the time value of money in different situations. These adjustments are needed in order to ensure that the various revenue adjustments are Net Present Value (NPV) neutral. In other words, the lag between the time when the company incurs the revenue differential and when our price controls apply the revenue adjustment should be taken into account by recognising the time value of money between these two time periods. There are many instances where these adjustments are relevant, such as:

- to make adjustments to allowed revenue between years – for example, if there is over-recovery of revenue in a particular charging year then allowed revenue should fall in a later year and the fall should reflect a time value of money adjustment;
- to profile allowed revenue over a number of years, for example, as we propose for some PR19 blind year adjustments; or
- when a company defers the application of outcome delivery incentive payments to a future year.

The adjustment for time value of money in the context of our price control framework is important for two main reasons:

- it is important from a company financeability perspective to ensure that companies do not bear additional financing costs; and
- to ensure water companies face no financial incentives to shift money between years in a way that is detrimental to customers.

We will use the company-specific **wholesale allowed return on capital** as set out in the PR19 final determinations as the relevant discount rate for adjustments to the wholesale controls and the company-specific **appointee allowed return on capital** for adjustments to the retail price controls. The time value of money adjustment aims to ensure that the relevant discount rate is the best available proxy for how companies will raise financing over the course of the price control period.

In addition to applying time value of money adjustment over 2020-25, we will apply time value of money adjustments when profiling any end of period revenue adjustments over 2025-30 in line with the profiling options available in the **revenue adjustments feeder model**.

2.4.2 Inflation

We make inflation indexation adjustments in our reconciliations for a number of reasons. For example, to:

- move money between years (such as if there is over-recovery of revenue in a particular year which means allowed revenue should fall in a following year);
- rebase figures set in a base year e.g. 2017-18 Financial year average (FYA) CPIH deflated prices in our final determination to another price base more suitable to the relevant reconciliation; and
- deflate data submitted as part of the annual APR process which is usually in outturn (nominal) prices to a different price base more suitable to the relevant reconciliation.

Historically, we used the **retail prices index (RPI)** as the preferred measure of inflation to index price controls. In PR19, we moved to an approach where we use the **consumer prices index including owner occupiers' housing costs (CPIH)** as our preferred measure of inflation (see Appendix 12: Aligning risk and return of our PR19 methodology for background). Our move away from RPI was primarily due to its de-designation as a National Statistic, and evidence that it overstates consumer inflation. We considered CPIH to be the more legitimate index for customers, given its inclusion of housing costs (which are a significant expense for most residential customers). We also noted the Office of National Statistics' view that CPIH is its preferred inflation index.

Financial year average vs. lagged Nov-Nov CPIH inflation

Another important distinction to make beyond the relevant index to use is the distinction between the Financial Year Average (FYA) measure of inflation and the lagged November to November (Nov-Nov) measure of inflation:

- the **FYA CPIH** measure is equal to the average values of the CPIH index for each month in a charging year April-March; and
- the **lagged November to November (Nov-Nov) CPIH** measure for a charging year is based on the difference in inflation between the index value in November in the prior charging year and the November in the immediately preceding charging year.

When indexing price controls during the price control period, it is not practical to use a contemporaneous measure of inflation such as FYA because companies need to know the actual level of inflation ahead of a charging year. That is why water companies' licences and the 'Notification of the PR19 final determination of Price Controls' for each company provide for a lagged Nov-Nov inflation measure to index price controls during the period. The main advantage is that this measure is directly observable at the time when companies set charges for the forthcoming charging year (usually the autumn

prior to the charging year). This allows them to better comply with their price controls, ensuring smoother customer bill profiles and avoiding penalties e.g. under the Revenue Forecasting Incentive (RFI) due to inflation risk that is outside of their control.

To give a practical example of how the two measures operate:

- FYA CPIH – a revenue under-recovery in 2020-21 that needs to be recovered in period with a two year lag (i.e. 2022-23) will be indexed by the difference in the average monthly CPIH inflation index values for the 2020-21 financial year and the 2022-23 financial year; and
- Lagged Nov-Nov – a revenue under-recovery in 2020-21 that needs to be recovered in period with a two year lag (i.e. 2022-23) will be indexed by the difference in the monthly CPIH inflation from the year ending November 2019 to the year ending November 2021.

Our approach

In reconciling for future performance over 2020-25, we will[9]:

- Generally use the **FYA CPIH** which is the contemporaneous measure of inflation. For example, if we are inflating a value between 2021-22 and 2022-23 then we would use the difference between the average monthly CPIH index values in the two financial years. This ensures our measure of inflation is consistent with the financial value to which it relates. In practice, this approach would be used for **end-of-period reconciliations** where we will deflate outturn data submitted as part of the annual APR process to the price base most suitable to use in the relevant reconciliation model. Examples include the totex sharing model, strategic regional water solutions reconciliation and the developer services reconciliation model. These adjustments will be captured in allowed revenues at PR24.

- Use **lagged Nov-Nov CPIH** for most **in-period reconciliations** due to the need for companies to know the actual level of inflation ahead of the charging year. Therefore, we will apply this measure in the RFI model, bioresources reconciliation model, and the Havant Thicket reconciliation model as part of the in-period reconciliation process described in section 2.3. We set out our approach for the in-period adjustments model in section 3.4.

[9] The CPIH index values we will use will be based on the monthly ONS data publications.

2.4.3 Taxation

Our PR19 final methodology introduced a tax reconciliation mechanism for 2020-25, 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. This reconciliation is set out section 3.13 of this document.

However, there is a broader need to consider the tax impacts across all of the reconciliation models. In principle, each of the reconciliation models results in taxation impacts in-period over 2020-25 and end-of-period, with application over 2025-30 via the PR24 financial model. Consistent with our approach to inflation and the time value of money adjustment, our overarching policy goal is to ensure that we are not creating incentives for companies to comply with our price controls in a way that attempts to realise a tax gain. We recognise that identifying all of those impacts is not straightforward. In addition, our price control framework is set in such a way that companies might face penalties outweighing the potential tax benefit gains. Therefore, we are implementing a proportionate approach in targeting key areas where we consider that a lack of an explicit focus on tax impacts could potentially lead to undesirable customer outcomes. We consider this strikes the right balance between unnecessary complexity and customer protection.

In general, the majority of our reconciliation models have been designed without considering tax explicitly within the model. This is driven by the fact that any tax impacts are best dealt with outside of the reconciliation models in the PR24 financial model which calculates the level of efficient tax allowance for companies over the next price control period taking account of the balance of all end-of-period reconciliation adjustments. Therefore, the detailed calculations would generally be outside the scope of this rulebook with the exception of some in-period adjustments.

Table 4 below sets out the five broad categories of models in relation to tax treatment and a high-level overview of the need for tax adjustment and the rationale.

Table 4: Taxation adjustments in the reconciliation models

Adjustment type made by the reconciliations	Reconciliations	Tax adjustment required?	Rationale
1. These reconciliations adjust allowed revenue during or at the end of the control period if a company over- or under-recovers in an earlier year.	RFI; Bioresources revenue adjustment (excl. bioresources forecasting incentive); Residential retail.	No	Companies' corporation tax impacts net off between years in-period. For any balances applied as end-of-period adjustments, the implications are more complex because of the scope to claim or incur tax twice on the same reconciliation. Therefore, we do not adjust for tax on these reconciliations.
2. These reconciliations adjust allowed revenue at PR24 due to changes in costs in the 2020-25 period	RPI-CPIH wedge (revenue element); Tax reconciliation.	Yes	We generally apply a post-tax regulatory framework. A tax adjustment is required to ensure the revenue reconciliation adjustments from these models are fully taken into account for the purposes of calculating companies' efficient tax allowance in PR24.
3. The reconciliations adjust allowed revenue at PR24 due to changes in costs in the 2020-25 period	Totex sharing (revenue element); Strategic regional water resources (revenue element); Developer services model; Cost of new debt; Innovation competition.	No	We do not apply a tax adjustment to the revenue element of these reconciliations due to the possibility of claiming or incurring tax twice on the same reconciliation.

4. These reconciliations make RCV adjustments at PR24 due to changes in costs or application of incentives in the 2020-25 period.	Totex sharing (RCV element); Strategic regional water resources (RCV element); WINEP; Land sales; End-of-period ODIs (RCV); RPI-CPIH wedge (RCV element).	Yes	We adjust the amount added to RCV so that when the RCV is run-off and recovered through revenue the total amount recovered includes an appropriate allowance for tax. Although there is a possibility that companies can claim or incur tax twice on the same reconciliation for the RCV adjustments arising from totex sharing, strategic regional water resources and WINEP reconciliations (see category 3 rationale), additional complexity is introduced if we want not to adjust for tax presents a disproportionate administrative burden. Therefore, the PR24 financial model will automatically apply the aggregate midnight RCV adjustment arising from all reconciliations affecting RCV and we will not apply any further tax interventions.
5. These reconciliations incentivise companies and depend on their performance	In-period ODIs; End-of-period ODIs (revenue); C-MeX; D-MeX; Water trading, bioresources forecasting incentive; Gearing outperformance sharing.	Yes	We generally apply a post-tax regulatory framework. A tax adjustment is required to ensure the full force of these incentives is experienced by companies. For example, we should reduce companies' tax allowance at PR24 if they are subject to a bioresources forecasting penalty.

3. Details of common reconciliations

The following sections sets out the details of each common reconciliation. The main purpose is to allow companies to understand the detailed nature of the PR19 reconciliation modelling suite and the relevant requirements to run every reconciliation model.

3.1 Cost reconciliations

3.1.1 Summary

This is the model we will use at PR24 to reconcile actual performance against the totex allowances from PR19. There are two versions of this model, one includes a sheet for the Thames Tideway Tunnel control and is to be used by Thames Water only.

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, Bioresources, Thames Tideway Tunnel	Company-specific wholesale allowed return on capital

3.1.2 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. The amount of expenditure that companies will bear or retain is based on the cost sharing rates set out in table 3.7 of their final determinations.

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 adjustment 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 use the weighted average PAYG rates for each control to reflect the opex/capex profile in the company's PR19 business plans[10]. 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; wastewater network plus and Thames Tideway tunnel. 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. The wage growth adjustment is applied to all the wholesale controls.

There are special sharing rates for over or under expenditure against allowances for business rates and Environment Agency abstraction charges. These apply to all the wholesale controls.

3.1.3 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

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

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

We have included an uncertainty mechanism reconciliation for the bioresources price control. Whilst the cost sharing mechanism does not apply to this price control, we include reconciliations for business rates costs and the real price effect on wage costs.

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

3.1.4 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.

Companies' actual totex for reconciliation is calculated as set out in table 5 below.

Adjustment calculations are 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. Time value of money adjustments have been made prior to the application of sharing rates to avoid any potential incentive to delay expenditure to the later years.

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 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.

Table 5: Definition of actual net totex for the cost sharing reconciliation

Item	Reference in RAG 4.11	Notes
Actual totex	2B.26	
Total costs excluded from sharing equals the sum of the below:		
Income offset payments	2E.15/2E.27	
Non price control grants and contributions (negative number)	sum of 2E.4-6/2E.17-19/2E.29-31	
Third party services (opex)	2B.13	
Third party services (capex)	2B.20	
Other cash items	2B.25	
Pension deficit recovery costs	2B.24	
Actual expenditure on innovation projects funded through the innovation competition	9A.24	
Non-section 185 diversions	sum of 4P.9 and 4P.10	
Disallowable costs	4C.4	Note 1
2019-20 transition expenditure (negative)	4C.3	Note 2
2023-24 and 2024-25 transition and Defra accelerated programme expenditure		Note 3
Total costs with separate sharing rates		
Abstraction charges (water only)	2B.3	
Local authority and Cumulo rates	2B.8	
Strategic scheme development costs	4L.37	
CMA companies only – items with bespoke sharing rates		

Note 1 – Disallowable costs: In setting price controls, we have used an overarching principle that costs should only feature in our totex for cost sharing for activities where it is appropriate for a company to share an over (or under) spend with their customers. We define disallowable items as costs that do not conform to this overarching principle. These include:

- costs associated with impairment of other businesses;
- costs related to financing (bond issuance fees, refinancing, takeover costs);
- fines and investigation costs;
- compensation claims; and
- any other costs where the activity driving it does not, ex ante, have a reasonable expectation of customer benefit.

To allow Ofwat to exclude disallowable costs from actual submitted totex, companies must provide details of any such cost items incurred. Companies should include all such items in Table 4C of their APR, RAG 4 reference 4C.4.

Note 2 – 2019-20 Transition expenditure: Refers to expenditure incurred in 2019-20 for the delivery of outcomes in the price control period 2020-25. Although incurred in 2019-20, forecast expenditure (to account for the blind year) was included in the totex baseline. Actual totex must therefore be adjusted to incorporate the actual value of this expenditure to ensure the incentive on cost performance is retained. Transition expenditure is presented in the table as a negative value to reflect the point that it must be added to actual totex to contribute to the baseline calculation. The actual value of transition expenditure is not part of the RAGs, but was included in companies' submissions towards the blind year reconciliations. Companies submitted this information as part of the July 2020 annual reporting.

Note 3 – 2023-24 and 2024-25 transition and Defra accelerated programme expenditure: Refers to expenditure incurred in 2023-24 and 2024-25 for the delivery of outcomes in the price control period 2025-30 and as part of Defra's accelerated programme. Although incurred in 2023-24 and 2024-25, forecast expenditure was not included in the totex baseline at PR19 and instead will be funded through a midnight adjustment to the RCV in 2025. Actual totex must therefore be adjusted to remove the actual values to prevent double counting with the RCV feeder model.

3.1.5 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. The outputs for the bioresources price control will not include the 'total adjustment for cost sharing after ex ante allowance'.

#	Output	Description	Units
1	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
2	Wholesaler bad debt adjustment	The bad debt adjustment to cost sharing	£m in 2017-18 prices
3	Cost sharing revenue adjustment	The total cost sharing adjustment that is linked to revenue. This is the total adjustment for cost sharing after ex ante allowance (1) multiplied by the weighted PAYG rate plus the wholesaler bad debt adjustment (2).	£m in 2017-18 prices
4	Cost sharing RCV adjustment	The total cost sharing adjustment that is linked to RCV. This is the total adjustment for cost sharing after ex ante allowance (1) multiplied by 1 – the weighted PAYG rate	£m in 2017-18 prices
5	Active adjustment for business rates and abstraction charges uncertainty mechanism	The total adjustment related to the reconciliation of actual and forecast business rates and abstraction charges.	£m in 2017-18 prices
6	Revenue adjustment for business rates and abstraction charges	The business rates and abstraction charges adjustment that is linked to RCV. This is the total adjustment for cost sharing after ex ante allowance	£m in 2017-18 prices

#	Output	Description	Units
		(5) multiplied by the weighted PAYG rate.	
7	RCV adjustment for business rates and abstraction charges	The business rates and abstraction charges adjustment that is linked to RCV. This is the total adjustment for cost sharing after ex ante allowance (5) multiplied by 1 – the weighted PAYG rate.	£m in 2017-18 prices

Inputs

Input values will be obtained from the PR19 final determinations, companies' APRs 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. Table 3.2 base costs	£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 control).	PR19 final determinations for company. Enhancement aggregator model, water enhancements tab, column CE.	£m in 2017-18 prices
3	WINEP / NEP ~ In-the-Round	Allowed WINEP / NEP enhancement costs (only applicable for wastewater network plus control).	PR19 final determinations for company. Enhancement aggregator model, wastewater enhancements tab, column T.	£m in 2017-18 prices

#	Input	Description	Source	Units
4	Opex split profile (base costs)	Opex profile for base opex after known adjustments.	PR19 opex/capex split model – rows 115 to 119 columns C to L	%
5	Capex split profile (base costs)	Capex profile for base capex after known adjustments.	PR19 opex/capex split model – rows 115 to 119 columns C to L	%
6	Opex split profile for cost sharing	Opex profile for opex for cost sharing after known adjustments.	Financial flows data source – opex split of net totex expressed as a percentage of the total	%
	Capex split profile for cost sharing	Capex profile for capex for cost sharing after known adjustments.	Financial flows data source – capex split of net totex expressed as a percentage of the total	%
7	Business Rates & Abstraction Charges forecast profile	Business Rates & Abstraction Charges forecast profile as per PR19 final determination.	20% - same allowance in each year of AMP	%
8	Net totex for cost sharing reconciliation – actual	See calculation of net totex in section 3.1.4 table 5. Value required for each year from 2020-21 to 2024-25.	Company's APR. Table 4C, RAG 4 reference 4C.5/ company's PR24 data submissions.	£m in outturn prices
9	Net totex available for cost sharing – allowed	Company's allowed totex for water resources and water network plus controls, net of price control grants and contributions, allowed totex for business rates and	PR19 final determinations for company. Table 3.7 of the final determinations	£m in 2017-18 prices

#	Input	Description	Source	Units
		Environment Agency abstraction licence fees. Value required for each year from 2020-21 to 2024-25.		
10	Business rates – Forecast allowed	Company's totex allowance for business rates. Value required for each year from 2020-21 to 2024-25.	PR19 final determinations for company. Feeder model 4: Wholesale water – Water resources and water N+ cost allowances and Feeder model 4: Wholesale wastewater – Bioresources and wastewater N+ cost allowances	£m in 2017-18 prices
11	Abstraction charges – Forecast allowed	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. Feeder model 4: Wholesale water – Water resources and water N+ cost allowances	£m in 2017-18 prices
12	Business rates - Actual	Company's actual business rate costs. Value required for each year from 2020-21 to 2024-25.	Company's APR. Table 2B, RAG 4 reference 2B.8 / company's PR24 data submissions.	£m in outturn prices

#	Input	Description	Source	Units
13	Abstraction charges - Actual	Company's actual Environment Agency abstraction licence fee costs. Value required for each year from 2020-21 to 2024-25.	Company's APR. Table 2B, RAG 4 reference 2B.3 / company's PR24 data submissions.	£m in outturn prices
14	Weighted average PAYG rate	Weighted average PAYG rate as calculated in the PR19 PAYG model.	PR19 PAYG model	%
15	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
16	Inflation	CPIH inflation index values.	ONS data publication.	Index value
17	OBR Forecast wage growth	OBR Forecast wage growth used in PR19 final determinations.	PR19 cost assessment technical appendix.	%.
18	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
19	Percentage totex linked to wage growth	The percentage of totex assumed to be wage costs.	Set at 38.6% in PR19 final determinations.	%
20	Outperformance Rate	The company's totex sharing percentage for over under expenditure.	PR19 final determinations cost sharing model	%
21	Underperformance Rate	The company's totex sharing percentage for under over expenditure.	PR19 final determinations cost sharing model	%
22	Cost sharing rates Abstraction and Business rates –	Company sharing percentage for under / over expenditure on business	Set at 25% in PR19 final determinations.	%

#	Input	Description	Source	Units
	Overperformance / Underperformance	rates and Environment Agency abstraction licence fees.		
23	WACC	Company's specific WACC value.	Derived from PR19 final determination	%
24	WINEP/NEP reconciliation adjustment	Company's specific adjustment to allowed totex for WINEP/NEP.	Output from the WINEP/NEP reconciliation model, before adjusting for the time value of money	£m in 2017-18 prices
25	Business retail bad debt liability due to covid liquidity measures	Outstanding amount after taking account of securities and credit protections		£m
26	Total wholesaler liability	Total wholesaler liability, pre totex sharing		£m
27	Allowance for CMA excluded items	Totex allowed by the CMA for items that have bespoke sharing rates	CMA final redeterminations / companies' PR24 submissions	£m in 2017-18 prices
28	Actual totex for CMA excluded items	Actual totex incurred on items with bespoke sharing rates set by the CMA	Companies' PR24 submissions	£m in outturn prices
29	CMA excluded items sharing rate	Company bespoke cost sharing rates for items set by the CMA	CMA final redeterminations / companies' PR24 submissions	%

#	Input	Description	Source	Units
30	Performance related pay recovery mechanism	Adjustment resulting from our decision under performance related pay recovery mechanism	Ofwat	£m, nominal prices
31	Actual green recovery expenditure	Actual expenditure on schemes funded under the green economic recovery	Companies' APRs tables 4S and 4T	£m, nominal prices
32	Total adjusted cost allowance	Adjusted cost allowance for green recovery schemes	Green recovery cost allowance adjustment model	£m, 2017-18 prices
33	Green recovery outperformance rate	Company cost sharing rate for outperformance on green recovery schemes	10%, Green recovery final decisions document	%
34	Green recovery underperformance rate	Company cost sharing rate for underperformance on green recovery schemes	Green recovery final decisions document, section 3.2	%@

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

#	Calculation overview	Calculation detail
		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 (wastewater only) to find totex available for wage indexation adjustment.
4	Profile for totex for wage adjustment	Profile totex 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	Wage totex overfunded/unfunded at PR19	Apply a time value of money adjustment to the variance calculated in step 7 using the company specific WACC for PR19 and change the sign to signify the amount that was over or underfunded at PR19.
Cost sharing on net totex for cost sharing		
9	Convert actual net totex to real prices	Convert actual net totex from nominal to real prices using CPIH

#	Calculation overview	Calculation detail
10	Convert actual performance related pay recovery mechanism adjustment to real prices	Convert actual performance related pay recovery mechanism adjustment from nominal to real prices using CPIH
11	Adjust actual net totex for cost sharing by performance related pay recovery mechanism adjustment	Adjust actual net totex for cost sharing by performance related pay recovery mechanism adjustment
12	Adjust forecast net totex for cost sharing by wage growth variance, performance related pay recovery mechanism adjustment and WINEP reconciliation adjustment	Calculate total net totex available for cost sharing by adding the variance to forecast wage linked totex (in step 7 above) and performance related pay recovery mechanism adjustment (in step 10 above) to PR19 net totex available for cost sharing.
13	Profile forecast net totex for cost sharing	Profile totex based on totex profile from the PR19 opex/capex model.
14	Variance to forecast net totex for cost sharing	Calculate variance between profiled forecast in step 9 and actual net totex for cost sharing in step 10.
15	Variance to forecast net totex for cost sharing – Time adjusted	Apply a time value of money adjustment using the company specific WACC for PR19.
16	Calculate the active costs sharing rate	Calculate whether to use to under/over performance rate for the cost sharing calculation. For Water Resources and Water Network the variance are combined to ensure a combined wholesale water rate for both controls.
17	Under / Overperformance on net totex for cost sharing	Calculate the active cost sharing adjustment using the sharing rate calculated in step 13 and then to the variance calculated in step 12.

#	Calculation overview	Calculation detail
CMA excluded items		
18	Convert actual totex for CMA excluded items to real prices	Convert actual totex from nominal to real prices using CPIH
19	Variance to CMA allowed totex	Calculate the variance between CMA allowed totex and actual totex on items with bespoke sharing rates
20	Variance to CMA allowed totex – time adjusted	Apply a time value of money adjustment to the variance between allowed and actual totex using the company specific WACC for PR19.
21	Under / overperformance - items with bespoke sharing rates	Calculate whether a company has under-/over-performed against the CMA's allowance and apply the appropriate cost sharing rate to the variance calculated in step 28.
Total adjustment for cost sharing		
22	Calculate total cost sharing adjustment after ex ante allowance and over/underfunded wage allowance and performance related pay recovery mechanism adjustment	Adjusted the cost sharing adjustment calculated in 17 by any time adjusted ex ante allowance allowed at PR19, performance related pay recovery mechanism adjustment and over/underfunded wage related totex.
23	Variance of embedded bad debt liability to cap	Calculate a company's exposure to business retail bad debt embedded in the cost sharing adjustment compared to the cap imposed as part of the business retail bad debt liquidity measures as a result of COVID-19.
Apportion Revenue and RCV cost sharing adjustments		
24	Revenue cost sharing adjustment	Apply average PAYG rate to total adjustment after ex ante allowance (15) plus the bad debt adjustment (16)
25	RCV cost sharing adjustment	Apply the remaining total adjustment to RCV adjustments (15)

#	Calculation overview	Calculation detail
Business rates and abstraction charges uncertainty mechanism		
26	Business rates & abstraction charges totex	Sum the business rates and abstraction charge forecast from PR19 final determinations and company actuals from APR data.
27	Profile total forecast business rates and abstraction charges	Profile forecast business rates and abstraction charges based on the PR19 FD.
28	Convert actual business rates and abstraction charges to real prices	Convert actual business rates and abstraction charges from nominal to real prices using CPIH
29	Variance to forecast business rates and abstraction charges	Calculate variance between profile forecast business rates and abstraction charges (step 123) and actual business rates and abstraction charges (step 24).
30	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.
31	Under / Overperformance business rates and abstraction charges	Calculate whether a company has under-/over-performed against the PR19 allowance and apply the appropriate cost sharing rate to the variance calculated in step 25.
Apportion Revenue and RCV Business Rates and Abstraction Charges adjustments		
32	Revenue cost sharing adjustment	Apply average PAYG rate to business rates and abstraction charges adjustment (step 26)
33	RCV cost sharing adjustment	Apply the remaining business rates and abstraction charges adjustment to RCV adjustments.

#	Calculation overview	Calculation detail
Green recovery		
34	Convert actual green recovery expenditure to real prices	Convert actual expenditure from nominal to real prices using CPIH
35	Variance to total adjusted cost allowance	Calculate variance between actual green recovery expenditure in step 34 and adjusted cost allowance.
36	Variance to total adjusted cost allowance - Time adjusted	Apply a time value of money adjustment using the company specific WACC for PR19.
37	Calculate the active costs sharing rate	Calculate whether to use to under/over performance rate for the cost sharing calculation. For Water Resources and Water Network the variance are combined to ensure a combined wholesale water rate for both controls.
38	Under / Overperformance on net totex for cost sharing	Calculate the active cost sharing adjustment using the sharing rate calculated in step 37 and then to the variance calculated in step 36.

3.2 Innovation fund and competition

3.2.1 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 collectively-funded innovation competitions. 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.

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

3.2.2 Background and purpose

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 our August 2020 decision document, we confirmed further details around the £200m innovation fund and competition. We set out our expectation around how the funding will be ring fenced and administered in a way 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.

3.2.3 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**. Companies may not spend the totality of the innovation competition funding provided through PR19, either because there have not been sufficient projects of high quality to be awarded all the funding, the competition is halted and/or because individual projects have experienced an underspend. In such circumstances, all unused funds will be returned to customers, except insofar as:

  - a decision is made by Ofwat 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 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.

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.

3.2.4 Mechanism structure – calculations

The model is a whole industry model with inputs and outputs for all companies housed within one model. The model will be run by Ofwat at the end of the AMP. Allocated funding will be pre-populated in the model and converted into outturn prices values to be consistent with the remaining inputs and calculations. The final adjustment will be in 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	Allowed innovation competition fund price control revenue - for each company in each year 2020-21 to 2024-25	Pre-Populated PR19 final determinations	£m in Real prices.
2	Total Funding transferred for innovation - for each company in each year 2020-21 to 2024-25	Company's APR. Table 9A, RAG 4 reference 9A.6	£m in Nominal prices.
3	Bids awarded for innovation competition- for each company in each year 2020-21 to 2024-25	Company's APR. Table 9A, RAG 4 reference 9A.24	£m in Nominal prices.

#	Input	Source	Units
4	Total actual project spend to date on innovation projects- for each company in each year 2020-21 to 2024-25	Company's APR. Table 9A, RAG 4 reference 9A.24	£m in Nominal prices.
5	Allowed future expenditure on innovation projects- for each company in each year 2020-21 to 2024-25	Company's APR. Table 9A, RAG 4 reference 9A.24	£m in Nominal prices.
6	Administrative charge for innovation partner	Company's APR. Table 9A, RAG 4 reference 9A.8	£m in Nominal prices.
7	Company's specific wholesale WACC value.	Derived from PR19 final determination	%
8	Indexation CPIH	Consumer Price Index (including housing costs) as published	Index

Calculations

#	Calculation overview	Calculation detail
1	Allocated funding adjustment from real to nominal prices	Inflation values are used to convert values from real 2017-18 FYA CPIH into outturn prices
2	Total spend to date	The combined total and any project expenditure to date and administrative costs
3	Total unused funding	The difference between the total allocated funding and the funding transferred to successful bids
4	Total underspends	The difference between funding awarded for successful bids and the total spend to date and allowed future expenditure.
5	Total to be redistributed	Calculates the total amount to be redistributed to individual companies'

#	Calculation overview	Calculation detail
		customers in line with the original allocation methodology set out in the PR19 final determinations.
6	Adjustment from nominal to real prices	Inflation values are used to convert values from outturn prices into real 2017-18 FYA CPIH

3.3 ODI performance model

3.3.1 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[12].

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

3.3.2 Background and purpose

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

There are 680 performance commitments across the 17 largest water companies. 464 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, 351 performance commitments have 'in-period ODIs' which bring ODI payments closer in

[12] Or subsequently revised by the Competition and Markets Authority's redetermination in 2021 and for Anglian Water in 2021, our final determination for an interim adjustment to the level of price controls.

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.

79 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.

3.3.3 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 2020-25 period.

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.

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.

3.3.4 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.

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. There may be occasions when companies need to use the override function within the ODI model to obtain the correct ODI payment.

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 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 use in the PR24 business plan containing forecast performance for 2024-25 so that we can apply this adjustment as part of PR24. Due to the timing of this adjustment, 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 6.

Table 6: 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 consistently with previous years (i.e. it is applied to the sum of outperformance payments that are paid in-period or end of period).

3.3.5 Mechanism structure – calculations

We describe some of the key mechanisms within selected worksheets within the ODI performance model below.

Outputs

'Model outputs – Aggregate level' 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

#	Input	Description	Source	Units
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 opening and closing balance, in 2017-18 prices.	Company input	£m (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)

#	Input	Description	Source	Units
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

The worksheet is a duplicate of the 'Company PC inputs' and 'Ofwat PC_Interventions'. The 'InpPerformance' worksheet will display what is entered in the 'Company PC input' worksheet unless there is an entry on the 'Ofwat PC Interventions' worksheet, in which case it will display the latter.

Actual performance in the 'Company PC inputs' sheet is automatically populated from a company's entries in the Annual Performance Report tables 3A and 3B that are integrated within the same spreadsheet.

#	Input	Description	Source	Units
1	Actual performance	Actual, outturn performance in the relevant reporting year to be reported by the company.	Company input	Performance commitment unit
2	Baseline (if applicable)	Baseline for performance commitments that are specified	Company input	Underlying unit for the

#	Input	Description	Source	Units
		as a percentage difference to a baseline, but which the ODI is specified in terms of the unit that the baseline is specified in.		baseline and ODI
	Validation Check if using HH:MM:SS format that entered to the nearest second	Calculations to provide verification that performance commitments with HH:MM:SS format are entered to the nearest second		
3	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
4	Performance commitment name	Performance commitment name as per the final determination 'Outcomes performance commitment appendix' for each company.	PR19 final determination – outcomes performance commitment appendix	Text
5	ODI is calculated in decimal minutes, but the performance commitment is specified in HH:MM:SS	Functionality so that water supply interruptions, leakage and PCC can be calculated where the ODI calculation is not directly based on reporting required by the performance commitment definition. TRUE if water supply interruptions, leakage or PCC.	Company input based on PR19 final determination – outcomes performance commitment appendix	TRUE or FALSE
6	ODI is calculated as a percentage difference to a baseline	Functionality so that leakage and PCC can be calculated where the ODI calculation is based on the underlying unit of measurement, but the PC is defined as a percentage change	Company input based on PR19 final determination – outcomes performance	TRUE or FALSE

#	Input	Description	Source	Units
		from a baseline. TRUE if leakage or PCC.	commitment appendix	
7	Standard outperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
8	Enhanced outperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
9	Additional outperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
10	Standard underperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
11	Enhanced underperformance payments – override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
12	Additional underperformance payments - override	Override inputs which the company should use for non-standard / complex ODI calculations.	Company input	£m (2017-18 prices)
13	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	Actual performance (rounded unless HH:MM:SS unit is used)	Rounds performance to specified requirements where required.
2	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.
3	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.
4	Has the company outperformed beyond the 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.
5	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.
6	Applying outperformance deadband (if relevant)	Difference between actual performance and outperformance deadband, if the deadband is applicable.
7	Adjustment for ODIs not directly based on underlying performance commitment	Block provides additional calculations for water supply interruptions, leakage and PCC where the ODI calculation is not directly based on reporting required by the performance commitment definition.
8	Standard outperformance payments	This formula calculates the outperformance payment due for the performance commitment.

#	Calculation overview	Calculation detail
9	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.
10	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.
11	Has the company underperformed beyond the 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.
12	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.
13	Applying underperformance deadband (if relevant)	Difference between actual performance and underperformance deadband, if the deadband is applicable.
14	Adjustment for ODIs not directly based on underlying performance commitment	Block provides additional calculations for water supply interruptions, leakage and PCC where the ODI calculation is not directly based on reporting required by the performance commitment definition.
15	Standard underperformance payments	This formula calculates the underperformance payment due for the performance commitment.
16	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).
17	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

#	Calculation overview	Calculation detail
		water or wholesale wastewater regulatory equity by the enhanced outperformance rate to establish the appropriate level of the cap.
18	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.
19	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.
20	Enhanced outperformance range	Difference between enhanced outperformance cap and enhanced outperformance threshold, if applicable.
21	Adjustment for ODIs not directly based on underlying performance commitment	Block provides additional calculations for water supply interruptions, leakage and PCC where the ODI calculation is not directly based on reporting required by the performance commitment definition.
22	Enhanced outperformance payments	This formula calculates the enhanced outperformance payment due for the performance commitment.
23	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.
23	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.
24	Enhanced underperformance range	Difference between enhanced underperformance collar and enhanced underperformance threshold, if applicable.
25	Adjustment for ODIs not directly based on underlying performance commitment	Block provides additional calculations for water supply interruptions, leakage and PCC where the ODI calculation is not directly based on reporting required by the performance commitment definition.

#	Calculation overview	Calculation detail
26	Enhanced underperformance payments	This formula calculates the enhanced underperformance payment due from this performance commitment.
27	Cost recovery mechanism applies this year?	This restates whether a cost recovery mechanism is applicable from above in the model.
28	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.
29	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.
30	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).
31	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).
32	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.
33	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.
34	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.

#	Calculation overview	Calculation detail
35	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.
36	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.
37	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.
38	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.
39	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.
40	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.
41	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.

3.3.6 Implementation

As we set out in the Consultation on regulatory reporting for 2020-21 – Responses document we have integrated the ODI performance model and APR tables, by which we mean the model will be part of the same spreadsheet as the APR tables. Companies will therefore use this model to calculate ODI payments each year. We will keep the ODI performance model updated and companies should use the latest version. For example, companies should use version 1.10 for reporting 2022-23 ODI performance.

The outputs of the net adjustment for each price control for in-period ODIs from the ODI performance 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 ODI payments that are calculated in this model, we will apply those adjustments in the relevant PR24 model.

3.4 In-period adjustments model

3.4.1 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

3.4.2 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.

3.4.3 Nature of the reconciliation

This model takes outputs from the ODI performance model (see section 3.3) as well as the C-MeX and D-MeX models (see sections 3.5 and 3.6) 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.

3.4.4 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.

We will use a forecast of lagged November to November CPIH. We will not 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. To ensure this is as accurate as possible, we will use a range of sources to inform our decisions, including those put forward by companies, and publicly available short-term inflation forecasts from reputable sources as applied in the PR19 final determinations.[13]

[13] See section 2 of 'PR19 final determinations: Allowed return on capital technical appendix'.

Tax

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

We will continue to make an adjustment for the marginal rate of 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 set out their expected marginal tax rate for the following charging year in their requests for an in-period determination, including whether they expect to pay corporation tax and any capital allowances, with appropriate evidence. We will take this information into account when making our determination, as well as upcoming changes to tax policies and any other relevant factors.

The marginal rate of tax that a company pays in the following charging year may differ from the assumption made in our in-period determinations. If there is a material impact on either customers or companies we will reconcile the differences at the 2024 price review (PR24) to ensure that neither customers nor companies over- or underpay due to a late change in tax rates relative to the assumptions made in 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 will continue to only apply a time value of money adjustment to in-period ODIs when they are deferred to future years. We will 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 at an appointee level, 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 TR_t where TR_t is the total unadjusted allowed revenue for the relevant year;
- for the **bioresources control**, we add net ODI payments to UR_t where UR_t is unadjusted revenue for the relevant year; and
- for the **business retail control**, we add net ODI payments to the rc_t of each customer type where rc_t is the allowed average retail cost component; as set out in section 4.1 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. We subsequently undertook a 'blind year' adjustment to account for the difference between forecast and actual performance in 2019-20.

For in-period ODIs in the 2020-25 period, we do not intend to make a blind year adjustment for performance in 2024-25. Instead 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 make any subsequent blind year adjustment for in-period ODIs.

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 incentives to over or under recover within the RFI calculation.

3.4.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1	K-based controls – revised K	The revised K factors for the water resources, water network plus, wastewater network plus,	Number to two

#	Output	Description	Units
		and dummy price controls, for the relevant reporting years.	decimal places
2	Bioresources (sludge) – revised unadjusted revenue (**URt**)	The revised total bioresources revenue, in £m, in 2017-18 FYA CPIH prices.	£m, 2017-18 FYA CPIH prices
3	Residential retail – revised total revenue (TRt)	The revised total residential retail revenue, in £m, in nominal prices, for the relevant reporting year.	£m, nominal prices
4	Business retail – revised allowed average retail cost component (rct)	The business retail revised allowed average retail cost component, by customer type, in £, in nominal prices, for the relevant reporting year.	£, nominal prices
5	ODI payments deferred until next reconciliation year	ODI payments deferred until the next reconciliation year, by price control, in £m, in 2017-18 FYA CPIH prices.	£m, 2017-18 FYA CPIH prices

Inputs

Companies should complete the 'InpCompany' sheet as part of their request for an in-period determination. We expect to use the 'InpOfwat' sheet as part of our interventions and proposed decisions during the in-period determination process.

#	Input	Description	Source	Units
1	Company name	Company name to be selected from the dropdown menu.	Company	Text
2	Reporting year	Financial year in which the performance took place, selected from a dropdown menu.	Company	Financial year
3	Price base for ODI rates	Preselected reporting year is 2017-18 and should not be changed.	Ofwat	Financial year

#	Input	Description	Source	Units
4	Net ODI payments – water resources	Company input of its water resources ODI payments.	Company	£m (2017-18 FYA CPIH prices)
5	Net ODI payments – water network plus	Company input of its water network plus ODI payments.	Company input from the ODI performance model	£m (2017-18 FYA CPIH prices)
6	Net ODI payments – wastewater network plus	Company input of its wastewater network plus ODI payments	Company input from the ODI performance model	£m (2017-18 FYA CPIH prices)
7	Net ODI payments – bioresources (sludge)	Company input of its bioresources ODI payments.	Company input from the ODI performance model	£m (2017-18 FYA CPIH prices)
8	Net ODI payments – residential retail	Company input of its residential retail ODI payments.	Company input from the ODI performance model	£m (2017-18 FYA CPIH prices)
9	Net ODI payments – business retail	Company input of its business retail ODI payments.	Company input from the ODI performance model	£m (2017-18 FYA CPIH prices)
10	Net ODI payments – dummy control	Company input of its dummy control (where applicable) ODI payments.	Company input from the ODI performance model	£m (2017-18 FYA CPIH prices)
11	Other in-period payments – C-MeX	Company input of its in-period C-MeX payments.	Company input from	£m (2017-18 FYA CPIH prices)

#	Input	Description	Source	Units
			the C-MeX model	
12	Other in-period payments – D-MeX (water network plus)	Company input of its in-period D-MeX (water network plus) payments.	Company input from the D-MeX model	£m (2017-18 FYA CPIH prices)
13	Other in-period payments – D-MeX (wastewater network plus)	Company input of its in-period D-MeX (wastewater network plus) payments.	Company input from D-MeX model	£m (2017-18 FYA CPIH prices)
14	ODI payments deferred from previous reconciliation year – water resources	Company input of its water resources ODI payments deferred from the previous reconciliation year.	Company input from Ofwat in-period determination	£m (2017-18 FYA CPIH prices)
15	ODI payments deferred from previous reconciliation year – water network plus	Company input of its water network plus ODI payments deferred from the previous reconciliation year.	Company input from Ofwat in-period determination	£m (2017-18 FYA CPIH prices)
16	ODI payments deferred from previous reconciliation year – wastewater network plus	Company input of its wastewater network plus ODI payments deferred from the previous reconciliation year.	Company input from Ofwat in-period determination	£m (2017-18 FYA CPIH prices)
17	ODI payments deferred from previous reconciliation year – bioresources (sludge)	Company input of its bioresources ODI payments deferred from the previous reconciliation year.	Company input from Ofwat in-period determination	£m (2017-18 FYA CPIH prices)
18	ODI payments deferred from previous	Company input of its residential retail ODI payments deferred from the previous reconciliation year.	Company input from Ofwat in-	£m (2017-18 FYA CPIH prices)

#	Input	Description	Source	Units
	reconciliation year – residential retail		period determination	
19	ODI payments deferred from previous reconciliation year – business retail	Company input of its business retail ODI payments deferred from the previous reconciliation year.	Company input from Ofwat in-period determination	£m (2017-18 FYA CPIH prices)
20	ODI payments deferred from previous reconciliation year – dummy control	Company input of its dummy control (where applicable) ODI payments deferred from the previous reconciliation year.	Company input from Ofwat in-period determination	£m (2017-18 FYA CPIH prices)
21	Voluntary abatements – water resources	Company input of the outperformance payments it proposes to not receive (water resources).	Company input	£m (2017-18 FYA CPIH prices)
22	Voluntary abatements – water network plus	Company input of the outperformance payments it proposes to not receive (water network plus).	Company input	£m (2017-18 FYA CPIH prices)
23	Voluntary abatements – wastewater network plus	Company input of the outperformance payments it proposes to not receive (wastewater network plus).	Company input	£m (2017-18 FYA CPIH prices)
24	Voluntary abatements – bioresources (sludge)	Company input of the outperformance payments it proposes to not receive (bioresources (sludge)).	Company input	£m (2017-18 FYA CPIH prices)
25	Voluntary abatements – residential retail	Company input of the outperformance payments it proposes to not receive (residential retail).	Company input	£m (2017-18 FYA CPIH prices)
26	Voluntary abatements – business retail	Company input of the outperformance payments it proposes to not receive (business retail).	Company input	£m (2017-18 FYA CPIH prices)

#	Input	Description	Source	Units
27	Voluntary abatements – dummy control	Company input of the outperformance payments it proposes to not receive (dummy control).	Company input	£m (2017-18 FYA CPIH prices)
28	Voluntary deferrals – water resources	Company input of the ODI payments is proposes to defer to the next reconciliation year (water resources).	Company input	£m (2017-18 FYA CPIH prices)
29	Voluntary deferrals – water network plus	Company input of the ODI payments is proposes to defer to the next reconciliation year (water network plus).	Company input	£m (2017-18 FYA CPIH prices)
30	Voluntary deferrals – wastewater network plus	Company input of the ODI payments is proposes to defer to the next reconciliation year (wastewater network plus).	Company input	£m (2017-18 FYA CPIH prices)
31	Voluntary deferrals – bioresources (sludge)	Company input of the ODI payments is proposes to defer to the next reconciliation year (bioresources (sludge)).	Company input	£m (2017-18 FYA CPIH prices)
32	Voluntary deferrals – residential retail	Company input of the ODI payments is proposes to defer to the next reconciliation year (residential retail).	Company input	£m (2017-18 FYA CPIH prices)
33	Voluntary deferrals – business retail	Company input of the ODI payments is proposes to defer to the next reconciliation year (business retail).	Company input	£m (2017-18 FYA CPIH prices)
34	Voluntary deferrals – dummy control	Company input of the ODI payments is proposes to defer to the next reconciliation year (dummy control).	Company input	£m (2017-18 FYA CPIH prices)
35	Discount rate – wholesale allowed	Prepopulated based on the company's final determination.	Ofwat	Percentage to two

#	Input	Description	Source	Units
	return on capital, real CPIH			decimal places
36	Discount rate – appointee allowed return on capital, real CPIH	Prepopulated based on the company's final determination.	Ofwat	Percentage to two decimal places
37	Years of delay for referrals	Prepopulated as 1 based on Ofwat policy.	Ofwat	Number to zero decimal places
38	Marginal tax rate	Company input of its expected marginal rate of corporation tax for the year when the revenue adjustments will be applied – for example, for performance in 2020-21, the marginal tax rate should be inputted in the column for 2022-23.	Company input	Percentage to two decimal places
39	November CPIH index	Company input of November CPIH index. The November CPIH index should be included in its own financial year (i.e. November 2019 CPIH should be inputted in the column for 2019-20). Where actual inflation is not available, a forecast should be provided.	Company input from the Office for National Statistics	Number to one decimal place
40	Monthly CPIH index	Prepopulated monthly CPIH data for the 2017-18 financial year.	Ofwat	Number to one decimal place
41	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 prices, to three decimal places
42	Water resources – K factors (last determined)	Company input of its water resources K factors from 2020-21 to 2024-25 from its final	Company input	Number to two decimal places

#	Input	Description	Source	Units
		determination or as updated following any interim or in-period determinations in the 2020-25 period.		
43	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 prices, to three decimal places
44	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	Number to two decimal places
45	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 prices, to three decimal places
46	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	Number to two decimal places
47	Bioresources – unadjusted 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 FYA CPIH prices, to three decimal places

#	Input	Description	Source	Units
48	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, to three decimal places
49	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 prices, to two decimal places
50	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
51	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
52	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 prices to three decimal places

#	Input	Description	Source	Units
53	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	Number to two decimal places

Calculations

Abatements and deferrals sheet

#	Calculation overview	Calculation detail
1	Net payments to be applied this year (by price control)	This block of formulae adds the ODI payments earned in the year of performance, other in-period adjustments (where applicable) and ODI payments deferred from the previous reconciliation year to give the net payments to be applied this year.
2	Unadjusted payments after abatements	For outperformance payments only, this block of formulae calculates the unadjusted payments after accounting for abatements.
3	Unadjusted payments after abatements and deferrals	This block of formulae calculates the unadjusted payments after accounting for abatements and deferrals.
4	Deferred payments for next reconciliation year (wholesale controls)	This block of formulae applies a time value of money adjustment to the deferred payments for the next reconciliation year for the wholesale controls. It uses the wholesale allowed return on capital.
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 reconciliation year for the retail controls. It uses the appointee allowed return on capital.
6	Payments after abatements and deferrals (2017-18 November CPIH prices)	This block of formulae applies an inflation adjustment to payments that are to be applied this reporting year so that prices are deflated from 2017-18 FYA CPIH prices to 2017-18 November CPIH prices.

Water resources sheet (calculation overview and detail are the same for water network plus, wastewater network plus and dummy 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	Payments after abatements and deferrals	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.

Bioresources (sludge) sheet

#	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	Payments after abatements and deferrals	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 £m (2017-18 prior Nov CPIH prices)	This formula deflates the ODI value from nominal prices to Nov CPIH prices.
9	ODI value in £m (2017-18 FYA CPIH prices)	This formula deflates the ODI value to the relevant price based of the bioresources control as set in the final determinations.
10	Revised unadjusted revenue (URt)	This formula adds the total value of the ODI (including tax adjustment) to the unadjusted revenue in the last determination.

Residential retail sheet

#	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	Payments after abatements and deferrals	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.

Business retail sheet

#	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	Payments after abatements and deferrals	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.

3.4.6 Implementation

This model will be used 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. In their submissions, companies should ensure they provide appropriate evidence in line with the expectations set out above and in any future guidance.

We then expect to use a copy of this model to clearly set out the impact of any proposed interventions and decisions.

3.5 Customer measure of experience (C-MeX)

3.5.1 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

3.5.2 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**.

3.5.3 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 performance commitments with 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.

3.5.4 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).

3.5.5 Mechanism structure – calculations

Outputs

#	Output	Description	Units
1	Performance payments (total)	Revenue adjustment to reflect outperformance or underperformance payments for each company from C-MeX in the reporting year.	£m, in 2017-18 FYA CPIH prices, to three decimal places

Inputs

#	Input	Description	Source	Units
1	Inputs – Company name	Company names	Company	Text
2	Inputs – Annual C-MeX scores	Annual C-MeX scores for each company	Agent	Number, to two decimal places
3	Inputs – Number of complaints	Each company's total household complaints per 10,000 connections	Company's APR. Table 3C, RAG 4 reference 3C.7	Number, to two decimal places
4	Inputs – Company UKCSI scores	Each company's UKCSI score from the relevant UKCSI release	UKCSI/Ofwat	Number, to two decimal places
5	Inputs – Upper quartile of all sector UKCSI scores	An upper quartile of all-sector UKCSI scores from the relevant UKCSI release	UKCSI/Ofwat	Number, to two decimal places
6	Inputs – Allowed revenue	Each company's annual allowed residential retail revenue for the year of performance	Annual allowed residential retail revenue (as set out in the company's 'Allowed revenue appendix' or as updated following any interim determinations or in-period ODI adjustments in	£m, nominal prices, to three decimal places

#	Input	Description	Source	Units
			the 2020-25 period). This revenue is to be in nominal prices, not adjusted for inflation. This revenue figure is not to be adjusted for changes in customer numbers.	
7	Inputs – Maximum standard outperformance rates	Decided by Ofwat in the PR19 final determinations	Ofwat	%
8	Inputs – Maximum standard underperformance rates	Decided by Ofwat in the PR19 final determinations	Ofwat	%
9	Inputs – One of the top 'x' performers on C-MeX	Decided by Ofwat in the PR19 final determinations	Ofwat	Number
10	Inputs – Higher performance rate for top ranked company	Decided by Ofwat in the PR19 final determinations	Ofwat	%
11	Inputs – Higher performance rate for second ranked company	Decided by Ofwat in the PR19 final determinations	Ofwat	%
12	Inputs – Higher performance rate for third ranked company	Decided by Ofwat in the PR19 final determinations	Ofwat	%

Calculations

#	Calculation overview	Calculation detail
Payment rates calculations		
1	Payment rates - C-MeX score rank	Ranks companies by their C-MeX score.
2	Payment rates - Difference from median	Company's score minus the median company.
3	Payment rates - Standard performance rates	As set out in the 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 rates - Higher performance payments – top three companies in C-MeX	Calculates whether the company's C-MeX score is in the top three C-MeX scores.
5	Payment rates - Higher performance payments – complaints	Calculates whether the company's number of complaints per 10,000 connections is below the industry average for complaints per 10,000 connections.
6	Payment rates - Higher performance payments – UKCSI	Calculates whether the company's C-MeX score is above the all-sector UKCSI threshold in line with the formula set out

#	Calculation overview	Calculation detail
		in the PR19 final determinations (see each company's 'Outcomes performance commitment appendix').
7	Payment rates - Higher performing companies – rank	If more than one company passes the three higher performance gates, calculates which company receives +6% +4% or +2% in higher performance payments.
8	Payment rates – Higher performance rate	Calculates companies' higher performance rates.
Performance payments calculations		
9	Performance payments – Standard performance payments	Calculates companies' standard performance payments: *Standard performance rate * Allowed residential retail for year of performance* Note that no inflation adjustment is necessary because while the allowed revenue used as the basis of the payments are in nominal terms, in line with our intended policy and consistent with all other performance commitments, the resulting ODI payments are in 2017-18 FYA CPIH prices.
10	Performance payments – Higher performance payments	Calculates companies' higher performance payments: *Higher performance rate * Allowed residential retail for year of performance* Note that no inflation adjustment is necessary because while the allowed revenue used as the basis of the payments are in nominal terms, in line with our intended policy and consistent with all other performance commitments, the resulting ODI payments are in 2017-18 FYA CPIH prices.

#	Calculation overview	Calculation detail
11	Performance payments – Total performance payments	Calculates companies' total performance payments. *Standard performance payments + Higher performance payments*

3.5.6 Implementation

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

In line with the RAGs, companies are to publish their C-MeX scores in their APRs.

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.

3.6 Developer services measure of experience (D-MeX)

3.6.1 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

3.6.2 Background and purpose

The developer services measure of experience (D-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.

3.6.3 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 performance commitments with 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.

3.6.4 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.

3.6.5 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

Inputs

#	Input	Description	Source	Units
1	Inputs – Annual qualitative survey scores	The survey score out of 100 for each company in the reporting year.	Agent, company's APR. Table	Number to two

#	Input	Description	Source	Units
			3D, RAG 4 reference 3D.1	decimal places
2	Inputs – Annual quantitative metrics scores	The performance data for each company in the reporting year, as set out by Ofwat in the PR19 final determinations.	Company's APR. Table 3D, RAG 4 reference 3D.2	Percentage to two decimal places
3	Inputs – Actual developer services revenue (water)	Actual developer services revenue collected by each company in the reporting year for water services, as set out in each company's 'Outcomes performance commitment appendix' in the PR19 final determinations.	Company's APR. Table 3D, RAG 4 reference 3D.4	£m, nominal prices, to 3 decimal places
4	Inputs – Actual developer services revenue (wastewater)	Actual developer services revenue collected by each company in the reporting year for wastewater services, as set out in each company's 'Outcomes performance commitment appendix' in the PR19 final determinations.	Company's APR. Table 3D, RAG 4 reference 3D.5	£m, nominal prices, to 3 decimal places
5	Inputs – Weighting for qualitative component	Decided by Ofwat in the PR19 final determinations.	Ofwat	Percentage
6	Inputs – Weighting for quantitative component	Decided by Ofwat in the PR19 final determinations.	Ofwat	Percentage
7	Inputs – Maximum outperformance payment rates	Decided by Ofwat in the PR19 final determinations.	Ofwat	Percentage
8	Inputs – Maximum underperformance payment rates	Decided by Ofwat in the PR19 final determinations.	Ofwat	Percentage

Calculations

#	Calculation overview	Calculation detail
Payment rates calculations		
1	Payment rates – D-MeX score	Using the weighting between the qualitative and quantitative component, calculates the company's score based on its results for each component.
3	Payment rates – Difference from median	Company's score minus the median company.
4	Payment rates – Company's performance payment rate (%)	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 D-MeX score; • 'median' is the median of all companies' D-MeX scores; • 'maximum' is the maximum of all companies' D-MeX scores; and • 'minimum' is the minimum of all companies' D-MeX scores.
Performance payments calculations		
4	Performance payments – Total performance payments (£m, water)	Using the proportion of actual revenues collected for water services, calculates total performance payments in £m for the water network plus control. Note that no inflation adjustment is necessary because while the allowed

#	Calculation overview	Calculation detail
		revenue used as the basis of the payments are in nominal terms, in line with our intended policy and consistent with all other performance commitments, the resulting ODI payments are in 2017-18 FYA CPIH prices.
6	Performance payments – Total performance payments (£m, wastewater)	Using the proportion of actual revenues collected for wastewater services, calculates total performance payments in £m for the wastewater network plus control. Note that no inflation adjustment is necessary because while the allowed revenue used as the basis of the payments are in nominal terms, in line with our intended policy and consistent with all other performance commitments, the resulting ODI payments are in 2017-18 FYA CPIH prices.

3.6.6 Implementation

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

In line with the RAGs, companies are to publish their survey results, their performance against the quantitative component of D-MeX, and their overall D-MeX scores in their APRs.

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.

3.7 Residential retail reconciliation

3.7.1 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 real appointee allowed return on capital

3.7.2 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.

3.7.3 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.

3.7.4 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

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 3.4 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.

3.7.5 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	Revised total revenue (**TR**t)	The total unadjusted allowed revenue	Output of the in-period adjustments model.	£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's APR. Table 2F, RAG 4 reference 2F.7	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's APR. Table 2F, RAG 4 reference 2F.8	Number
5	Revenue Recovered (**RR**)	The revenue that each company actually collected from residential customers (households) in a given charging year	Company's APR. Table 2F, RAG 4 reference 2F.4	£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's APR. Table 2F, RAG 4 reference 2F.5. 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'	£, Outturn

#	Input	Description	Source	Units
			'Notification of the 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 real (i.e. CPIH-deflated) 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;	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

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

#	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 Revised total revenue (**TRt**) plus (Actual customers (**AC**) minus Forecast customers (**FC**)), multiplied by the Modification factor (**M**). This should correspond to company's APR, Table 2F, RAG 4 reference 2F.9
Allowed Revenue (reforecast customer numbers)		
5	Allowed revenue (reforecast)	This is Revised total revenue (**TRt**) 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. This should correspond to

#	Calculation overview	Calculation detail
		company's APR, Table 2F, RAG 4 reference 2F.6
Net adjustment		
7	Net adjustment	This is the Allowed revenue (**R**) minus Actual Revenue (net). This should correspond to company's APR, Table 2F, RAG 4 reference 2F.10
Calculation of threshold for financing adjustment		
8	% Net difference (reforecast)	This is (Actual revenue (net) minus Allowed revenue (reforecast)) divided by 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 Net adjustment if the Threshold triggered = 0. Where Threshold triggered = 1, then Net adjustment in the above calculation is multiplied by (1 + Discount rate)$^{\text{Forecast period factor}}$
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

3.8 Revenue forecasting incentive model (RFI)

3.8.1 Summary

The Revenue Forecasting Incentive (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 real allowed return on capital

3.8.2 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. The RFI applies to price controlled activities related to **water network plus**, **wastewater network plus**, **water resources** and **Thames Tideway Tunnel (TTT)**. It replaces the WRFIM 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 3.4 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.

We further modified companies' licences, with effect from 11 November 2020, to amend the effect of the Revenue Forecasting Incentive (RFI) formula for the purposes of the blind year adjustment. We consulted on this change in September 2020.

3.8.3 Nature of the reconciliation

A reconciliation related to the RFI is needed 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 allowed revenue will be adjusted:

- 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.

3.8.4 Mechanism structure – overview

Adjusted allowed revenue

Annex 3 of companies' 'Notification of the PR19 final determination' sets out how adjusted allowed revenue (AR_t) is calculated. This is according to following formula:

$$AR_t = R_t + BYA_t + RFI_t$$

Where:

R_t, is allowed revenues.

BYA_t is the blind-year adjustment.

PR19 Blind year adjustment

As set out in companies' 'Notification of the PR19 final determination' the calculation of the blind year adjustment during the 2021-25 period for the relevant controls is 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

The RFI adjustment is calculated 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, a financial penalty applies 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 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. Companies in their APR should:

- state they have allocated any penalty proportionately to the control that creates a revenue imbalance resulting in RFI penalties; or
- explain why they have chosen a different approach

3.8.5 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	%
2	CPIH: Nov – Nov index	One plus the percentage change in the Consumer Prices Index (H) between that	ONS	%

#	Input	Description	Source	Units
	inflating from 2019-20	published for the month of November in the Prior Year and that published for November 2018		
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 real 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's APR. Table 2M, RAG 4 reference 2M.10	£m, Outturn

#	Input	Description	Source	Units
10	Allowed revenue	Revenue allowed, **R**, to the Appointed Business in a Charging Year by a Price Control in respect of the activities concerned	'Notification of the PR19 final determination of Price Controls'	£m, 2019-20 Nov-Nov
11	Bilateral entry adjustment (**BEA**)	The revenue adjustment arising from the Bilateral entry adjustment model (see section 4.3) 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.	In the absence of a modification by the CMA, '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.	Companies in their APR should either state they have allocated any penalty proportionately to the control that creates a revenue imbalance resulting in RFI penalties; or explain why they have chosen a different approach.	%
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.	'Adjusting for company actual performance in 2019-20: Blind Year adjustment, final decisions – overview'	£m, 2019-20 Nov-Nov
15	Blind year profiling factor (**Y**)	This is $\mathbf{Y_t}$ i.e. the percentage of the blind year adjustment that the company has elected to	Company discretion. Values must:	%

#	Input	Description	Source	Units
		receive in period t of the price control period.	• 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; • for the charging year 2023-24, T = 2023; and • for the charging year 2024-25, T = 2024.	N/A	Number

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. This should correspond to the sum of RAG 4 references 2M.4 and 2M.5 (in company's APR, Table 2M).

#	Calculation overview	Calculation detail
Bilateral entry adjustment (these calculations apply to the water resources control for relevant companies)		
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. This would feed into RAG 4 reference 2M.7 (in company's APR, Table 2M).
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
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. This would feed into RAG 4 reference 2M.7 (in company's APR, Table 2M).
Revenue correction (these calculations apply to all of the controls)		
9	Adjusted allowed revenue (AR)	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.

#	Calculation overview	Calculation detail
		financing rate and inflation adjustment (**BYA**) plus Bilateral entry adjustment – as incurred plus RFI This should correspond to company's APR, Table 2M, RAG 4 reference 2M.8
10	Revenue Imbalance	This is Adjusted allowed revenue (AR) minus Actual Revenue (RR). This should correspond to company's APR, Table 2M, RAG 4 reference 2M.11
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
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

#	Calculation overview	Calculation detail
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+
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

#	Calculation overview	Calculation detail
		Proportion of penalty allocated to Water Res
RFI calculation (these calculations apply to all of the controls)		
27	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. This should correspond to company's APR, Table 2M, RAG 4 reference 2M.6
Application of adjustment for last two years at the end of AMP7		
28	Bilateral entry adjustment (**BEA**)	This is Bilateral entry adjustment (**BEA**), multiplied by CPIH: Nov - Nov index inflating from 2019-20
29	Penalty adjustment – Water-N+	This is Penalty adjustment, multiplied with Proportion of penalty allocated to Water-N+ (**PS**)
30	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)
31	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)
32	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+
33	Penalty adjustment - Water Res	This is Penalty adjustment, multiplied with Proportion of penalty allocated to Water Res

#	Calculation overview	Calculation detail
34	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)
35	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)
36	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
37	Value of year 5 RFI adjustments at the end of AMP7 – Water-N+	This is Revenue imbalance – Water-N+ plus Penalty adjustment – Water-N+
38	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
39	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+
40	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
41	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)
42	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
43	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+
44	Value of year 5 RFI adjustments at the end of AMP7 – WW-N+	This is Revenue imbalance – WW-N+ plus Penalty adjustment – WW-N+
45	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+

3.8.6 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 in their APRs to:

- state they have allocated any penalty proportionately to the control that creates a revenue imbalance resulting in RFI penalties; or
- explain why they have chosen a different 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 would consider 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 could 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**: Changing the effect of the RFI formula during the price control period would ultimately require a licence change. We consider that the onus should be on companies to propose the basis for any adjustment and licence change. This would include explaining how such a change would be applied and providing appropriate justification. We recognise that implementing this may benefit from more detailed consideration and engagement with companies.

- **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 ask that companies engage with us as soon as possible on their proposed basis for any adjustment and appropriate justification. This would help us to consider and, if necessary, implement any adjustment in a timely and effective manner. Companies should make any request to us for such a change by 15 August preceding the beginning of the relevant charging year at the very latest. 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.

Un-invoiced wholesale charges in the event of an unplanned retailer exit

In November 2022 we confirmed that should a retailer failure occur in time for it to be considered as part of PR24, companies will benefit from an adjustment in relation to un-invoiced revenue through the RFI at the end of period reconciliation for PR19.

Before proposing adjustments through the RFI, we expect companies to demonstrate that they have first used all reasonable endeavours to exhaust securities and credit protections available to them and to offset them against unpaid charges, including in respect of amounts relating to un-invoiced usage. Where a company then seeks to pass

through the RFI mechanism amounts in respect of un-invoiced revenue, we expect it to provide a commentary setting out the value of un-invoiced amounts due to a retailer failure as part of the RAG 3 disclosure requirement linked to APR table 2M.

Any amounts of un-invoiced revenue in relation to network plus and water resources activities that remain outstanding after a retailer failure will be subject to each company's specific underperformance cost sharing rate before any amounts are recovered via an adjustment through the RFI.

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.

Unlike Thames Water's control for TTT activities, 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 4.4 for more details on the Havant Thicket reconciliation).

3.9 Developer services revenue adjustment mechanism

3.9.1 Summary

This reconciles developer services revenues within the network-plus control for PR19 to ensure companies' allowed revenue reflects the actual number of new connections. 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

3.9.2 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.

3.9.3 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. $\mathbf{AC_t}$ is the actual number of new properties connected for the relevant service occurring in charging year **t**[14]. $\mathbf{FC_t}$ is our forecast number of new properties connected for the relevant service occurring in charging year **t**[15]. **Unit Rate** is a number relating to the relevant service in charging year **t**.

[14] 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.
[15] 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.

3.9.4 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	Number
2	Actual number of connections (**AC**)	The actual number of new properties connected for the relevant service occurring in charging year	Company's APR. Table 4Q, RAG 4 reference 4Q.11	Number
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

#	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 company-specific real wholesale allowed return on capital as determined at PR19.	%

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**)) $^{5-t}$

3.9.5 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.

3.10 Bioresources revenue reconciliation model

3.10.1 Summary

The reconciliation shows:

- how the average revenue control changes each year based on the difference between outturn and forecast sludge production;
- how allowed bioresources revenue is adjusted in one year to correct for any under- or over-recovery of revenue in earlier years; and
- how the bioresources forecasting accuracy incentive is calculated.

This reconciliation combines and simplifies the previously published 'Bioresources modified revenue model', the 'Bioresources in-period revenue correction model' and the 'Bioresources forecasting accuracy incentive model'. 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 real wholesale allowed return on capital

3.10.2 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.

3.10.3 Nature of reconciliation

A reconciliation related to the bioresources control is needed 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.

3.10.4 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:

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

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

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 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 in the in-period adjustment model, which will take account of any applicable in-period ODI adjustments (see section 3.4), with a lag of two years. This revised unadjusted revenue (**URt**) is then used in the bioresources model to calculate the modified revenue.

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%[16].

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

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

> $\mathbf{UR_t}$ 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 and the company's forecast sludge production (**FTDS**) is greater than or equal to 6%:
>
> $$\left|\frac{\mathbf{ATDS-FTDS}}{\mathbf{FTDS}}\right| \geq \mathbf{0.06}$$

3.10.5 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

[16] We have modified Hafren Dyfrdwy's licence so that it includes more appropriate figures for the company's forecast sludge production. In order to provide an appropriate incentive for Hafren Dyfrdwy's updated forecast to be accurate, the penalty calculation for this company would be based on the last four years of the 2020-25 period using the updated sludge production forecasts. The company agrees that this approach would provide an appropriate incentive for the updated forecast to be accurate.

#	Output	Description	Units
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. This is displayed in cell F11 of the Outputs tab in the model.	£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'[17]	TDS
2	Actual volume of sludge (**ATDS**)	Company actual sludge production in a given Charging Year.	Company's APR. Table 8A, RAG 4 reference 8A.3	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'[18]	£/TDS, 2017-18 FYA CPIH deflated, £/TDS
4	Recovered revenue for bioresources (**RR**)	Revenue recovered for bioresources services in a given Charging Year.	Company's APR. Table 2M, RAG 4 reference 2M.10	£m, Outturn

[17] For Hafren Dyfrdwy, as stated in Modification of the Conditions of Appointment of Hafren Dyfrdwy Cyfyngedig made on 19 July 2022 and effective on 1 August 2022.
[18] For Hafren Dyfrdwy, as stated in Modification of the Conditions of Appointment of Hafren Dyfrdwy Cyfyngedig made on 19 July 2022 and effective on 1 August 2022.

#	Input	Description	Source	Units
5	Revised unadjusted revenue (**URt**)	Total revenue allowed to the company in a given Charging Year based on the forecast amount of sludge produced and adjusted for ODI payments.	Output of in-period adjustments model.	£m, 2017-18 FYA 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's APR. Table 2M, RAG 4 Reference 2M.7	Outturn, £m
8	Discount rate (**D**)	The discount rate used to provide a time value of money adjustment.	This is the real 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	ONS	%

#	Input	Description	Source	Units
		Year and that published for November 2016.		

Calculations

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

#	Calculation overview	Calculation detail
Calculation of modified revenue		
1	Actual volume of sludge (ATDS)	This is Actual volume of sludge (**ATDS**), multiplied by Units in a thousand.
2	Modified revenue - 2017-18 FYA (CPIH deflated)	This is (Actual volume of sludge (ATDS) minus Forecast volume of sludge (**FTDS**)), multiplied by Variable revenue - 2017-18 FYA (CPIH deflated). This result is then added to Revised unadjusted revenue (**URt**) - 2017-18 FYA (CPIH deflated)
3	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		
4	Allowed revenue	This is the modified revenue, plus the Total adjustment to allowed revenue including over / under recovery reconciliation (calculation 10 which is the output from calculations 7-9 below). This should correspond to company's APR, Table 2M, RAG 4 reference 2M.8
5	Revenue imbalance	This is Allowed revenue minus Recovered revenue for bioresources (**RR**). This should correspond to company's APR, Table 2M, RAG 4 reference 2M.11
6	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
7	Bioresources revenue adjustment (ABR) - with	This multiplies the Bioresources revenue adjustment (ABR) - with financing adjustment by the Actual

#	Calculation overview	Calculation detail
	financing adjustment & 2 year lag of inflation	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. This should correspond to company's APR, Table 2M, RAG 4 reference 2M.6
8	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. This should correspond to company's APR, Table 2M RAG 4 reference 2M.7
9	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
10	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 4
Application of adjustments in last two years at the end of AMP7		
11	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
12	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
13	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
14	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

#	Calculation overview	Calculation detail
15	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		
16	Absolute Forecast Error	This is Actual volume of sludge (**ATDS**) minus Forecast volume of sludge (**FTDS**)
17	Forecast Error %	This is (Actual volume of sludge (**ATDS**) minus Forecast volume of sludge (**FTDS**)) divided by Forecast volume of sludge (**FTDS**)
18	Penalty required?	This is a check whether the Forecast Error % is greater than or equal to the Deadband.
19	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 %

3.11 Cost of new debt reconciliation model

3.11.1Summary

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. The reconciliation adjustment will be applied to revenues for the 2025-30 period.

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

3.11.2 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.

3.11.3 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.

3.11.4 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.

3.11.5 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.	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	%
2.	Regulatory Capital Value (RCV_{FD})	Regulatory Capital Value set at PR19 final determinations.	PR19 Final Determinations: Allowed Revenue Appendices ("Total opening RCV" and "Total closing RCV" by control)	£m, (2017/18 CPIH)
3.	Notional gearing (G_{FD})	Notional gearing set at PR19 final determinations (60%).	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
4.	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	%
5.	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 section below).	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
6.	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)
7.	Allowed cost of embedded debt	The allowed cost of embedded debt from final determinations (2.42%). **Note:** this is not used in the	PR19 Final Determinations: Allowed Return on	%

#	Input	Description	Source	Units
		above calculation but is relevant to the outturn cost of debt output to the tax reconciliation model	Capital Technical Appendix	
8.	Issuance and liquidity costs	Issuance and liquidity costs allowed for at final determinations (0.10%). **Note:** this is not used in the above calculation but is relevant to the outturn cost of debt output to the tax reconciliation model	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
9.	iBoxx yields	The annualised yields for our benchmark index, the iBoxx GBP non-financials 10+ A and BBB indices.	IHS Markit	%, nominal
10.	Ex ante 'outperformance wedge' for the notional company	The suggested figures are as follows: New debt: 0.15% Embedded debt: 0.25%	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
11.	Company-specific adjustment for new and embedded debt	The suggested figures are as follows: New debt: 0.25% Embedded debt: 0.35%	PR19 Final Determinations: Allowed Return on Capital Technical Appendix	%
12.	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
13.	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.

3.12 Gearing outperformance sharing mechanism

3.12.1 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

3.12.2 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.

Recent high levels of inflation have meant that, for certain years and for some companies, the actual cost of debt has been in excess of the notional nominal cost of equity resulting in the reconciliation calculation being negative with some companies reporting additional revenue being due from customers. We set out in the RAG 4 that "If the calculation produces a positive value (due to volatile changes in the rate on inflation during the reporting the period), companies should report a zero value for the reporting year." As such, we have amended the Gearing outperformance sharing mechanism reconciliation model to return zeros in any such year where the calculation is negative.

3.12.3 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.

3.12.4 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:

Gt = gearing: book value net debt from the APR divided by RCV;

RP = the reference point;

SR = the sharing rate;

CoEFD = the notional nominal cost of equity;

CoDt = indicative weighted average nominal interest rate;

D = the discount rate, and

RCVt = 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.

3.12.5 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 APR	Company's APR. Table 1E, RAG 4 reference 1E.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 APR	Company's APR. Table 1E, RAG 4 reference 1E.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

#	Input	Description	Source	Units
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

3.13 Tax reconciliation

3.13.1 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.

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[19]

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

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

3.13.3 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.

3.13.4 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 has not paid full tax value for any group losses utilised in 2020-25 (or where it has not charged full tax value for any losses surrendered to other group companies).

The PR19 financial model has been updated to add the functionality needed to apply a different capital allowance rate in different years of the control. This change was necessary to allow the financial model to capture fully the temporary change in capital allowance rates, that was announced in March 2021 after the PR19 Final Determination. Companies should use the individually populated version of the financial model, provided to them in April 2023, to run the reconciliation tool.

3.13.5 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 Wastewater 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
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
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 has not charged full tax value for any losses surrendered to other group companies).

3.14 RPI-CPIH wedge reconciliation model

3.14.1 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 wholesale allowed return on capital

3.14.2 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.

3.14.3 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.

3.14.4 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. Output for each wholesale price control.	£ 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. Output for each wholesale price control.	£ million 2017-18 FYA CPIH deflated

#	Output	Description	Units
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. Output for each wholesale price control.	£ 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	2020 RCV RPI inflated-initial balance - nominal	Opening RPI-indexed RCV as at 1 April 2020 expressed in forecast nominal terms. Requires values for each wholesale price control to be input separately.	PR19 financial model – FD 'RCV balance summary' sheet cells K23, K93, K163, K233 and K303	£ million
2	RPI - final determination	RPI monthly index values included in final determination.	PR19 financial model – FD 'Index' sheet rows 131 to 142 (for years 2018-25	Index
3	CPIH - final determination	CPIH monthly index values included in final determination.	PR19 financial model – FD 'Index' sheet rows 59 to 70 (for years 2017-18) and rows 10 to 21 (for years 2018-25)	Index
4	RPI - actual	RPI for each month available on the ONS website.	ONS website for published values	Index

#	Input	Description	Source	Units
		Requires forecast values to March 2025 where published index values are not available from ONS.		
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
6	RCV run-off rate	RCV run-off rate included in final determination to calculate allowed run-off on RPI indexed RCV. Requires values for each wholesale price control to be input separately.	PR19 financial model – FD 'F_OutputsMaster' sheet rows 953, 956, 959, 962 and 966	%
7	Real RPI based wholesale WACC	Real RPI based WACC for wholesale included in final determination to calculate allowed return on RPI indexed RCV. Requires values for each wholesale price control to be input separately.	PR19 financial model – FD ''Water Resources', 'Water Network', 'Wastewater network', 'Bio Resources', and 'Dummy Control' sheets row 980	%
8	Real CPIH based wholesale WACC	Real CPIH based WACC for wholesale included in final determination. Used for time value of money adjustment. Requires values for each wholesale price control to be input separately.	PR19 financial model – FD ''Water Resources', 'Water Network', 'Wastewater network', 'Bio Resources', and 'Dummy Control' sheets row 860	%

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.

3.15 WINEP/NEP reconciliation model

3.15.1 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.

The model will calculate a change in allowed totex as an adjustment to the RCV only for amber schemes listed in the WINEP spreadsheet used to make our final determinations and is not a mechanism to add to companies' totex allowance for any additional environmental requirements that were not listed as amber in the 'Water Industry National Environment Programme' (WINEP) in England, issued on 29 March 2019, and the 'National Environment Programme' (NEP) in Wales, issued on a company specific basis between March and July 2018.

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	Company specific wholesale allowed return on capital

3.15.2 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.

3.15.3 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.

3.15.4 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.

3.15.5 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)
6	Allowed totex unit rate	OFWAT allowed totex unit rate	Cost Efficiency Final Determination Appendix	£m

#	Input	Description	Source	Units
7	Quantity in PR19 FD	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	Quantity delivered	Number of units at this Allowed totex unit rate confirmed as being progressed in the price control period.	To be provided by company and confirmed by Environment Agency / Natural Resources Wales	To be entered
9	1 = In plan 0 = Not in plan	Whether the scheme cost was included in our FD	Cost Efficiency Final Determination Appendix	1 or 0
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	The discount rate used to provide a time value of money adjustment. This is the wholesale allowed return on capital.	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 in PR19 FD multiplied by (1 minus the Proportion Confirmed) multiplied by -1, where Proportion Confirmed = Quantity in PR19 FD divided by Quantity delivered

#	Calculation overview	Calculation detail
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 in PR19 FD multiplied by the Proportion Confirmed, where Proportion Confirmed = Quantity in PR19 FD divided by Quantity delivered
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.

3.16 PR19 Water trading incentive model

3.16.1 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

3.16.2 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 the PR19 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[20]. 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

[20] 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).

3.16.3 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.

3.16.4 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[21] 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. The parameters of the trade must be consistent between both the importing and exporting companies. This is essential in order to:

- calculate the appropriate forecast bulk supply revenues to net-off for the exporter / include in business plan cost proposals for the importer (we have already undertaken this); and

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

- ensure any subsequent PR19 water trading incentive claims at PR24 are claimed on the same basis i.e. the outturn bulk supply revenues of the exporter should match the outturn cost of the importer.

Companies should take care to ensure that these parameters are consistent when submitting incentive claims at 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 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 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.

3.16.5 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

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

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

#	Input	Description	Source	Units
Export incentive inputs (inputs 6-10 below are repeated for three export trades in the reconciliation model[22])				
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
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	True/False flag	Ofwat	N/A

[22] 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
	procurement code?			
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's APR. Table 4A, RAG 4 reference 4A.1 – 4A.25	£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's APR. Table 4A, RAG 4 reference 4A.1 – 4A.25	£m
Import incentive inputs (inputs 14-16 below are repeated for three import trades in the reconciliation model[23])				
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	%

[23] 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
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 control for an import	The proportion of the import incentive for an import that is allocated to the water resources control	Company	%
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

#	Calculation overview	Calculation detail
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
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

#	Calculation overview	Calculation detail
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
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

#	Calculation overview	Calculation detail
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 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

#	Calculation overview	Calculation detail
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
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

#	Calculation overview	Calculation detail
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
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

#	Calculation overview	Calculation detail
		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

3.16.6 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 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.

3.17 Land sales

3.17.1Summary

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

3.17.2 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.

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 feeder model at a later date.

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

3.17.3 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 RCV24.

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.

Annex 1 of the 'Notification of the PR19 final determination of Price Controls for Thames Water contained an error because it did not reflect the value attributable to relevant disposals of land allowed for in determining Thames Water's price control for sewerage services for the Thames Tideway Tunnel project (the TTT price control). We included forecast land sales income as negative totex when setting the TTT price control. Table 3.7 of PR19 final determinations: Thames Water final determination correctly sets out the forecast land sales income.

3.17.4 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 real allowed return for the wholesale controls that applied at PR19; and

[24] 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.

- It calculates the net present value adjustment to deduct from the RCV to apply at PR24.

3.17.5 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. The model generates outputs for both the 2017-18 base year and 2022-23 base year options because this will allow for some flexibility for when we develop 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. This was 2.92% for all companies apart from South Staffs Water and Portsmouth Water which was 3.11%.	PR19 final determination	%
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 2L. Forecasts are required for 2023-25.	Company's APR. Table 2L, RAG 4 reference 2L.1	£000

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

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.

#	Calculation overview	Calculation detail
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.
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.

3.18 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'.

3.18.1 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

3.18.2 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.

3.18.3 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.

3.18.4 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 time value of money adjustment is allocated to RCV and revenue based on the same proportions, which is consistent with other totex models.

Unfunded solutions

We recognise the potential for companies to identify new or alternative solutions, in addition to those currently identified and funding under the PR19 price controls. We will allow companies to propose new or alternative solutions up to gate three. Any proposal will need to satisfy us that the solution should benefit from funding to support accelerated development of the scheme.

Where we accept the inclusion of a proposed scheme, we will set out the expected basis for funding the subsequent development work and use the end of period reconciliation mechanism to allow companies to recover their efficient costs. For example, a scheme may be a substitute for a solution that is already funded for the whole of the 2020-25 period but has not progressed. In this case, 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.

To understand if a solution is of better value than the rejected solutions 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.

RAPID is developing a process for the transferring in of unfunded solutions which will be published by the end of March 2021. Where unfunded schemes are to be transferred in, RAPID will perform an efficiency assessment on the proposed expenditure to ensure that customers get value for money. This figure will then be used as the allowed totex in the reconciliation model, against which outturn totex will be reconciled at PR24.

Time value of money application

We recognise that the application of time value of money adjustments based on financial years is an approximation since the timings of each gate in our final determination do not map to the financial years for regulatory reporting (April – March) as they did in the draft determinations. We consider that applying time value of money adjustments on the basis of a fraction of a financial year introduces an unnecessary modelling complexity with little benefit. In addition, gate three and four timings were not pinpointed to a particular month in our final determination (see Table 7). Therefore, it would not be possible to establish the formal deadline for submissions at these gates

to use for time value of money calculations until later on in the process. For these reasons, we apply integer values when calculating time value of money adjustments in the reconciliation model:

- three for solutions that do not progress beyond gate one;
- two for solutions that do not progress beyond gate two; and
- one for solutions that do not progress beyond gate three.

The model has been corrected to discount to 2024-25, meaning we apply three years' worth of time value of money adjustment to solutions that are abandoned at gate one, rather than four years' worth. An equivalent change has also been made for gate two and gate three.

Table 7: Gate timings for strategic regional water resources in our final determination

Gate	Standard gate start (submission) dates	Accelerated gate start (submission) dates
Gate 1	Monday 5 July 2021	Monday 28 September 2020
Gate 2	October 2022 (aligned with draft WRMP24 consultation period)	Monday 27 September 2021
Gate 3	Summer 2023 (aligned with final WRMP24 publication)	June 2022
Gate 4	Summer 2024	April 2023
Gate 5 (if required)	Winter 2025	Autumn 2024

The model applies a different level of discounting to set portions of the overall sum returned to customers, based on the expected expenditure profile (10% at gate 1, 15% at gate 2, 35% at gate 3, 40% at gate 4). This ensures that any time value of money adjustment reflects the true opportunity cost that customers face when a scheme is abandoned mid-period but they are not reimbursed until the end of the period.

3.18.5 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	Years of discounting required for project abandoned at gate (x)	The number of years of discounting that needs to be applied to any adjustment to account for time value of money, based on which gate the project is abandoned at.	Ofwat	#

#	Input	Description	Source	Units
3	Totex sharing rate	The totex sharing rate applicable to under or overspend compared to the allocated allowance	Ofwat	%
4	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'	%
5	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				
6	Gate funded scheme has progressed to (up to gate 4)	The final gate to which the funded scheme has progressed to	Ofwat	#
7	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'	%
8	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
9	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'	%
10	Company outturn totex for funded scheme	The actual totex for a funded scheme for the company	Company APRs. Table 4L, RAG 4 reference 4L.37	£m

#	Input	Description	Source	Units
11	Company penalty for funded scheme	A penalty deducted from a company's development allowance for a funded solution based on gate deliverables. Note that this should be entered as a negative value.	RAPID	£m
Unfunded schemes inputs				
12	Gate unfunded scheme has progressed to (up to gate 4)	The final gate to which the unfunded scheme has progressed to	Ofwat	#
13	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'	%
14	Company totex allowance for unfunded scheme	The full totex allowance for an unfunded scheme for the company	RAPID	£m
15	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'	%
16	Company outturn totex for unfunded scheme	The actual totex for an unfunded scheme for the company	Company regulatory reporting. The exact source of this input will be confirmed after the publication of RAPID's guidance for the transferring in of unfunded schemes.	£m

#	Input	Description	Source	Units
17	Company penalty for unfunded scheme	A penalty deducted from a company's development allowance for an unfunded solution based on gate deliverables. Note that this should be entered as a negative value.	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

#	Calculation overview	Calculation detail
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]
If project is abandoned at gate 1:		
9	Total proportion of costs allocated to gates 2-4 - company [funded scheme]	This is the sum of Proportion of costs allocated to gate 2, Proportion of costs allocated to gate 3 and Proportion of costs allocated to gate 4.
10	Company total totex adjustment for [funded scheme] financing adjustment (gate 2 element) (gate 1 abandonment)	This is equal to the Proportion of costs allocated to gate 2 divided by the Total proportion of costs allocated to gates 2-4 - company [funded scheme], multiplied by the Company total totex adjustment for [funded scheme], all discounted by the Years of discounting required for project abandoned at gate 1.
11	Company total totex adjustment for [funded scheme] financing adjustment (gate 3 element) (gate 1 abandonment)	This is equal to the Proportion of costs allocated to gate 3 divided by the Total proportion of costs allocated to gates 2-4 - company [funded scheme], multiplied by the Company total totex adjustment for [funded scheme], all discounted by the Years of discounting required for project abandoned at gate 2.

#	Calculation overview	Calculation detail
12	Company total totex adjustment for [funded scheme] financing adjustment (gate 4 element) (gate 1 abandonment)	This is equal to the Proportion of costs allocated to gate 4 divided by the Total proportion of costs allocated to gates 2-4 - company [funded scheme], multiplied by the Company total totex adjustment for [funded scheme], all discounted by the Years of discounting required for project abandoned at gate 3.
13	Company total totex adjustment for [funded scheme] financing adjustment (if project is abandoned at gate 1)	This is the sum of Company total totex adjustment for [funded scheme] financing adjustment (gate 2 element) (gate 1 abandonment), Company total totex adjustment for [funded scheme] financing adjustment (gate 3 element) (gate 1 abandonment) and Company total totex adjustment for [funded scheme] financing adjustment (gate 4 element) (gate 1 abandonment).
If project is abandoned at gate 2:		
14	Total proportion of costs allocated to gates 3-4 - company [funded scheme]	This is the sum of Proportion of costs allocated to gate 3 and Proportion of costs allocated to gate 4.
15	Company total totex adjustment for [funded scheme] financing adjustment (gate 3 element) (gate 2 abandonment)	This is equal to the Proportion of costs allocated to gate 3 divided by the Total proportion of costs allocated to gates 3-4 - company [funded scheme], multiplied by the Company total totex adjustment for [funded scheme], all discounted by the Years of discounting required for project abandoned at gate 2.
16	Company total totex adjustment for [funded scheme] financing adjustment (gate 4 element) (gate 2 abandonment)	This is equal to the Proportion of costs allocated to gate 4 divided by the Total proportion of costs allocated to gates 3-4 - company [funded scheme], multiplied by the Company total totex adjustment for [funded scheme], all discounted by the Years of discounting required for project abandoned at gate 3.

#	Calculation overview	Calculation detail
17	Company total totex adjustment for [funded scheme] financing adjustment (if project is abandoned at gate 2)	This is the sum of Company total totex adjustment for [funded scheme] financing adjustment (gate 3 element) (gate 2 abandonment) and Company total totex adjustment for [funded scheme] financing adjustment (gate 4 element) (gate 2 abandonment).
If project is abandoned at gate 3:		
18	Company total totex adjustment for [funded scheme] financing adjustment (if project is abandoned at gate 3)	This is the Company total totex adjustment for [funded scheme], discounted by the Years of discounting required for project abandoned at gate 3.
19	Company total totex adjustment for [funded scheme] financing adjustment	IF function that uses Gate [funded scheme] has progressed to (up to gate 4) to determine which of Company total totex adjustment for [funded scheme] financing adjustment (if project is abandoned at gate 1), Company total totex adjustment for [funded scheme] financing adjustment (if project is abandoned at gate 2) and Company total totex adjustment for [funded scheme] financing adjustment (if project is abandoned at gate 3) is to be used. Company total totex adjustment for [funded scheme] is then subtracted from this.
20	Company 1 revenue adjustment for [funded scheme] incl. financing adjustment	This is the Company PAYG ratio, multiplied by the sum of Company total totex adjustment for [funded scheme], Company penalty for [funded scheme] and Company total totex adjustment for [funded scheme] financing adjustment.
21	Company 1 RCV adjustment for [funded scheme] incl. financing adjustment	This is 1 minus the Company PAYG ratio, multiplied by the sum of Company total totex adjustment for [funded scheme], Company penalty for [funded scheme] and Company total totex adjustment for [funded scheme] financing adjustment.

#	Calculation overview	Calculation detail
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 3 totex allowance for [unfunded scheme], plus the Company 4 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]
If project is abandoned at gate 1:		
9	Total proportion of costs allocated to gates 2-4 – company [unfunded scheme]	This is the sum of Proportion of costs allocated to gate 2, Proportion of costs allocated to gate 3 and Proportion of costs allocated to gate 4.
10	Company total totex adjustment for [unfunded scheme] financing adjustment (gate 2 element) (gate 1 abandonment)	This is equal to the Proportion of costs allocated to gate 2 divided by the Total proportion of costs allocated to gates 2-4 – company [unfunded scheme], multiplied by

#	Calculation overview	Calculation detail
		the Company total totex adjustment for [unfunded scheme], all discounted by the Years of discounting required for project abandoned at gate 1.
11	Company total totex adjustment for [unfunded scheme] financing adjustment (gate 3 element) (gate 1 abandonment)	This is equal to the Proportion of costs allocated to gate 3 divided by the Total proportion of costs allocated to gates 2-4 - company [unfunded scheme], multiplied by the Company total totex adjustment for [unfunded scheme], all discounted by the Years of discounting required for project abandoned at gate 2.
12	Company total totex adjustment for [unfunded scheme] financing adjustment (gate 4 element) (gate 1 abandonment)	This is equal to the Proportion of costs allocated to gate 4 divided by the Total proportion of costs allocated to gates 2-4 - company [unfunded scheme], multiplied by the Company total totex adjustment for [unfunded scheme], all discounted by the Years of discounting required for project abandoned at gate 3.
13	Company total totex adjustment for [unfunded scheme] financing adjustment (if project is abandoned at gate 1)	This is the sum of Company total totex adjustment for [unfunded scheme] financing adjustment (gate 2 element) (gate 1 abandonment), Company total totex adjustment for [unfunded scheme] financing adjustment (gate 3 element) (gate 1 abandonment) and Company total totex adjustment for [unfunded scheme] financing adjustment (gate 4 element) (gate 1 abandonment).
If project is abandoned at gate 2:		
14	Total proportion of costs allocated to gates 3-4 - company [unfunded scheme]	This is the sum of Proportion of costs allocated to gate 3 and Proportion of costs allocated to gate 4.
15	Company total totex adjustment for [unfunded scheme] financing adjustment (gate 3 element) (gate 2 abandonment)	This is equal to the Proportion of costs allocated to gate 3 divided by the Total proportion of costs allocated to gates 3-4 - company [unfunded scheme], multiplied by the Company total totex adjustment for

#	Calculation overview	Calculation detail
		[unfunded scheme], all discounted by the Years of discounting required for project abandoned at gate 2.
16	Company total totex adjustment for [unfunded scheme] financing adjustment (gate 4 element) (gate 2 abandonment)	This is equal to the Proportion of costs allocated to gate 4 divided by the Total proportion of costs allocated to gates 3-4 - company [unfunded scheme], multiplied by the Company total totex adjustment for [unfunded scheme], all discounted by the Years of discounting required for project abandoned at gate 3.
17	Company total totex adjustment for [unfunded scheme] financing adjustment (if project is abandoned at gate 2)	This is the sum of Company total totex adjustment for [unfunded scheme] financing adjustment (gate 3 element) (gate 2 abandonment) and Company total totex adjustment for [unfunded scheme] financing adjustment (gate 4 element) (gate 2 abandonment).
If project is abandoned at gate 3:		
18	Company total totex adjustment for [unfunded scheme] financing adjustment (if project is abandoned at gate 3)	This is the Company total totex adjustment for [unfunded scheme], discounted by the Years of discounting required for project abandoned at gate 3.
19	Company total totex adjustment for [unfunded scheme] financing adjustment	IF function that uses Gate [unfunded scheme] has progressed to (up to gate 4) to determine which of Company total totex adjustment for [unfunded scheme] financing adjustment (if project is abandoned at gate 1), Company total totex adjustment for [unfunded scheme] financing adjustment (if project is abandoned at gate 2) and Company total totex adjustment for [unfunded scheme] financing adjustment (if project is abandoned at gate 3) is to be used. Company total totex adjustment for [unfunded scheme] is then subtracted from this.

#	Calculation overview	Calculation detail
22	Company totex sharing adjustment for [unfunded scheme] financing adjustment	IF function. If Gate [unfunded scheme] has progressed to (up to gate 4) is equal to 4 then value is zero. If not, the value is equal to Company totex sharing adjustment for [unfunded scheme], multiplied by $(1 + Discount\ rate)^{Forecast\ period\ flag - Gate\ [unfunded\ sch}$, minus Company totex sharing adjustment for [unfunded scheme].
23	Company totex adjustment for [unfunded scheme] financing adjustment	This is the sum of Company total totex adjustment for [unfunded scheme] financing adjustment and Company totex sharing adjustment for [unfunded scheme] financing adjustment.
20	Company revenue adjustment for [unfunded scheme] incl. financing adjustment	This is the Company PAYG ratio, multiplied by the sum of Company total totex adjustment for [unfunded scheme], Company penalty for [unfunded scheme] and Company total totex adjustment for [unfunded scheme] financing adjustment.
21	Company RCV adjustment for [unfunded scheme] incl. financing adjustment	This is 1 minus the Company PAYG ratio, multiplied by the sum of Company total totex adjustment for [unfunded scheme], Company penalty for [unfunded scheme] and Company total totex adjustment for [unfunded scheme] financing adjustment.

3.18.6 Implementation

Final form of the reconciliation model

The reconciliation model we have published alongside this document 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 is 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.

4. Our approach to company-specific reconciliations

There are a number of reconciliations that do not apply to all companies. These are summarised in Table 8.

Table 8: Company-specific reconciliations covered in this section

Reconciliation	Companies affected	Summary of the reconciliations' purpose
In-period reconciliations		
Bilateral entry adjustment	Affinity Water, Anglian Water, Portsmouth Water, Southern Water, South East Water, South Staffs Water, Thames Water and Yorkshire Water.	To adjust relevant companies' revenues should bilateral entry in the water resources market occur
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.

4.1 Business retail controls for companies wholly or mainly in Wales

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.

4.1.1 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. This is to be achieved through a change in the allowed average retail cost component ('**rc**') of the price controls, ensuring no undue focus on a subset of customers.

This 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').

4.1.2 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.

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 applied the PR14 business retail SIM and will apply 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 have revised the tables that companies will need to populate within the APR.

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

4.2.1 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[25] 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;

[25] 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.

4.3 Bilateral entry adjustment (BEA)

4.3.1 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.

The BEA only applies to companies which are wholly or mainly in England with a positive post-2020 capacity. Where this is the case, the details of the BEA adjustment is set out in 'Notification of the PR19 final determination of Price Controls'.

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

4.3.2 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 the 2020-25 period 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'.

4.3.3 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 the 2020-25 period 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[26];
- 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.

4.3.4 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:

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

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

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

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

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

[26] 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.

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

$$TCC_t = ICC_t + BCCf_t$$

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

4.3.5 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)

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.

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 yield funded through the water	Table 4 of companies' 'Notification of the PR19 final	Ml/d

#	Input	Description	Source	Units
	cumulative capacity (**ICC**)	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.	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 submission[27]	Ml/d

[27] These are not yet in the published RAGs or submitted in current APRs, but will be considered further as part of future developments in performance reporting. We will need to consider how best to collect this information for the reporting year 2022-23 and onwards for when the bilateral market is scheduled to open in 2022.

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).

4.4 Havant Thicket reconciliation model

4.4.1 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

4.4.2 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'.

4.4.3 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**.

4.4.4 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:

$$Rt = UR_t \times \text{CPIH adjustment factor}_t$$

Where:

UR_t means the total unadjusted allowed revenue.

4.4.5 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	%

#	Input	Description	Source	Units
6	Corporation tax rate	The corporation tax rate	HM Government	%
7	Outturn revenue from bulk supply agreement	The actual revenue earned from the bulk supply agreement	Company's APR. Table 4A, RAG 4 references 4A.1 – 4A.25	£m
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. The exact source of this input will be confirmed prior to PR29.	£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. The exact source of this input will be confirmed prior to PR29.	£m
12	Outturn CAPEX	Outturn company capital expenditure	Company regulatory reporting. The exact source of this input will be confirmed prior to PR29.	£m
13	Cost sharing rate	Totex cost sharing rate for totex under or outperformance	Ofwat	%
14	Proportion of Havant	Percentage of the Havant Thicket construction incomplete by the	Company regulatory reporting. The exact	%

#	Input	Description	Source	Units
	Thicket construction programme not delivered by 31 March 2030	end of the price control period on 31 March 2030	source of this input will be confirmed prior to PR29.	
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 through bulk supply	The outturn volume of water traded under the bulk supply agreement.	Company's APR. Table 4A, RAG 4 references 4A.1 – 4A.25	m^3
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. The exact source of this input will be confirmed prior to PR29.	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				

#	Input	Description	Source	Units
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)[28]	Company regulatory reporting. The exact source of this input will be confirmed prior to PR29.	£m
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

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

Calculations

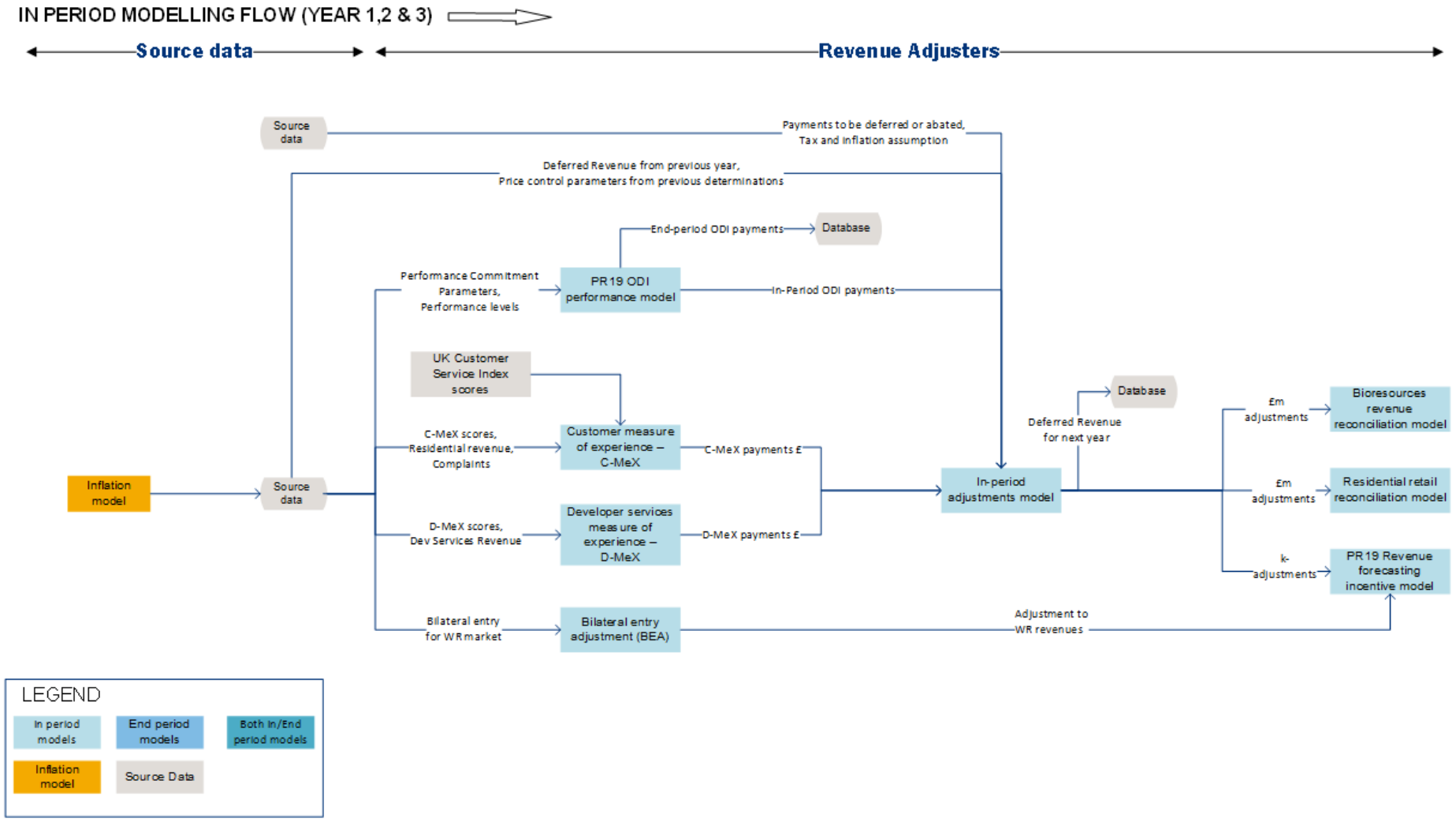
All calculations are made for each charging year over the 2020-30 period unless otherwise stated.

#	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

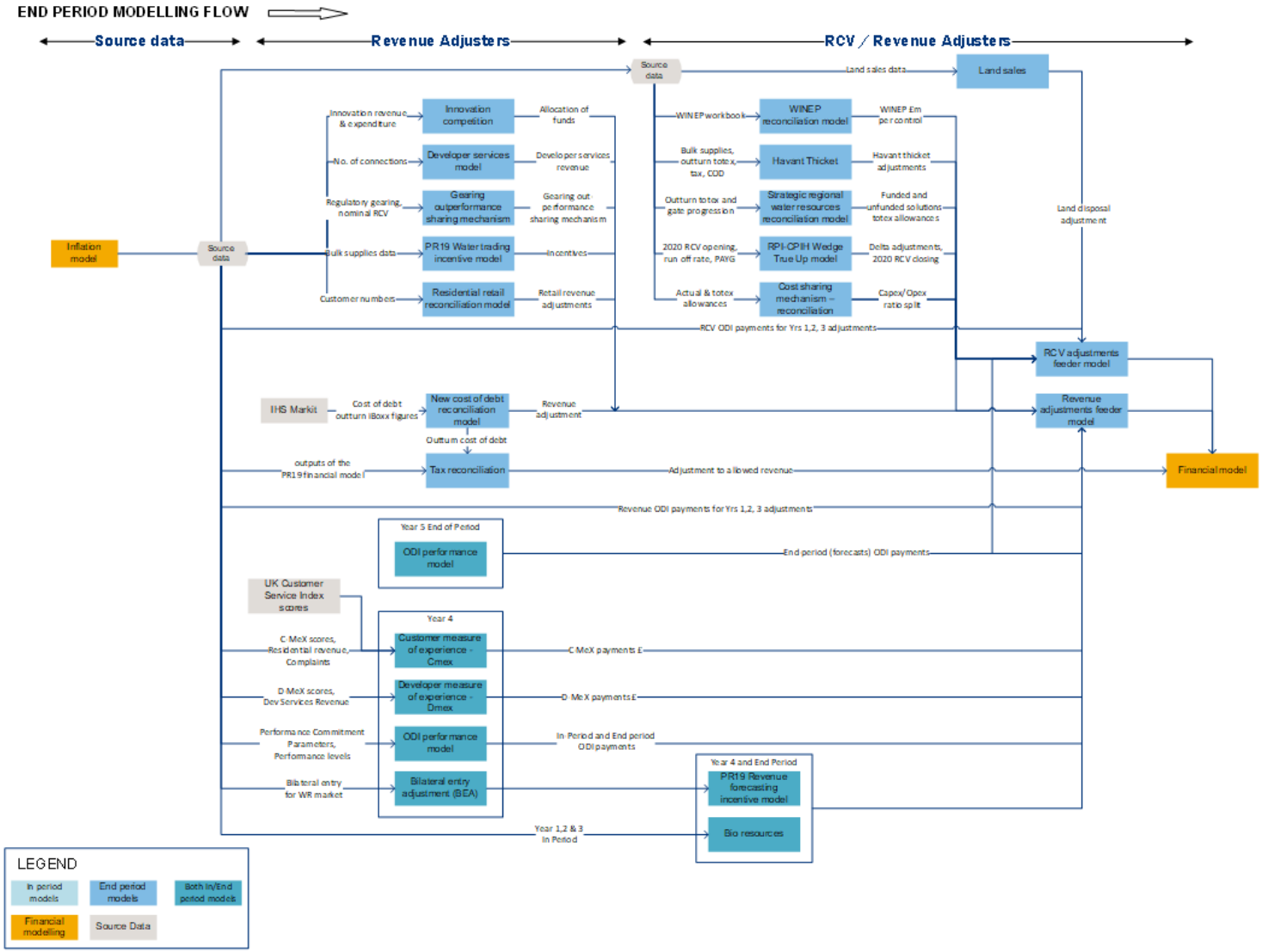
#	Calculation overview	Calculation detail
6	Total NPV of economic profit incl. financing adjustment to 2030	This is the sum of NPV of economic profit incl. financing adjustment to 2030 over the price control period
7	After-tax NPV of economic profit incl. financing adjustment to 2030	This is NPV of economic 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

#	Calculation overview	Calculation detail
		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

Appendix 1: In period modelling flow



Appendix 2: End of period modelling flow



Appendix 3: Updates to document

Reconciliation	Section	Description of change	Change applied
Cost reconciliations	3.1.1 Summary	Amendment of table to clarify that reconciliation also affects Bioresources and Thames Tideway Tunnel controls	August 2023
Cost reconciliations	3.1.2 Background and purpose	Amendment of text to clarify application of reconciliation	August 2023
Cost reconciliations	3.1.4 Mechanism structure – overview: Table 5 and notes	Changes to update references to latest version of RAG 4 New line and note added for 2023-24 and 2024-25 transition and Defra accelerated programme expenditure New line added for CMA companies only for items with bespoke sharing rates	August 2023
Cost reconciliations	3.1.5 Mechanism structure – calculations: Inputs section	Update of source for line 6 Update to units for lines 12 and 13 Insertion of new lines relating to CMA determinations, performance related pay recovery mechanism and green recovery schemes	August 2023
Cost reconciliations	3.1.5 Mechanism structure – calculations: Calculations section	Insertion of new lines relating to CMA determinations, performance related pay recovery mechanism and green recovery schemes Amendment to lines 12 and 22 overview and detail to take account of performance related pay recovery mechanism adjustment	August 2023
Innovation fund and competition	3.2.4 Mechanism structure – calculations: Inputs section	Update to source for lines 2 to 6 to update references to latest version of RAG 4	August 2023
ODI performance model	3.3.1 Summary	Insertion of footnote to confirm position in relation to CMA redeterminations and Anglian Water's 2021 interim determination of K.	August 2023
ODI performance model	3.3.2 Background and purpose	Minor updates to text and one clarification	August 2023
ODI performance model	3.3.4 Mechanism structure – overview	Text amended to make two clarifications	August 2023
ODI performance model	3.3.5 Mechanism structure – calculations: Inputs section	Additional explanatory text added under 'InpPerformance' worksheet heading in relation to the 'Company PC inputs' sheet	August 2021
ODI performance model	3.3.5 Mechanism structure – calculations: Inputs section	Text amended to make two clarifications	August 2023
ODI performance model	3.3.6 Implementation	Text amended to make two clarifications	August 2023

In-period adjustments model	3.4.5 Mechanism structure – calculations: Outputs section	Minor update to title for line 1 and title and description for line 5	August 2021
In-period adjustments model	3.4.5 Mechanism structure – calculations: Inputs section	Minor update to title and description for line 39	August 2021
Customer measure of experience (C-MeX)	3.5.5 Mechanism structure – calculations: Inputs section	Update to source for line 3 to update reference to latest version of RAG 4 Update to source for line 6 to provide clarification	August 2023
Customer measure of experience (C-MeX)	3.5.5 Mechanism structure – calculations: Calculations section	Minor update to detail for line 5	August 2021
Residential retail reconciliation	3.7.5 Mechanism structure – calculations: Inputs section	Minor update to description for line 5	August 2021
Revenue forecasting incentive model (RFI)	3.8.2 Background and purpose	Text included in error deleted in relation to November 2020 licence amendment deleted	August 2021
Revenue forecasting incentive model (RFI)	3.8.6 Implementation	Insertion of explanatory text in relation to un-invoiced wholesale charges in the event of an unplanned retailer exit	August 2023
Developer services revenue adjustment mechanism	3.9.4 Mechanism structure – calculations: Inputs section	Update to source for line 2 to correct RAG 4 reference	August 2023
Bioresources revenue reconciliation model	3.10.4 Mechanism structure – overview	Insertion of footnote in relation to Hafren Dyfrdwy	August 2023
Bioresources revenue reconciliation model	3.10.5 Mechanism structure – calculations: Inputs section	Update to source for lines 4 and 6 to update references to latest version of RAG 4	August 2021
Bioresources revenue reconciliation model	3.10.5 Mechanism structure – calculations: Inputs section	Insertion of footnotes in relation to Hafren Dyfrdwy	August 2023
Bioresources revenue reconciliation model	3.10.5 Mechanism structure – calculations: Calculations section	Update to source for lines 4,5,7 and 8 to update references to latest version of RAG 4	August 2021
Gearing outperformance sharing mechanism	3.12.2 Background and purpose	Insertion of explanatory text in relation to the impact of high levels of inflation	August 2023

Tax reconciliation	3.13.4 Mechanism structure – overview	Insertion of explanatory text in relation to the temporary change in capital allowance rates announced on March 2021	August 2023
PR19 Water trading incentive model	3.16.5 Mechanism structure – calculations: Inputs section	Update to source for lines 9 and 10 to update references to latest version of RAG 4	August 2023
Strategic regional water resources	3.18.5 Mechanism structure – calculations: Inputs section	Update to source for line 10 to update reference to latest version of RAG 4	August 2023
Havant Thicket reconciliation model	4.4.5 Mechanism structure – calculations: Inputs section	Update to source for lines 7 and 16 to update references to latest version of RAG 4	August 2023

Ofwat (The Water Services Regulation Authority) is a non-ministerial government department. We regulate the water sector in England and Wales.

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