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Trust in water

Delivering Water 2020: Our methodology for the 2019 price review

Appendix 7: Network plus water and wastewater controls

Appendix to Chapter 6: Targeted controls, markets and innovation: wholesale controls

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1. Summary

Applicability to England and Wales

Our final methodology for the network plus water and wastewater controls **applies to both** companies whose areas are wholly or mainly in England and companies whose areas are wholly or mainly in Wales.



1.1 Purpose and structure

This appendix sets out our final methodology and the reasons for our policy for the 2019 price review (PR19) for the network plus water and wastewater controls. These activities represent the majority of the wholesale value chain and will continue to be regulated as monopolies during 2020-25. These controls will remain a key part of the way we regulate to make sure customers are protected and get secure, sustainable, and affordable water and wastewater services.

Our PR19 final methodology has been determined after fully considering the views expressed by respondents to our [draft methodology proposals](#), published in July of this year. This appendix provides more information about the final form of the water and wastewater revenue controls as set out in chapter 6 (targeted controls, markets and innovation: wholesale controls) of our [PR19 final methodology](#), and in our overview of respondents' views and our responses, which you can find in appendix 15 ([Responses to our draft methodology](#)).

Our overall approach to the network plus water and wastewater controls is based on decisions taken both before and as a result of our draft methodology proposals. In our May 2016 decision document '[Water 2020: Our regulatory approach for water and wastewater in England and Wales](#)', we set out a high-level framework for our approach to the network plus water and wastewater controls. This appendix draws these together to provide a composite overview. It is structured as follows:

- a high-level summary (section 1);
- our overall approach (section 2);
- decisions already taken to support our approach (section 3); and
- decisions taken as a result of our PR19 methodology consultation (section 4).

This appendix does not cover all the aspects of how the network plus water and wastewater controls will be implemented. We reflect this throughout the appendix by cross-referencing to other sections of our PR19 final methodology.

Our approach to setting controls for water resources and bioresources is set out in appendix 5 ('[Water resources control](#)') and appendix 6 ('[Bioresources control](#)') respectively.

1.2 Context and summary of our approach

Our PR19 final methodology for the network plus water and wastewater controls reflects the four key themes of PR19. It enables better targeted regulation and encourages market-based solutions across the wholesale value chain to help address some of the challenges and opportunities in providing water and wastewater services to customers in a sustainable manner.

This will provide a framework to protect customers' interests, and enable greater collaboration between companies and other stakeholders. It will also maximise the value of existing resources and incentivise the efficient provision of wholesale services. This includes enabling the delivery and operation of large-scale infrastructure through direct procurement for customers. Our approach also recognises and reflects the strategic policy statements of the UK and Welsh governments.

Our approach has four strands:

- **Establishing the separate controls:** Separate controls for network plus water and wastewater enable better targeted regulation and will encourage management to focus more on these areas of the value chain. These controls will also facilitate greater collaboration between companies and other stakeholders to co-create solutions through partnership working, catchment management and ecosystem services. The boundary of the network plus controls is aligned with the definitions used in regulatory accounting guideline 4.06 and will be confirmed with the final determinations.

The allocation of the pre-2020 RCV will determine the starting basis for each of the separate controls. A proportion of the wholesale water pre-2020 RCV will be allocated to the water resources control, with the remainder forming the pre-2020 RCV for the network plus water control. Similarly, a proportion of the wholesale wastewater pre-2020 RCV will be allocated to the bioresources control, with the remainder allocated to the network plus wastewater control. In setting up the

controls, we defined some of their key characteristics, including a five-year duration and annual adjustments to the control to allow for inflation.

We will continue to include developer services within the scope of the network plus revenue controls. We will consider whether to remove contestable elements of developer services from the scope of price regulation as part of our consideration of the form and scope of the controls at PR24.

- **Managing the separate controls:** The network plus water and wastewater controls will be total revenue controls. We are also maintaining the proven building-block approach. Present protections will be retained for the RCV allocated at 31 March 2020 for the 2020-2025 period. After 2020, we are not providing further explicit commitment to protect investments added to the RCV over and above our existing commitments. We expect companies to be able to recover efficiently incurred costs over the 2020-25 period. In preparation for PR24, we will consider the design of controls, including any further separation of network plus activities, such as the treatment of raw water, and the role of any further extension of the RCV protection, consistent with our approach at previous price reviews.

To ensure compliance with the controls, we will require companies to provide a clear overview of the split of wholesale charges between network plus water and wastewater services, water resources and bioresources activities. The revenue forecasting incentive will be used to encourage companies to manage the under or over-recovery of revenues over 2020-25.

- **Encouraging markets:** By separating out the network plus controls from water resources and bioresources, we enable markets to evolve across the wholesale value chain to deliver benefits to customers through improved resilience, greater efficiency and more choice. The framework will facilitate co-creation of solutions through partnership working, third party delivery provision of services, and the adoption of catchment scale approaches and ecosystem services.

Direct procurement will also provide opportunities to drive greater efficiency in the delivery and operation of new large scale infrastructure, including new pipelines and treatment facilities. Company bid assessment frameworks (in [appendix 8](#)) will enable demand management and leakage services to be proposed as alternatives to new resource schemes where it is more efficient to do so, consistent with a twin-track approach to water resources.

Overall, we expect enhanced markets to bring significant opportunities for innovation and efficiency.

- **Managing uncertainty and ensuring legitimacy:** We expect companies to embed long-term thinking and innovation in their approach to the provision of water and wastewater services, and where appropriate using markets and other collaborative approaches to provide services in a resilient and sustainable manner. Companies should understand and own the risks that they face on behalf of customers and provide confidence and assurance that these are being managed effectively.

We will continue to apply a symmetric revenue forecasting incentive (RFI) to the network plus water and wastewater controls, to provide incentives on companies to accurately forecast revenue recovery and protect customers from unnecessary bill volatility.

We will introduce a volume-based symmetric revenue correction for developer services within a total revenue control, to encourage timely and quality new connections. Companies will have to forecast and report on a more granular scale for these services, which will allow an appropriate correction. Developer services are excluded from the revenue forecasting incentive, we will apply interest penalties to where there are large differences between the volume of new connections provided and the companies' forecasts to incentivise accurate forecasts.

1.3 Summary of our decisions for the network plus water and wastewater controls

Table 1 below summarises our decisions for the network plus water and wastewater controls and provides references to where further detail on them can be found.

Table 1 – Summary of our decisions for the network plus water and wastewater controls

Area	Topic	Final position	Further detail
Establishing the separate controls	Separation of activities	We will introduce separate controls for network plus water and wastewater activities.	Section 2.1 Section 3.1.1 Section 3.1.2 Section 3.1.4
	Boundary of control	The scope of the controls will reflect wholesale activities not designated as bioresources or water resources activities. See the definitions in relation to network plus activities in paragraph 2 of each	Section 2.1 Section 3.1.3

Area	Topic	Final position	Further detail
		companies' licence condition B for more information. We will continue to include developer services within the controls.	
	Pre-2020 RCV allocation	We will determine the allocation of the RCV to the network plus water and wastewater controls as part of the PR19 determinations, it being the RCV remaining after determining the RCV allocated to the water resources and bioresources controls.	Section 2.1 Section 3.1.5
	RCV midnight adjustments	We will apply midnight adjustments to the network plus water and wastewater RCV.	Section 2.1 Section 3.1.6
	Length of control	Five years.	Section 2.1 Section 3.1.7
	Inflation indexation	Annual adjustment to reflect any percentage change in the consumer price index including housing (CPIH).	Section 2.1 Section 3.1.8 Appendix 12
Managing the separate controls	Type of control	Separate total revenue controls set for network plus water and network plus wastewater.	Section 2.2
Encouraging Markets	In-period revenue correction	In-period revenue correction, subject to the revenue forecasting incentive.	Section 2.4 Section 4.2
Managing uncertainty and ensuring legitimacy	Pre-2020 RCV	RCV allocated to network plus water and wastewater will have the same type and degree of regulatory protection as at present.	Section 2.2
	Post-2020 RCV and investment	Building-block approach. The return and depreciation on efficiently incurred investment will be recoverable in the 2020-2025 period.	Section 2.2
	Revenue forecasting incentive	We will apply a symmetric revenue forecasting accuracy incentive that will apply a penalty, within period, to differences between forecast and actual revenues where it is greater than 2%.	Section 2.2 Section 4.2
	Developer services	We will apply a symmetric revenue adjustment for changes in volume of developer services provided over the 2020-2025 period. We will apply a penalty to large forecasting errors.	Section 2.2 Section 2.4 Section 4.1
	Other markets	Our approach will allow partnership approaches and market-based solutions to be used in the provision of water and wastewater services.	Section 2.3

2. Overview of our approach

This section summarises our overall approach against the four key strands set out above:

- establishing the separate controls for network plus water and wastewater;
- managing the separate controls;
- encouraging markets; and
- managing uncertainty and ensuring legitimacy.

2.1 Establishing the separate controls for network plus water and wastewater

Separate controls at a company level for network plus water and wastewater services enable better targeted regulation and will increase management focus across the elements of the wholesale value chain, increasing efficiency and resilience in the service provided for customers and the environment in the long term. It will also increase the accuracy and consistency of cost reporting.

The activities in the water and wastewater network plus controls are those of the wholesale water and wastewater businesses that remain once the activities associated with water resources and bioresources (sludge treatment, transport and disposal) – for which we are setting separate controls – are excluded.

With uncertainties around the degree of competitiveness of contestable aspects of developer services, all developer services activity will be within the scope of the network plus water and wastewater controls at PR19. We have determined that removing these services from the control and opening them up entirely to market forces is not prudent given the potential for some areas to be considerably less competitive. We will continue to monitor the market and review the wholesale control treatment of developer services at the 2024 price review (PR24).

The pre-2020 RCV allocated to network plus water and wastewater controls will be the remaining RCV that has not been allocated to the separate water resources or bioresources controls respectively. We will make midnight adjustments in determining the opening RCV for the network plus water and wastewater controls.

The decision to set separate controls for network plus water and wastewater services has been implemented by the licence change to condition B of the conditions of the appointment ('licence') of each of the 17 largest water companies in

England and Wales. We shall formally designate water resources, bioresources and network plus activities as part of the final determination process. Companies should prepare business plans on the basis that the activities listed above will have the same definitions as in RAG 4.06.

We may make minor changes to the boundary in light of new evidence. This is similar to our PR14 approach when we first set the boundary between wholesale and retail activities.

Continuing our PR14 approach to the wholesale water and wastewater controls, the period of the control will be five years.

2.2 Managing the separate controls

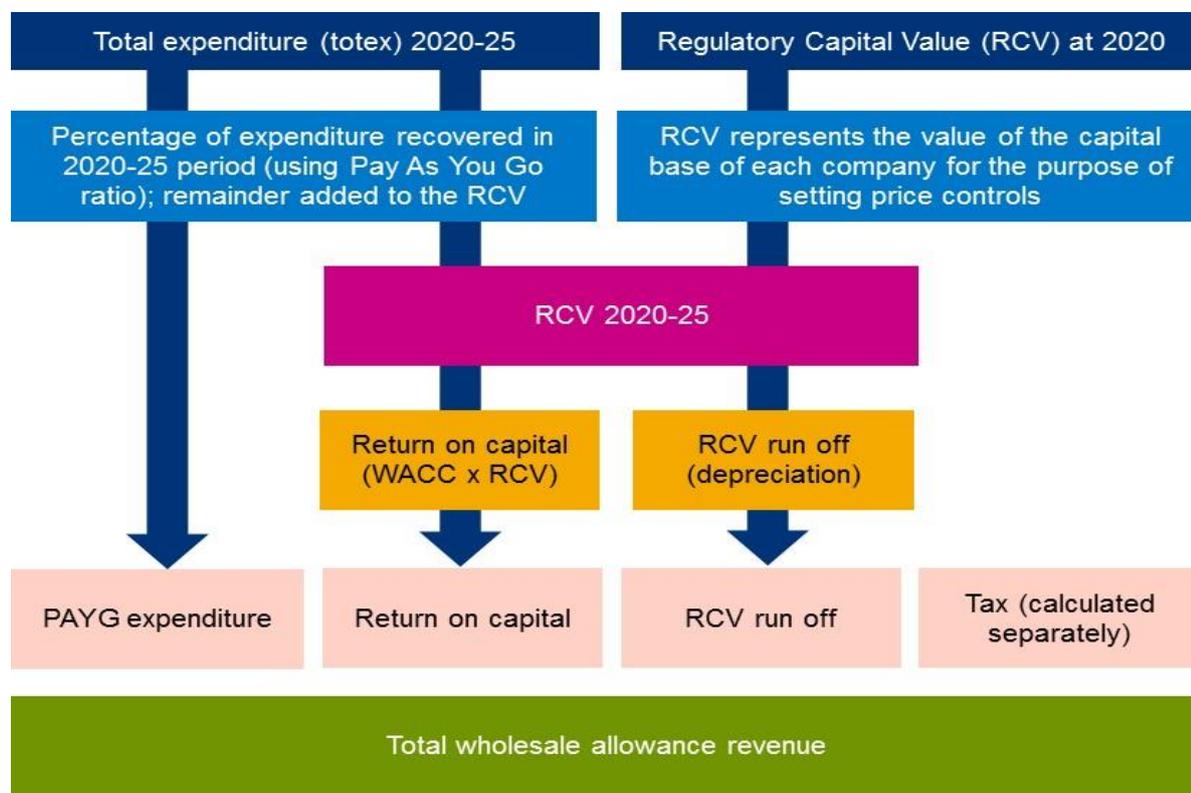
Retaining total revenue controls for network plus water and wastewater for the 2020-2025 period helps to provide certainty and stability for companies and investors and, when combined with wider incentives, aligns their interests with those of customers and the environment.

For the first year of the control, we will set limits on companies' revenues to fund the efficient costs of providing water and wastewater. A company will be allowed to increase revenues every year by the change in the consumer prices index including housing costs (CPIH) and an adjustment factor known as K. We will determine the K factor to profile revenues to meet the requirements to fund efficient costs.

We will set the network plus controls using a building-block approach to determine total revenue for each company. Figure 1 illustrates these building blocks, which incorporate:

- returns and depreciation of the RCV;
- an assessment of efficient totex during the 2020-25 period funding:
 - expenditure to be recovered within the period (determined by the pay as you go ratio (PAYG)); and
 - expenditure added to the RCV and recovered in future periods (through future returns and depreciation); and
- a tax allowance.

Figure 1 – Building-block approach to setting wholesale revenue controls



The building blocks are discussed further in the main document in:

- Chapter 9 ('Securing cost efficiency'), which sets out our approach to assessing the efficient costs for the wholesale controls;
- Chapter 10 ('Aligning risk and return'), which discusses how we will set an appropriate return for the wholesale controls, and our approach to tax; and
- Chapter 11 ('Aligning risk and return: financeability'), which sets out our approach to recovering costs and determines the PAYG rates and RCV run-off for the wholesale controls.

We propose to extend our protection of past, efficiently-incurred investments in the RCV up to 31 March 2020 to ensure that all elements (whether water resources, bioresources or network plus) of the wholesale controls are given a common level of protection to align with common treatment in the 2015-20 control. After 2020, we are not providing a further explicit commitment to protect investments added to the RCV over and above our existing commitments. We expect companies to be able to recover efficiently-incurred costs during 2020-25. In preparation for PR24, we will consider the design of the wholesale controls, including any further separation of network plus activities, such as the treatment of raw water, and the role of any

further extension of the RCV protection, consistent with our approach at previous price reviews.

In addition to setting allowed revenues, we also provide incentives to encourage efficient delivery, reduction in expenditure and delivery of outcomes. Chapter 4 ('Delivering outcomes for customers') provides further detail.

To ensure compliance with the controls, we will require companies to provide a clear overview of the split of wholesale charges between network plus water and wastewater services, water resources and bioresources activities. [Appendix 5](#), section 4.2.3, sets out that companies will develop, for compliance purposes, a notional charging structure for their water resources activities which is to be charged to retailers and network plus water. The charges for network plus water account for losses of water incurred before the supply to customers' premises. The sale of raw water to network plus would be funded through the revenue allowance in the network plus water control.

Consistent with our decision to adopt a binding control on total revenues, it is necessary to allow companies to carry out a reconciliation for under or over recovered revenues over 2020-25. This is to mitigate the risk of adverse impacts on customers and companies due to over or under recovery. The adjustment mechanism for network plus water and wastewater (excluding developer services) will be the revenue forecasting incentive (RFI), which has similar features to the PR14 wholesale revenue forecasting incentive (WRFIM).

We will continue to maintain developer services within the scope of the network plus water and wastewater controls. At PR19, we will determine the expected volume of new connections for various connection sizes and the expected average unit revenues associated with delivering those connections. This will be for both contestable and non-contestable elements of water and wastewater developer services. At PR24, we will evaluate the difference between actual and forecast volumes of developer services provided over the period and calculate an adjustment to revenues as part of the end-of-period reconciliation. We expect companies to forecast as part of their business plan submissions then report annually on the volumes and revenues of providing these contestable and non-contestable services to developers. We will encourage companies to forecast the overall volume of new connections and other developer services, within reasonable limits, through the interest rates applied to large volume differences.

2.3 Encouraging markets

By separating out the network plus controls from water and bioresources, we enable markets to evolve across the wholesale value chain to deliver benefits to customers through improved resilience, greater efficiency and more choice. We are separating the wholesale controls to facilitate the evolution of markets within water resources and bioresources, however we also see scope for the evolution of markets across the entire wholesale value chain.

There are opportunities for co-creation of solutions through partnership working, third party delivery provision of services, and the adoption of catchment scale approaches and ecosystem services.

Direct procurement will also provide opportunities to drive greater efficiency in the delivery and operation of new large scale infrastructure, including new pipelines and treatment facilities. Company bid assessment frameworks will enable demand management and leakage services to be proposed as alternatives to new resource schemes where it is more efficient to do so, consistent with a twin track approach to water resources. Overall, we expect enhanced markets to bring significant opportunities for innovation and efficiency.

2.4 Managing uncertainty and ensuring legitimacy

It is important to incentivise long-term thinking and effective planning, to secure the legitimacy of the water and wastewater services that companies provide to their customers. It is important that companies own the risks that they face on behalf of customers and provide confidence and assurance that these are being managed effectively. We expect companies to embed long term thinking and innovation into their approach, where appropriate using markets and other collaborative approaches to provide services in a resilient and sustainable manner.

We will apply a revenue forecasting incentive (RFI) to the network plus water and wastewater controls, similar to the wholesale revenue forecasting incentive mechanism (WRFIM) introduced at PR14. This will be a symmetric revenue adjustment applied in-period to true-up revenue differences and, where differences between actual and allowed revenues are greater than 2%, apply a financial penalty. This will enable companies to manage revenue uncertainty and provides incentives to minimise bill volatility over the period. The RFI will not apply to the bioresources control, which will be subject to volume risk through the average revenue control and a targeted volume forecasting incentive.

We will not include developer services within the revenue forecasting incentive, to prevent cross subsidy given we are introducing a separate correction mechanism for these services.

For developer services, we recognise that the demand for new connections is closely linked to local economic activity, competition and other factors. At PR24, we will assess the volume differences over the period and calculate an adjustment to revenues. The adjustment will be based on the expected average revenue of providing services, which should incentivise efficiency.

Introducing a volume correction mechanism could dilute companies' incentives to forecast the volume of new connections accurately. In light of this, we will also introduce a forecasting incentive mechanism, to incentivise accurate forecasting.

3. Decisions taken as a result of our May 2016 decision document

In this section we provide an overview of the decisions taken in our May 2016 decision document which were focused on establishing the separate control. They reflect the decision document and continued engagement with companies, third parties and wider stakeholders.

3.1 Establishing the separate controls

A key focus of the May 2016 decision document was establishing the rationale and framework for the separate controls. In this section we discuss:

- further considerations in applying the separate controls to Wales (see section 3.1.1);
- the licence change to enable the separate controls (see section 3.1.2);
- the activities in the network plus water and wastewater controls (see section 3.1.3);
- the rationale for separate controls (see section 3.1.4);
- the allocation of pre-2020 RCV to network plus (see section 3.1.5);
- RCV midnight adjustments (see section 3.1.6);
- length of the controls (see section 3.1.7); and
- reflecting inflation in the controls (see section 3.1.8).

3.1.1 Further considerations in applying the separate controls to Wales

The network plus water and wastewater controls will apply to both companies whose areas are wholly or mainly in England and companies whose areas are wholly or mainly in Wales. The plans of Welsh companies will be tailored to reflect specific aspects and requirements of the Welsh Government and our approach supports this.

3.1.2 The licence change to enable the separate controls

All 17 companies agreed to the modification to enable us to introduce separate controls for water resources, bioresources and network plus water and wastewater activities. We have implemented the change to condition B of the conditions of the

appointment ('licence') of each of the 17 largest water companies in England and Wales.

For each of the network plus water and wastewater controls, the licences require us to determine them in the same way as the PR14 control(s) for wholesale activities (water and wastewater):

- a single control, expressed as a percentage limit on the change in the charges to be levied by and/or revenue allowed to the regulated business in each year for the relevant network plus activities;
- the percentage limit, expressed as the change in the relevant inflation index plus or minus a factor 'K'; and
- how the appointee shall demonstrate compliance with the controls.

The key constraints set in the licences are that:

- we can only set one single control for network plus water and, where relevant, one single control for wastewater activities;
- the duration of each control is five years; and
- there is a requirement for an annual adjustment to reflect any percentage change in the relevant index.

The licence also defines the activities that can be covered by the separate control. This is discussed below.

3.1.3 The activities in the network plus water and wastewater controls

The activities in the network plus water and wastewater controls include the parts of the wholesale water and wastewater businesses that remain once the activities associated with water resources and bioresources, for which we are setting separate controls, are excluded.

The list of activities that could be covered by the water resources and bioresources controls are set out in paragraph 2 of companies' licence condition B (under definitions of 'Water Resources Activities' and 'Bioresources Activities'). The terms used in those definitions of activities that can and cannot be designated have the meanings assigned to them in '[Regulatory Accounting Guideline \(RAG\) 4.06 - Guideline for the table definitions in the annual performance report](#)', August 2016.

Network plus water activities will be all the wholesale water activities except those designated as water resources activities. We expect these will be:

- raw water transport;
- raw water storage;
- water treatment; and
- treated water distribution.

Network plus wastewater activities will be all the wholesale wastewater activities except those designated as bioresources activities. We expect these will be:

- collection of foul sewage;
- collection of customers properties' surface water;
- collection of highway's surface water;
- sewage treatment and disposal; and
- sludge liquor treatment.

We will formally designate water resources and bioresources activities (and therefore network plus activities) as part of the final determination process. Subject to no material new information and evidence this will confirm the activities set out above. Companies should prepare business plans on the basis that the activities listed above will have the same definitions as in RAG 4.06.

We may make minor changes to the boundary in light of new evidence. This is similar to our PR14 approach when we first set the boundary between wholesale and retail activities.

Developer services will form part of the network plus controls and is covered in section 4.2 below.

3.1.4 The rationale for separate controls

Our revenue controls are an important regulatory tool, providing cost and delivery incentives that encourage companies to deliver better value for customers. Separate controls at a company level for network plus water and wastewater services enable better targeted regulation and will increase management focus across the elements of the wholesale value chain, increasing efficiency and resilience in the service provided for customers and the environment in the long term. They will also increase the accuracy and consistency of cost reporting.

3.1.5 The allocation of the pre-2020 RCV to network plus

The RCV captures the amount companies have invested and not recovered in the five year control period and forms part of our building-block approach to wholesale controls. It is used in the controls to determine the level of revenue that a company is allowed to recover. The introduction of separate controls for bioresources and water resources means that wholesale water and wastewater RCV respectively, will need to be allocated between:

- network plus water and water resources; and
- network plus wastewater and bioresources.

The pre-2020 RCV for water, will be allocated to water resources on an unfocused basis; the remaining value of the RCV, after allocation to the water resources control, will be allocated to the network plus water control. We provided further details of the approach companies should follow in allocating RCV to their water resources controls in [appendix 8 of our draft methodology proposals](#). We are not changing our guidance and are not reissuing it with our PR19 final methodology.

The pre-2020 RCV for wastewater, will be allocated to bioresources on a focused basis. This means the allocation of the RCV to bioresources will be based on the economic value of the assets employed. We briefly discuss the RCV allocation to bioresources in [appendix 6](#) of our final methodology.

We will confirm the allocation of RCV to the four wholesale controls as part of our PR19 final determinations.

3.1.6 RCV midnight adjustments

Generally, when we set revenue controls at each price review, we make an adjustment to the value of a company's RCV to reflect its performance in the previous period. This is known as a midnight adjustment. The adjustment can create a step change between the closing RCV of a control at the end of the previous price review period and the opening RCV for the new price review period.

We will apply a RCV midnight adjustment to the network plus water and wastewater controls. All of the RCV adjustment for past performance against the PR14 wholesale wastewater control will be applied entirely to the network plus wastewater control.

3.1.7 Length of the controls

In our May 2016 decision document, we decided to set the network plus controls on a five-year basis at PR19. We will revisit this as we develop our approach to wholesale controls for PR24.

3.1.8 Reflecting inflation in the controls

The control will be indexed by inflation. Chapter 10 ('Aligning risk and return') of our PR19 final methodology confirms that we will use the consumer price index including housing (CPIH) as our inflation index.

4. Decisions based on our PR19 methodology consultation

In this section, we set out our decisions based on our PR19 draft methodology consultation for:

- the treatment of developer services (section 4.1); and
- the revenue forecasting incentive (section 4.2).

Our approach to these two areas effectively straddles the four key strands of our approach. For example developer services covers the management of control and has links both encouraging markets and managing uncertainty and ensuring legitimacy.

For each policy area, we set out:

- the issue we were seeking to address;
- our preferred option in the draft methodology;
- stakeholder responses;
- our review, analysis and final decision; and
- how our final decision will be applied.

Section 5 ('Wholesale controls') of [appendix 15](#) outlines respondents' views and our responses to the question we posed on the network plus water and wastewater controls in our draft methodology.

4.1 The treatment of developer services

The issue we were seeking to address

Developer services relate to the activities required to connect new developments (or previously unconnected premises) to a water or wastewater network. At PR14, developer services were within the scope of the wholesale controls. The structure of the PR14 wholesale controls can create perverse incentives whereby our single till approach to setting controls discourages companies from serving developers efficiently or responding to competition.

The structure of the PR14 wholesale controls puts all of the volume risk on companies. If the volume of new connections work is lower than forecast, and income from developer services is lower than expected, the companies could

increase its wholesale tariffs to make up the difference. It will also retain 50% of any reduction in the cost that it incurs overall. If the volume of new connections work is higher than expected, companies will incur higher costs but are not allowed to recover increased total revenues to compensate. The structure of the PR14 wholesale controls may encourage companies to limit the number of new connections they provide over the period.

A company may also be encouraged to inflate the proportion of costs it expects to recover through developer contributions. A company's gross costs are a function of the volume of developer services that it provides. Even when the gross costs of the company stay the same, reallocating costs between customers and developers may provide perverse financial benefits through allowing higher revenues from wholesale charges and recovery of 50% of notional changes in totex (net costs).

At PR14 we reserved the right to adjust allowed revenues (including financing costs) where:

- we determine that a company increased wholesale revenues by unduly reducing connection charges to the detriment of customers; or
- a company requests an adjustment for higher than anticipated volumes of connections, which reduce profitability disproportionately.

For PR19, we have considered how to treat connections and other developers' services, including whether or not revenues and cash receipts from these services should be included in the total revenue controls and whether a mechanism for adjusting revenues needs to be introduced.

Our preferred option in the draft methodology

In our draft methodology proposals, we proposed to include all developer services revenues within the network plus controls but with a mechanism for adjusting revenues more transparently and symmetrically according to variations in the volume of new connections work.

The options that we considered included:

- option 1: maintaining the PR14 approach;
- option 2: treating developer services as excluded charges, whether in their entirety or limited to contestable activities; and
- option 3: maintaining developer services within the revenue controls, with a symmetric end of period revenue adjustment and forecasting incentive.

Our preferred approach was option 3.

Stakeholder responses

We received nine responses to our proposals for developer services. Respondents were divided. Five generally supported our proposal to maintain the inclusion of developer services within the network plus controls. Four companies argued that some, or all, of these services should be outside the scope of the control, with charging rules and competition law providing adequate protection.

Three companies commented on the volume adjustment specifically, with two suggesting it should reflect both the totex and revenue impact, while the other suggested the adjustment should reflect the volume of water supplied rather than customer numbers. Additionally, two companies argued that developer services should have its own revenue control.

One respondent noted that variation between developer services contributions and those forecast had not caused volatility in wholesale charges and so there was little need for regulatory intervention.

Our review, analysis and final decision

We have considered these responses and acknowledge that, in principle, competitive markets enable and encourage greater efficiency, higher quality and innovation in the provision of services and deliver long-term benefits to developers and customers more generally. Nevertheless, where the market is not effective, or where services are not contestable, targeted price regulation has an important role in protecting the interests of water customers and developers. Since our draft methodology proposals, we have revisited the options for the treatment of developer services and have analysed the following options.

Option 1: maintain the PR14 approach

This is the 'no change' option and involves maintaining the PR14 approach to developer services' revenues and totex (including provision for ex post adjustments by Ofwat) for the PR19 network plus water and wastewater controls.

We would maintain our current single till approach and include the developer services revenues inside the scope of the total revenue controls along with other regulated wholesale activities. Given the total income companies can earn from all wholesale and developer charges is fixed, the company would have to ensure that any change in income from developer services would be offset by a change in

income recovered from other wholesale charges to customers to maintain overall revenues in line with the revenue cap. Similarly, if income from developer services is lower than anticipated, the company would be able to increase other charges to offset the effect. This creates perverse incentives that discourage companies from serving developers efficiently or responding to competition.

We would retain the flexibility to propose a revenue adjustment as new information on connection volumes, costs, and revenues emerge.

Option 2: developer services treated outside the revenue control

We could exclude all developer services' revenues and associated totex from the network plus controls and rely on competition in the provision of new connections, competition law and new charging rules to protect the interests of developers and customers. This would mean that non-contestable services would be outside the scope of price regulation.

This approach would address some of the perverse incentive effects to minimise the volume of new connections. However, the approach may not encourage companies to serve developers efficiently, especially in the provision of non-contestable services.

This approach would also rely on accurately allocating costs and revenues between developers and customers when setting the controls. Companies may be incentivised to rebalance how costs are recovered across wholesale and developer charges. They could initially allocate a higher proportion of gross costs within the network plus controls and subsequently recover a higher proportion of costs through developer contributions. This would generate a reduction in net costs against the network plus controls which companies would be able to retain a proportion of, increasing profitability for the company.

Developers will receive some protection through competition law and other relevant legal requirements. Ofwat has powers to take action if there is a breach of competition law and/or charging rules. This option therefore relies on our ex post rather than ex ante regulatory powers. However these powers may not be needed. For non-contestable services, the new transparency measures we have introduced in relation to infrastructure charges (currently limited to companies whose areas are wholly or mainly in England) ensure that these charges are cost reflective. We expect to consult on charging rules and associate measures for companies whose areas are wholly or mainly in Wales in early 2018.

For contestable services, competition law and competitive pressure is likely to encourage greater efficiency and improvements in the quality of service. However,

the degree of contestability is mixed across company areas and across types of services. For example, self-lay organisations account for a significant proportion of wastewater connections and in certain new water connections, but the picture is mixed across the country. As a consequence, the market for contestable services may not provide consistent protection to developers and customers.

Option 3: hybrid – contestable developer services treated outside the revenue controls while non-contestable developer services remain inside the revenue controls

This is similar to option 2 in so far as contestable services would be excluded from the network plus water and wastewater controls. Competitive pressure should encourage greater efficiency and improvements in the quality of services, while competition law and new charging rules would provide some regulatory protection. Including non-contestable services within the network plus control enables targeted regulation of monopoly developer services, to provide appropriate incentives for efficiency in the absence of competition.

We would adopt a symmetric revenue adjustment mechanism for non-contestable activities to mitigate potential incentives to minimise non-contestable services. This would adjust revenues for changes in new connection volumes, maintaining the average revenue from non-contestable activities at the level assumed when setting the control.

A company's ability to rebalance the recovery of costs across developer and wholesale charges will depend on the degree of competitive pressure for contestable services. In the absence of effective competition, a company could generate a reduction in net costs against the network plus controls, increasing profitability. However, as with option two, companies would still have to comply with competition law and other relevant legal requirements.

Option 4: end-period volume correction mechanism with forecasting incentive

This option includes all developer services within the scope of the network plus total revenue controls, but with a symmetric revenue adjustment mechanism for variations in the volume of new connections work. The revenue adjustment mechanism would adjust revenues for changes in new connection volumes, maintaining the average revenue at the level assumed when setting the control. In addition we will remove contributions from developer services from totex cost sharing arrangements. This should maintain incentives for cost efficiency.

We have refined our approach in light of responses to our draft methodology proposals. Our mechanism would use size banding to acknowledge that any change

in the volume of services provided by the company will change the expected impact on costs and revenues, depending on the size of connections involved.

We will include an adjustment for inflation and cost of financing to the volume differences. We will apply an interest rate penalty to where there are large differences between the volume of new connections provided and the companies' forecasts to incentivise accurate forecasts.

The table below sets out our qualitative impact assessment of options for the developer services and further explains the rationale behind our final decision.

Table 2 – Developer services options

	Option 1	Option 2	Option 3	Option 4 Final decision
Achieving our objectives	Current arrangements potentially distort incentives to serve developers efficiently and respond to market signals due to the incentive to minimise the number of connections and ability to offset revenue loss by increasing wholesale charges. ✓	Reduced regulatory burden but can't ensure consumers are protected or effective competition is promoted. ✓	Reduced regulatory burden but can't fully ensure consumers are protected or effective competition is promoted. ✓	Would strike best balance between customer protection and company financeability. ✓✓

How our objectives are achieved	Single till approach in total revenue controls would still apply and totex sharing mechanism would still allow companies to reduce total contributions from developers and increase wholesale charges. ✘	It would automatically reflect volume trends. However relying only on charging rules and competition may lead to abusive behaviours. ✓	It would automatically partially reflect volume trends. With contestable services relying only on charging rules, this may reduce confusion and abusive behaviours. ✓✓	Symmetric adjustment of revenue for changes in volumes and removal of contributions from totex cost sharing would address perverse behaviour and provide incentives for cost efficiency. ✓✓
Practicality	Would not require additional arrangements. ✓✓	Would decrease complexity and require lower implementation costs from Ofwat but higher ex post enforcement costs. ✓	Would require information on cost allocation between contestable vs non-contestable markets to make an accurate split. ✓	Would require forecasting at an appropriate level of detail, to make accurate adjustments. This includes costs and revenues. ✓

We will adopt option 4, maintaining the wholesale elements of developer services within the scope of the network plus controls for PR19, largely maintaining our draft methodology proposals.

We recognise that the costs and average revenues of new connections can be influenced by development size and type. We will therefore determine the expected costs and average revenues for difference sizes and types of connection. We expect that companies will set out up to 5 bands for each of the network plus controls for connections with broadly similar characteristics.

For each of these bands, we would expect the company to set out the key characteristics, services provided and the expected costs, revenues and volumes associated with them. These will then form the basis of the revenue adjustment mechanism at the end of the period, where we will determine the total revenue adjustment after considering the volume changes associated with each band.

The key advantage of our approach is that it will provide incentives on companies to provide developer services efficiently and respond to competition; while ensuring that

developers and customers are adequately protected, where appropriate, by targeted regulation.

How our final decision will be applied

At PR19, we will maintain developer services within the scope of the network plus revenue controls.

We will determine the network plus water and wastewater controls to include the expected revenue associated with providing the wholesale developer services over 2020-25. At PR24, we will assess the revenue differences over the period and calculate the revenue surplus or shortfall based on actual volumes.

We will apply a symmetrical volume-based revenue adjustment mechanism to encourage companies to respond to changing demand for developer services, and to ensure costs are recovered appropriately from customers and developers. This will be based on the average revenues of providing new connections of different types and sizes. We will also adjust for inflation and the cost of finance. An illustrative example of the revenue adjustment mechanism is set out below.

It is important that companies take reasonable steps to forecast new connections volume accurately. The revenue adjustment mechanism may dilute companies' incentives to forecast the volume of new connections accurately. In light of this, we will adopt a forecasting incentive mechanism, to apply symmetrically where outturn volumes of connections over the control period differ significantly from the expected volumes underpinning the controls. We will adjust the interest rate applied to the revenue adjustment where volume differences are large, for example, by adding an additional penalty interest where monies need to be returned to customers or reducing the interest adjustment to compensate companies for forecasts of new connections that were too low. We will set the volume differentials that will trigger the incentive as part of companies' final determinations.

We recognise that local economic factors and other external drivers can influence the number and timing of new connections. We consider that companies are able to influence, to some extent, these risks and are best placed to manage them.

We will monitor the development of the contestable developer services market during the control period and revisit whether it would be appropriate to remove contestable services from the scope of future controls at PR24.

Box 1 shows how the revenue adjustment will be determined.

Box 1 – Developer services revenue adjustment mechanism

The developer services revenue adjustment factor (DSRA) will be applied for each of the network plus water and wastewater controls as follows:

$$DSRA = \left(\sum_{i=A}^E ((ANCV - FNCV)_i \times UNCR_i) + \sum_{i=A}^E ((ACV - FCV)_i \times UCR_i) \right) \times INT$$

$$\times INF$$

Where:

i - refers the relevant band for new connections provided, defined as part of the PR19 determination.

ANCV – is the number of new connections provided over the period (2020-25) where the appointee has provided non-contestable developer services

FNCV – is the number of new connections over the period (2020-25) that the appointed expected to provide non-contestable developer services

$(ANCV - FNCV)_i$ – is the difference between actual and forecast volumes for each relevant band

$UNCR_i$ – is the expected unit revenues from non-contestable developer services for each relevant band, set out as part of the PR19 determination. This should be consistent with the charging guidelines for infrastructure charges.

ACV – is the number of new connections provided over the period (2020-25) where the appointee has provided contestable developer services

FCV – is the number of new connections over the period (2020-25) that the appointed expected to provide contestable developer services

$(ACV - FCV)_i$ – is the difference between actual and forecast volumes for each relevant band

UCR_i – is the expected unit revenues from contestable developer services for each relevant band, set out as part of the PR19 determination. It should reflect the tot totex to deliver the total forecast number of connections for each relevant band, averaged and adjusted to expected revenue per connection

INT – is the interest rate adjustment, which will be the weighted average cost of capital set out at the final determination, adjusted by a penalty interest rate where the total number of new connections across all bands is significantly different from the total number of new connections that were expected for the period 2020-25.

INF – is the inflation adjustment that we will apply, which will be determined from the change to CPIH over the period.

In practice we will determine a separate adjustment for water and wastewater developer services, to be applied to the relevant control at PR24.

Box 2 provides a worked example of this adjustment for illustrative purposes.

Box 2 – End-period revenue correction mechanism – worked example

Scenario assumed

As part of their PR19 submission, a company forecasts their developer services activity over the 2020-25 period. Reporting against Ofwat's requirements to break down forecasted revenue first by contestable and non-contestable, then for contestable an appropriate banding and unit cost of each (of up to 5). For simplicity, in this example we do not distinguish between water and wastewater services.

- *Infrastructure charge receipts*_{forecast} = £20 million
- *Connection charge receipts*_{forecast} = £10 million
- *Requisitioned mains receipts*_{forecast} = £10 million
- *Other services (within price control)*_{forecast} = £3.5 million

Therefore forecasting £20 million non-contestable and £23.5 million contestable.

The company decides to apply 3 bands, band A representing developments with up to 5 connections, band B representing developments with more than 5 connections but less than 100 connections and band C representing developments with more than 100 connections.

The company forecasts the number of new connections within these bands. We have assumed that the revenue for non-contestable work is the same across all bands:

- $FNCV = 50,000$
- $FCV_A = 5,000$
- $FCV_B = 20,000$
- $FCV_C = 5,000$

Derived from totex and these expected connection volumes we determine the forecast unit revenues (based on the data provided in company business plans):

- $UNCR = £400$
- $UCR_A = £1000$
- $UCR_B = £800$
- $UCR_C = £500$

The company reports actual volumes and at the end of the period we have observed:

- $ANCV = 50,000$
- $ACV_A = 10,000$
- $ACV_B = 10,000$
- $ACV_C = 20,000$

The company accurately forecast the total number of connections, however won 10,000 more contestable services than forecast. The company did more expensive small-scale connections and more cheap large-scale connections, but did not win as many medium-size connections.

Calculation of the end-period revenue adjustment

$$DSRA = \left(\sum_{i=A}^E ((ANCV - FNCV)_i \times UNCR_i) + \sum_{i=A}^E ((ACV - FCV)_i \times UCR_i) \right) \times INT$$

$$\times INF$$

$$DSRA = ((50,000 - 50,000) \times 400 + (10,000 - 5,000) \times 1000$$

$$+ (10,000 - 20,000) \times 800 + (20,000 - 5,000) \times 500) \times INT$$

$$\times INF$$

$$DSRA = £4.5 \text{ million} \times INT \times INF$$

The total volume of connections provided in the area is in line with expectations, but the company has under forecast contestable works by around 10,000, connections. We will therefore make a positive revenue adjustment at PR24 to ensure that the company is remunerated for these additional connections,

although depending on the limits sets out as part of the final determination, this may trigger a penalty interest rate adjustment for inaccurate forecasting.

We will not apply cost sharing rates to developer services activities. This provides a strong efficiency incentive to lower average costs of providing new connections.

4.2 Revenue forecasting incentive (RFI)

The issue we were seeking to address

Companies set charges in advance of the start of the year, based on the best information available to ensure that their expected revenues from charges are aligned with their revenues allowed under their controls. Nevertheless, revenues they earn from charges may still vary from the revenue allowance.

There are many factors that may cause revenues to vary from the limits set by the revenue controls. These include risks that are partially controllable by companies, such as forecast accuracy, and other factors that management cannot fully control, such as the impact of weather on demand. Failure to set charges to recover allowed revenues by a company over the control period means that its future customers face the risk of being asked to pay more in future periods or that future customers benefit at the expense of current customers.

In PR14, we introduced a wholesale revenue forecasting incentive mechanism (WRFIM) to perform two key functions:

- to incentivise accurate wholesale revenue forecasting; and
- to correct for under/over-recovery of revenues associated with demand forecasts.

We consider that it remains appropriate that we continue with a revenue forecasting incentive mechanism but have refined our approach in line with the proposals to implement separate controls for water resources and bioresources. We will apply a revenue forecasting incentive (RFI) to the water resources and network plus water and wastewater controls. We do not consider an additional revenue forecasting incentive to be appropriate for bioresources, which will be subject to targeted volume forecasting incentives.

The average forecasting error across all companies for wholesale water revenues was 1.8% in 2015-16, compared to an average 2.6% adjustment over 2010-15

(under the revenue correction mechanism). Similar size deviations occurred in wastewater revenues. It is too early to say with certainty that impacts for 2015-16 are likely to be representative of the whole period 2015-20; we note in particular that 2015-16 was a relatively benign year in terms of the effect of weather on revenues.

In theory, both a move from a control on prices (through a prescribed tariff basket formula) at PR09 to a control on revenues at PR14 and the introduction of a forecasting incentive would suggest that the variation in 2015-20 should be lower than in 2010-15. This is because under a revenue control companies have a greater ability to change charges on an annual basis, rather than place limits on annual prices and an incentive to do so. This mitigates the impact of substantial annual revenue over (under)-recoveries.

We consider the financial incentive needs to be sufficient to focus management attention in this area, and based on the outturn data from 2015-16 presented above we consider the incentive strength that underpins the existing WRFIM remains appropriate for the RFI that we will implement for 2020-25.

At a sector level, we estimate that a 2% revenue over-recovery, without correction, would be equivalent to an impact of around 0.9% on RoRE¹ in a company's favour. Revenue under-recovery would be of similar size but negative impact on RoRE.

Our preferred option in the draft methodology

In our draft methodology proposals, our preferred option was to carry out in-period adjustments for over and under-recovery of wholesale revenues, with a financial incentive applied in-period to each year's recovered revenue.

The options that we considered included:

- an in-period revenue adjustment with an in-period financial incentive;
- an in-period revenue adjustment with an end-period financial incentive; and
- an end-period revenue adjustment with an end-period financial incentive.

¹ The impact on RoRE is calculated as the average of total revenues over five years divided by average regulated equity. It is based on sector figures that underpinned the 2014 final determinations, it hasn't been adjusted for bioresources, and will vary between companies depending on the relationship between revenue and RCV.

Stakeholder responses

Ten respondents commented on our proposal for the RFI. Our preferred option to apply an in-period revenue adjustment and financial incentive was supported by nine companies.

While one company suggested a change to the deadband range to account for metering levels, another company proposed retaining the range at its current level. Another company said that the strength of the existing mechanism is effective. One company asked for a worked example to increase transparency.

Our review, analysis and final decision

Following our full consideration of views expressed by respondents and the analysis carried out to support our draft methodology proposals, we will apply in-period adjustments for both under and over-recovered revenue and for the associated financial incentive. We note the general support for this approach from respondents. As we acknowledged in our draft methodology proposals, a licence amendment will be needed for in-period adjustments to be made.

We want companies to take responsibility for providing accurate forecasts as part of their business plan. As companies cannot entirely control demand risks, we envisage that a small but meaningful financial incentive applied to each year's revenue would be enough to achieve this aim. We consider the financial incentive needs to be sufficient to focus management attention in this area and, based on the outturn data from 2015-16 presented above, we consider the incentive strength that underpins the existing WRFIM remains appropriate for the incentive mechanism we apply for 2020-25.

In response to stakeholders' responses:

- We recognise that metering introduces some intrinsic degree of volatility, given that it involves, most of the time, a move from charges based on a known quantity such as a rateable value to volumetric charges, potentially resulting in highly metered companies being more exposed to variable weather conditions. At the same time, companies potentially gain a better understanding of customer usage to enable more accurate forecasting.
- Based on analysis of company forecasts from 2010-15 and in 2015-16, we do not find sufficient correlation between metering penetration and increasing forecasting errors in wholesale revenues. The evidence points toward higher metering penetration resulting in lower forecasting errors at the margin.

On balance, there is not sufficient evidence that metering penetration has a significant impact of revenue volatility and that the deadband proposed for the revenue forecasting incentive in the draft methodology remains appropriate.

We will be publishing the model for the RFI in early 2018 which will provide an example of how the mechanisms will operate in advance of business plan submission.

The table below sets out our qualitative impact assessment of options for the revenue forecasting incentive and further explains the rationale behind our final decision.

	Option 1 In-period adjustment and incentive Final decision	Option 2 In-period adjustment with end-period incentive	Option 3 End-period adjustment and incentive
Achieving our objectives	Best aligns customer protection and companies' financeability. Focuses company attention on predictable revenue profile over the period under more flexible control. ✓	An end-period incentive would promote accurate revenue forecasts only across the period, not in individual years. ✓	An end-period revenue adjustment means that the balance between consumer and financing objectives would be in part linked with a higher risk of greater volatility in bills and/or an unfair allocation of costs between current and future customers. ✓
How our objectives are achieved	Current charging flexibility may outweigh volatility from in-period adjustment. In-period financial incentives increase focus of current management to forecast accurately for each year. ✓✓	End-period financial incentives would encourage companies to take ownership for their charges and revenue profile. ✓	End-period adjustment may overly on companies' ability to smooth bills over time but without strong incentives, companies may focus on cash flow optimisation strategies at the expense of price stability. ✓
Practicality	In-period revenue adjustment and financial incentives would require a marginal increase in regulatory burden.	End of period financial incentives would require a marginal increase in regulatory burden. ✓	End of period revenue adjustment may be easier but it may require extra new tools to avoid

	✓		significant end of period adjustments. ✓✓
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How our final decision will be applied

Under our final position, a symmetric revenue adjustment and financial incentive will apply in-period, to each year's recovered revenue. Based on 2015-16 data and consultation responses we consider the strength of the existing incentive to be appropriate.

Our mechanism will specify allowed revenues for each year of the control period and at the end of each charging year, we will compare the allowed revenue with revenues recovered by companies in that year.

There will be a symmetric revenue adjustment applied in-period to true-up revenue differences and, where differences between actual and allowed revenues are greater than 2%, a financial penalty will apply.

Companies will be able to recover from customers (amend the target revenue to collect from customers) any shortfall (over-recovery), determined by the annual reporting and charging cycles.

We will exclude the impact of developer services from the revenue forecasting incentive.

To ensure the revenue adjustments are NPV neutral, we need a discount rate to ensure we take account of the time value of money. At PR14, we used the expected WACC over the next control period as a discount rate in calculating in-period revenue reconciliation, which was constant over time. In our PR19 final methodology an element of the WACC, the cost of new debt will be indexed to market benchmark interest rates and therefore WACC will not remain constant over the period. To avoid unnecessary complexity, we will use the WACC that we determine in setting the final determination and apply this constantly over the period.

As in PR14, we propose to offer a licence modification to ensure that in-period adjustments are allowed in 2020-25 and future price review periods. This would have an equivalent effect to the licence modification made in 2016 for most companies in relation to the current price review period.