



# PR19 draft determinations: cost assessment webinar

25 July 2019

|            | Item   | 09:30 to 10:30       |
|------------|--|----------------------|
| <b>1.0</b> | <b>Introduction</b>  | <b>09:30 - 09:35</b> |
| <b>2.0</b> | <b>Principal changes in base costs since IAP</b>                     | <b>09:35 – 10:20</b> |
| 2.1        | Changes to the scope of costs included in base costs                 |                      |
| 2.2        | Changes to our forecast of cost drivers                              |                      |
| 2.3        | Updated data provided by companies                                   |                      |
| 2.4        | Changes to our bioresources econometric models                       |                      |
| 2.5        | Real price effects and frontier shift                                |                      |
| 2.6        | Changes to our approach in residential retail                        |                      |
| <b>3.0</b> | <b>Principal changes in enhancement costs since IAP</b>              |                      |
| 3.1        | Move from capex to totex in enhancement models                       |                      |
| 3.2        | Enhancement opex implicit allowance within base models               |                      |
| 3.3        | Resilience enhancement assessment criteria                           |                      |
| 3.4        | Strategic regional water resources development                       |                      |
| 3.5        | Leakage funding assessment   |                      |
| 3.6        | Programme level efficiency: supply-demand balance & WINEP wastewater |                      |
| <b>4.0</b> | <b>Other changes since IAP</b>                                       |                      |
| 4.1        | Grants and contributions   |                      |
| 4.2        | Cost sharing   |                      |
| <b>5.0</b> | <b>Q&amp;A</b>   | <b>10:20 – 10:30</b> |

- The purpose of the webinar is to highlight **principal changes** to our cost assessment approach since the IAP
- Further information on our approach is published in the [Securing cost efficiency technical appendix](#) on our website. We have also published our [cost assessment models](#). See also [Strategic water resources technical appendix](#) for information in this area .
- There will be an opportunity for questions at the end of the webinar. The purpose of the Q&A is to **provide clarification** on our approach. The purpose is **not to debate the rationale** for our approach.
- We do not propose to cover very detailed company specific queries in this process. If a company has such a query they should submit it through the inbound query process. Further questions can be submitted via the query process.
- We will publish the slides on our website.
- Please **ensure you are on mute**.

## Principal changes in base costs since IAP

## Description of scope change

After further consideration since the IAP, we have decided to include a number of areas that were previously considered as enhancement in base costs.

These are summarised in the tables below:

### Water activities added to modelled base costs

| Activity                                    | Total totex requested (after reallocations) |
|---|---|
| New developments                            | £1,075m                                     |
| New connections element of new developments | £622m                                       |
| Addressing low pressure                     | £21m  |

### Wastewater activities added to modelled base costs

| Activity                            | Total totex requested (after reallocations) |
|-------------------------------------|---|
| New development and growth          | £825m                                       |
| Growth at sewage treatment works    | £1,150m                                     |
| Reduce flooding risk for properties | £869m                                       |

## Rationale for scope change

For IAP we developed 'growth' models in water and wastewater. These models included costs whose underlying driver is population growth:

- Water: new developments and new connection costs.
- Wastewater: new development and growth; growth at STWs; and reducing flooding risk for properties.

A number of companies raised issues with our assessment of growth costs, and we considered two main alternatives to address the concerns raised:

1. **Test similar models to those at IAP but on a totex basis.**
2. **Incorporate growth expenditure into our base models.** This is consistent with our view that growth related enhancement expenditure share similar characteristics to opex and capital maintenance.

**We decided to use the second alternative for draft determinations** because:

- We considered the stand-alone totex growth models did not offer an improvement relative to the models used at IAP.
- An integrated approach to base and growth costs: (i) removes concern related to inconsistent data allocation between growth and base activities; and (ii) removes the risk of double counting of enhancement opex.

**The only additional activity that we decided to add to base costs is expenditure to address low pressure.** Companies have always had a requirement to address low pressure and there is no new statutory threshold to obtain.

For further information please see section 3.2.1 of our 'Securing cost efficiency technical appendix'

## Context

To set cost allowances for 2020-25 we **form a view about the future value of the cost drivers that are used within our cost models.**

Developing an independent view of efficient costs is an important part of incentive-based regulation, and forming an independent view of cost drivers is a key part of this.

## Approach at IAP

- For the IAP, cost drivers were largely forecast using a **linear trend** or an **average over a number of historical years.**
- A number of companies challenged this approach because they considered that we had failed to consider their forecast of cost drivers.

## Company responses to our IAP

- For example, several companies suggest that our linear trend method to forecast connected properties is inappropriate for companies that grow at a faster rate in AMP7 than the historical period.
- Other companies also state that our linear trend method to forecast mains length fails to consider their programme of mains extensions that are scheduled to take place in AMP7.

## Approach at DD

We have taken on board company responses regarding our approach to forecasting cost drivers and made changes where we considered it appropriate to do so.

For example:

- We **develop our connected properties forecasts based on household growth rate projections produced by ONS.**
- We **base our mains length forecasts on the average of our trend based forecasts and company own forecasts.**

We explain all the changes we have made to our cost driver forecasts in the table below:

| Variable                        | IAP Approach  | DD Approach   |
|---------------------------------|---|---|
| <b>Connected properties</b>     | Based on historical growth rates for each company                             | Based on ONS household growth rate projections                          |
| <b>Length of mains</b>          | Based on historical growth rates for each company                             | Based on an average of historical growth rates and companies' forecasts |
| <b>Length of sewers</b>         |   |   |
| <b>Sewage load</b>              | Based on historical growth rates for each company                             | Based on companies' business plan projections                           |
| <b>Booster pumping stations</b> | Based on the average number in the period 2015/16 to 2017/18 for each company | Based on historical growth rates per company                            |
| <b>Weighted average density</b> | Based on the average of the last three years of actual data                   | Based on ONS household growth rate projections                          |

For further information please see section 3.2.2 of our 'Securing cost efficiency technical appendix'

We received revisions to historical data on two variables and updated our econometric models accordingly:

## Booster pumping stations for wholesale water

### Booster pumping stations for wholesale water

#### Context:

- We use the number of booster pumping stations as a driver of treated water distribution costs.
- The driver accounts for differences in topographies across water companies, and the implication on pumping requirements and network complexity, which in turn drive network costs.

#### All company query:

- The query process that followed the IAP clarified that **companies interpreted our definition of booster pumping stations in different ways**, leading to possible inconsistencies in the data.
- In May 2019 we issued a clarification to the definition of booster pumping stations and **asked companies to resubmit the data**.
- We clarified the definition as the 'total number of owned and operated potable water pumping stations that pump **into and within** the treated water distribution service'.
- We have reviewed companies' revised data and **decided to use the updated data in our models**.

#### Outcome:

- The number of booster pumping stations **remains a statistically significant variable in all relevant models**
- We tested alternative explanatory variables to capture differences in network complexity and energy requirements (such as average pumping head and pumping capacity) but **did not find a more robust cost driver**.

For further information please see section 3.2.4 of our 'Securing cost efficiency technical appendix'

## Approach at IAP

- We developed two bioresources econometric models to set efficient bioresources costs for AMP7.
- The models included two cost drivers:
  - **Sludge produced** to control for the volume of output produced.
  - **Population density or sewage treatment works per property** to control for economies of scale in sludge production.

## Company responses to our IAP

- Some companies argued that the bioresources models used at the IAP controlled for too few exogenous factors.
- They suggested that our bioresources models **do not sufficiently capture drivers of costs associated with sludge transport** even after controlling for density.

## Approach at DD

- We have reviewed our bioresources models in light of company representations.
- We tested alternative drivers to control for exogenous factors that may drive sludge transport costs and have **decided to include the percentage of load treated at band sizes 1-3 as an additional explanatory variable** in one of our bioresources models.
- This variable provides **a proxy for differences in sludge transport costs** associated with operating in rural and urban areas:
  - In rural areas, sewage is often treated in relatively small treatment works. The sludge will be transported to a larger treatment centre in order to achieve scale.
  - Therefore, a company that treats a large proportion of its sewage at small works (bands 1-3) is likely to incur higher costs associated with transporting sludge.
- We also tested other ways to control for differences in sludge transport costs between companies but **decided that the inclusion of 'percentage of load treated at band sizes 1-3' was the most robust solution.**

For further information please see section 3.2.3 of our 'Securing cost efficiency technical appendix'



## **Real price effects:**

- we make a real price effects adjustment for labour costs. Our adjustment is based on Office of Budget Responsibility forecasts of labour productivity and real wage growth.
- Given the uncertainty in the forecasts we consider that there should be an ex-post true up at PR24 based on outturn manufacturing wage growth .

## **Frontier shift**

- We continue to apply a frontier shift assumption of 1.5% per year.

Further detail in section 3.3.2 and annex 3 of our technical appendix.

## **Changes to our cost drivers**

We updated a number of our cost drivers with recent updates to the data made by the ONS.

- ✓ Coefficient on transience back to positive.
- ✓ Decided against using "council tax collection rate" as a cost driver

## **Change to the method for setting an efficiency challenge**

We have changed our method for calculating the efficiency challenge from using the 'forward-looking upper quartile' to using both the forward looking upper quartile and the historical upper quartile with equal weights

Further detail in section 6.1 of our technical appendix.

## Principal changes in enhancement costs since IAP

## **Approach at the initial assessment of plans**

At IAP we assessed enhancement activities on a capex basis and made an efficient capex allowance. We did not explicitly assess enhancement opex that companies proposed, except in certain areas where there were clear opex solutions (eg SDB, P-removal). Instead, we assumed that the implicit allowance for enhancement opex through our base econometric models was sufficient for all enhancement opex.

## **Approach at the draft determinations**

- ✓ At DD we assess enhancement activities on a totex basis. For example, for an activity where we have a benchmark model, we benchmark totex over the AMP7 period, rather than capex.
- ✓ We still consider that there is an implicit allowance for enhancement opex through our base econometric models. We estimate this implicit allowance and deduct it from our allowance.

Further detail in section 4.2 of our technical appendix.

# Enhancement opex implicit allowance within base models

## Rationale

Our enhancement models make totex allowances. However our base econometric models consider historical totex and so contain an implicit allowance for average historical enhancement opex. Therefore we remove enhancement opex from our base allowances.

## Methodology

1. A subset of companies report appropriate enhancement opex in 2017-18 in the relevant price controls. 2017-18 is halfway through the 2020-25 period and is considered an 'average' year

2. We determine sector average enhancement opex within each price control

3. We remove this proportion from our modelled allowance for each company in each relevant price control



## Future considerations

- Not all companies reported all relevant enhancement opex for the 2015-20 period
- Refining our approach requires better definitions and consistent data.

## Retained from IAP

Our **definition of resilience enhancement is unchanged**, we accept proposals that improve service resilience in the face of low probability and high consequence risks that are currently beyond management control, including investment to meet new, more onerous requirements arising from the National Flood Resilience Review.

## Principal changes since IAP

We've **refined the criteria required to demonstrate the need for investment**. For each proposed investment we seek evidence:

- of the specific cause of service failures and associated probability of failure the investment is proposing to address;
- of the consequence of failure to customer service;
- of how the failure and the consequence are currently beyond management control; and
- that the proposed investment clearly provides effective resilience benefits above the high standard we expect from base services.

## Sufficient evidence:

- **Service failures** should be **specific and plausible**.
- **Probabilities** should be provided in **quantitative** or **semi-quantitative** terms.
- **Measures to control failures and consequences** should be described.
- A description of **any overlap** between the proposed investments and any **improved performance measured by common performance commitments** should be provided.

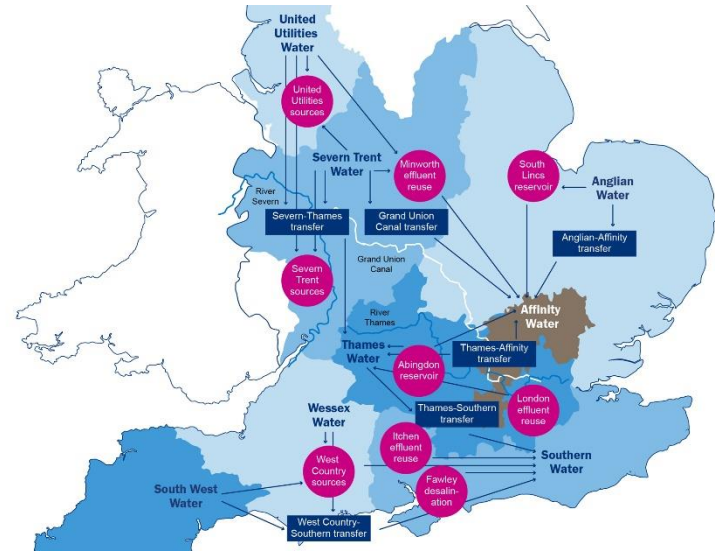
## For final determinations

- Some proposed investments might be eligible for resilience allowances but are insufficiently evidenced to establish the need. **We expect companies to provide better evidence** ahead of final determinations.

## 1. Development allowance

| Company            | Maximum development allowance 2020-25 (£m) |
|--------------------|--|
| Affinity Water     | 83.3                                       |
| Anglian Water      | 25.3                                       |
| Severn Trent Water | 43.3                                       |
| Southern Water     | 82.0                                       |
| South West Water   | 1.3  |
| Thames Water       | 179.2                                      |
| United Utilities   | 34.3                                       |
| Wessex Water       | 1.3  |
| <b>Total</b>       | <b>450.1</b>                               |

## 2. Strategic regional solutions



## 3. Delivery gates

Five delivery gates (four within 2020-25 period):

1. Initial feasibility, design and multi-solution decision – April 2021
2. Detailed feasibility, design and multi-solution decision making – April 2022
3. Finalised feasibility, pre-planning investigations and planning applications – April 2023
4. Planning applications, procurement strategy and land purchase – June 2024
5. Development consent order application – December 2025

## 4. Customer protection

Flexible reconciliation mechanism to allow the following:

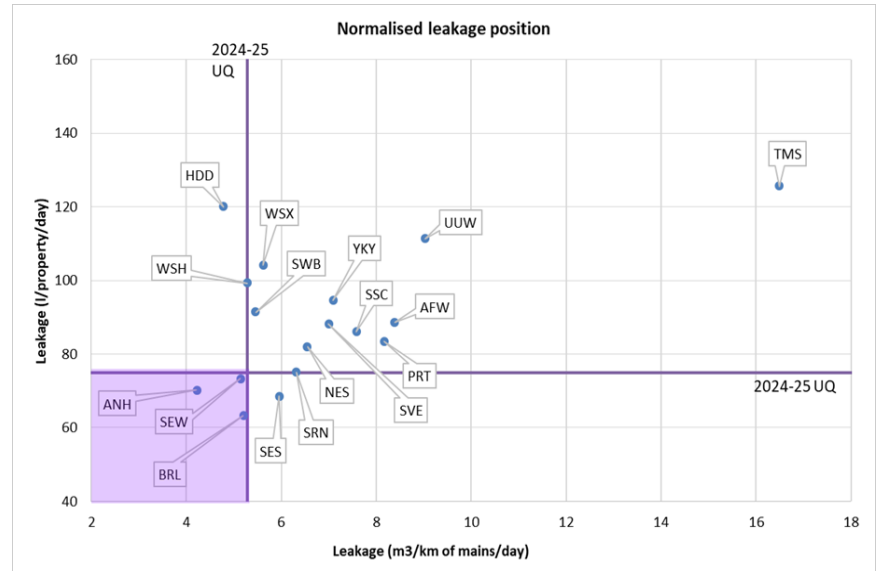
- Solution discontinued – returns future funding where a solution is cancelled partway.
- Solution substitution and reallocation – allows transfer development funding to a substitute solution.
- Partner substitution and reallocation – enables reallocation of funding for changes in solutions or solution partners.
- Delivery penalties – applies penalties for late delivery or poor quality of outputs.

## Funding performance

- We consider stretching performance commitment levels represent a base level of service. We expect an efficient company to be able to deliver these levels through our base cost allowance. Therefore, we have rejected requests for enhancement costs to catch up with our stretching performance commitments.
- An exception to this approach is leakage where we challenged companies to reduce leakage by at least 15% over the period 2020-25. Most companies responded to our challenge submitting stretching targets in business plans.
- Companies will receive outperformance payments if they exceed their performance commitment, including those where their target takes them beyond upper quartile performance. We consider it appropriate to allow enhancement funding for leakage reductions above the forward looking upper quartile and up to the performance commitment.

## Approach for draft determination

- Remove the 15% stretch target as a threshold for enhancement funding as this relates to in-period stretch covered by outcome delivery incentives.
- Retain the use of the upper quartile threshold in both normalised leakage measures for enhancement funding.
- No longer use the industry unit cost as this does not reflect the costs for the small number of companies receiving funding. Instead we use the company's own unit cost with company specific efficiency factor applied where applicable.



**Company forecast leakage performance (per kilometre of mains and per property) for 2024-25 post-draft determination intervention**



## Supply-demand balance: approach at IAP

- We assessed the short term supply-demand balance enhancement component and metering enhancement using benchmarking totex models or unit costs. We allowed companies the minimum of our view of efficient costs and their requested costs in each individual area.

## WINEP wastewater: approach at IAP

- We assessed these areas using benchmarking models, unit costs or through a shallow/deep dive process. We applied a cost challenge, where appropriate, to the individual areas and allowed companies the minimum of our view of efficient costs and their requested costs.

## Development of our approach

- There may be common activities that can be recorded under each enhancement area such as water efficiency activities working with customers to reduce usage as part of metering installation programmes.
- We do not consider other components of the supply-demand balance enhancement have the potential for such overlap in costs and benefits.
- We make a joint assessment to consider whether an adjustment to our allowances for the individual activities is appropriate.

## Development of our approach

- 92% of requested funding in this area is assessed using models or unit costs. We developed our models considering feedback from companies, for example, for assessing chemical removal and reducing sanitary parameters solutions.
- We note that there may be issues with the granularity of the models and how companies apportion costs between lines. We triangulate several models to maximise the factors considered in our assessments and assess if costs are efficient at a programme level.

## Programme level approach for draft determination

- If a company appears efficient in one area but inefficient in the other, we make an adjustment to the combined allowance.
- We calculate the total allowance from our two models and the total of the company's requested expenditure, and allow the lesser of the two totals.

## Programme level approach for draft determination

- We sum the output of all of the allowances from our models and deep dive assessments (now totex rather than capex) and apply a cost challenge at this level to arrive at our efficient view of costs.
- Our allowance is the minimum of our view of total costs and the total requested by the company.

## Other changes since IAP

## **Modelling new connections costs**

We considered comments made on cost models at IAP.

Our revised approach at DD uses botex+ modelling, where we include growth costs in our econometric models.

We have worked to try to address remaining issues, but have not found a straightforward solution.

We have devised a further data request so we could potentially create a bespoke developer services model.

If we do create a bespoke model, this would be a significant departure from the DD approach.

## **Grants and contributions**

For DD we used implied recovery rates from business plans to calculate grants received for water 'new developments' expenditure. For water and wastewater 'new connections' we assumed a 100% recovery rate.

## **Grants and contributions true up**

In our PR19 methodology, we introduced a true-up for developer services to remove any disincentive for companies to make new connections. We allowed companies to split their activities into up to 5 'bands' for contestable activities and 5 bands for non-contestable activities. This was to ensure that the end-of-period true-up would be cost-reflective.

## **Concerns with our true up approach**

This approach creates challenges. Our cost modelling is based on totex data, but companies' bands are based on revenues. The two data sources do not align well. Also, the bands vary considerably between companies, making comparisons difficult.

## **Forecasting incentive**

A forecasting penalty is triggered if companies' number of connections forecasts prove to be inaccurate. Our methodology described a developer services forecasting incentive (DSFI). Now we use company forecast connections rather than our view of connections to make our botex+ allowance we are dropping the DSFI and will consider developer services revenue as part of the revenue forecasting incentive.

## **Revised true up approach**

We will apply our botex+ efficiency challenge in the same proportion to companies' forecast G&C gross revenues (i.e. before any adjustment for income offset). We will divide this by the company forecast of new connections; to generate a company-specific unit-rate adjustment to be used for the basis of any true up.

A company-specific unit rate implicitly assumes the companies' mix of connections (e.g. proportion of self-lay, mix of brownfield vs. greenfield, etc.) remains the same over the control period so we will consider if adjustments are needed at PR24 if company evidence indicates the average rate has not accurately reflected their actual mix of connections.

Our cost sharing rates will be determined based on the company view of totex relative to our view of totex.

- For the company view of totex, we propose to place **50% weight on the company's September 2018 business plans** and **50% weight on the company final business plan** it provides with its representation to the draft determination.
- We propose to **amend the cost sharing rates** in the 110-120 range to ensure our mechanism incentivises companies to deliver efficient plans.

Response to common or significant issues raised by delegates during the webinar.



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