

PR24

Assessing base costs at PR24: response

February 2022

United Utilities' response to Ofwat's consultation on assessing base costs at PR24.

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Principles of PR24 base cost assessment

Q1. Do you agree with our principles of base cost assessment?

In general, we agree that Ofwat's principles of base cost assessment are appropriate. However, we consider that there is scope for the principles to be strengthened.

Firstly, whilst Ofwat's consultation states that these principles will apply to base cost assessment, we consider that they should be equally applicable to enhancement cost assessment. Indeed, in our view, this would be consistent with Principle 6 in that cost assessment should be coherent, not just within subcategories of cost (eg: base) but also more broadly across categories (ie: across base and enhancement.) This should help to facilitate an appropriate totex baseline, and make clear which activities Ofwat expects its totex baseline to deliver.

Secondly, we note that there is some potential for Principle 4 to contradict itself: *"The econometric cost models used to determine efficient base cost allowances should accurately predict and forecast efficient costs and be robust to scrutiny."* While targeting a robust model suite is a reasonable objective, it is possible for any apparent robustness to be the result of a chance correlation within the historical sample. It could also be the case that the models perform well at predicting historic expenditure, but in areas where the sector is expecting dramatic change, even robust backwards looking models would be incapable of predicting future expenditure. This could be the case in bioresources, which may need to transition towards a new operating model as a result of evolving environmental regulations.

This would mean that cost assessment would be unable to appropriately forecast future expenditure if future conditions are reasonably expected to be different. Therefore, we suggest that a robust modelling suite should be considered an *outcome* of the cost assessment process, rather than a fundamental principle. Instead, we would align Principle 4 to Principle 4 in our Future Ideas Lab paper¹, which states that cost assessment should be capable of reflecting future efficient expenditure, even where this is different to that experienced in the past, by considering the 'external validity' of the approach. This would prioritise the ability of cost assessment to predict future expenditure, rather than simply pursuing models with good historic fit but which could lead to an inappropriate answer for future periods.

Q2. Do you consider any important principles are missing?

As we set out in our 'Principles of Cost Assessment' Future Ideas Lab paper, we consider the first step of cost assessment must be to define (and hence to properly understand) the services companies provide. This principle ensures that cost assessment establishes a prior expectation that appropriate cost drivers will be needed to reflect the factors that drive variations in cost for each service. Failure to do this might mean that the cost assessment process inadvertently overly focuses on the "statistical fit" of models, and hence may not appropriately reflect efficient variations in cost across the industry for all areas of service, or may miss any operational trade-offs that exist between different stages of water and wastewater value chain. Therefore, we consider that Ofwat's cost assessment framework should recognise each service that companies provide, and demonstrate that its models are capable of capturing efficient variations in the cost of providing each service across the industry.

¹ UUW (2021) The Principles of Regulatory Cost Assessment. Available [here](#).

Approach to wholesale base cost modelling at PR24

Q3. Do you consider the scope of wholesale modelled base costs should be amended at PR24? If so, please explain how the potential amendment/s to wholesale modelled base costs can be justified based on our proposed assessment framework.

We disagree with Ofwat's interpretation that the CMA validated its approach to growth (page 23). Our interpretation was that the CMA was not able to identify or develop better approaches in the timeframe of the redetermination. Therefore, we consider that there is still merit in exploring alternative approaches. We also note that we supported (or rather we did not object to) Ofwat's move to include growth at the Draft Determination (DD) on the proviso that it didn't (at DD) have a significant impact on Ofwat's assessment of efficient cost for UUW. However, Ofwat changed its approach at final determination, which resulted in significant changes in the balance of costs recovered for growth across the industry. This level of uncertainty in cost assessment should not occur, and only arose due to the inclusion of growth within botex models. Ofwat's assessment for efficient cost of growth expenditure should be treated as a separate enhancement, with greater up front certainty over the cost assessment approach, to better enable companies to represent their growth requirements within their business plans.

However, currently Ofwat's position is to include growth in the botex models. While we agree that some cost allocation differences could exist between companies, we consider that the harm introduced by such differences needs to be balanced against the harm introduced by an incoherent framework. In our view, this balance overwhelmingly favours assessing growth separately from base costs:

- Including growth costs within modelled cost means that the alignment between growth costs and developer contributions is opaque. This undermines the principles of simplicity and transparency that Ofwat is seeking to promote, as per Section 1 of its consultation. For example, because Ofwat didn't calculate an explicit allowance for developer gross costs, it had to apply an 'efficiency challenge' adjustment to align the view of grants and contributions with the predicted allowance from the benchmark models. We think this should be avoided in future in the interests of securing a 'sensibly simple and transparent' framework and 'coherent cost assessment approach', which are both principles Ofwat is rightly seeking to promote at PR24. If Ofwat calculated a separate allowance this would have been avoided.
- As we set out in our '*Principles of Cost Assessment*' *Future Ideas Lab* paper², cost assessment needs to facilitate appropriate cost benchmarks for future periods. However, including discrete enhancement costs within the definition of modelled cost makes it hard to understand the extent to which costs are allocated to each discrete enhancement area. Indeed, without an appropriate cost driver it is likely that the botex models will misallocate costs for these enhancement categories. The opaqueness of this is a serious problem in the context of the Drainage and Wastewater Management Plan (DWMP) process, which will likely identify new enhancement requirements for the industry. It's reasonable to expect that these requirements will be captured in the 'growth' enhancement lines i.e. reducing internal sewer flooding and growth at STW. This will make Ofwat's assessment of DWMP projects much more opaque. Consider, for example, the following scenario:
 - A company's business plan contains discrete enhancement expenditure in a specific category.
 - Ofwat chooses to include this enhancement category in its base models, and assumes that its existing cost drivers are capable of explaining variations in growth costs.
 - An implicit allowance calculation suggests the company is underfunded relative to its business plan (we note that several stakeholders raised concerns about the robustness of implicit allowance calculations during PR19, and it is not clear how Ofwat will view any similar estimates provided by companies).
 - It's likely that the company will submit a cost adjustment claim. However, it is extremely difficult to robustly differentiate between costs covered by the base allowance and additional costs included in its

² UUW (2021) *The Principles of Regulatory Cost Assessment*. Available [here](#).

cost adjustment, to the evidential threshold demanded by Ofwat. Therefore, the opportunity for a company to (reasonably) make a valid cost adjustment claim would be prevented. The price control process should aim to avoid this circumstance as its aim is to ensure reasonable recovery of efficient costs.

- We strongly disagree with the growth unit cost adjustment applied by Ofwat and the CMA. This adjustment was applied at the Final Determination stage, and was intended to reflect differences in growth rates across the industry, in the absence of a suitable ‘growth’ cost driver. The lack of a reconciliation for any outturn variation to the forecast implied that the forecast variations in growth were certain to happen. However, as Ofwat’s Developer Services Revenue Adjustment (DSRA) mechanism recognises, future growth is inherently uncertain, necessitating a reconciliation against the forecast. Therefore, the logic underpinning these two elements of the framework was contradictory and incoherent (we note that the CMA’s inclusion of strategic assets in the DSRA implies that the CMA considers growth to be inherently uncertain, despite its adoption of the unit cost adjustment). As Table 1 shows, Ofwat’s approach appeared to under allocate growth costs to almost every company in the industry, and the CMA’s removal of the 50% cap on negative adjustments would have made the situation significantly worse. We do not support any approach which implies ex ante certainty in an area where forecasts are frequently and materially wrong (see Figure 1 for example), and where costs are primarily variable as opposed to the fixed costs which characterise much of the rest of the wholesale value chain. In our view, these characteristics mean growth is better assessed separately from all base costs, with developer services expenditure potentially moved to its own ‘average revenue’ price control.

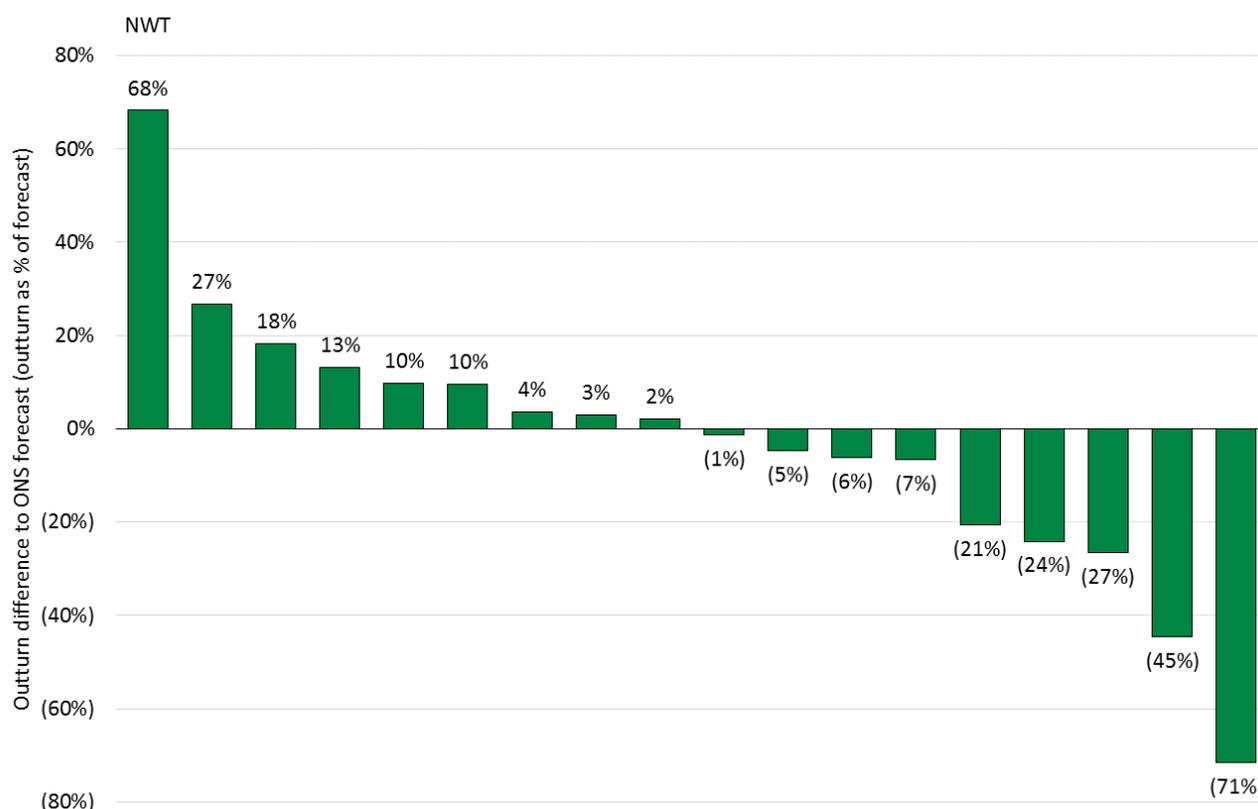
Table 1 Ofwat and the CMA's approach to growth under allocated costs to the industry

Company	Business plan (growth)	IAP allowance	FD implicit allowance	FD growth base adjustment	Implicit allowance + base adjustment	Gap at IAP	Gap at FD	Gap with CMA unit cost approach
ANH	716	568	330	91	421	(148)	(296)	(296)
HDD	6	3	7	(1)	6	(3)	(0)	(1)
NES	264	188	207	(26)	180	(75)	(83)	(110)
NWT	360	344	411	(55)	357	(16)	(4)	(58)
SRN	342	271	193	31	224	(70)	(118)	(118)
SVE	560	422	476	(20)	456	(139)	(104)	(123)
SWB	147	122	137	(0)	137	(25)	(10)	(10)
TMS	910	803	679	109	788	(107)	(121)	(121)
WSH	165	137	209	(16)	193	(28)	27	11
WSX	215	138	157	12	169	(77)	(46)	(46)
YKY	190	227	287	(35)	252	37	62	27
AFW	101	54	66	9	75	(47)	(26)	(26)
BRL	30	27	20	4	24	(3)	(6)	(6)
PRT	8	5	10	(10)	(0)	(3)	(8)	(18)
SES	18	9	11	2	13	(8)	(5)	(5)
SEW	84	47	37	7	44	(37)	(40)	(40)
SSC	68	42	27	(2)	25	(26)	(43)	(45)
IND	4,184	3,408	3,265	99	3,364	(776)	(820)	(986)

UUW analysis. Growth is aligned with Ofwat’s definition at PR19. The FD implicit allowance was calculated by removing all elements of growth from modelled costs and comparing the resulting allowance to Ofwat’s PR19 allowance.

- Outturn evidence suggests that the unit cost adjustment was particularly detrimental to U UW. As Figure 1 shows, 2020-21 outturn growth is significantly higher in U UW’s region than the growth unit cost adjustment assumed. This meant that the final determination approach did not adequately allow for the cost of growth within our region, with no compensatory mechanism to appropriately allocate risk. We were not permitted the opportunity to represent on the base adjustment due to its late inclusion at the FD. Overall, we do not consider this to align with Ofwat’s aspiration to accurately predict and forecast efficient costs within a transparent framework.

Figure 1 – Ofwat’s growth unit cost adjustment was particularly detrimental to U UW (labelled NWT)



- Maintaining growth within the models would result in companies with significant population movements from one internal region to another or to another company’s region being under-allocated costs due to the lack of an appropriate driver.
 - In the case of internal movements in population, the company would need to invest in additional infrastructure in areas of high growth while maintaining its assets in areas which have experienced negative population growth. However, the current botex models would not account for this effect due to the lack of an appropriate driver. Therefore, such companies would be penalised.
 - In the case of a movement to another company’s area, the receiving company would receive a larger cost allocation via the botex models, but the company with net negative internal migration would receive a lower allocation despite still having the same asset base.

Overall, we consider that the detriment introduced by including growth in the models outweighs any potential distortion introduced by cost allocation differences, and therefore are strongly in favour of removing all enhancement from the botex models, and assessing growth separately through stand-alone models and deep dives.

Finally, Ofwat should consider whether it is reasonable for atypical costs to be stripped out of the definition of modelled cost. In general, many atypical costs arise from “one off” or unusual events that may not occur every year (hence atypical). Whilst such events are not predictable, they are not inefficient (or unnecessary) costs –

they simply represent the necessary cost of managing unusual events. In addition, whilst each event may be atypical, companies (especially larger companies) may experience different atypical events in many years. They are a necessary part of the cost base of companies, and therefore we do not consider that it is appropriate for the regulatory settlement to ignore the associated costs, or to treat them as inefficient costs to be excluded from cost assessment. In addition, changing weather patterns are causing events that have previously been classed as 'atypical' to occur with greater frequency. For example, in the past we have reported atypical costs relating to the impact of winter storms. However, these weather events are becoming more frequent, which means that the costs of dealing with them could be considered 'business as usual'. We also note that the internal sewer flooding performance commitment includes flooding events recorded during an extreme weather event – it would therefore be incoherent not to adjust performance measures for atypical events, whilst also ignoring the costs of managing such events.

Therefore, we do not consider it would be appropriate for Ofwat to apply a one-size-fits-all exclusionary approach to atypical costs. Ofwat could consider whether it is appropriate for atypical costs to be included in modelled cost to ensure companies are allocated sufficient resources to deal with incidents driven by factors outside of management control. It should also consider whether the regulatory framework is suitably consistent where modelled costs do not reflect the impact of extreme weather events, but the outcome regime does. Please see our response to Ofwat's 'Assessing Base Costs at PR24' consultation for more details of our thinking in this area.

Q4. Would you recommend collecting additional data in relation to growth expenditure (cost and/or cost driver data) to improve cost assessment at PR24? If so, what additional data would you recommend collecting? Please provide definitions alongside suggested data additions.

We consider that Ofwat could create a dataset using the recent developer services data request. This would allow for the benchmarking of granular developer services activity. However, we do not believe that this should include any revenue information within this dataset, because this is not directly relevant to cost assessment.

We consider that there may be some merit in collecting data on property demolitions, which would allow cost assessment to reflect gross growth versus net growth. The ONS forecast is only a measure of net housing growth (i.e. it includes both new developments and reductions due to demolitions.) The cost for a company of facilitating growth within its region is more related to gross growth than net growth. Net growth may be a reasonable proxy for modelling purposes, but only if the relative proportion of net to gross growth is consistent across all company regions – which we do not believe is the case. Areas with low levels of net growth are more likely to be impacted by demolitions, and hence have a much greater (relative) requirement for gross growth. Hence modelling the efficient cost of growth using net new connection values will inherently favour companies with high levels of regional growth. This is also particularly compounded when modelling growth as part of botex models, which should be avoided.

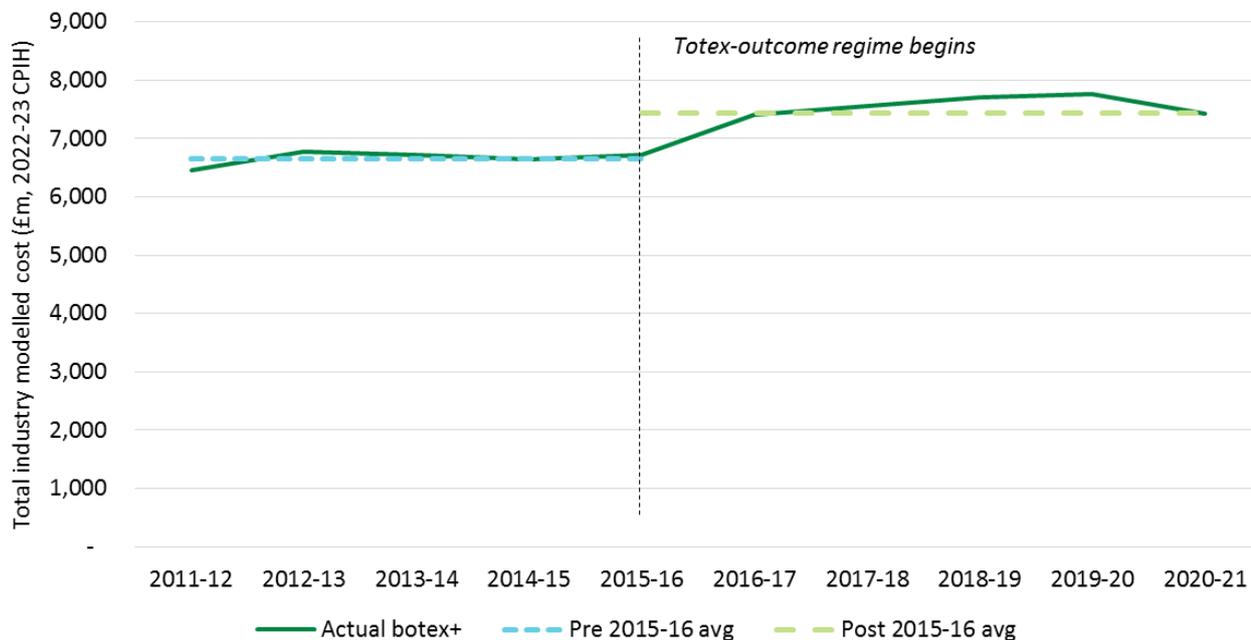
Q5. Do you agree that we should utilise the full historical data series available to develop the wholesale base cost models at PR24 (from 2011-12 onwards) unless there is clear justification for using a reduced time series (e.g. structural break that cannot be addressed through other remedies)?

Firstly, we note that a coherent framework requires the choice of modelled period to complement other elements of Ofwat's approach. For example, in principle we consider the frontier shift period should align to the modelled period absent any strong evidence that this is inappropriate. A coherent framework would need to account for wider changes in the regulatory framework that might create periods of operational instability, because the link between efficient cost and cost driver may be more opaque during such periods. Any such significant change would represent a structural break. In theory, a structural break within the modelled period could create bias and instability within the models, which could unduly influence Ofwat's benchmark. Therefore, in general, if a suitable alternative approach is available, we would favour it.

We consider we have identified evidence of a structural break in costs from AMP6 onwards. This coincides with the beginning of the totex-outcomes regime, which represented a departure from the output-focused regime that

operated before this period. As Figure 2 shows, companies have tended to spend more money from AMP6 onwards. Therefore, modelling using data from AMP6 onwards might provide a more appropriate estimate of cost under the totex-outcome regime. If Ofwat was to ignore this trend, then it might risk setting an unrealistic efficiency frontier, particularly if the catch-up and frontier shift efficiency challenges do not account for the implicit stretch created by ignoring the structural break.

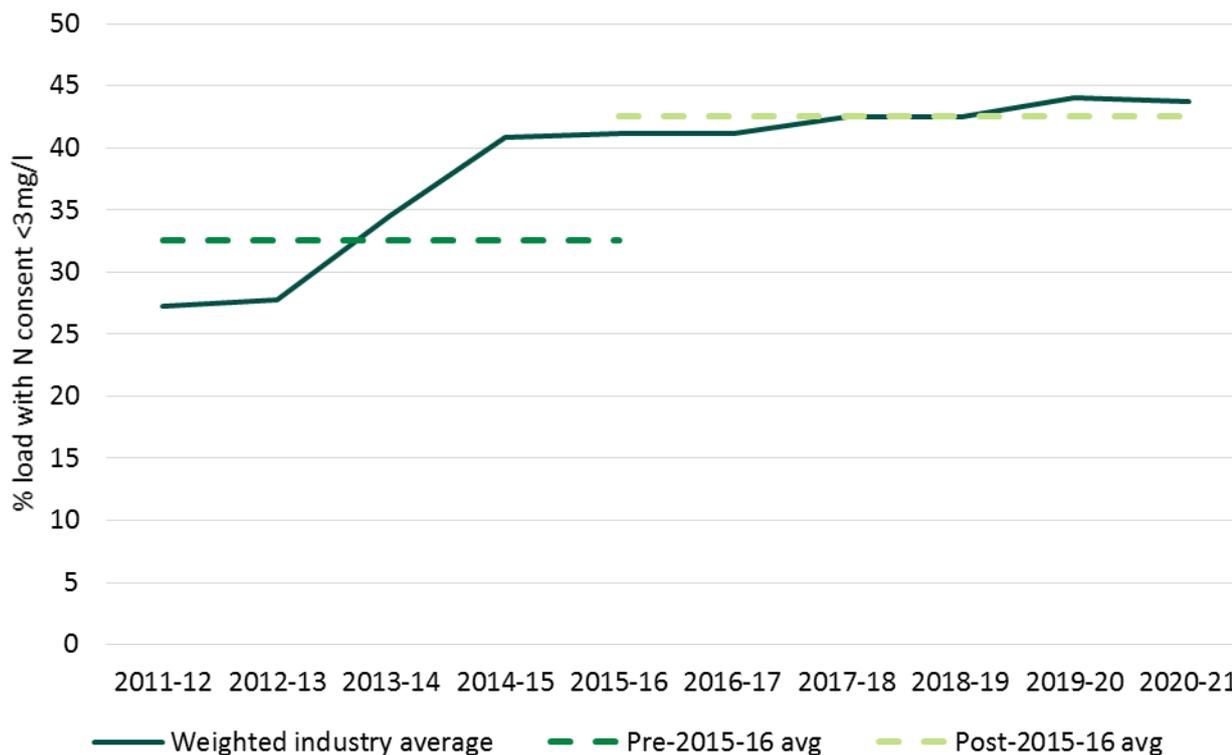
Figure 2 - There is evidence of a structural break with total industry botex+



However, we do consider that the benefit gained from more appropriate cost inputs needs to be weighed against potential issues that stem from estimating models with fewer data points, particularly in wastewater where there are only 11 companies:

- Less data means that the model estimates will be less precise, with fewer degrees of freedom.
- While Ofwat’s PR19 water models perform relatively well using data from 2015-16 to 2020-21, the wastewater models are not as robust. Several cost drivers suffer from weakened statistical significance and appear to be of smaller magnitude. For example, Figure 3 suggests that treatment complexity requirements have been increasing since 2011-12 suggesting that Ofwat’s cost drivers from PR19 may need to be respecified to capture new trends in the industry.

Figure 3 - A more stringent treatment complexity driver may be appropriate given trends over the period.



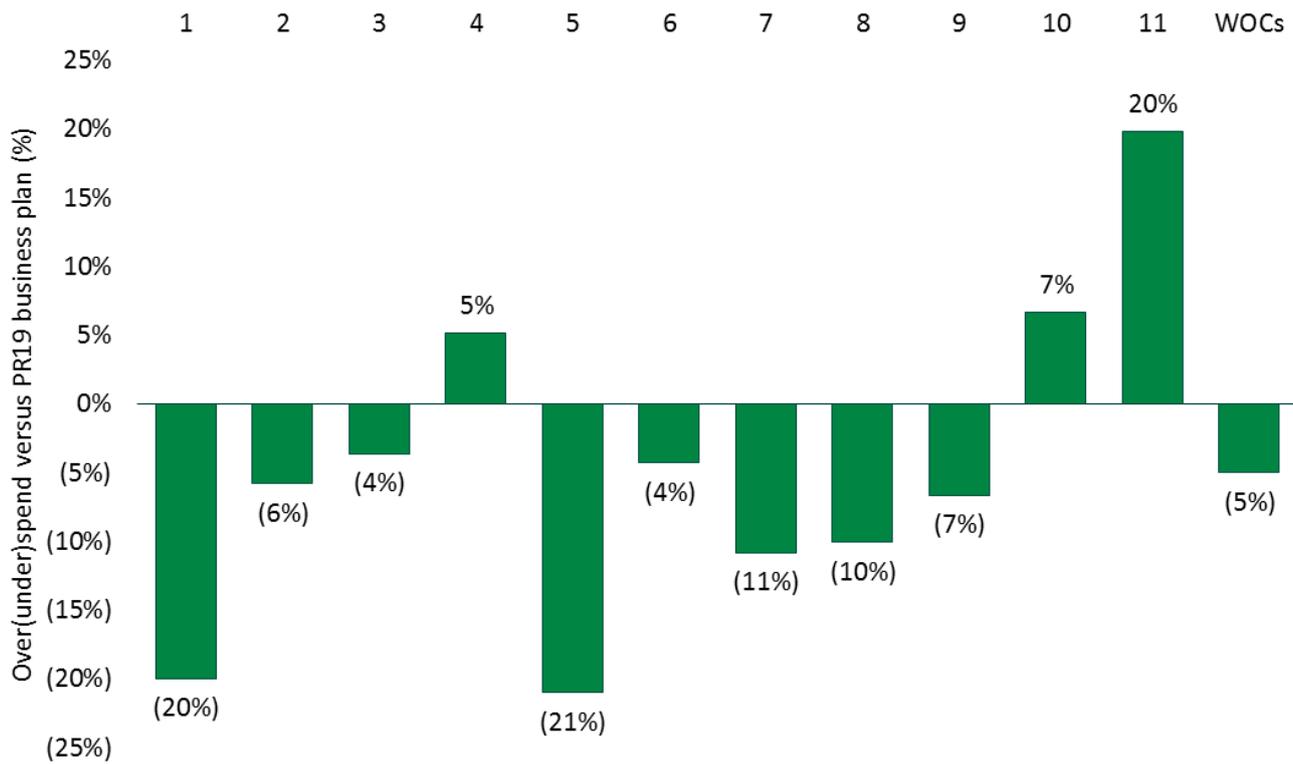
Q6. Should we consider including business plan forecasts in our wholesale base cost models at PR24?

As our ‘Principles of cost assessment’ Future Ideas Lab paper states³, we consider that cost assessment should be entirely independent of company influence because this aligns with a competitive market environment, where the prevailing market price and the costs of more efficient competitors are out of the hands of market participants. The inclusion of business plan forecasts in the models would mean companies are able to directly influence the benchmarking process by adjusting the costs within their business plan. We are concerned that this could incentivise companies to submit inefficient plans, which would make the problem of information asymmetry worse and so hamper Ofwat’s ability to effectively challenge the sector.

A less principled, more practical problem is that an individual business plan forecast is much more likely to have poor predictive power, and therefore be an inappropriate basis to set an efficiency benchmark. For example, Figure 4 compares companies’ outturn expenditure in 2020-21 (excluding timing differences) to their expectations when submitting their PR19 plans. It is clear from this that there are significant and material differences between expectations and reality. Some of the difference may be explained by the presence of regulatory incentives within the price review process. However, it is likely that much of this difference is simply because the future is inherently uncertain.

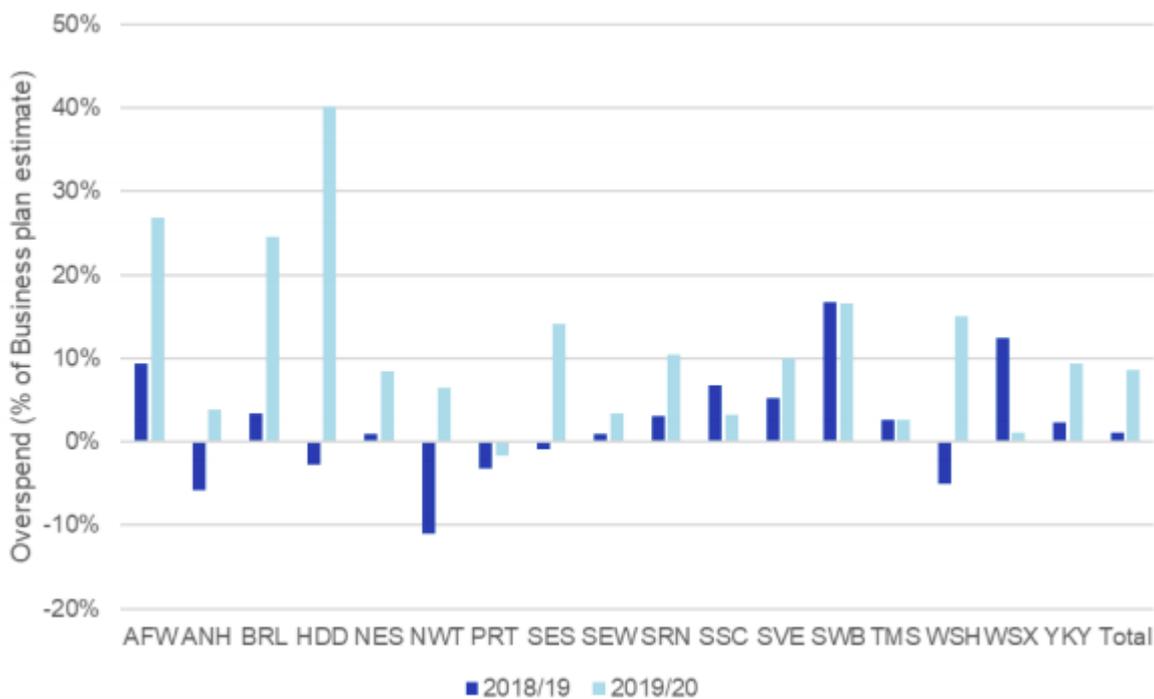
³ Uuw (2021) *The Principles of Regulatory Cost Assessment*. Available [here](#).

Figure 4 - How companies' expenditure in 2020-21 compared to their business plans (excluding timing variation)



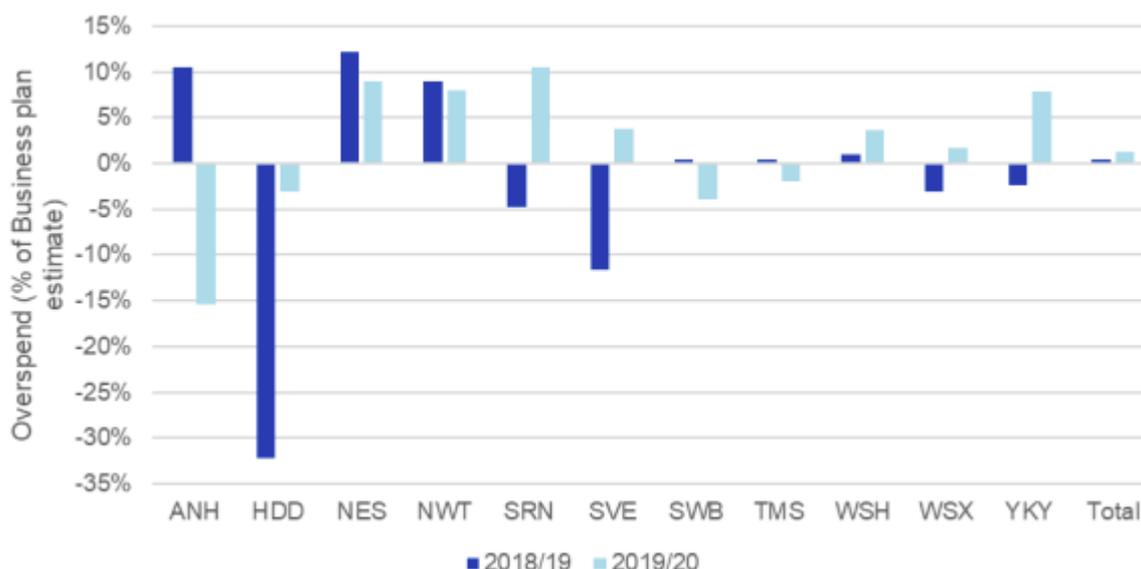
The CMA also noted the poor predictive power of business plan information in its redetermination⁴. Figure 5 and Figure 6 demonstrate that companies tended to spend more than they stated in their business plan for the years 2018-19 and 2019-20.

Figure 5 - CMA analysis of actual water expenditure versus business plan expectations



⁴ CMA (2021) *Final Report: appendices and glossary*. Page C30. Available [here](#).

Figure 6 - CMA analysis of actual wastewater expenditure versus business plan expectations



However, in some limited circumstances, the harm created by ignoring future cost pressures in the benchmark may be greater than the harm created by compromising the independence of the benchmark. Whilst we would not generally support the inclusion of forecast data in the core modelling suite, we do consider that there is scope in some circumstances for forward looking information to be used as a crosscheck against Ofwat’s modelled allowances, in the form of a supplementary assessment. This could allow Ofwat to challenge companies’ plans where there are unexplained differences or understand whether there is a common factor driving higher or lower costs across the industry. It may also allow Ofwat to test whether new cost drivers are needed to reflect future variations in efficient cost. In this way, Ofwat would be able to understand whether its framework is effectively reflecting future expenditure requirements across the sector.

As an example, Farming Rules for Water (FRfW) could have a significant impact on the bioresources value chain, by requiring companies to develop additional disposal routes for their sludge. This would likely increase bioresources costs across the industry, which would not be reflected in the backwards looking models. Incorporating forward looking information in this case could be a useful way assess whether bioresources cost benchmarks are appropriate.

If such an approach is taken however, Ofwat must ensure that its wider framework is coherent. For example, we note that companies will anticipate future efficiencies in their business plans, so a coherent framework would need to address the risk of ‘double-counting’ these efficiencies within the forward looking ‘frontier shift’ challenge.

Q7. Do you agree with our proposed target wholesale base cost modelling suite at PR24?

In summary:

- We would prefer Ofwat takes a more comprehensive (and less simplistic) approach to its modelling approach. This is in line with the proposals that we made at PR19⁵ to utilise a more diverse suite of models, with appropriate triangulation of those models.
- However, in the context of Ofwat’s “sensibly simple” approach, its proposed models are not unreasonable, although the approach to assessing Bioresources costs will need to be reconsidered given the recent significant changes in environmental regulation. In addition, Ofwat’s approach necessitates a more permissive stance towards the need for cost adjustment claims, as its more simplistic suites of models are much more likely to result in omitted variables and omitted significant impacts on company costs. It is our view, as discussed below, that at PR19 the approach to cost adjustment claims was

⁵ UUW (2018) S6002: Cost assessment proposal. Available [here](#).

considerably too stringent for the purposes of augmenting the “sensibly simple” modelling approach in support of an efficient totex benchmark.

Firstly, it is important to note that the model suite is only one component of cost assessment. As such, our opinion on its appropriateness will be conditioned by its coherence with the other elements of the framework. However, considered in isolation, it appears to be reasonable.

As noted above, Ofwat’s proposed modelling split is less diverse than our PR19 proposal, with less cost drivers and model splits. We consider that our proposal⁶ remains the appropriate way to approach cost assessment. It promoted the use of a wide variety of modelling splits and cost drivers to capture key sources of variation in efficient costs across the industry. It also suggested an innovative form of triangulation, which sought to ensure no company is disproportionately benefitted or penalised by the models. By comparison, Ofwat’s proposed model suite is simpler with less models and a smaller basket of cost drivers. As a result, we consider it likely that companies will seek a relatively larger number of cost adjustment claims. Notwithstanding our preference for our proposal, we did consider that Ofwat’s models at PR19 were largely legitimate, although we maintain our view that there was an incoherency between Ofwat’s ‘sensibly simple’ models and its stringent cost adjustment regime (see our response to Q17 for more details).

In the particular case of bioresources, we note that there is considerable uncertainty relating to potential future requirements driven by Farming Rules for Water (FRfW). At the same time, Ofwat is proposing to substantially evolve its approach to benchmarking bioresources activity. Currently, we do not consider that the predominantly backwards-looking approach being promoted by Ofwat will be able to reflect the new potential requirements driven by FRfW. Bioresources must be assessed using an appropriately targeted framework. Our response to Ofwat’s ‘*funding bioresources at PR24*’ consultation will set out more details of our thinking in this area.

However, while we consider that bioresources can be assessed separately through a specially targeted process, substitution effects across the wastewater treatment and bioresources value chains will persist and will still need to be accounted for. For this reason, we consider that it would be inappropriate for Ofwat to apply a catch-up challenge based upon the individual price control residuals. We note that Ofwat hopes to facilitate such a challenge by collecting additional historic data that aligns with its updated RAGs. However, this does not address the more fundamental problem of substitution effects. As such, we consider Ofwat should continue to set its catch-up challenge at an aggregated wastewater level.

Q8. Do you consider it would be worthwhile attempting to develop wholesale wastewater network plus models for PR24? If so, do you propose any potential wastewater network plus cost model specifications to consider?

It is always worthwhile to explore new potential improvements to cost assessment. As we said in our cost assessment proposal at PR19⁷, a more diverse model suite will provide better information and result in better cost assessment. A wastewater network plus (WwNP) modelling split has the potential to capture substitution effects that might exist between sewage collection and sewage treatment. For this reason, if such models were supported by engineering and operational logic then we would consider them to provide useful additional information on efficient costs in the sector. We note that Arup and Vivid Economics⁸ noted the clear engineering rationale behind using a measure of urban rainfall to explain variations in efficient wastewater costs. As such, any engineering-led approach to a wastewater network plus model should incorporate urban rainfall. We discuss this more in our response to Q11.

Whilst we would be supportive of a WwNP modelling split, as we state in our response to Q7, we consider that the presence of substitution effects between wastewater treatment and bioresources means that Ofwat must maintain a bioresources plus modelling split. As such, any wastewater network plus model(s) should supplement

⁶ Uuw (2018) S6002: Cost assessment proposal. Available [here](#)

⁷ Uuw (2018) S6002: Cost assessment proposal. Available [here](#).

⁸ Arup and Vivid Economics (2017) *Understanding the exogenous drivers of wholesale wastewater costs in England and Wales*. Available [here](#).

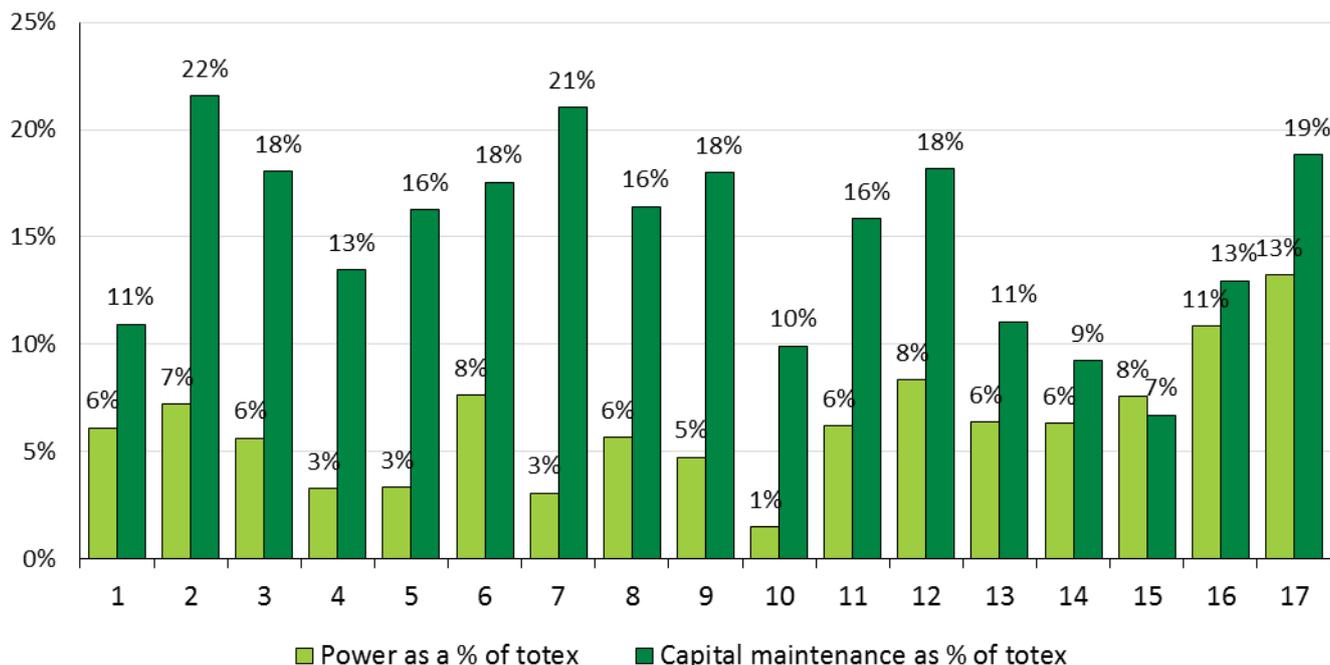
a model suite which includes a ‘bioresources plus’ model split and applies an aggregated ‘wastewater’ efficiency challenge.

Q9. Do you think we should reconsider the inclusion of APH in the wholesale water base cost models at PR24? If so, should it be a substitute for, or additional to, booster pumping stations per length of mains?

A consistent APH measure represents a potential way to model power costs, but the association with all base expenditure is less clear-cut. It is widely accepted that there are significant reporting differences between companies and so actually drawing any conclusions from the current data is of little value. While we note that this area is currently under investigation by Ofwat, it remains to be seen what the outputs will tell us and whether this will be of use within cost assessment for PR24. In any event, we would question whether APH is actually a better variable to use in explaining all base costs compared to an asset-based measure, such as booster pumping stations, which Ofwat used at PR19.

Power costs within the water price controls represent a comparatively small percentage of total costs for companies. For cost assessment models, we are looking to select the best variable for a particular driver to explain all base costs, not simply one for power cost variations between companies (in this case, topography). As Figure 7 illustrates for treated water distribution (the same relationship holds for other value chains), non-infra capital maintenance is a much larger component of total expenditure than power and there are clear differences between companies that need to be accounted for within a model. Attempting to predict capital maintenance rather than power also has clearer linkages to both asset health and resilience. Engineering and economic logic would dictate that an asset based metric should be far superior in accounting for all of the costs associated with operating and maintaining these assets compared to a variable that only accounted for the associated power costs. It makes sense that a measure of the number of stations has a far greater chance of explaining all base costs, including power, than a measure of pumping head has for explaining capital maintenance requirements. Companies need to operate and maintain their assets and so we believe that Ofwat should continue to use an asset-based measure, such as booster pumping stations, to reflect the base expenditure differences between companies rather than attempt to use average pumping head, which will only capture power differences.

Figure 7 – TWD power and non-infra capital maintenance costs as a percentage of totex (2011-12 to 2020-21)



Finally, on Ofwat’s question for whether APH could supplement booster pumping stations within the same model, it isn’t clear to us what benefit is achieved by targeting such a small proportion of overall cost with two separate variables. Ofwat has built its PR19 models using engineering narrative to support the inclusion of cost drivers and

variables. To us, there is no clear omitted driver that Ofwat would be trying to account for by including both variables in a single model. Including both variables is essentially overfitting the model for an area of expenditure (power) that is not actually the most material across the sector. We do not consider this to be an appropriate trade-off with 'sensible simplicity' or a helpful use the limited degrees of freedom that we are trying to develop models with, and so do not believe there is good reason to include both in a model.

Q10. Should we consider replacing the existing 'load treated in size band 6' variable with 'load treated in band 8 and above' in the relevant wholesale wastewater base cost models?

We agree with Anglian that the range of WWTW currently included in band 6 is too wide and consider that replacing the existing 'load treated in size band 6 and above' should be investigated to test if it results in a more appropriate model that better satisfies the principles of cost assessment. As such, we would support the new definition of 'load treated in band 8 and above' if there is underlying engineering rationale for this definition.

Q11. Please provide detailed proposals for any additional / alternative cost drivers and explanatory variables we should consider at PR24, including clearly defined data requirements that would need to be collected from companies.

Firstly, we would like to make clear our understanding of the difference between a cost driver and a variable. The cost driver is the factor that engineering, operational and economic logic suggests causes variations in cost. A variable represents one potential approach to proxy that cost driver in an econometric model. To take one example, pumping head is not a cost driver, it is a variable; topography is the associated cost driver.

We consider that there is a significant need for Ofwat's approach to wastewater cost assessment to better reflect the complex interactions between providing both foul sewage and surface water drainage services. This is a particular issue for companies, such as UUW, that face challenges from operating in areas with high drainage requirements, especially where there is a high prevalence of combined sewers which compound hydraulic issues. We consider that the associated cost driver is network capacity and complexity, and as such would fit within Ofwat's current cost driver framework. There is compelling engineering, operational and economic rationale that supports the inclusion of network complexity factors⁹. We have two suggestions for variables that would reflect this rationale by capturing the complexity of service provision within the sewage collection network, both of which are supported by robust engineering rationale.

The first is a measure of urban rainfall, normalised by sewer length. Arup and Vivid Economics produced a measure of urban rainfall at PR19, but Ofwat ultimately chose not to use it. Our understanding is that this conclusion was reached because Ofwat considered the cost of drainage to be correlated with company scale (and therefore remunerated by the scale driver): *"While this variable was found to be significant in our econometric models, it was highly collinear with our scale driver, length of sewer. We drew the conclusion that a large portion of the claim was already captured by an implicit allowance within our base allowance"*¹⁰.

However, as Table 2 demonstrates, when the variable is normalised to account for company scale, it performs well in Ofwat's sewage collection models, supplemented with two additional years of data. The coefficients on other cost drivers are not materially affected, while the constant term is, suggesting the model is picking up variation between companies that was previously assumed to be constant.

⁹ Arup and Vivid Economics (2017) *Understanding the exogenous drivers of wholesale wastewater costs in England and Wales*. Available [here](#).

¹⁰ Ofwat (2019) *United Utilities: cost efficiency additional information appendix*. Available [here](#).

Table 2 Ofwat's sewage collection models with urban rainfall

Driver	SWC1	SWC2	SWC1 + urban rainfall	SWC2+ urban rainfall
ln(Sewer length)	0.857***	0.886***	0.896***	0.917***
ln(Pumping capacity per length)	0.368	0.579*	0.397	0.576*
ln(Properties per length)	1.062***		0.968**	
ln(WAD)		0.177		0.164
ln(Urban rainfall per length)			0.153***	0.158***
Constant	-8.661***	-6.372***	-8.117***	-5.956***
Sample size	100	100	100	100
Estimator	RE	RE	RE	RE
R squared	0.9	0.856	0.906	0.867

Therefore, we consider that Ofwat should incorporate this factor into its wastewater modelling suite to capture the variances in efficient cost that are driven by the interaction between regional climates and the wastewater service. We have previously provided this driver to Ofwat but note we would be happy to provide an updated version. If Ofwat does not consider this measure to be appropriate, then we consider it should collect an alternate measure to inform its decisions at PR24. We would be happy to work with Ofwat to explore opportunities to achieve this in the interests of delivering a more complete and comprehensive modelling approach.

The second is combined sewers. Our recent wastewater ‘hackathon’ reaffirmed that combined sewers increase network complexity. As Table 3 shows, when a combined sewers variable is included in Ofwat’s PR19 sewage collection models (updated for additional years’ data), it is clear that the factor has strong statistical power. While Model 2’s scale driver increases above 1, Model 1’s scale driver remains intuitive. This suggests that Ofwat’s models are understating the impact of scale, because companies with large amounts of combined sewers will artificially depress the scale driver despite such companies still having to provide both a foul and surface water service.

Table 3 Ofwat's sewage collection models with combined sewers

Driver	SWC1	SWC2	SWC1 + % combined sewers	SWC2 + % combined sewers
ln(Sewer length)	0.857***	0.886***	0.967***	1.011***
ln(Pumping capacity per length)	0.368	0.579*	0.488*	0.710**
ln(Properties per length)	1.062***		0.997**	
ln(WAD)		0.177		0.217
Percentage combined sewers			0.008***	0.012**
Constant	-8.661***	-6.372***	-9.812***	-8.292***
Sample size	100	100	100	100
Estimator	RE	RE	RE	RE
R squared	0.9	0.856	0.915	0.895

UUW analysis

Q12. Do you agree that we should maintain the use of random effects to estimate our wholesale base cost models at PR24?

We note that the assumptions required by random effects are unlikely to be met in the context of regulatory benchmarking, but we note this also holds true for OLS. This is therefore an empirical question, which should be led by the appropriate statistical logic.

One comment we do have relates to how Ofwat will apply its proposed principles for base cost assessment in this area. Ofwat's Principle 4 states it will target a robust model suite. However, at this stage we do not consider it is possible yet to know whether random effects is best placed to deliver this relative to alternative estimation methods, as it will depend on how well such models perform at the time of the price control.

Q13. Do you agree with our proposed model selection process?

We do support Ofwat's proposed model selection process, and consider that Ofwat's implementation of this process at PR19 played an important role in the model suite relative to PR14.

However, we would caution against an approach that used the model selection criteria to narrow down a selection of equally appropriate models. In such circumstances, we consider that it would be entirely legitimate to triangulate between multiple legitimate models (each of which reflecting different interactions between factors and company costs), rather than potentially justify a model's exclusion because one of its statistical indicators is marginally worse. As we set out in our PR19 cost assessment proposal¹¹, we consider that using a wide variety of cost drivers and model triangulations should provide a richer understanding of efficient costs, with less need for cost adjustments, as opposed to the 'sensibly simple' approach adopted by Ofwat which, all else equal, would increase the need for cost adjustments.

¹¹ U UW (2018) S6002: Cost assessment proposal. Available [here](#).

Cost adjustment claims

Q14. Do you agree that the cost adjustment claim process at PR24 should be separated between base (wholesale and residential retail) and enhancement claims?

We don't have any principled objections to this suggestion. We consider that this separation should allow the assessment gates to be better targeted across base cost adjustments and enhancement claims.

Q15. What base cost adjustment claims (wholesale and residential retail) would you consider submitting if the PR19 base cost models were used to assess efficient costs at PR24?

Regional operating circumstances are (broadly) unchanged so we anticipate that companies will seek similar cost adjustments to those they have previously submitted, unless new emerging pressures are impacting their cost bases. We also note that companies' final view of potential cost adjustment claims will be conditioned by the final model suite, so it's possible that some adjustments are withdrawn or new ones submitted once Ofwat has published it. However, we provide an indicative list of possible cost adjustment claims below:

- We anticipate that we may propose a cost adjustment claim relating to the cost of **maintaining our unusually large fleet of reservoirs**. The PR19 models do not account for the scale of our reservoir fleet, and following the incident at the Canal and Rivers Trust reservoir in Whaley Bridge and subsequent Balmforth Report, independent inspectors have become more risk averse. We expect this to drive significant additional maintenance requirements, additional to those identified at PR19.
- We also anticipate we may submit a claim relating to the cost of **providing drainage services in an area of unusually high urban surface water run-off**. Currently, Ofwat's framework does not recognise that our regional operating circumstances drive higher efficient cost. Recent work such as our internal sewer flooding 'hackathon' has revealed new evidence, and new work in this area continues to point to the importance of factors which the PR19 approach did not account for, such as urban run-off and the proportion of combined sewers.
- While there is considerable uncertainty in this area, it is possible that changes to **Farming Rules for Water (FRfW)** could drive additional expenditure requirements in bioresources if current disposal routes are no longer viable. Given the lack of such requirements in the past, we consider a cost adjustment would be an appropriate route to address this issue. We note that Ofwat's approach to funding bioresources at PR24 is subject to a separate consultation, and we provide more details in that response.
- We are forecasting that our wastewater WINEP could be especially large in AMP8, relative to the rest of the industry. Additional investment is driven by potential requirements relating to the Manchester Ship Canal. We still await Environment Agency guidance but are using our DWMP process to develop options that fit our long-term ambitions that could phase and mitigate the scale of investment. However, if statutory drivers materialise then **the scale of WINEP investment will create significant additional maintenance requirements**, beginning in AMP8. Our current understanding is that Ofwat's models wouldn't appropriately reflect this maintenance expenditure. Therefore, we may propose a cost adjustment if expected maintenance expenditure is materially larger than the modelled implicit allowance.
- **Our region is characterised by significant coastal conurbations, which has driven us to install extremely large sewers adjacent to coastal areas**. These sewers are associated with higher maintenance and operating costs because, for example, they are significantly harder to inspect and are liable to fill with sand. We may propose a cost adjustment if we consider the botex baseline does not appropriately recognise this.
- **We serve the most deprived region in the country, which drives bad debt and debt management costs within residential retail**. At PR19, Ofwat included cost drivers relating to deprivation which captured the additional costs we incur due to our regional circumstances. If the PR24 retail model suite does not include similar drivers then we may propose a cost adjustment claim that recognises the higher costs we face due to the scale of deprivation in our region.

- **Ensuring cost recovery of HS2-related diversions.** HS2 phase 2b could lead to increased non-price control diversions activity. There remains considerable uncertainty on the scale of diversions required, but our current understanding is HS2 would not be requesting diversions under the New Roads and Street Works Act (NRSWA), instead seeking them through specific legislation instead. At PR19, we assumed that all works would be 100% recoverable from HS2 but there is a risk that this new legislation will not allow full cost recovery from HS2 Ltd. Should this not be the case, we would propose a cost adjustment in the same manner as we did for NRSWA diversions at PR19, which Ofwat subsequently accounted for through its revised approach.

Q16. What additional cross-sector data should be collected to support the submission of the claims indicated in response to the previous question? Please describe and explain the rationale behind the additional data that you consider should be collected and provide a draft definition.

Firstly, we note that at this stage, Ofwat's final model suite is not known and some potential drivers for cost adjustment claims are also not known (FRfW for example). This means that it is impossible at this stage to provide a definitive list of potential data that could support all potential cost adjustments. However, we have provided a short list of suggestions that we consider would substantially augment Ofwat's ability to assess cost adjustments at PR24:

- **Total number of impounding reservoirs.** Currently, Ofwat's line definition counts a chain of impounding reservoirs as one impounding reservoir. However, engineering rationale dictates that each individual reservoir is the cost driver of interest. The fact that a reservoir sits within a chain does not influence upon the operational and maintenance requirements of that individual reservoir. For this reason, we consider that Ofwat should collect data on the total number of impounding reservoirs, not the total number of impounding reservoir chains. We provide a draft definition below:

"nr, Total number of impounding reservoirs. This line should count each impounding reservoir within a chain separately."

- **Average age of the reservoir fleet, with age measured from first construction.** Older reservoirs are more costly to maintain so companies with large fleets of older reservoirs will face more expensive maintenance requirements relative to companies without such assets. We consider that an unweighted average is appropriate, because maintenance requirements are more closely associated with the overall number and age of reservoirs, rather than the size or storage volume. We specifically reference the age of first construction because this avoids conflating the year of construction with the year of registration with the Environment Agency. We provide a draft definition below:

"years, Average age of the reservoir fleet, with age measured from first construction."

- As noted above, **engineering and operational rationale supports the use of urban rainfall** as a variable to capture the complexity of the wastewater network service. Arup and Vivid Economics have developed a measure of urban rainfall¹², which we have previously supplied to Ofwat. If Ofwat does not consider this measure to be appropriate, then we consider it should collect an alternate measure to inform its decisions at PR24. We would be happy to work with Ofwat to explore opportunities to achieve this in the interests of delivering a more complete and comprehensive modelling approach.
- **Separate reporting of internal sewer flooding events for those caused by severe weather.** We consider that it would be proportionate to split out the reporting of internal sewer flooding into those events recorded during periods of severe weather and all other events. This would allow Ofwat to understand the impact of extreme weather events on the sector, which could be an important trend going forward due to climate change. We note that as companies have previously reported these numbers, this would likely be associated

¹² Arup and Vivid Economics (2017) *Understanding the exogenous drivers of wholesale wastewater costs in England and Wales*. Available [here](#).

with only a very minor regulatory burden. We propose that Ofwat uses the same established definition previously used in reporting.

- **Large diameter sewers.** Engineering rationale suggests that large diameter sewers drive higher costs than smaller sewers, all else equal. We consider it would be beneficial for Ofwat to collect information on the total length of sewer with a diameter greater than 925mm and 1,500mm to understand the distribution across the industry. We also consider that the same information should be collected for sewers adjacent to the coast, as these are associated with additional costs relative to large sewers away from coastal areas. We provide draft definitions below:

“km, The length of all sewers with a diameter between 925mm and 1,500mm”

“km, The length of all sewers with a diameter greater than 1,500mm”

“km, The length of all sewers with a diameter between 925mm and 1,500mm within 3km of the coast”

“km, The length of all sewers with a diameter greater than 1,500mm within 3km of the coast”

Q17. How can the cost adjustment claim guidance be enhanced to improve the quality of cost adjustment claim submissions?

At PR19, we consider that our cost adjustment claims were well motivated, extensively researched and based upon robust evidence, and were generally acknowledged as such by Ofwat. However, we observed that Ofwat was limited in its engagement during the assessment process, which limited our opportunity to present evidence to address Ofwat’s concerns. We consider that the process would be substantially improved if Ofwat approached its assessment with more transparency and worked collaboratively with companies to understand whether a potential claim is well-evidenced.

We would also like more clarity on the role that comparisons to historic and business plan costs play in Ofwat’s assessment. A central principle of incentive-based regulation is for companies who reveal efficiencies to profit in the short-run, with customers benefitting in the long-run, and the regulator benefitting from better information on the efficient operating level. We are concerned that failure to uphold the benchmark’s independence could undermine this principle and create perverse incentives for companies to submit high cost plans in future periods, which would create worse outcomes for customers and increase the asymmetry of information between companies and Ofwat. Therefore, cost adjustments that meet the evidential threshold should be accepted, regardless of whether the resulting benchmark is above business plan costs. This maintains the benchmark’s independence and protects the associated incentive properties. Ultimately, if there is evidence that a company is exposed to higher costs, then it would be inappropriate for Ofwat to make apparently arbitrary judgement calls that are unrelated to its previously disclosed assessment criteria.

We also have concerns about the balance that Ofwat struck between its ‘sensibly simple’ models and the stringency of Ofwat’s challenges to cost adjustment claims. At PR19, Ofwat accepted roughly 20% of cost adjustment claims, the majority of which were classed as enhancement (meaning the need was more explicit). Ofwat was much less likely to accept botex cost adjustment claims, despite the ‘sensibly simple’ approach Ofwat took to the models necessitating a more permissive approach to botex cost adjustment claims.

While a ‘sensibly simple’ approach is entirely legitimate, it does mean that an appropriate balance should be struck with other adjustments to base costs. For example, ‘sensibly simple’ models will tend to increase the number of cost adjustment claims submitted by companies. An overly stringent approach to assessing these claims could result in an inappropriate allocation of costs across the industry, and we do not consider that a series of misallocations can be assumed to cancel out at the company level. Therefore, Ofwat’s framework should recognise the inverse relationship that exists between a ‘sensibly simple’ model suite and the larger requirement for cost adjustments to reflect individual company circumstances.

We also consider Ofwat’s assessment could be improved by placing less emphasis on ex ante certainty. The risk of having a cost assessment framework that only makes additional allowances where ex-ante certainty can be provided is that it can disincentivise more innovative ideas that could provide better value for customers in the long run, in favour of the ‘tried and tested’. To help with this, Ofwat should consider ways it can facilitate this

switch, either through the use of other mechanisms to operate in conjunction with cost assessment such as UUW's AMP7 natural capital ODI and WINEP cost allowances, or whether improved guidance (for evidence) in areas that are innovative will provide Ofwat with the confidence that the proposed costs are efficient. We consider that a pragmatic stance towards such cases, especially when considered alongside a 'sensibly simple' modelling approach, should contribute to allocative efficiency, and help to ensure that companies are able to implement innovative solutions in response to increasingly challenging operating conditions, in the same way a competitive market would.

We would also be interested to understand what Ofwat considers to be good evidence in terms of data. We consider that it may be helpful for Ofwat to publish some principles that codify the relative strength of different data sources. For example, transparent comparative industry data sourced from the Office for National Statistics might be preferred over data provided with no source information.

Finally, we consider that there is considerable scope to improve how the framework addresses issues like Drainage and Wastewater Management Plan (DWMP) allowances. For the initial submissions, companies likely did not submit DWMP cost adjustments because Ofwat's methodology suggested it would reject claims outright due to immateriality. This is despite a cost adjustment being a legitimate approach; DWMPs are a new requirement, and so models based on historic costs (as used at the time) would be incapable of predicting the required expenditure. However, four companies successfully submitted cost adjustment claims at the slow-track DD stage, despite the claims being below the materiality threshold. This has created a perverse situation where companies who closely followed Ofwat's guidance were left at a disadvantage to those who ignored it. We consider that the most legitimate approach would have been to either continue to reject all claims on materiality grounds or to provide the opportunity for the entire industry to submit DWMP allowance requests, not just those who did not follow Ofwat's guidance. We consider that this should be reflected in all similar circumstances in future.

Q18. Would an early cost adjustment claim submission be welcome at PR24?

We consider that early submission would be welcome if it was accompanied by early engagement from Ofwat on companies' proposed claims.

Capital maintenance and asset health

Q19. Do you agree with the different elements / approaches to introducing more of a 'forward look' into our approach to assessing capital maintenance expenditure? Are there other elements / approaches we could consider?

As we noted in our response to question 6, basing botex models upon business plan information would allow companies to influence the benchmarking process. This undermines our cost assessment principle of exogeneity¹³, and could result in an inappropriate benchmark – in particular, company plans will make assumptions about future base efficiency, which Ofwat applies separately (and hence using forecast costs to set the botex efficiency benchmark would double count this component of efficiency). Therefore, we would not generally support Ofwat's proposal to include business plan data in benchmarks or implement a forward looking efficiency challenge. However, in some cases supplementing the cost assessment approach with comparisons to companies' business plans may provide some useful indication as to whether companies are expecting material increases in costs due to increased capital maintenance requirements, which should facilitate better external validity.

Ofwat notes that it does not propose to include an asset health cost driver in the model suite. If a suitable asset health cost driver could be found then we would not oppose its inclusion in the models, if it is consistent with the principles of cost assessment. However, we anticipate that it will be a challenge for asset health measures to be included successfully; investment in asset replacement, in many cases, may have a relatively weak relationship between performance and cost in the short term (and/or differing relationships for each company over the model data period). It therefore seems likely that it will be difficult for a model to reveal, and hence predict, the efficient level of asset health related activity and cost for each company for AMP8.

Finally, we agree with Ofwat's conclusions that it is inappropriate to carry out separate capital maintenance modelling, as this may lead to capex bias.

Q20. Do you have any comments on the proposed long list of asset health measures in Table 5, particularly in relation to their suitability and how feasible they are to collect? Please include any reporting or definition changes you would like us to consider and provide suggestions for other measures not included in this list.

Firstly, we do not consider it is realistic to expect Figures 5.1, 5.2 and 5.3 to appropriately reflect improvements in asset health. We do not consider that these measures can be thought of as purely asset health measures, and therefore that they are unable to signify any trends in asset health across the industry. We also note the potential for there to be an inconsistency in Ofwat's approach because at PR19, Ofwat highlighted leakage as an area where companies should improve performance, as this measure did not show continued improvement over the last decade. Ofwat did not attribute the stagnation in leakage performance to asset health, but to management practice. In reality, performance measures such as these are influenced by a complex array of factors and we consider that any attempt to use them to provide a picture of asset health has the potential to lead to false conclusions.

We do consider that there is merit in monitoring most of these measures to develop a holistic view of asset health over time and support Ofwat's approach in this area. However, we consider that factors with poor incentive properties should be deprioritised for inclusion. For example, tracking 'planned network rehab' could incentivise companies to inefficiently increase work on cheaper and less critical assets. Additionally, we note that tracking 'maintenance backlog' does not provide an indicator of asset health, rather it is subject to management decisions and could discourage proactive maintenance.

However, we are fairly supportive of the remaining basket of measures. We consider that the definitions should be as clear as possible to maximise data consistency between companies. Additionally, Ofwat should remain

¹³ Uuw (2021) *The Principles of Regulatory Cost Assessment*. Available [here](#).

cognisant that the remaining measures all have limitations. While these should not necessarily disqualify any measure (other than where incentive properties are poor, as mentioned above), it reinforces the idea that individual measures are unable to support firm conclusions on asset health, meaning a holistic view is needed.

We do strongly support the Base Asset Health Index (BAH) because this measure has the greatest potential to provide a forward looking, tailored view of underlying asset health, with little impact from management decisions and customer behaviours. We also note it can be applied within and across price controls, up to the industry level, which aligns with Ofwat's approach to regulating the sector i.e. on a price control basis. However, we do caution that successfully deploying this measure will require agreement from across the industry on data definitions. As such, we consider that it may only be feasible to use this measure from PR29 onwards. We would be happy to work with Ofwat to facilitate this.

Cost-service relationship

Q21. Do you agree with the high-level approach to determine 'what base buys'? Can you define any additional analysis or information that could support this process?

Ofwat's proposed framework splits performance commitments into those where Ofwat considers there is sufficient evidence that company performance can be expected to be different (for example, leakage) and those where it does not (for example, water supply interruptions, internal sewer flooding and pollution incidents).

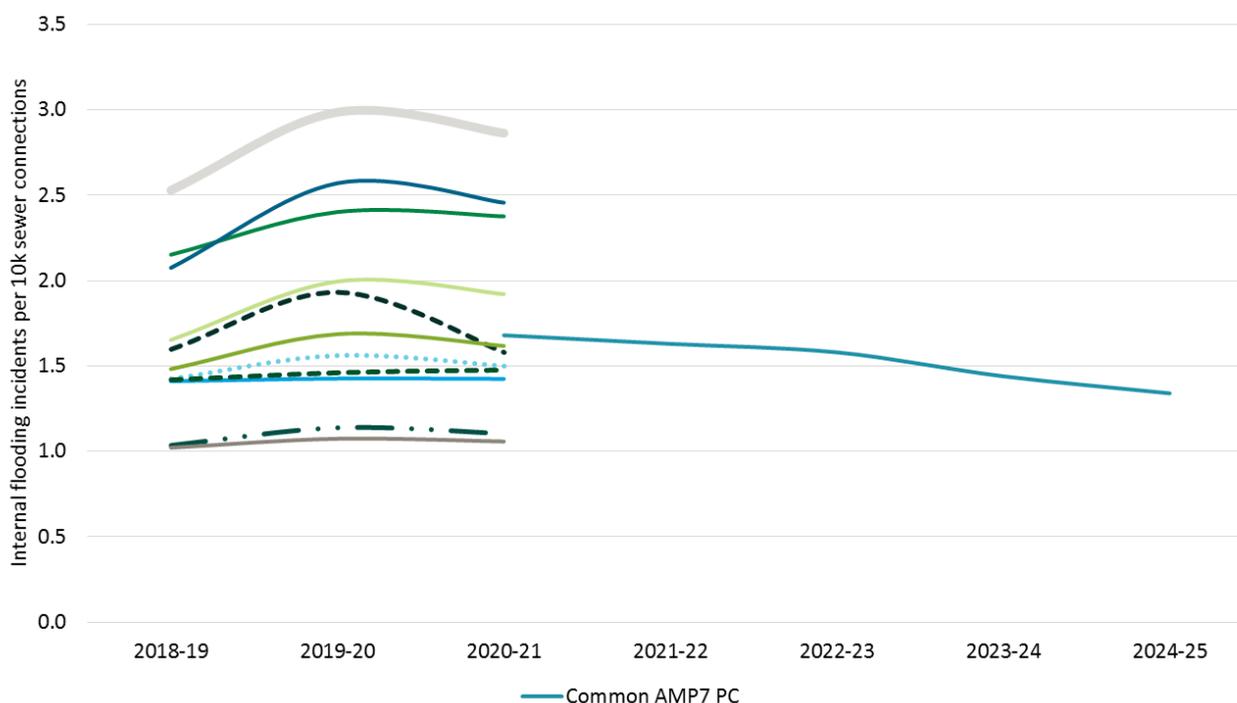
We do not agree that it is appropriate for internal sewer flooding to be subject to a common target, whilst cost assessment does not appropriately acknowledge the exogenous factors associated with managing urban surface water run-off. We have carried out econometric analysis using industry APR data and Arup and Vivid Economics' urban rainfall variable¹⁴ that demonstrates internal sewer flooding performance is driven by regional operating circumstances outside of management control. We briefly set this analysis out below but we also intend to share this work with all stakeholders as part of a Future Ideas Lab paper.

The analysis considered the engineering and operation rationale underlying which regional exogenous factors impact internal sewer flooding performance, including evidence from our wastewater sewer flooding 'hackathon' which harnessed big data to reveal key insights about risk factors that lead to flooding issues. This exercise revealed a shortlist of potential performance drivers, which were tested in regression models (where data availability allowed) analogous to those used by Ofwat when setting cost benchmarks. We then used Ofwat's model selection criteria to identify the model suite most able to explain variations in performance. We estimated the upper quartile level of performance across the industry, again in an analogous way to Ofwat's catch-up efficiency challenge calculation.

Figure 8 illustrates the resulting modelled upper quartile performance level for each company over the period modelled (2018-19 to 2020-21). The upper quartile level is determined by: scale; the prevalence of combined sewers; property density; urban rainfall; and the interaction between combined sewers and urban rainfall. All these factors are outside of management control and have strong engineering and operational priors. This demonstrates that regional operating circumstances do drive differences in the equivalently efficient level of company performance, which is what should drive benchmark levels of botex cost.

¹⁴ Arup and Vivid Economics (2017) *Understanding the exogenous drivers of wholesale wastewater costs in England and Wales*. Available [here](#).

Figure 8 - Modelled upper quartile performance level for internal sewer flooding



We believe this analysis shows there is a strong case for Ofwat to consider a different approach to assessing coherent efficient cost and performance targets where there is evidence that exogenous regional factors drive variations in company performance. Ofwat’s framework could address this in two ways:

- Adjust base costs to reflect the different challenges faced by companies with different operating circumstances. For example, it could include urban rainfall in its sewer collection and wastewater network plus models. However, this approach could cause companies above the common PC to spend inefficient levels of cost to target unachievable levels of performance and it is not clear how it would account for the interplay between the effect of combined sewers and urban rainfall.
- Adjust performance targets to reflect companies’ individual operating circumstances, by implementing the analysis set out above to determine the upper quartile performance level for each company. This would keep the cost modelling approach more sensibly simple.

Currently, Ofwat’s proposed framework does neither of these, meaning that companies operating in particularly challenging areas receive an unreasonable level of assumed cost and expected performance levels, whilst companies in less challenging areas receive overly lenient performance targets and higher cost allowances, to the overall detriment of customers.

We agree with Ofwat that it is appropriate for the pollution incidents performance commitment to continue to be subject to a common performance target. This is because we consider that company strategy has more of an impact upon pollution incidents (relative to the exogenous factors we identified that impact internal sewer flooding) because the core driver is asset failure. Our strategy, as set out in our pollution incident management plan, ensures we are constantly vigilant against such failures with the outcome being less pollution incidents. It is not possible to take the same approach with urban rainfall, as it is significantly less predictable.

We also agree that the water supply interruptions performance commitment should be subject to a common performance target. We consider that the underlying drivers of performance are substantively under the influence of management. For example, companies are able to develop means of alternative supply or monitor disruption in the network more effectively.

Q22. Do you consider it would be feasible to assess the ‘efficient’ baseline performance level for each company for individual PCs such as leakage and PCC through econometric modelling? Are there any other PCs where you consider this could feasibly be attempted?

In general, we would support a framework that makes performance targets proportionate to the operational circumstances each company faces. This would negate the need for Ofwat to allocate degrees of freedom in its cost models to measures of performance, allowing it to focus upon engineering and economic cost drivers. We consider that an econometric approach represents an ideal way to achieve this outcome. For clarity, by an econometric approach we do not mean an approach which includes performance measures in a cost benchmarking model; rather, we mean an approach which seeks to use exogenous factors to explain efficient variations in performance, in an analogous way to Ofwat’s cost models.

We consider that this is also feasible (and is at least equally legitimate) for common PCs other than leakage and PCC, and note that this type of analysis will demonstrate which PCs can reasonably be targeted with common performance levels across the industry because they are not driven by differences in regional operating circumstances.

As we noted in our response to Q21, we have carried out an econometric assessment for the internal sewer flooding PC. This has demonstrated that there are exogenous factors which drive variations between companies in internal sewer flooding performance (particularly urban run-off and combined sewers), and strongly indicates that a single common performance target is unsuitable for this area of performance, particularly when this is absent any compensating correction to base costs.

Q23. The need to collect further granular data to elucidate the cost-service relationship was highlighted by companies in response to our PR24 May consultation. Can you propose any data it would be proportionate to collect to support the high-level approach outlined in this chapter?

We consider that econometric techniques could reveal whether variation in company performance is linked to factors outside of management control, as we have demonstrated with our analysis of internal sewer flooding performance. We note that such techniques are reliant upon consistent data.

Our comparative analysis of internal sewer flooding performance found that urban rainfall is a significant driver of variation in company performance and separate analysis has demonstrated it also influences cost. Arup and Vivid Economics developed a measure of urban rainfall during PR19¹⁵, which we have previously sent to Ofwat. This means that the additional costs to Ofwat of using this variable to inform PR24 are minimal. All other data we used in this assessment is available in the APR.

Q24. What are your views on attempting to use of a composite variable to investigate the cost-service relationship, in the context of the methodological issues and complexities we outlined?

A composite variable is appealing because in theory, it is able to recognise that performance commitments are the manifestation of a series of operational trade-offs, and that positive action in one area can cause a negative reaction in another. A good example of this is the relationship between leakage and mains bursts. Alternatively, positive action in one area can induce a positive reaction in another. In other words, externalities exist across performance measures. This implies that companies’ performance will vary across the basket of PCs. Taking the best performer for each PC to create a targeted overall performance level would therefore create an unobtainable frontier, and wouldn’t appropriately reflect ‘what base buys’.

A composite variable would reflect these trade-offs, because it would reflect the operational balance each company has struck in response to its targets, its operating circumstances and the preferences of its customers. However, we note that companies have been incentivised to achieve each PC differently through the relative

¹⁵ Arup and Vivid Economics (2017) *Understanding the exogenous drivers of wholesale wastewater costs in England and Wales*. Available [here](#).

strength of incentives. This means that there should be a company-specific weighting that appropriately calibrates the composite variable for this effect. We also reiterate our position that benchmarking models should be independent of company influence. As such, we would not support the use of a composite variable within the core benchmark models.

Finally, we note that the creation of a composite variable would be hampered by the fact that some performance measures can reasonably be expected to be common between companies, but performance in some areas can vary due to regional operating circumstances. In the first case, it is reasonable to expect that only the best performing companies will incur additional cost. However, in the second case even the apparent lowest performing company may actually be efficiently incurring the highest cost. Accommodating these effects within a composite variable will be challenging, but should be explicitly considered in any such variable's design.

Q25. Do you have any proposals for how to make adjustments where a performance commitment level differs from that expected to be delivered from base costs?

Companies should make such proposals via the cost adjustment claim process, as the inclusion of performance levels within models is unnecessary (as it is rewarded from ODIs), and takes explanatory power away from genuine engineering/economic factors that drive cost within the industry.

If a company proposes a different level of performance, for example a higher level of performance, then this will be rewarded by ODI rewards for outperformance. Therefore, Ofwat should take care not to (effectively) allocate additional costs to a company to deliver higher performance for which it is also rewarded through the outcome regime, hence leading to customers paying twice for the same performance.

Residential retail cost assessment

Q26. Do you have any comments regarding our proposal to ask companies to separate out the part of their provision of bad debt costs to do with Covid-19 that was made outside of their standard methodology in the PR24 business plan tables?

We consider that separating out bad debt provisioning relating to Covid-19 would allow Ofwat to smooth these costs. It is likely that provisions will be spiky which could impact negatively upon the model. However, we consider that (scaled down to outturn bad debt costs) these costs should be left within the model as they reflect business risk. Should these costs be removed then we consider that a symmetrical adjustment be made elsewhere in the framework to reflect higher costs companies incurred during this period. Failure to do either of these would be contrary to the established regulatory principle that companies should only be exposed to risk they are able to manage.

Q27. What guidance would aid companies to provide appropriate data related to the provision of bad debt costs to do with Covid-19?

No comment.

United Utilities Water Limited
Haweswater House
Lingley Mere Business Park
Lingley Green Avenue
Great Sankey
Warrington
WA5 3LP
unitedutilities.com



Water for the North West