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Assessing Base Costs at PR24- Consultation Response

We welcome this opportunity to provide our views on this key area of the price review framework. We recognise the exploratory work that has been undertaken by the cost assessment working group in this area and would welcome the continuation of the group in order to further develop a number of key aspects, including the cost-service framework, asset health and retail cost assessment.

The consultation sets out a few key principles for the PR24 base cost modelling. We welcome these principles in general and have provided further detail in our responses to the questions set out below. The document consults on specific detailed components of the framework. We believe it is premature to constrain the modelling at this stage of the process, and that these decisions should be influenced by the results of the trialled models, statistical tests and decisions on the wider regulatory framework.

It is unlikely that there will be a single model for any of the PR24 price control areas that is robust enough to fully explain cost differences for all companies. We welcome the proposal to use a suite of econometric models, which helps to account for some of the limitations of individual models. We believe there is a place for disaggregated modelling to allow for the use of more specific cost drivers. It is important however, to be aware of cost synergies and trade-offs between different components of the value chain. We have concerns about the removal of the 'bioresources plus' model and the proposal to set a separate efficiency challenge for bioresources. We highlight the risk that the inappropriate use of disaggregated modelling, when an upper quartile benchmark (for example) is set in each disaggregated model and then the resulting cost allowances are combined, can lead to artificial and unrealistic efficiency frontiers.

The consultation seeks views on ways to make the link between cost and service more explicit, and we welcome this aspect of the proposals. When examining this relationship, it is important to consider a suite of performance commitments in the aggregate to ensure that stretching yet achievable performance commitment levels are set. When determining the efficient level of performance from base costs allowances it is important to consider the level of improvement that has been delivered from base in the past and how much has been achieved by enhancement expenditure. Finally, the link between cost and service should be recognised when applying any additional efficiency challenge linked to estimated productivity improvement. Productivity gains can be achieved by either improving the level of service or reducing costs. Any productivity factor should be adjusted to take into account the level of performance expected to be achieved from base costs.

The consultation also explores options for introducing a forward-looking element into the determination of capital maintenance expenditure. We welcome this objective but recognise that there are challenges in applying this in the cost modelling in a way that avoids problems of endogeneity. In our response we argue for the development of a robust leading asset health measure (or combination of measures), that could be used in the future to help understand future capital maintenance needs. The most useful and meaningful measures of asset health will take time to develop in terms of a consistent definition and industry capability. For PR24 it will be vital to ensure that there are mechanisms in place to recognise the additional expenditure, including capital maintenance expenditure, that will be required to address the impacts of climate change.

We look forward to continued engagement on this important topic for PR24 and beyond.

Yours sincerely,

A handwritten signature in cursive script, appearing to read 'Eleri Rees'.

Eleri Rees

Strategy and Regulation Director

Principles of PR24 base cost assessment

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

We welcome the principles for base cost assessment. The key point is that however good the models are, there will still be a role for judgements and trade-offs within the cost assessment framework. These should be based on evidence and should consider (among other things) the quality of the modelling and the wider policy framework. We provide further comments on the six principles below.

Focus on exogeneous cost drivers

A focus on exogeneous cost drivers helps ensure the independence of the estimates of efficient base costs and avoids perverse incentives. However, there are some partially endogenous factors that significantly influence cost and that should be considered, in our view. The important thing is to ensure that the choice of variables within the modelling minimises the risk of perverse incentives. A number of variables are partially endogenous, but in some cases there are mechanisms in the wider framework to manage any perverse incentives. For example, there is a relationship between cost and service, and whilst the service level is partially endogenous, there are sufficient mechanisms, both financial and non-financial, to significantly reduce the risk of perverse incentives. It might therefore be appropriate to consider service level as a cost driver. Ofwat is rightly exploring this. We therefore propose that this principle is amended so as not to exclude endogenous variables, and instead emphasises the importance of avoiding perverse incentives.

Robust econometric models

We agree with the principle of robust econometric modelling. As mentioned above, no econometric model is perfect, judgements will always be required within the wider price review framework. The robustness of the modelling should be considered when making these judgements, such as the level of the efficiency challenge to be applied.

Set a stretching but achievable cost efficiency challenge

Determining the level of efficiency challenge is a key component for cost assessment. We welcome the wide range of evidence to be considered in determining the level of the efficiency challenge. However, the evidence solely draws on the evidence from the cost assessment itself without considering wider factors such as service improvements.

Productivity improvements can be achieved through either a reduction in costs for a given level of output or through an increase in output, including improvements in quality for a given level of costs. The productivity factor at PR19 was applied to costs whilst not considering the productivity improvements arising from improvements to the level of service that were to be achieved through base costs. When determining the level of the efficiency challenge at PR24, we would urge Ofwat to recognise that a 'stretching but achievable' cost efficiency challenge cannot be determined without reference to the level of service to be delivered from base expenditure.

The residential retail price control at PR19 did not have an explicit on-going efficiency challenge. However, the price control is not linked to inflation, meaning there is an implicit efficiency challenge at the level of inflation. By 2025, residential retail will have had two price control periods with a nominal price control of this kind and no explicit efficiency challenge. With inflation and wages currently rising, we argue that the retail price control at PR24 should align to the approach in wholesale, in which prices are indexed linked and the efficiency challenge is determined separately. This approach has the additional benefit of significantly reducing the complexity of the price review, in particular the financial modelling.

Coherent cost assessment approach

We welcome the principle of a coherent approach to cost assessment within the wider regulatory framework. In particular, the approach to cost assessment and the approach to setting outcomes should be coherent. The consultation introduces the concept of 'what base buys' which recognises the link between cost and service. As outlined above the relationship between cost and service is intrinsic to the calculation of the appropriate on-going efficiency challenge.

2. Do you consider any important principles are missing?

No. We do think however that clarification is needed on the definition of 'base costs', and the distinction between base and enhancement costs. This is particularly important in the context of discussions about 'what base buys' and the interaction between cost and service in the context of challenges such as climate change.

Scope of wholesale modelled base costs

3. 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.

Table 3.2 sets out proposed criteria for determining the scope of wholesale modelled base costs at PR24 (excluding bioresources). We provide feedback on some of these criteria below. We believe that these criteria should not be absolute, but should support judgements to be made in what costs should be included or excluded, taking account of the results of the modelling. The criteria provide a useful framework to consider the scope of the wholesale base costs. However, the final decision on the scope of the wholesale base cost models should be determined by the robustness of the modelling.

Criterion 1 seems to state that costs considered for exclusion/separate assessment should not have been incurred in the past. We believe that this is not correct. There may be instances where costs have been incurred in the past, but given the nature of the cost or the specific cost drivers a separate assessment might be appropriate (e.g., the modelling of lead pipe replacement). It is clear however that any costs that have not been incurred in the past should not be included in the base cost modelling. The criterion could be amended to reflect this point.

Criterion 4 states that costs should be considered for inclusion in the modelled costs if robust standalone econometric/unit cost models cannot be developed. The criteria of limiting the separate assessment of costs only to those costs where econometric/unit cost models are available is unduly restrictive. We believe that in some cases deep dives or alternative forms of cost assessment may be possible and appropriate for separate cost assessment, such as the unmodelled costs at PR19.

Criterion 5 seems to state that only costs outside of company control should be considered for separate assessment. We believe that this criterion is too restrictive and should be removed. There may be costs that are partly within management control but can be better accounted for in a separate model.

At PR19 Ofwat excluded a small number of opex items from wholesale modelled base costs whose characteristics made them more suitable for separate assessment. These included business rates and third-party costs alongside other costs. We agreed with this approach.

The consultation outlines that the appropriate treatment of “atypicals” within base costs modelling is being considered. “Atypicals” should be included in the modelling as whilst these costs are considered as atypical for an individual company in the reported year, companies as a whole will continue to incur atypical costs from time to time and therefore the costs should be reflected within cost allowances. There is no suggestion that atypical costs represent inefficiency, so they should not be treated as though they were.

4. 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.

The modelling of growth costs is a complex area and requires considerable care. “Growth costs” encapsulates the costs of meeting the requirements of developers, the ongoing costs of meeting the needs of new customers, the up-front and one-off costs of serving NAVs, and the ongoing costs of meeting growth in demand from existing customers. Disentangling the costs for which new and existing customers are each causally responsible is not straightforward. Potential differences between England and Wales must also be taken into account. For these reasons we would support the establishment of a working group to develop a modelling approach and identify data requirements.

We support the collection of the historical developer services data for the updated APR guidance (RAGs). The updated guidance separates our developer services opex costs, we are able to provide this data. The updated RAGs provide for a further breakdown of developer service costs in 4N, 4O and 4P into New Connections, Requisitions mains, infrastructure network reinforcement etc. The accuracy of this granular level of data deteriorates the further we go back in time and the completion of the data will require certain assumptions. Our initial view is that the availability and quality of this granular data significantly deteriorates prior to 2015-16.

Sample period selection

5. 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)?

We agree that the full historical data series should be utilised within the model where the data is accurate and provides a useful indication of future base expenditure requirements. The cost function may change over the time, this can be a gradual change or as due to a one-off “shock”. A model over a shorter time period may be more in line with engineering and economic rationale. The time period to be used within the modelling should be take into account the results of the modelling and following model robustness checks.

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

Business plan forecasts play an important role within the wider price review framework. However, we do not think they should be included within the wholesale base cost assessment modelling. Business plan forecasts are endogenous, and their inclusion could create perverse incentives which could undermine the validity of the benchmark. Companies’ forecast do not represent “hard data”, and may reflect different approaches to risk and ambition.

Target modelling suite

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

We welcome the proposal to model costs at a variety of levels of the value chain and cost aggregations as outlined in figure 3.1. It is unlikely that any model will be robust enough to capture all cost differences for all companies, therefore we believe it is appropriate to have a suite of models to ensure that key variables are captured. This modelling enables key cost interactions to be taken into account and lessens the impact of any differences in cost allocation between companies.

As a result of the proposed changes to the bioresources price control, the ‘bioresources plus’ model, which included sewage treatment and sludge disposal, has been removed from the target suite of models. However, we would argue that there are significant cost interactions between these two components of the value chain. In the absence of this model these interactions are not taken into account and if the efficiency challenge is set separately then companies may be set an efficiency challenge that is unfeasible at the aggregate level. This should be considered when determining the strength of the catch-up challenge. We believe that a ‘bioresources plus’ model should be developed which can be used as a cross check to ensure that cost allowances are set at an appropriate level.

8. 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?

The development of a model for the wholesale wastewater network plus model is worthwhile exploring. As outlined previously using different levels of modelling can be useful either for triangulation or as a cross check. We would note however that activities and cost drivers are different between sewage collection and sewage treatment so it may be difficult to capture all cost differences in a joint model. The quality of the model should be considered when determining whether it should form part of the modelling suite or only as a useful cross check.

Cost drivers and explanatory variables

9. 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?

We welcome the Average Pumping Head (APH) project to examine the consistency of reporting across companies. We believe that APH is a useful proxy for topography to explain differences in cost and would welcome its inclusion within the models. The modelling should consider a range of variables in the development phase with the final variables chosen being based on the robustness of the models.

10. 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?

Yes, this should be considered, based on the evidence. Large sewage treatment works benefit from significant economies of scale. We support the collection of data for the different size bands. We believe that the appropriate band size to be used in the modelling should be based on empirical evidence from either the econometric models or other sources.

11. 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.

We have no comments at this time.

Model estimation method

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

We broadly agree with the proposal to use random effects. However, Ofwat should be open to other approaches which may yield better results, such as those outlined in the consultation document.

Model selection process

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

The proposals for the model selection process are broadly sensible. Judgement will be required when applying the selection process to determine which models are the most suitable for the price review. We would welcome further engagement with regards to the appropriate range of these tests and how models will be assessed against each other.

No model will be able to perfectly estimate the cost functions, so the robustness of the models as determined through the selection process should be taken into consideration when considering the extent of the efficiency challenge and other wider policy decisions. As a general rule, the better the equations the more confident Ofwat can be in translating the results into efficiency challenges, and *vice versa*.

Cost adjustment claims

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

We believe that the distinction between base and enhancement cost adjustment claims is helpful.

15. 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?

At PR19 we submitted a cost claim in relation to the measure of deprivation in the residential retail model. We will be examining the data and considering whether there is merit in submitting a similar claim at PR24.

We will be considering what other cost claims might be justified as part of our business planning process, we provide an initial view of additional data required to support the submission of cost claims in the following question.

16. 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.

Water

1. Length of mains by material

In our experience water mains burst rates are different depending on the material of the mains. We are interested in exploring the differences in material type across the industry on burst rates and repair costs.

Metric to collect	Definition
Length of mains by material	Total length of mains (km) by material types (Ductile Iron, Asbestos cement, PVC, etc..)
Total mains bursts by material	Total number of mains bursts by material type (Ductile Iron, Asbestos cement, PVC, etc..)

2. Length of mains by pressure

In our experience water main burst rates, time and cost of repairs are influenced by the water main pressure. We are interested in exploring the difference in mains pressure across the industry.

Metric to collect	Definition
Length of mains by pressure	Total length of mains (km) within different pressure thresholds (0-5 bar, >5-10 bar, etc..)

Retail

3. Measure of deprivation

The current measure of deprivation is measured using the Equifax default rate and the income score from the IMD. The income score captures those individuals who are either in work or out of work that have low incomes, who satisfy the respective means tests. The current measure is restrictive in that it does not consider those who are 'just about managing' and struggle to pay their water bills. To understand bad debt we believe additional data should be collected to understand the distribution of incomes within companies operating areas. We are doing further work in this area so may come back with additional suggestions.

Metric to collect	Definition
Income Distribution	The proportion of households in each income decile.

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

The consultation outlines the requirement for companies to indicate the value of the symmetrical adjustment and the implicit allowance. Additional guidance on how to determine these adjustments would be helpful.

Where multiple base claims are accepted, additional guidance would be welcomed on how the final symmetrical adjustment will be calculated. Any final adjustment should reflect all the approved cost claims simultaneously.

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

Yes, we would welcome an initial early submission of cost adjustment claims. This would allow for Ofwat to provide feedback on key areas, in particular some of the new requirements such as the calculation of the symmetrical adjustments. However, we would want to retain the opportunity to submit cost claims alongside our final business plan, as only at that stage would we have all the necessary information to make a final decision.

Capital maintenance and asset health

19. 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?

We are supportive of the move to consider how to reflect more of a 'forward-look' into the assessment of capital maintenance expenditure. We would propose the use of a robust, leading asset health measure to help ensure that capital maintenance allowances are both sustainable and efficient over the long-term. However, currently we do not have an industry agreed leading asset health measure, and consider that it would be premature to rely upon this approach alone at PR24. We would propose that companies work with Ofwat to develop a leading asset health measure that can be included in shadow reporting by PR24, with the aim of gaining greater clarity, consistency and confidence in the measure, so that it could potentially be used as part of a forward-looking approach to determining the efficient level of capital maintenance expenditure at PR29.

The discussion document describes a potential benefit of including a forward-looking approach where "the historical period is not a good reflection of the future." We agree. We believe that maintaining existing service levels is likely to cost more in the future due to factors such as shorter asset lives, the need for asset replacement to support net zero carbon, and the impacts of climate change. We are developing evidence to demonstrate this contention. We propose that this could best be dealt with at PR24 by an alternative industry modelling approach or cost adjustment claim. Although these factors are likely to affect all companies, to a varying degree, past expenditure would not capture all the costs, so an industry-wide upwards adjustment might be necessary.

There is an additional benefit to including a forward-looking component to setting capital maintenance expenditure in that it would give confidence that such expenditure is sufficient to allow for a sustainable approach to capital maintenance, that is, ensuring that costs do not need to increase sharply at some point in the future, at the expense of future customers. Ofwat points out that the existing base cost modelling approach the water industry has allowed the industry to improve performance over recent AMP periods, while also seeing improvements in measures of asset health such as mains bursts and sewer collapses. However, mains bursts and sewer blockages are *lagging* measures of asset health, and are poor proxies for the wider condition of assets. In the absence of robust *leading* measures of asset health it is unclear whether underlying levels of asset health risk are increasing or decreasing. It is critical for the future of the industry that we ensure we are not building up an unsustainable future maintenance burden for future generations, particularly when combined with the challenges posed by climate change.

Ofwat offer two approaches for consideration:

- including company forecast costs as part of the basic econometric models
- using a forward-looking catchup efficiency challenge

We concur with Ofwat's concern that these approaches would reduce the independence of the benchmarking process and could reflect differences in risk appetite rather than actual relative cost efficiency. We would support a move towards supplementing the econometric modelling view of capital maintenance requirements (that have served customers well in recent AMPs) to include an engineering and risk-based view of needs (to ensure future customers are protected).

As noted above, our proposed approach would be for the industry to shadow develop and report a preferred leading (rather than lagging) asset health metric (or combined set of metrics) at PR24 with the aim of understanding differences in asset health risk across the sector and gaining confidence that the metric helps to inform future requirements. The measure could then be considered for inclusion in the cost modelling process at PR29. A sound leading asset health metric would start to expose companies' underlying risk and help Ofwat to judge the sustainability of individual companies' maintenance strategies. If clearly defined it would also provide information to support engagement with customers and stakeholders on asset maintenance strategies.

As explain in our response to Q20 below, we support the use of a Base Asset Health or Asset Risk measure (or a combination of the two) as a robust leading measures of asset health. We would welcome working on this with Ofwat and the rest of the sector.

20. 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.

In considering what data it may be useful to collect on asset health, we need to consider both what the data will be used for (i.e., its utility) and the burden involved in collecting, processing, auditing and reporting the information. On page 57 of the document Ofwat lists three areas in which asset health data could be used. We think that some of the measures listed might be suitable to inform wholesale base cost assessment (but more likely at PR29 than at PR24, as the measures are not yet sufficiently developed) as we explain below. Other data might be useful to collect for the purposes of monitoring asset health, helping to hold companies to account, and making comparisons between companies.

We note that some measures have the potential to be more meaningful as ‘true’ indicators of asset health but require a greater level of maturity (that is, they require further work to produce a meaningful and tight definition that is consistently applied across the industry, and the measures rely on more complex processes and analytical techniques). Others are relatively simple to collect, and require a lower level of maturity, but offer less meaningful asset health information. Welsh Water uses a hierarchy of asset health information as shown below. The measures that we recommend as potential candidates for future use in cost assessment are in Level 4 – requiring considerable time and effort in order to develop a common industry approach, but are the most useful as genuine leading indicators of asset health. Measures at Level 1 and 2 could be collected immediately, but are only suitable for monitoring and making relatively simplistic comparisons across companies. They also ‘feed in’ to the higher level measures in that, for example, poor asset condition increases the risk of asset failure.

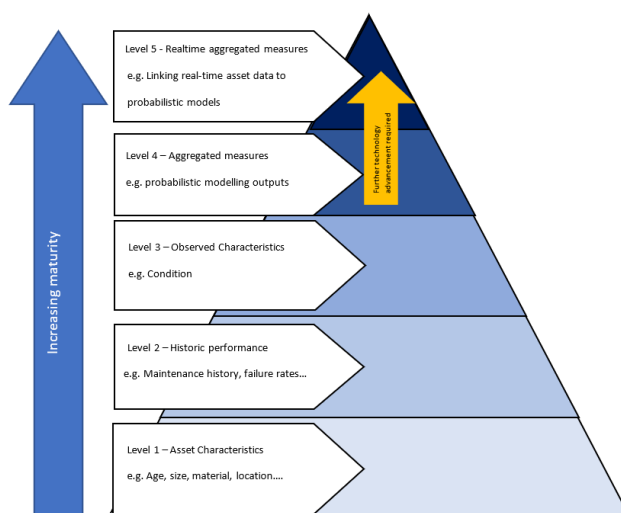


Figure 1. Hierarchy of Asset health information

Overall, we endorse 6 of the 17 measures proposed by Ofwat and make one proposed addition.

For potential use in future cost modelling, we would recommend two of the aggregated measures:

1. Base Asset Health index (BAH) -

We express Base Asset Health as “Number of failures per year”. This probability is derived from our deterioration models that consider parameters such as asset characteristics (e.g., age, material, location, soil types etc), historic performance (e.g. previous failure rates of an asset / asset group) and observed characteristics (e.g. condition), resulting in an asset specific probability of failure. A probability of failure is calculated for each asset and this forms its “Base Asset Health”. Base Asset Health is presented as “expected number of failures per year”, with higher scores indicating a higher probability of failure and therefore poorer Base Asset Health.

2. Asset Risk

This is calculated as Base Asset Health (probability of failure) multiplied by the monetised consequence of failure. We calculate the consequence of asset failure with reference to our service value framework. This includes the economic, social and environmental impacts on Welsh Water, our customers, communities and wider stakeholders and the environment.

Overall Equipment Effectiveness (OEE) is listed as an aggregate measures of asset health, in our view this measure is more subjective and onerous than the base asset health and asset risk measures.

For monitoring, improving understanding, and making comparisons we would recommend that the following measures could be usefully collected.

Maintenance activity

3. Unplanned Maintenance (excluding planned reactive activity)

Capturing this data would be useful to give a transparent view on companies’ ability to manage Asset Risk effectively. For example, if a company carried too much Asset Health risk, then the time spent on unplanned maintenance across time might be expected to increase over time.

We stress that this would need to be considered over a longer time period as short-term cost reductions might be possible without suffering any immediate change in unplanned maintenance activity in the short-term. We propose using a ten-year rolling average on unplanned maintenance data to account for this.

4. Mean time to repair and mean time between failures

We see repair times and actual failure rates as useful for understanding the probability and consequence of failure. An increasing mean time to repair might be associated with greater consequences being realised and could reflect the quality of the repair or intervention undertaken.

5. Asset inspection, planned vs actual

We believe that a focus on a measure of this type would be beneficial in understanding asset health strategies in the water industry. Asset inspection would need to be tightly defined as a measure in terms of scope and scale to ensure comparisons could be made.

Asset characteristics

6. Asset Condition Grade

Condition assessment for some assets would be helpful, particularly for the most consequential assets, but the additional effort required to obtain this data would need to be funded. Condition assessing all assets would be unduly burdensome and of limited benefit, so a clear framework for capture would need to be agreed.

Additional suggestion

7. Asset Age

Asset Age would provide a simple measure that could be reported upon relatively easily, and that could present an interesting company to company comparison. We emphasise that this should not be used in isolation as an asset health measure as an older asset base can be managed within the same Asset Health risk tolerance as a younger asset base, with the right practices. But this measure does have the benefit of being objective and relatively easy to gather, and it is not irrelevant to considerations of asset health.

Asset and Service performance measures

We do not believe that Asset and Service performance measures are useful as indicators of asset health. Although these measures are easily available, they are at best lagging measures with regard to asset health and are heavily influenced by operational responses.

Cost-service link

21. 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?

We agree that it is important to recognise that this is a complex area, and that a pragmatic and proportionate approach is necessary moving forward. In this context, assuming the approach is based on a pragmatic and limited set of principles, it is vital to get those principles right. One of those principles, in our view, is that companies are heterogeneous. One company may be naturally strong in one performance area, and weaker in another. Companies may also choose to respond to customer demands as to what is more important to them. The costs of improvement may also be different in different company areas. This is widely recognised in the principle of the 'economic level of leakage' which differs across companies. The end goal should not therefore be to force all companies to the same 'gold standard' of service across the board, as this would not be in the interests of customers and environment. Instead, Ofwat should be seeking to incentivise great performance by all companies 'in the round'.

A second key underlying principle to be recognised is that, whatever the actual underlying cost-service relationship is, it is unlikely to be linear. The law of diminishing returns means that past service improvements are unlikely to be deliverable for the same costs as in the past.

Thirdly, Ofwat should not assume that previous performance improvements have all been funded from base, and therefore assume that such improvements can be sustained from base expenditure in the future. This is because it is often the case that expenditure to improve performance in the past may have been accounted for as enhancement, and therefore would not be picked up in the base cost models.

Finally, we think it is vital to recognise that any improvement in performance from base expenditure is by definition a productivity improvement. At PR19 Ofwat ignored this when considering the appropriate level of 'frontier shift' for cost efficiency. In our view this was incorrect and ran counter to economic theory.

At a high level, we believe the approach proposed by Ofwat on 'what base buys' is appropriate, but the details of the methodology matter a great deal here. For example, the judgement applied by Ofwat as to how it takes into account company performance during 2020-25, and the weighting applied to different factors, could make the difference between the right and wrong answer.

Specifically on the question of 'what base buys' for 2025-30, we agree that Ofwat should use the data sources listed. 'PR19 company forecasts' should be the forecasts originally submitted by companies in their original business plan submissions, not those included in their IAP responses or Draft Determination responses, as these in most cases reflected the Ofwat view and not companies' own. We would also note that 'companies PR24 business plan forecasts of what base buys' may not be appropriate, or at least should take into account the underlying assumptions and guidance about how companies should come up with those forecasts. (For example, they are likely to be very dependent on assumptions on the level of base funding that will be provided.)

In our view, the number of performance commitments for which you can expect companies to meet the same performance level from 'base' costs is very limited. This was applied to water supply interruptions and pollution incidents (among others) at PR19. Part of the difficulty is in 'normalising' performance across companies. For water supply interruptions this is reasonably straightforward. However, for pollution incidents, for example, it is more complicated. As we have argued in previous submissions, one cannot simply divide the number of pollution incidents by kilometres of sewer and expect companies to achieve the same performance level. Companies vary significantly in the numbers of different assets (such as treatment works and pumping stations) relative to the length of sewer, that can also be the source of pollution incidents.

We accept that for compliance measures companies should be targeting the same level of performance, but for others there should be no presumption that companies should be able to achieve the same level of performance from base expenditure. One reason for this is

that not all historical improvements have been achieved from base expenditure, with companies receiving unequal amounts of enhancement expenditure for different performance areas in the past. We would suggest that the proposal on page 75 to set a more stretching improvement target for those companies with worse performance is reasonable on the surface, but underlying this proposal is the assumption that there is a common underlying 'good performance' level which is common across all companies.

22. 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?

One of the challenges in modelling 'efficient' baseline performance, as with cost modelling, is the limited number of observations across the industry. Nevertheless, we consider it would be worthwhile to attempt to model this for certain measures. For example, we have argued in the past that our record on supply interruptions is partly driven by our mains pipe material and the high pressure under which we run our network, due to its natural characteristics. However, we think PCC is a poor candidate for this, as it is so much affected by customer behaviour and weather, over which companies have limited control. PCC is also not a 'performance' measure as such, in the same way that supply interruptions is.

Another strong candidate would be acceptability of water, where companies are in very different performance, and where there is strong evidence that performance is driven by features of the asset base, in particular the proportion and age of cast iron mains in the water network. Performance is of course partially driven by operational strategies, but these in our experience could never totally overcome the underlying challenges caused by the qualities of the asset base. Sewer flooding may be another candidate.

We propose that pollution incidents should be 'modelled' to take account of the different absolute and relative numbers of different wastewater assets, not just sewers, across companies. We have done some work on this previously, submitted to Ofwat at PR19 here (see Appendix at <https://corporate.dwrcymru.com/-/media/Project/Files/Page-Documents/Corporate/Library/PR19-Reports/IAP-Supporting-Documents/B22WSHOC-Performance-Commitments-and-Deadbands.ashx>

as Appendix). We would welcome engagement on this topic with Ofwat.

23. 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?

To understand the cost-service relationship in more detail, we need to consider the drivers of performance differences across the industry. We support the proposal to explore econometric modelling to model the 'efficient' level of performance given the exogenous factors. By way of example, flooding and pollution incidents are driven by exogenous factors including sewer diameter, rainfall intensity and duration, and the number and type of wastewater assets. Supply interruptions and acceptability of water performance are driven by a number of factors including mains material, raw water quality, travel time (density) and mains pressure. We would support the establishment of a working group to develop this area.

24. 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?

We do think there is merit in exploring this approach, as no one measure can fully reflect the efficiency of spending. Ofwat is already proposing to set ODIs for common measures, from which can be inferred the relative 'value' of different measures. If a way can be found to normalise performance across the industry, this would produce a composite measure that could be used to investigate the cost-service relationship further. It would be beneficial to see how sensitive the conclusions of any analysis were to different approaches and assumptions.

25. 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?

First, we would suggest that one should consider the level of performance that can be delivered from base costs as being about the general standard of performance taken in the round, accepting that companies will naturally and legitimately vary in terms of the service deliverable from base costs for individual measures. Given this, the variances above and below the 'what base buys' level for individual measures could be adjusted for using ODIs. This could also lead to a company choosing to be generally above the 'what base buys' level, with customers paying for this 'premium' service level with higher bills, or the reverse could also legitimately be the case. This choice will depend on customer views and company costs.

For this theory to work in practice, it will be vital however that ODIs are correctly derived and calibrated. The methodology for deriving ODI rates from centralised research is new and so far unproven. A degree of caution will be required in interpreting and applying the results in order to protect customers.

Residential retail cost assessment

We believe there is scope for improvement in the residential retail models, the models have a large range of residuals and a low r-squared value. We are undertaking some modelling on retail which we will share once complete.

26. 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 think this is an area that needs to be approached with some care. Strictly speaking, Covid-19 has not of itself generated additional bad debts. The economic impact of the responses of governments and society to the pandemic has had an effect, but it is not clear why this would warrant different treatment as compared with the inevitable economic fluctuations that have affected bad debts in previous years (notably the recession that followed the 2008 financial crisis).

We support the proposal to ask companies to separate out the part of their bad debt costs related to Covid-19, for the reasons set out in the paper.

In addition, however, we think Ofwat should consider asking companies if they would now, with the benefit of hindsight, have come to different decisions on how bad debt provisions were adjusted to take into account the impact of Covid-19. This could inform any re-profiling/smoothing that Ofwat considers necessary.

This issue raises the wider issue of the relationship between actual debt write-offs and the movement in the doubtful debt provision that is booked as a cost for profit and loss accounting purposes. As companies may take different approaches to accounting for doubtful debts, and indeed those approaches may have changed over time, we consider that this could be an issue to be looked at in detail by a working group (see below).

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

We would support the establishment of a working group to develop the guidance. In particular, there are issues to be addressed regarding causality – that is to say, how much of the bad debt charge incurred in a year is and is not related to Covid 19.