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10 February 2022

Dear Ofwat

Our proposed approach to funding bioresources activities at PR24

We are pleased to outline our response to Ofwat's consultation on setting the bioresources price control at PR24.

We continue to play an active role in the development and operation of both nascent and maturing markets, promoting competition where it is possible and in the long term interests of customers. We are supportive of Ofwat's promotion of markets and remain proud of our leading role in their development, as recognised in Ofwat's previous review of incumbent company support for effective markets¹.

Specific to the development of the bioresources market, we have led the sector in promoting the accredited Biosolids Assurance Scheme which, by developing accreditation for a level playing field for Biosolids standards, is supporting the development of effective biosolids markets². We were the first company to publish our market information tables, before they were a regulatory requirement, and we supported Ofwat in the development of the RAG5 guidance on using regulated assets for non-regulated bioresources activities.

The consultation proposes a radically different approach to setting the price control for bioresources relative to the way in which the bioresource price control and most other price controls have been set previously. These differences include the inputs to the cost assessment models, the removal of the RCV as a component of the calculation for setting the return and the remuneration of enhancement expenditure.

Taken in totality, the proposals imply different risk exposure for the bioresources control.

¹ For example – Aug 2020 - [Review of incumbent company support for effective markets](#)

² See PR19 – Our Business Plan 2020-25 – Chapter 11 the role of markets, incentives and behaviours



Firstly in relation to cost assessment, while Ofwat has taken steps since PR19 to improve the consistency of reporting sludge liquor treatment costs, overheads and energy costs and revenues, we suspect there may remain other inconsistencies in cost and revenue reporting or instances where cost substitution across the two price controls occurs. To the extent that this were to happen in companies' data, the benchmarks derived for the two price controls could, in combination, comprise an unrealistic efficiency challenge and all else equal increase cost risk.

Secondly, the proposals to include financing costs in the econometric benchmarking exposes companies to new asymmetric downside risks, compared to the existing RCV approach. At a conceptual level, we consider that all financing costs should be excluded from cost benchmarking. If not, there is a risk of double counting past efficiency challenges. In addition, it is unclear whether the new approach would support full protection of legacy assets, in line with past regulatory policy.

Moreover, some of the approaches set out by Ofwat – such as the value floor method – could include direct efficiency challenge to legacy assets and contravene regulatory policy set out at PR19 which signalled that pre-2020 assets would be protected.

The rationale for the consultation proposals is that the management of bioresources has characteristics in common with other activities of the organic waste market that enable direct market competitive pressure to be applied to bioresources. This could benefit consumers by enabling the benchmarking of bioresources costs with those of the wider organic waste market, thus allowing the inherent market forces evident in that market to be brought to bear on this component of water and water recycling company operations.

We would therefore draw again to Ofwat's attention points we have previously raised to explain why bioresources cannot be regarded as interchangeable with other organic wastes, and the factors which impede the smooth integration of bioresources into the wider waste market. We have set these out previously to Ofwat, for example, in our letter of December 2020 as part of our contribution to Ofwat's review of the bioresources market. Ofwat published this letter on its website in May 2021³.

Our pro-market approach, recognised by Ofwat⁴, means we have actively worked to remove the environmental regulatory barriers to the integration of bioresources with the wider organic waste treatment market. However, much to our frustration, the barriers described in our December 2020 letter remain. Indeed, they have become more onerous.

A prerequisite for a change to the price control approach is that bioresources can be regarded as a full player in the wider organic waste treatment market and should therefore be exposed to the full forces which apply in that market. However, because of the factors referred to above, the ability of WaSCs' bioresources operations to interact with that market is very limited and prospects for that to change in the immediate future are remote.

³ <https://www.ofwat.gov.uk/publication/anglian-water-submission-for-the-bioresources-market-review/>

⁴ See August 2020 - [Review of incumbent company support for effective markets](#)

Even if the consultation proposals have been judged correctly and were implemented successfully, the changes are unlikely to lead to any increase in bioresources trading. We seriously question whether the costs and risks of implementing the consultation proposals are justified given the low probability that Ofwat's overall goals for the bioresources market can be achieved in the foreseeable future.

Since we wrote that December 2020 letter, there have been a number of further major detrimental changes in the regulatory environment pertaining to the management of bioresources. Most significant of these is a change in the Environment Agency's interpretation of the Farming Rules for Water (FRfW), which means that the autumn application of treated biosolids will effectively no longer be permitted, except where there is an immediate fertiliser nitrogen requirement. We previously applied more than 80% of our biosolids production in the autumn ahead of winter cereal crops but this will no longer be possible following this change. In addition to the issue associated with FRfW, we expect to lose about 40% of the landbank that we currently draw on for biosolids recycling as land in catchments affected by nutrient neutrality is effectively closed or significantly restricted to applications.

The change in the EA's interpretation of FRfW has profound effects on the way in which we will have to manage bioresources. Our Chief Executive has been leading work for Water UK to engage with the EA to seek to reduce the negative impacts of the EA position, drawing on the work of the Biosolids Assurance Scheme, but it is already clear that the factors we set out in our December 2020 letter are heightened by this, and the prospects of the organic waste market being able to treat bioresources are lessened. Regrettably, it seems likely that new assets will be required to divert at least part of our biosolids production away from agricultural recycling.

The combination of business risks for bioresources and Ofwat's proposals indicate *higher* relative risk exposure for bioresources compared to the other price controls. Therefore, we disagree with Ofwat that the proposals have no impact on the cost of capital. It is important to ensure that the cost of capital is calibrated to reflect the outcomes of the financeability assessment and levels of risk borne by companies in relation to this price control. We do not agree that bioresources price control risks will be captured through appointee level CAPM analysis. In addition, pricing for bioresources will need to consider asymmetric risks and real options, which would not be captured under the CAPM.

No single part of the water industry value chain faces the prospect of such short-term and longer-term uncertainty as bioresources. Given this, we ask Ofwat to reconsider whether the reforms advocated in the PR24 discussion document represent a sensible change given the wider uncertainty and the longer-term challenges facing the sector which should be our collective principal focus.

At this time, the sector needs a stable, predictable and understood framework for how best to fulfil our statutory duty of dealing effectually with the contents of our sewers. Additional regulatory uncertainties regarding the setting of the price control would add further risk to a situation that has become far more challenging. The proposals set out in the consultation document might have been better received five years ago, when we thought our bioresources asset base was complete and our strategy was set. Today the timing looks completely wrong.

Notwithstanding our overall position on the consultation, in this response we engage fully in considering the proposals which have been made. We identify flaws in the detail of Ofwat's proposals which would apply even if we agreed with Ofwat's overall policy intent.

We recognise that the wider impediments to market development that we set out above are not in Ofwat's gift to remove; that Ofwat has statutory duties to fulfil; and that the environmental regulations might change to enable the development of the full bioresources market that we all seek.

Consistent with the positive, pro-markets stance that we have always adopted, we can readily contemplate being able to support the policy intent behind the consultation proposals at some point in the future. This would be in circumstances where we faced the future with much greater certainty than we do today.

However, as we stand today, we would seek changes to aspects of the proposed approach, to address the drawbacks we have identified in this response. We would suggest a period of collaboration between Ofwat and the industry which might allow the development of a price control setting methodology which met the policy objectives in a way which was acceptable to companies given the live challenges. This suggestion has the benefit that during the time of this strategy development we would be gathering the data on which much of any approach would depend. It could also allow for a period of shadow testing to allay concerns about the workability of the strategy and the level of risk associated with it.

In the attached document the questions posed in the consultation document are set out in italics and our responses follow. Where relevant, we refer to our responses to other of the PR24 consultations, such our response of 3 February 2022 to 'Assessing base costs'.

As ever, the full Anglian team remains committed to explore any aspect of the discussion raised in this response. We would also welcome the opportunity to work with Ofwat to develop these proposals – which we recognise in the longer term might support the development of the bioresources market – on a sustainable basis over a longer time horizon to ensure that they support robust price control calibration, incentivise efficient investment and provide appropriate regulatory stability as the market develops.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Darren Rice', written in a cursive style.

Darren Rice
Head of Policy and Regulatory Strategy

Key points

Cost assessment and modelling approach

- To back-cast the cost data required for the models Ofwat proposes would require large numbers of assumptions and estimates. The margin of error in our data would be very large.
- We do not support the use of forecast costs in models.
- The pattern of historical investment in bioresources has been uneven. We therefore see a risk that the inclusion of depreciation in the proposed cost models will not forecast accurately future capital maintenance costs.

Growth driven and enhancement investment

- We retain an open mind about whether growth variables in the models can accurately control for future growth-driven investment.
- Ofwat's preferred option for remunerating new quality-driven investment (including an allowance for annualised cost over one regulatory period) will deter investors concerned about the risk of asset stranding. In view of the critical need for investment to deal with high levels of uncertainty in the sector, we prefer the alternative approaches.

Modelling financial costs

- We have carefully reviewed the proposals to include financing costs in the econometric benchmarking.
- At a conceptual level, we do not consider it appropriate to apply an efficiency challenge to financing costs (either in relation to new or legacy assets) as this would effectively penalise more capital-intensive companies (as the difference in financing costs per unit between companies would reflect the difference in the ratios of RCV/sludge production, with more capital-intensive companies appearing to have a higher financing cost per unit).
- Moreover some of the approaches set out by Ofwat – such as the value floor method – appear to include implicit efficiency challenge to legacy assets, which contravenes regulatory policy at PR19 which signalled that pre-2020 assets would be protected.
- Overall we consider that all financing costs should be excluded from cost benchmarking as it is unclear that the two proposed approaches would support full protection of legacy assets in line with past regulatory policy.

Impacts on Risk and cost of capital

- The combination of business risks for bioresources and Ofwat's proposals indicate *higher* relative risk exposure for bioresources compared to the other price controls.
- It is important to ensure that the cost of capital is calibrated to reflect the outcomes of the financeability assessment and risk allocation for this price control. We do not agree that bioresources price control risks will be captured through appointee level CAPM analysis. In addition pricing for bioresources will need to consider asymmetric risks and real options, which would not be captured under the CAPM.
- Financeability for bioresources – which Ofwat is proposing to treat as a separate business for price control setting – needs to be assessed on (1) a standalone basis; and (2) in the short *and* long term. As a result we do not consider Ofwat's commentary on the size of the bioresources business relative to the appointee business as a whole to be relevant for calibration of this price control on a standalone basis.

Conclusion

In summary, we see great risk in Ofwat's proposals. The timing of Ofwat's proposal to move to a radically different and untested way of setting the price control for bioresources is wrong given the great uncertainty in the bioresources from changes in various aspects of environmental regulation.

1. Better targeted cost assessment

1: Do you have any comments on this section?

2: Do you have any comments on our proposed information request in Annex 1? In particular, we would welcome feedback on the following areas:

- the level of accuracy of the information companies could provide;*
- the types of assumptions the company may make to provide this data;*
- whether we should consider any further changes to this data; and*
- whether additional data may be required.*

We recognise the desire to set an efficiency challenge for bioresources which is separate from the wastewater network plus. The reason Ofwat did not proceed with this at PR19 was uncertainty about the consistency of cost allocation between bioresources and wastewater network plus in previous years.

While Ofwat has taken steps since PR19 to improve the consistency of reporting sludge liquor treatment costs, overheads and energy costs and revenues, we suspect there may remain other inconsistencies in cost and revenue reporting or instances where cost substitution across the two price controls occurs. **To the extent that this were to happen in companies' data, the benchmarks derived for the two price controls could, in combination, comprise an unrealistic efficiency challenge and all else equal increase cost risk.** The best way to check for this would be to triangulate the outputs of separate bioresources and Network Plus models against an overall wholesale wastewater model. There are two very obvious problems. First, the PR19 modelling suite did not include wholesale wastewater models although seven parties (including Ofwat, with eight models) proposed 37 between them in the March 2018 cost modelling consultation. Second, the nature of the proposed bioresources cost models along with the untested novel features proposed render it impossible to triangulate alongside Network Plus botex models. We see this as a further reason to maintain the established approach to bioresources cost modelling.

The bioresources models were the least robust of the PR19 botex Plus model suite. The range of implied efficiencies, at over 100%, is certainly implausibly large. Ofwat's PR24 proposed Bioresources cost modelling is radically different from any modelling it has carried out previously. None of the potential challenges of this modelling are acknowledged in the consultation. The proposed models will also be informed by inclusion of financing costs for the first time, depreciation costs rather than expenditure and opex data which will have been almost entirely assessed long after the years in which they incurred against brand new reporting requirements. None of these data are yet available to Ofwat. The combined effect of all these factors is that there must be great uncertainty about the quality of the models that might emerge.

For companies, this presents modelling risk of a level which would be significantly greater than that associated with the type of cost models with which they are more familiar. We can therefore foresee a lot of company variation that cannot credibly be attributed to current efficiency or inefficiency.

The consultation document says nothing about the modelling principles which will apply or the criteria for acceptable models. We therefore assume as a minimum that the principles proposed in 'Assessing base costs' will apply here. But given the introduction of such a significant change these criteria on their own will not be sufficient. In addition, Ofwat would need to: (i) cross-check with aggregate wholesale wastewater models (as per above), and (ii) cross-check significant changes in company results under the new approach compared to old modelling approach, and possibly (iii) undertake further sensitivity analysis / cross-checking.

The consultation identifies that the approach to cost modelling which is proposed depends on the availability of historical company data which have been calculated in accordance with reporting requirements which were issued last year. The revised reporting requirements for sludge liquor treatment cost were issued in time for companies to attempt reporting for 2020-21 while the revised guidance for energy and overhead costs only appeared in late 2021 and has yet to be applied in any company reports.

Of the four options set out in the consultation for addressing the absent data we agree, in principle, with the preference for option 4. However, that is dependent on whether companies can, in practice, derive values for these lines for previous years. In considering this, it is worth recalling that the costs of sludge liquor treatment and energy use were not reported at all for most of the years in question.

We said in our response to 'Assessing base costs' that in general we were sceptical about companies' ability to back-cast data for up to 10 years to the standard that would be required for reliable cost modelling. This remains the case. Specific to bioresources:

- We would be unable to produce sludge liquor treatment cost data that comply with the new reporting requirements. For example, we only started collecting settled BOD samples this year after the introduction of the new requirements and our records for any samples of sludge liquors would be very incomplete back to 2011/12.
- On the energy side, we know for those years the energy generated by bioresources, the total consumption by WRC and STC and the exports to grid but we do not know the transfer of power from bioresources to WRC.
- Furthermore, there is no way current data can be safely extrapolated backwards given the changes in our asset base; 2011/12 predates all our HPH sludge treatment centres and saw us still operating driers that we took out of service in 2013.

Without undertaking the detailed work, we are unable to estimate the margin of error that would be associated with the back-cast data we might calculate. It is clear, though, that we would have to employ a lot of assumptions and estimates to compensate for the measurements we did not capture at the time. We would expect this to be true of all companies in the sector.

In summary, the proposed cost modelling will:

- Rely on cost data of suspect quality;
- Build on existing models which already display an unrealistic range of efficiencies; and
- Incorporate novel features not previously investigated by neither the industry nor Ofwat.

It is hard to avoid the conclusion that this all amounts to a high risk that cost allowances produced from these models will be wrong.

In our response to 'Assessing base costs' we commented on the length of the sample period of historical costs that is used for cost modelling. We identified a number of drawbacks with Ofwat's preferred approach of using all years from 2011/12 and suggested that five years should be used on all models. As well as ensuring that the sample period correlates to a complete price control period and includes years that are relevant to future costs, our proposal has the benefit of reducing the numbers of years that require back-casting. If it were adopted, for current modelling companies would only need to back-cast data to 2016/17, halving the scale of the task and associated risk from data error. By the time of PR24 FDs Ofwat will have data up to 2023/24, with the earliest back-cast year being 2019/20, and thus the impact of data errors would be more limited when it comes to setting cost allowances.

Should we be required to provide back-cast data with this year's APR, it would constitute a considerable regulatory burden as well as being of uncertain and questionable value. That burden should be recognised when considering reforms of this nature. In 2021 Ofwat consulted on revisions to the bioresources market data which companies are required to publish annually. In our response to this, we highlighted that because most of the data relating to bioresources assets change very little between years it was disproportionate to require companies to publish them annually. We suggested that there would be no loss of value if these tables were only produced every three years. Ofwat did not accept our proposal then, but should it proceed with requesting back-cast data to 2011/12 with this year's APR we would propose again that the requirement for companies to publish bioresources market information tables should be suspended for 2021/22.

2. A more market-based approach to setting costs and revenues

3: Do you have any comments on this section?

4: Do you have any comments on our proposed objectives and principles for PR24?

5: Do you have any comments on the design of our proposed control, including whether:

- depreciation data or expenditure data is more appropriate to reflect companies' capital costs;
- our proposed approach to standardising capital costs data before 2020 is appropriate, including our proposal to base this on lighter-touch current cost accounting and straight-line depreciation;
- our proposed approach to using companies' RCV run-off as our measure of depreciation over the 2020-2025 period is appropriate;
- our proposed approach to standardising expenditure data is appropriate;
- our proposed approach to capturing financing costs in our econometric cost modelling is appropriate; and
- our proposed approach to enhancements is appropriate.

6: Do you have any comments on our information request in Annex 3?

3. Capital costs

Ofwat wants to explore whether it could use depreciation rather than capital maintenance expenditure in its proposed cost models.

We agree that over the “medium term” and with a pool of assets in a “steady state”, depreciation on a current cost basis should equal capital maintenance. However, we do not believe that the assets used in sludge treatment are in “steady state”. This means that future capital maintenance expenditure should be expected to continue to be “lumpy” in nature. This is especially the case given the relatively small number of sludge treatment centres and the large enhancement programmes completed in recent AMPs which will require significant capital maintenance in AMP8. We foresee a great risk that these costs will not be provided for by the model. The problem here is analogous to including growth in base costs: while it is possible to argue that standard growth is accommodated by scale variables (albeit with the caveat that we believe such an implicit allowance understates the true cost), strategic growth (building a new STC in the case of bioresources) is not, and we believe cannot be, taken into account.

If Current Cost Accounting were to be adopted for depreciation pre 2020, we would support the lighter touch approach, and agree that straight line depreciation would keep things simpler.

For the period 2020 to 2025, while using RCV run-off initially seems sensible, given the wide variation of run off rates between companies at PR19, we would support the testing of this against the standardised approach.

We support the principle of ‘triangulating’ various methods to assess efficient capital maintenance expenditure including depreciation and historical capital maintenance expenditure. Companies should also have the opportunity to provide evidence for and explain why historical data is unlikely be the best guide for future capital maintenance requirements.

4. Financing costs

Ofwat has proposed to include financing cost in the cost pool subject to benchmarking. At this stage, Ofwat has provided only limited guidance on the specific implementation mechanism of the financing cost allowance.

On a conceptual level, we do not consider it appropriate to apply an efficiency challenge to financing costs. This is because financing costs are calculated by multiplying two inputs:

- Asset base – which has already been subjected to an efficiency challenge (via econometric benchmarking for base costs and via individual assessment of enhancement costs over time). As such, applying further efficiency challenges to the historical RCV could be viewed as double counting.⁵
- WACC – which has already been subjected to an extensive calibration process and efficiency challenge (for example on benchmarking of debt costs under the ‘balance sheet approach’) through the normal price control. As such, applying further efficiency challenges to the WACC could be viewed as double counting. In addition, the WACC is set equally in almost all respects across all companies where it is based on the notional capital structure,⁶ making cross company comparison meaningless.

By applying the efficiency challenge on financing costs per unit, Ofwat would effectively penalise more capital-intensive companies as the asset base is key determinant of returns in absolute terms. As a result, the difference in financing costs per unit between companies would reflect the difference in the ratios of RCV/sludge production, with more capital-intensive companies appearing to have a higher financing cost per unit. However, capital intensity is likely to be driven, at least in part, by the specific operational requirements and business characteristics of each company.

To the extent that there is a trade-off between OPEX and CAPEX, this might not necessarily be an issue as more capital-intensive companies would have lower OPEX. Thus, the overall impact on ‘TOTEX’ itself might be unaffected (especially if the trade off between OPEX and capital costs is 1:1). Some regulators explicitly model trade offs between OPEX and CAPEX, rather than sum them into a TOTEX measure, and Ofwat could explore this option. Importantly we consider that the OPEX and CAPEX split should not govern recoverability of efficient financing costs incurred.

As a result Ofwat is applying an efficiency challenge to financing costs, which would imply a challenge to the asset base rather than the WACC, as the WACC is essentially the same for all companies (excluding the PR19 CMA appellants and companies with a small company premium). This would represent a double count of the efficiency challenge.

It does not seem appropriate to apply an efficiency challenge based on this criterion or to implicitly apply a further efficiency challenge based on an asset base which has already been subject to

⁵ Ofwat proposed to protect the pre-2020 RCV. However, no protection is provided for additions in the 2020-2025 period. In addition, under the ‘value floor’ approach, the efficiency challenge is applied to the entire historical cost base.

⁶ Except for companies that appealed at CMA PR19.

extensive efficiency challenge. All else equal, the proposed inclusion of financing costs in the econometric benchmarking would increase risk exposure in the bioresources price control.

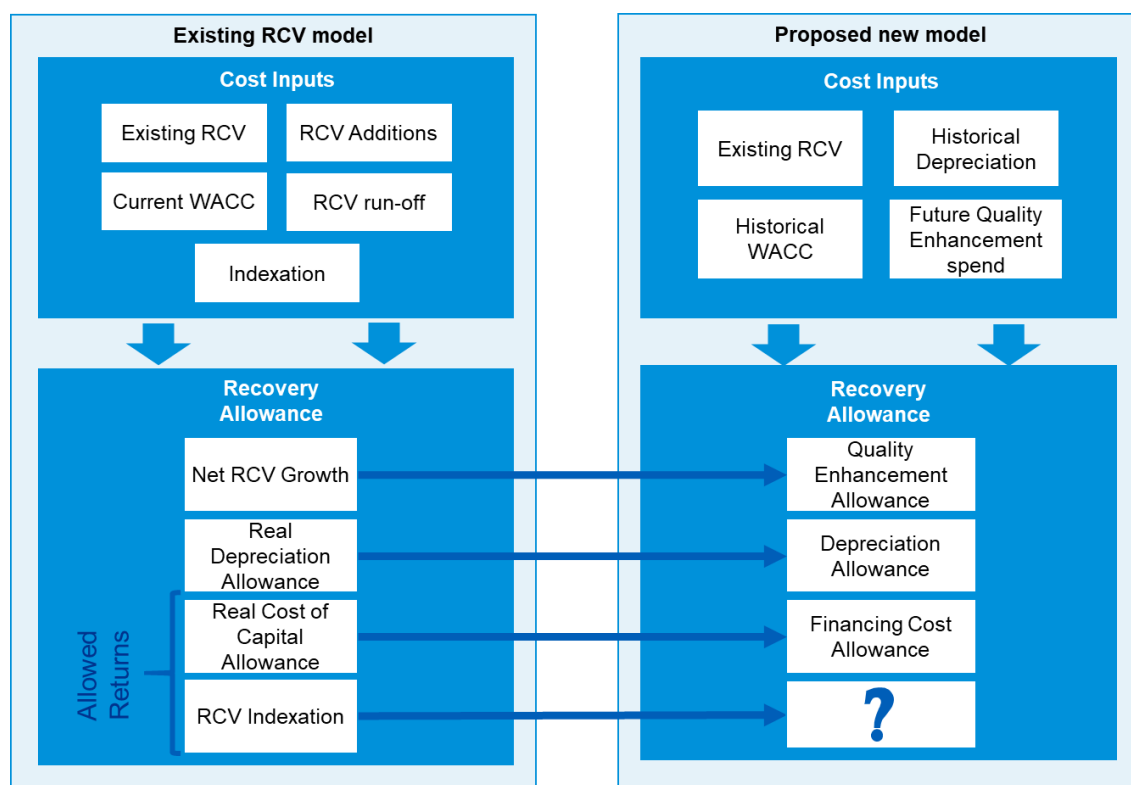
To the extent that Ofwat decides to remove the RCV approach as indicated by the consultation, as an *ex-ante* principle, we consider that any changes should be NPV neutral. As proposed in the consultation, we do not think that this objective is achieved.

Under the RCV model, companies receive a return *on* capital (through the WACC) and return *of* capital (through depreciation) in real terms. In addition, the RCV is adjusted to account for net additions (based on 1 – PAYG rate), and companies also earn an indexation factor on the RCV, which applies to the historical asset base as well as any RCV additions.

Under the new approach, Ofwat is proposing to allow companies to recover efficient financing and capital costs (through an allowance for depreciation – we provide comments on this approach above). In addition, Ofwat is also proposing to allow companies to potentially recover additional capital and financing costs associated with quality enhancement expenditure.

However, Ofwat has not explicitly addressed at this stage how the new approach will allow companies to recover the RCV indexation related to the historical asset base and future RCV additions (which represents the nominal component of returns under the current RCV model). This is illustrated in the figure below.

Figure 1 - Comparison of Recovery Allowances under RCV approach and Ofwat's new bioresources model



In the discussion Paper, Ofwat stated that it intends to ‘*use the allowed return from previous final determinations (calculated on a fully notional basis) to estimate companies’ historical financing costs. We would apply this rate to the bioresources asset base corresponding to the relevant control period*’.⁷

We agree that financing costs should be considered on a notional basis for consistency with other price controls. Companies incur actual debt financing costs on debt that is raised at the appointee level, so it would be theoretically incorrect to divide actual debt costs between price controls.

We note that Ofwat’s proposals make no explicit reference to how historical assets would be adjusted to reflect indexation. To ensure that companies can earn the allowed return in nominal terms on an expected basis, we consider that the capital and financing cost allowances should be revalued at a new price base for each future Price Review period. Similarly, we also consider that the new mechanism for the recovery of financing cost related to the Bioresources business would if implemented need to reflect certain changes to the cost of capital allowance set for the appointee.

Furthermore, depreciation on a current cost basis is equal to capital maintenance only when the asset base is in a steady state. If the asset base is not in steady state, past depreciation data is unlikely to be a good proxy for future capital expenditure requirements. As mentioned in Section 2 of this response, we do not believe that the assets used in sludge treatment are in “steady state” and capital maintenance expenditure is expected to continue to be “lumpy” in nature. Therefore, the new model is likely to create additional risk exposure for companies in terms of expenditure recovery compared to the existing RCV model.

In light of the above, we consider it important for Ofwat to clearly set out how the new approach would ensure NPV neutrality and support recovery of nominal financing costs on an *ex-ante* basis, particularly in relation to the recovery of RCV indexation under a model where:

- (1) Financing costs are based on a *real* cost of capital
- (2) The RCV concept is not applied, with depreciation based on assets recognised at historical cost.

⁷ Ofwat (2021), ‘*Our proposed approach to funding bioresources activities at PR24*’, December, p. 25

5. Assessing enhancement costs

The consultation document notes that enhancement allowances for bioresources have tended in the past to be relatively small. While this may have been the case historically, there is a high likelihood that allowances in the next price control period will be much more substantial. We set out in our covering letter the changes to environmental regulation that have been introduced recently and some of the emerging consequences of those changes for our bioresources operations. It is too early to say how we propose to respond to the new regulatory landscape, but it is very possible that new assets will be required and that the scale of future investment will be very different to the past, notwithstanding the impact of population growth on the asset base. We say a bit more about the consequences of the regulatory changes for companies' bioresources operations and investment in the appendix.

Finding the right approach to dealing with future enhancement allowances is therefore potentially more significant than Ofwat might have assumed. The approach Ofwat proposes is to let the cost models do the hard work wherever possible. The rationale is that provided the sample period of years' costs that are used to create the cost model include enhancement expenditure, *and* the model includes variables that control for differences between companies in those costs, *and* the values of those variables can be accurately forecast, future enhancement costs driven by those variables can be accurately forecast.

As set out in our "assessing base costs" response, in principle we do not support the use of the totex models:

"We are pleased that Ofwat is minded not to pursue the development of total expenditure (totex) models. Previous experience shows that the chances of creating robust and useable totex models are very slim and we consider the sector's collective efforts are better directed to developing other robust cost assessment approaches."

We suspect that one reason for the difficulty in producing reliable totex models is their conflation of opex and capex, which are two very different types of expenditure with different drivers. We recognise that the modelling approach Ofwat is proposing for bioresources uses the depreciation and financing costs related to capital investment rather than expenditure. However, we have no experience of this approach to modelling and reserve judgement about it until we see some results. As previously stated though, we foresee significant risk that a lot of justifiable company variation will be attributed to inefficiency.

The success of Ofwat's proposed approach in making sufficient allowances for future enhancement investment is of course conditional on the cost models accurately capturing the relationship between independent variables in the models and historical investment. These variables would need to control for both of the drivers of bioresources enhancement investment – namely growth and quality. Before turning to each of these in turn, we observe that variables would need to be selected carefully to ensure that they did not breach Ofwat's principle on endogeneity. Length of mains laid, for example, could be considered endogenous.

Growth-driven enhancement

The growth variables in the PR19 bioresources and bioresources plus models were sludge produced and load treated. These variables served in the PR19 models to control for differences in companies' bioresources opex and capital maintenance costs. These same variables would now also be required to control for depreciation and financing costs related to growth-related investment. Until we see models which have been built on the proposed basis we cannot say if they will achieve that.

One way of testing this would be to run proposed models with and without the costs relating to historical investment. The difference in future costs forecast by this pair of models should therefore represent the additional (implicit) allowance relating to future investment. This figure could then be compared with companies' own forecasts of future investment needs as a check on the model's quality. This approach to computing an implicit allowance for enhancement is similar to that recommended by Ofwat in January 2020 for computing growth implicit allowances.

There is a relatively straight-line relationship between opex and capital maintenance costs and, say, sludge produced. For example, each additional cubic metre of sludge requires a little bit of extra energy to pump and treat it. The growth variables in the PR19 bioresources models might, therefore, have a chance of controlling for botex costs. In contrast, growth-related capital investment is made in periodic, more substantial packages. As demand grows it is catered for by existing headroom with no requirement for investment. Once this headroom is exhausted investment is made to create a new stock of headroom which may satisfy growth for a substantial future period. The relationship between the chosen growth variable in the model and the growth investment over a decade may therefore not be very clear. This may well mitigate against success in cost modelling.

We recognise that Ofwat proposes to measure capital costs by smoothing expenditure over the lifetime of the asset rather than modelling growth related capital investment directly. This may help to mitigate this issue and improve the estimated relationship between scale drivers and enhancement. However, it will still struggle to pick up the need for a company with no headroom to increase spend in the following AMP to enable forecast growth.

As mentioned above, the problem is a close analogy to that of modelling strategic growth as part of Botex Plus. As we set out in our Base Cost consultation response, we believe that growth costs should and can be modelled separately.

Quality-driven enhancement

The consultation document states that 'future quality enhancement expenditure may not be reflected in historical costs.' The statement is not explained but we surmise that it reflects a view that the drivers of future quality may be different from those that drove historical expenditure.

The PR19 bioresources and bioresources plus models included no drivers for quality. Had Ofwat sought to adopt its proposed PR24 approach at PR19 the quality driver might have been 'the proportion of sludge treated by a process designed to achieve enhanced status', as most companies' investment programmes have consisted of investment to improve the quality of biosolids in the context of agricultural recycling strategies. Looking forward, companies' investment programmes

might well be in response to the requirement to reduce the reliance on agricultural recycling. There would be no advantage in treating biosolids to enhanced standard if it is to be incinerated, in which case the PR19 driver would have been useless in predicting future enhancement needs.

We can leave the problem of choosing the correct quality driver to PR29 as Ofwat proposes to make separate allowances where companies have to make quality-driven investment in the PR24 period. Ofwat proposes three options for how these allowances would be remunerated. We recognise the drawbacks associated with all three. Ofwat's preference is for option 1 (allowance for annualised cost over one regulatory period). We are very concerned about the lack of regulatory certainty associated with this option and the risk of asset-stranding from 2030.

This risk could act as a significant deterrent for investors in the face of the high levels of other uncertainty in the bioresources market. While we recognise the drawbacks associated with the other two options, on balance they represent better solutions for allowing companies to discharge their statutory duties.

6. Broadening the information used to set companies' costs (use of business plan forecasts and market costs)

7: Do you have any comments our proposal to broaden the information we use in our assessment of companies' costs?

As we set out in our response to 'Assessing base costs,' we are generally sceptical about the use of forecast costs in cost models. Experience shows that there is frequently a large gap between companies' outturn costs and those they proposed in their business plans, revealing those forecasts to be unreliable components of a benchmarking tool. Furthermore, use of forecast costs blatantly breaches Ofwat's third modelling principle, that cost drivers should be outside of company control, or exogenous. At best, comparison between forecast data and cost allowances might be informative about the quality of the cost models and the extent to which the past is a good predictor of the future.

The consultation document sets out two specific reasons for considering the use of forecast costs for bioresources costs modelling – the paucity of historical information and the prospect that forecasts will reflect the efficiencies available from a better functioning market. We question whether models derived from unreliable back-cast historical data are likely to be improved by the addition of unreliable cost forecasts. We also refer back to opening remarks about the prospects for integration of bioresources with the wider organic waste market to question how likely it is that companies will have the confidence to reflect the efficiencies available to them from this market in their business plan forecasts.

We are even more sceptical about the potential for market prices, such as the gate prices in the wider waste sector, to form reliable benchmarks for companies' bioresources' price controls. We would want to scrutinise very closely any such benchmarks to ensure they were fit for purpose as valid, like-for-like comparators of bioresources costs.

7. Implementing the new bioresources control

8. Do you have any comments have on this section?
9. Do you have any comments on our options for providing a different level of protection for pre-2020 RCV?
10. Do you have any comments on our assessment of cost risk?
11. Do you have any comments on our assessment of the impact on the cost of capital?

Approach to pre-2020 RCV

The consultation highlights in a number of places that a different degree of regulatory protection will be provided for the pre-2020 RCV and investment after that date. It is important this level of protection includes full protection and remuneration of the pre-2020 RCV, which was clearly signalled in regulatory policy at PR19⁸. The continued expectation of the full remuneration of efficiently incurred RCV is a cornerstone of the regulatory model that drives the investment case for the industry and we strongly support retention of this approach for legacy assets in particular.

The consultation includes two proposals for protecting the pre-2020 RCV:

- Option 1: Excluding legacy assets from the catch-up efficiency challenge
Under this option, Ofwat would undertake an efficiency assessment on companies' operating costs, capital costs and financing costs. The efficiency challenge would then be applied only to companies' modelled operating costs and the financing and depreciation costs of new assets, while companies would still receive pre-2020 RCV run-off and financing costs.
- Option 2: Value Floor
Under this option, Ofwat would undertake the efficiency assessment on companies' operating costs, capital costs and financing costs as with Option 1. Ofwat would then set a floor equal to the depreciation and financing costs on the pre-2020 RCV. The average revenue would be the greater of the amount implied by the efficiency challenge and the value floor.

Both of these proposals would be dependent upon the development of robust econometric models which include financing cost as input variables. The consultation document does not set out the exact form of econometric modelling to be undertaken. However, the nature of the pre-2020 RCV is likely to make it unsuitable for econometric modelling. Let us first consider the following stylised full (totex) econometric model:

$$\text{Allowed revenue (Y)} = A + \text{opex cost driver} * B + \text{capital cost driver} * C + \text{financing cost driver} * D + E$$

Although this econometric model could be used to calculate allowed revenue (Y) for each company, the calculated revenue (Y) cannot be disaggregated into separate cost components. This implies that the level of remuneration attributable to financing costs (including for the pre-2020 RCV) will be

⁸ "We will extend the protection of efficiently incurred past investments, included in the wholesale wastewater RCV, up to 31 March 2020."
<https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-6-Bioresources-FM-final.pdf> page 12

unknown. Since we cannot use this model to determine the amount of allowed revenues that is attributable to financing costs, this model would not be able to guarantee the recovery of the pre-2020 RCV.

As a solution, financing costs could be calculated as the dependent variable using a separate econometric model. For example, the pre-2020 RCV econometric model could take the following form:

$$\text{Financing revenue } Z = A + \text{Asset base} * \text{financing cost driver } B + C$$

The financing cost driver B would need to be calculated based upon historical financing costs, which are driven by past WACC rates and the size of companies' asset bases (which is in turn determined by historic spend and the levels of depreciation). Given that there is a direct relationship between these three variables, the model would suffer from multicollinearity. Therefore, it is also not possible to estimate financing revenues through a separate econometric model.

Furthermore, for a normal econometric model, the cost driver is calculated using dependent and independent variables. The calculated cost driver is then used to calculate the "average" level of forecast funding based upon a company's characteristics (a further efficiency adjustment could also be applied). Any calculated variations against the historic average are assumed to be driven by differences in efficiency (or data collection issues).

For the financing revenue econometric model, any calculated allowed revenues derived using the cost driver would not be driven by efficiencies. As historic costs are driven by company specific WACC rates and company specific RCVs (historic funding cost are not within company controls), any variation against the average would be solely driven by the variation in WACC rates and changes in RCVs (which are driven by company specific depreciation rates policies), so the cost driver would provide companies with revenues based upon the average WACC and depreciation rates of the industry.

In summary, the issues with specifying an appropriate econometric model for financing costs imply that both Option 1 and Option 2 are inappropriate, as they both rely on the development of (robust) econometric models which include financing cost as input variables.

In particular, as the use of the econometric approach for funding of financing costs will not ensure full funding of the pre-2020 RCV, "Option 1: Excluding legacy assets from the catch-up efficiency challenge" is not suitable to be used.

The use of "Option 2: Value Floor" presents a number of additional concerns. The stacked chart diagram on page 34 of the consultation shows a value floor sufficient to ensure the funding for the "financing costs (legacy assets)", "depreciation (legacy assets)" and "efficient opex". This assumes that these costs are known (which cannot be achieved with full totex models) and has only been achieved by placing the "financing cost (new assets)", "depreciation (new assets)" and opex cost at the top of the stack of the "cost entered into benchmarking models". As this cost stack can be rearranged, this show that the value floor will not ensure recovery of legacy asset costs.

Overall, although we support with Ofwat's desire to avoid an 'in-house' bias in principle, it is unclear how this would be further achieved by the extending the econometric model approach to include financing costs. The 'in-house' bias could for example be considered as a form of capex bias, where it is sometimes assumed that companies having a preference for 'in-house' capital intensive solutions. However, with the move to totex regulation at PR14 alongside an intensive business planning process this is unlikely to be the case.

For simplicity, it would be beneficial to maintain the current RCV * WACC funding building block approach as this avoids creating winners and losers and fully guarantees the protection of the pre-2020 RCV.

Our assessment of cost risk

Ofwat does not consider that the new approach to the cost challenge would necessarily increase the cost risk faced by companies, noting the following points:

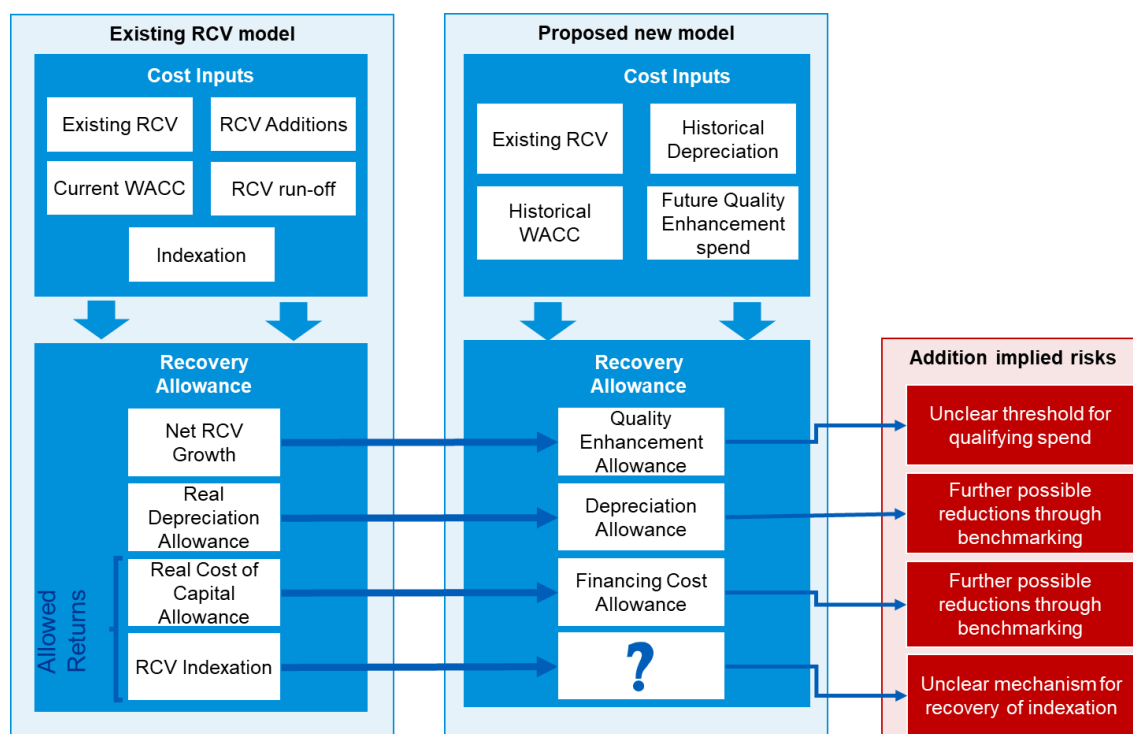
- *exposing capital expenditure to a cost challenge through our econometric cost benchmarking models is not new since capital maintenance was included in our PR19 cost assessment;*
- *if companies are efficient in their use of capital assets they could gain out of the approach;*
- *companies allocated RCV to bioresources at 31 March 2020 in a way that reflected the economic value of these assets - this approach means that any inefficiency should not be reflected in this RCV;*
- *there is a degree of regulatory protection for companies' pre-2020 RCV – this will remain the bulk of companies' bioresources RCV over the 2025-30 period, so only a fraction of companies' bioresources RCV would be at risk⁹.*

However, we consider there is evidence that the new approach does inherently increase cost risk.

This is because under the proposed new approach, companies are exposed to additional benchmarking risk compared to the existing RCV approach, while simultaneously being exposed to risk that the design of the mechanism does not allow companies to recover RCV indexation, and an unclear mechanism for qualifying and providing for efficient enhancement expenditure. This is illustrated in the diagram below:

⁹ Ofwat (2021), 'Our proposed approach to funding bioresources activities at PR24', December, p. 36

Figure 2 - Additional risks implied by new approach to assessing cost risk



In relation to the specific points that Ofwat has raised, we make the following remarks:

- First, while it is true that capital maintenance costs were included in the cost assessment at PR19, Ofwat is not providing protection for RCV additions during the 2020-2025 period, which means that the new approach presents the possibility for further efficiency reductions;
- Second, as shown in the figure above, the new bioresources model presents additional, new risks compared to the existing RCV model. As such, it is unclear how companies can expect gain out of the new proposals; and
- Third, the pre-2020 RCV will become a gradually smaller portion of the bioresources asset base going forward, which means that any benefits from the protection of the pre-2020 RCV will be phased out over time.

Potential implications for the cost of capital

We note that Ofwat considers that the new approach for the treatment of bioresources should not lead to an increase in the cost of capital.

First, Ofwat comments that the WACC is estimated at the overall company (or ‘appointee’) level – reflecting investors' risk perception of all business activities, including bioresources. To the extent that the proposed bioresources changes increase perceptions of risk, this should be picked up in beta (which is forward-looking) for the appointee several years before cut-off of the FD – and thus that it would already be reflected in the allowed return for the appointee.

Second, Ofwat considers that even if there were additional risks from our approach not reflected in our estimate of the PR24 allowed return, the impact on the cost of capital would be insignificantly

small. This is because the bioresources RCV on 31 March 2021 was only approximately 5% of sector RCV, with most of this being pre-2020 RCV benefiting from the proposed protections over the 2025-30 period. Any higher risks would only apply to the much smaller residual share of post-2020 RCV, meaning they would be significantly diluted at the appointee level in terms of their impact on the cost of capital.

We do not agree with the initial position adopted by Ofwat and outlined above.

First, betas are averaged over periods of up to 10 years, and investor expectations might not crystallise until the FD (or even later, given the possibility of appeal). This means that a significant portion of the data points used for the estimation of betas would not entirely capture investors' views on current expectations for bioresources risk. In addition, beta is only estimated by reference to two companies (Severn Trent and United Utilities), whose sludge business might not be representative of the wider water sector.¹⁰ As such, relying on beta as the only measure of risk for the sector is likely to suffer from sample distortions.

Second, the relative size of the bioresources business should not be used as a factor to assess the appropriateness of an increase in WACC. Rather, the risk and return profile of bioresources should be viewed on a standalone basis. This would be consistent with Ofwat's objective of creating a competitive market for bioresources, where pure-play undertakings should be financeable on a standalone basis. Under the proposed approach Ofwat seeks to selectively highlight the advantages of bioresources remaining as part of a water business on the one hand and those arising from joining a separate market as a stand-alone business.

Third, as shown in Figure 2 above, the new approach to assessing cost risk for bioresources implies additional asymmetric downside risks for water companies. Companies' depreciation and financing cost allowances are exposed to additional benchmarking risk compared to the existing RCV approach. At the same time, companies are exposed to risk that the design of the mechanism does not allow the recovery of RCV indexation, and the mechanism for qualifying and providing for efficient enhancement expenditure is unclear. These factors expose water companies to a range of, *inter alia*, asymmetric downside risks, which are not captured by the CAPM. Therefore, as explained below, it is important to ensure that CAPM results are cross checked against a robust financeability assessment and risk analysis and adjusted if necessary.

Fourth, it is also important to consider whether – given the uncertainty inherent in the development of the bioresources market, the risk environment and in particular lack of clarity around the recovery of efficient costs – companies might 'wait and see' and defer investment in the presence of this uncertainty. All else equal investors would need a premium to be incentivized to give up the 'wait and see' option.

Assessing financeability

The proposed approach outlined by Ofwat in the financeability section of the discussion paper relates to calculating gearing by including pre-2025 bioresources RCV plus post-2025 bioresources

¹⁰ For instance, United Utilities has a Biosolids incinerator, whereas other companies rely on land disposals

investment after taking account of depreciation. Overall, we consider that the discussion paper does not address the wider implications of the proposed changes to bioresources for financeability, which we consider needs to be assessed for this price control on a standalone basis.

In our response to Ofwat’s discussion paper on Risk and Return at PR24 and beyond, we stated that *‘The financeability assessment, which is explicitly linked to Ofwat’s financeability duty, should be viewed as the primary cross check to the allowed Cost of Equity. This is because the financeability test is designed to capture the overall financial position of the company under the proposed regulatory package [...] This approach is consistent with the one adopted by the CMA for the PR19 determination’*.¹¹

In the same Risk and Return response, we also outlined that risk analysis should be used in conjunction with the wider financeability assessment to ensure that the cost of equity has been properly calibrated. Similar to the financeability assessment, using risk analysis as a cross check is consistent with the notion that there is an intrinsic link between the allocation of risk between companies and customers, the returns allowed by Ofwat and the financial resilience of companies.

Using the financeability assessment and risk analysis as a cross check to allowed returns is particularly important in light of the proposed changes to the treatment of bioresources. This is because a number of factors specific to the bioresources price control suggest a higher risk profile for bioresources compared to the rest of appointee regulated activities:

- Companies’ costs related to bioresources face a risk of increasing significantly in certain scenarios. For example, potential changes in environmental law could further restrict access to land for disposing bioresources, following the EA’s recent change in its interpretation of the FRfW which would likely lead companies to incur additional costs for sludge disposal.
- Bioresource assets have a *shorter* life cycle compared to the rest of appointees’ regulated assets. The table below shows the run-off rates proposed in our PR19 business plan for each price control

	AMP7	AMP8
Water Resources	5.00%	5.50%
Water Network Plus	3.95%	4.50%
Wastewater Network Plus	5.10%	5.50%
Bioresources	6.00%	6.00%

- The higher investment churn associated with bioresources assets implies an *increased* risk profile compared to longer lived assets, due to more frequent procurements and more frequent exposure to cost increases for development of the assets.
- The bioresource price control has a lack of regulatory protections compared to appointees’ other regulated activities. This includes, *inter alia*, a lack of cost sharing mechanisms, exposure to volume risk and new efficiency challenges for financing costs.

¹¹ Anglian Water response to Ofwat’s discussion paper on Risk and Return, p.24

- Ofwat’s proposals involve using depreciation on a current cost basis as a proxy to capital maintenance expenditure. This approach relies on a steady state assumption for the asset base. If the asset base is not in steady state, past depreciation data is unlikely to be a good proxy for future capital expenditure requirements. We do not believe that the assets used in sludge treatment are in “steady state” and capital maintenance expenditure is expected to continue to be “lumpy” in nature. Therefore, bioresource activities are exposed to higher risk associated with expenditure recovery.
- Ofwat itself recognised that *‘it is challenging and costly for incumbents and potential entrants, both other WASCs and firms in wider waste markets, to identify profitable trades or optimisation opportunities’*¹²

Considering the likelihood of increased risk exposure in bioresources and higher relative risk compared to other price controls, it is important to ensure that the cost of capital is calibrated to reflect the outcomes of the financeability assessment and risk analysis in the bioresources business.

¹² Ofwat (2017), Bioresources market information guidance, p.3

Appendix – investment needs arising from the EA’s reinterpretation of the Farming Rules for Water

The industry and EA are discussing the impact of the EA’s recent reinterpretation of the Farming Rules for Water (FRfW) and a package of additional controls is being considered, which will ensure that biosolids applications remain compliant with the FRfW in future.

The EA has indicated that significant restrictions on biosolids and other organic waste applications are likely to be necessary in 37 catchments which drain to sensitive sites, as part of this package of controls. These catchments face a nutrient neutrality challenge, which means developers must provide certainty that any proposed scheme is deliverable in line with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Significantly restricting biosolids applications in these 37 catchments across England will affect the water companies to differing extents, with some having to consider alternative recycling/disposal routes for a significant part of their sludge/biosolids production, whereas there will be little if any impact for others.

Companies are likely to face a significant number of other regulatory changes at the start of AMP8 too, including implementation of the Industrial Emissions Directive (IED) and the EA Sludge Strategy. The level of investment associated with complying with IED will vary greatly between companies, as the number, age and complexity of different sludge treatment plants varies. The overall impact is that the level of enhancement expenditure associated with companies Bioresources activities and the types of recycling/disposal activities deployed by the different companies are likely to vary significantly in AMP8.