PR24 Draft Methodology Consultation:

Response to the bioresources price control consultation

Anglian Water

September 2022

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Section 2 Questions

Question 2.1: Do you have any comments on this section?

(1) We note that Ofwat proposes to pursue the approach to regulating bioresources that it set out in its December 2021 document.[1] In our response to that document,[2] we set out our significant concerns with those proposals. These broadly fell into two categories. Our first set of concerns was about whether markets can make a material contribution at this time to help water companies to address their bioresources challenges in ways that would benefit customers and the environment. Our second set of concerns was whether the method for determining bioresources price controls proposed by Ofwat would fully remunerate companies for their legitimate bioresources costs.

(2) The concerns we expressed previously regarding Ofwat's proposals have not been allayed. On the question of how far the market can help address the bioresources challenges, Ofwat's own bioresources market monitoring report[3] shows the lack of appetite among market participants, notwithstanding the actions that we and other companies have taken in recent years to promote engagement. We are not surprised at this; our response to the December 2021 document[4] set out the factors which would understandably discourage participants from risking investment in this market at this stage. We see no evidence that those factors have diminished.

(3) It remains very uncertain as to the contribution which markets can make at this stage to the bioresources challenge. Nevertheless, we remain actively engaged in supporting, promoting and identifying potential market opportunities. For instance, Anglian is leading the Unlocking Bioresources Markets project with Business Modelling Associates and four other WASCs, funded through the Innovation Water Competition Catalyst Competition.[5]

(4) On the question of whether Ofwat's proposed method for determining bioresources price controls would fully remunerate companies for their bioresources costs, Ofwat asserts that all cost allocation issues between bioresources and wastewater network plus have been resolved. We retain an open mind on that question in respect of costs which have been reported since the revised guidance was issued. We are much more uncertain about the reliability of allocations which has been applied retrospectively to costs which were first reported ten years ago.

(5) For brevity, we do not repeat here the arguments submitted in our response to the December document. However, we are very concerned that despite our previous response and the concerns expressed by other companies that Ofwat's proposals have not materially changed in response to these genuine concerns and valid arguments and evidence that companies set out in February.

Question 2.2: Do you have any further comments on our approach to a separate efficiency assessment, in particular the options we consider in section 2.4.2?

(6) In principle, we have no objection to the setting of a separate, well calibrated efficiency challenge for bioresources. However, the reasonableness of that efficiency challenge depends entirely on the reliability of the cost models from which it derives. Those, in turn, depend on the accuracy of the input data used for modelling. Our comments above on cost allocation therefore apply.

(7) On the question of cost substitution between bioresources and wastewater network plus, we oppose options 2 and 3 set out in section 2.4.2. Significant cost substitution effects would reveal themselves if companies were frontier in one service and a laggard in the other. Ofwat should assess the bioresources and network plus efficiency assessments for all companies and be prepared to take steps for any company with a frontier / laggard efficiency combination. Those steps could include inviting the company to identify (and adjust for) potential areas of cost substitution or to modify the efficiency assessments for both services.

[1] Ofwat, 'Our prosed approach to funding bioresources activities at PR24', December 2021
[2] Anglian Water, 'Response to 'Ofwat (2021), Our prosed approach to funding bioresources activities at PR24', February 2022
[3] Ofwat, 'Review of the bioresources market – consultation', May 2021
[4] ibis
[5] In addition to having led the sector in promoting accredited Biosolids Assurance scheme.

Section 3 questions:

Question 3.1: Do you have any comments on this section?

(8) This section sets out Ofwat's intentions around setting price limits based on 'gate fees' for bioresources services at PR24 as an alternative to the regulatory building blocks approach. We redirect Ofwat to Anglian's response[6] to the December consultation, in which we shared detailed concerns around **1)** the implied risk exposure for the bioresources revenue control because of the significantly different approach to setting the Bioresources price control relative to the way in which most other controls have been set previously, and **2)** the speed at which these approaches are being proposed to be introduced.

On December Proposals

Question 3.2: Do you have any further comments on the draft methodology proposals which we propose to retain from our December document and our reasons for doing so?

(9) The section repeats Ofwat's December consultation and provides a summary of stakeholder responses to **a)** the uncertainty around environmental requirements for bioresources; **b)** inclusion of financing costs in econometric benchmarking models; **c)** inclusion of growth enhancement in the econometric cost benchmarking models; **d)** preference for providing an allowance for annualised costs over one regulatory period for any future equality enhancement expenditure; **e)** no separate adjustment for historical growth enhancement costs and no separate allowance for related costs at PR24; **f)** use of PR24 business plan forecasts in econometric cost benchmarking models; and **g)** use of market data.

(10) Ofwat also elaborates on its approach to regulating post-2020 RCV and dismisses the risk of asset stranding, in addition to dismissing the implied increase in the level of both cost and volume risk for individual companies as result of these proposals.

(11) As stated in the response to question 2.1 above, we raised significant concerns to the approaches in our response[7] back in February. We note that the draft methodology does not provide any indication that these concerns, or those raised by the wider industry, have been considered.

(12) For instance, almost all companies in their response to the December consultation highlighted the uncertainty and challenges in the regulatory environment in which the bioresources price control operates, such as the changes to the farming rules for water (FrW) and the Industrial Emission Directive (IED). The draft methodology does not show any indication that Ofwat has considered the significance of these challenges, nor their implications for its proposed approach. The current situation has not improved since our previous comments, and can be summarised as follows:

Industrial Emissions Directive (IED)

Despite the efforts of both WaSCs and the Environment Agency, the date previously set for IED compliance has now passed; no IED permits have yet been issued to any English WaSC. The ongoing lack of clarity in relation to requirements means it is unlikely that all the investment associated with IED compliance will be delivered by 2025.

The industry and the Environment Agency have experienced a steep learning curve in the process of implementing the IED on existing sludge treatment assets. The collective understanding of what would be required for IED compliance has grown significantly since the need was first confirmed, and the initial expectation that a risk assessment-based approach would suffice in most cases has proven not to be the case. As requirements continue to be clarified, the level of investment needed and timescale for delivery has increased significantly.

In terms of outstanding IED issues, covering tanks is a BAT requirement under IED, but in the context of sludge holding tanks this has the potential to create an explosive atmosphere which must be carefully managed to avoid

[6] ibid
[7] ibid

significant health and safety risks. Whilst discussions are ongoing, the Environment Agency have yet to provide clear guidance on what would be appropriate in terms of covering tanks in a safe and effective manner.

Spill modelling is also underway across the industry and is being used to identify appropriate secondary containment options. This is something that the industry has not had to implement previously, and there is a reliance on specialist consultants to guide the development of what secondary containment would be appropriate. To date, a lack of feedback in relation to applications, means the industry has no clear guidance in terms of expectations.

The industry has requested to work more closely with the Environment Agency, to ensure these issues are resolved as quickly as possible and to agree a realistic timescale for implementation.

Farming Rules for Water

Defra issued Statutory Guidance regarding what criteria the Environment Agency should consider when they assess if they should take enforcement action in relation to Farming Rules for Water. The guidance was initially issued in March 2022 and then amended in June 2022, in response to a challenge from specific environmental stakeholders. The guidance states that it must be reviewed and potentially amended or even withdrawn by September 2025. There is still uncertainty over whether autumn applications of biosolids for example will be allowed in future, which is not helpful in terms of business planning. The industry currently applies c.70% of all biosolids in the autumn period, as it is simply not practical to apply biosolids to most growing crops in the spring: applications in the spring would cause significant crop damage and there would be a high risk of soil structural damage and increased run-off risk too. The industry therefore faces a position where most of its outlet for biosolids could be lost after business plans have been submitted.

Whilst the Environment Agency's Water Industry National Environment Programme (WINEP) stated the drivers for investment in sludge management for AMP8 aim to deliver improvements in resilience, this does not address the risk associated with potentially losing part/all of the agricultural outlet because of uncertainties in the guidance, and the fact it must be at least reviewed, but could also be revised or withdrawn, by September 2025.

With reference to the Long-Term Delivery Strategy expectations, in relation to Bioresources, the Draft Methodology states, "We do not recommend that companies use our adaptive planning framework to address risks regarding the use or disposal of sludge. Forecasting regulatory changes is too speculative to drive enhancement funding at PR24." This statement appears to contradict the long term, adaptive planning focus Ofwat have been more widely advocating and which we continue to broadly support.

Environmental Permitting Regulations

The Environment Agency published its Sludge Strategy in 2020, which seeks to move from 2023 the recycling of treated sewage sludge (biosolids) from the Sludge (Use in Agriculture) Regulations (SUiAR) to the Environmental Permitting Regulations (EPR). Whilst the Industry has attended a number of workshops/meetings to support in the development of this new regulatory approach for biosolids recycling, there is currently insufficient clarity on the outcome of this process. It is likely that a new Standard Rules Permit for biosolids recycling will be created, with additional fees paid to the Environment Agency in relation to each deployment application. The details and costs associated with this new process have yet to be confirmed.

The SUiAR is prescriptive legislation, clearly identifying the soil and sludge analysis required before applications of biosolids can be made. If these conditions are met operators do not need to gain approval but must keep records to demonstrate compliance. The EPR is a framework under which an operator must hold a permit and then a deployment must be approved before the activities can take place. Whilst there are standard conditions, the Environment Agency may request additional analysis and could apply further restrictions in relation to the application of biosolids to land in future. Moreover, the delay to gain approval from the Environment Agency will increase operational costs and even result in biosolids not being recycled on occasions, due to these delays. This uncertainty and potential for delays creates uncertainty over the viability of agricultural recycling and therefore how companies must plan.

It was suggested that the Environment Agency's Sludge Strategy was necessary on the basis that the constituents within sewage sludge and how it's managed (the supply chain) has changed over time. Publicly raising these concerns, without an opportunity to properly address them, or a firm evidence base to justify them, has not been helpful in terms of providing reassurance to stakeholders that the practice of recycling treated sewage sludge

(biosolids) to land is safe and sustainable. This has significantly increased the risk of a partial or total loss of the agricultural outlet in future.

(13) Given the current situation, we retain concerns with the chosen approach which seems to overly emphasise the role of econometric modelling (as a substitute for competition), without acknowledging the unresolved challenges of the bioresource market, and crucially that it lacks the most fundamental aspect of a typical market, that is the ability for the participants to enter and exit the market.

(14) Although an econometric approach can be used to calculate a 'gate price,' if the setting of a 'gate price' through this approach fails to reflect the effective recovery of either past efficiently incurred costs or future investments over the life of an asset, this will deter investment and will ultimately harm customers.

(15) We would support the suggestion from Affinity Water for the revenue allowance to be calculated both on the PR19 methodology and any proposed PR24 methodology, and for a comparison to be made between the revenue allowances. Where there are large differences in revenue allowances (which cannot be explained by changes in efficiency) this may indicate deficiencies in the econometric approach which would need to be investigated further.

(16) It is important that all costs are modelled appropriately rather than the overall approach being driven by an objective of capturing all costs within a single econometric approach (under the flawed logic that this is a more market-based approach which will promote markets).

(17) Having read the Bioresources Control supplementary document[8] that assesses the alternative packages of options for funding bioresources activities at PR24, we have set out further comments in the response to QS.2

Question 3.3: Do you have any suggestions on how our approach to PR24 quality enhancements could be implemented in a way that achieves our objectives whilst addressing the concerns raised by stakeholders?

(18) We remain concerned about the lack of regulatory certainty associated with Ofwat's preferred 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. On balance, this option does not allow for companies to discharge their statutory duties.

On updated proposals

Question 3.4: Do you agree with, or have any comments on, the degree of regulatory protection we propose for pre-2020 RCV (Regulatory Capital Value)? Do you agree with our proposal to implement option 1 to achieve this?

(19) In the December consultation, Ofwat consulted on two approaches that could provide a different degree of regulatory protection for pre-2020 RCV in line with its commitment at PR19 when setting price controls for the 2020-25 period. At draft methodology, Ofwat has opted for 'Option 1: excluding legacy assets from the catch-up efficiency challenge'.

(20) As noted in our response to the consultation, neither option 1 nor option 2 would provide sufficient regulatory protection for the pre-2020 RCV as guaranteed at PR19.

(21) The draft methodology fails to evidence the existence of an "in-house bias" inhibiting the development of bioresource markets and the requirement to move away from the building-block approach to setting the price control. It should be noted that Anglian and other WaSCs are expected to implement a bid assessment framework for bioresources activities to complement the existing market structure and help ensure that we procure bioresources services in a way that promotes the market.

(22) The totex approach introduced at PR14 in addition to Ofwat's approach to the Direct Procurement for Customers (DPC)[9,10] further mitigate the risk of any 'in-house bias. In intervening during the PR19 CMA redetermination, the CMA observed that specific investment by companies represented best whole life costs for customers "… whilst Anglian

[8] Ofwat, 'Creating tomorrow, together: consulting on our methodology for PR24 – Bioresources Control: supplementary document,' September 2022
[9] A process for water companies to competitively tender for a third-party (a competitively appointed provider) to design, build, finance, operate and maintain infrastructure
[10] Ofwat, 'Draft Guidance for Appointees delivering DPC projects,' September, 2022

building in-house capacity has a higher upfront cost, the lower whole life cost represents a more efficient form of delivering the necessary activities."[11]

Question 3.5: Do you agree with, or have any comments on, our updated proposals for modelling financing costs in our benchmarking models?

(23) In its consultation in December, Ofwat proposed that financing costs be estimated by multiplying the asset base and allowed return from previous final determinations to estimate companies' historical financing costs.

(24) At Draft Methodology, Ofwat proposes the use of a PR24 post tax allowed return on capital, multiplied with the asset base, to provide an estimate of companies financing costs that it could use in its benchmarking models along with operating and capital costs.

(25) In our response[12] to the December consultation, we explained that use of historical financing costs for cost benchmarking created a risk of double counting past efficiency challenges. Whilst the adoption of a forward-looking cost of capital is being proposed at draft methodology, we would argue that all financing costs should be excluded from cost benchmarking models, as this would calculate allowed revenues based upon the average asset bases across the industry and would thereby create arbitrary winners and losers based upon historic spend levels and investment profiles.

Question 3.6: Do you agree with, or have any comments on, our proposals in relation to managing volume risk? Do you agree with our preferred option, that is, option 2?

(26) Ofwat's proposal of an average revenue control based on companies' actual sludge production removes the fixed revenue allowance component when setting allowed revenues. Despite the recognition of the implied degree of volume risk because of its approach, Ofwat is dismissive of the significance.

(27) Ofwat consults on three options with a preference for 'Option 2: No adjustment in relation to volume risk but retaining the forecasting incentive as at PR19' i.e., the approach estimates the unit cost rate directly from econometric models to inform allowed revenues (with no forecasting incentive or cap and collars that could affect allowed revenue), with the possibility of reviewing the level of financial penalty and the deadband associated with the forecasting incentive.

(28) We agree with option two in principle as it is well understood and tested. This is conditional on the effective calibration of the wider incentives. We would have concerns if the level of financial penalty is increased, or the deadband is reduced or removed as a result of the proposed review. This is because there are many factors that impact on the forecasting accuracy of total sludge production from network plus. These include but are not limited to: the accuracy of population growth profiles; the pace of development and the speed of overall population growth; and the impact of future WINEP quality enhancement programmes. For the quality enhancement schemes at business plan submission the precise detailed solutions to be implemented are not fixed; different technologies or solutions selected will impact on forecast sludge production arising from network plus.

Question 3.7: Do you agree with, or have any comments on, our proposals to make a separate adjustment for tax?

(29) Ofwat proposes using a building block approach to tax and then add that to the cost figures for bioresources produced by the econometric modelling. We query how Ofwat will derive a taxable profit for the bioresource price control if it adopts its proposed fully reformed approach. An econometric model which includes financing and depreciation costs could not provide the necessary outputs to allow a tax computation to be completed. The approach therefore risks over or under remunerating companies for tax.

[11] PR19 CMA Final Report, March 2021 pp.554 para 5.656

[12] ibid

Question 3.8: Do you agree with, or have any comments on, our proposal to continue to refer to the post-2020 asset base as RCV?

(30) Ofwat proposes that the asset base for bioresources from 2025 onwards be recorded as RCV in order to safeguard against any effect on debt covenants in addition to ensuring that an appropriate metric for gearing calculations continues to be available. We have no specific comments.

Question 3.9: Do you have any comments on our option assessment in the annex?

(31) Please refer to our response to question S.2 below

Question 10.7: Do you have any comments on how to best deal with the impact of shadow and non-shadow reporting in table B103 on other tables?

(32) Please refer to our response to the draft methodology

Question 10.8: Do you have any comments on the data we should collect in table B105?

(33) No comment

QS.1: Do you have any comments on the type of data used for the example model results? Whist recognising the proposed refinements to establishing standardised depreciation in annex 6, do you have further comments on whether RCV and RCV run-off would provide an acceptable and/or more appropriate input to our econometric cost benchmarking models over the 2020 to 2025 period?

(34) With regards to Options 1 and 2, the data used are of the same nature as those used to derive the PR19 bioresources cost models. The difference between Option 1 (and, for that matter 1+) models and those from the FD is that the PR24 versions include 2020 and the 2021 data, along with the back-casting adjustments. Compared to the Final Redetermination models, the difference is purely the extension of the time series.

(35) We look forward to the fully updated data set which Ofwat has said will be released shortly. We assume that this will contain adjustments to take account of Principal Use of Assets. It will also enable us to evaluate the impact of the proposed change regarding atypicals.

(36) In conclusion, we have no concerns regarding the data used for developing models in Options 1 or 2.

(37) We are concerned that MEAV ought to be restated were there to be any significant change in the technology required by changes in legislation. i.e. If disposal to land is no longer viable and incineration becomes necessary, then this should be reflected within the MEAV. Merely restating capital costs according to changes in CPIH and accounting for acquisitions and disposals would not then reflect MEAV.

QS.2: Do you have any comments on the econometric models and results? How could our models be improved? For example, should we consider alternative specifications or cost drivers?

(38) Our response to this question is divided into three parts. In the first, we consider the merits of Options 1 and 2. In the second, we outline our views on Option 3. Finally, in the third part, we give some initial thoughts on possible alternative model forms.

(39) <u>Options 1 & 2</u>

(40) With regard to Options 1 and 2 as set out by Ofwat, we observe that they are the same model forms as used by Ofwat at PR19 but relating to differing dependent variables. For Option 1, the left hand side of the equation is the total cost; for Option 2 it is the unit cost with regard to sludge produced.

(41) Option 1 is defined purely in terms of Botex, Option 2 has versions using Botex and Totex. To be clear over definitions, by Botex we refer to base costs covering opex and Capital Maintenance only, whereas Totex also includes all enhancement capex.

(42) In line with our long-standing position, and supported by the evidence in Table 1 below, we remain firmly of the view that cost models are better divided into Botex, with separate evaluation (by econometric or other means) for enhancement capex. As such, we would urge Ofwat to take this approach for its assessment of Bioresources at PR24. Table 1 below shows the coefficients and significance for each model on each basis.

Table 1: Results for Option 1 showing both Botex and Totex outputs

	Model 1		Model 2	
Cost driver	**Botex**	**Totex**	**Botex2**	**Totex3**
Lnsludgeprod	0.242***	0.332**	0.271	0.335
	{0.008}	{0.014}	{0.244}	{0.225}
Lnwedensitywastewater	-0.218**	-0.227**		
	{0.033}	{0.034}		
pctbands13	0.073***	0.070***		
	{0.000}	{0.000}		
Lnswtwperpro			0.429**	0.405*
			{0.023}	{0.057}
_cons	-0.685	-0.958	1.393*	0.978
	{0.291}	{0.201}	{0.053}	{0.206}
Econometric_model	Random Effects	Random Effects	Random Effects	Random Effects
Depvar	lnrealbotexbr	lnrealbotexbreh	lnrealbotexbr	Lnrealbotexbreh
N	100	100	100	100
Vce	Cluster	cluster	cluster	Cluster
R_squared	0.415	0.292	0.284	0.14

(43) Recognising and fully supporting Ofwat's desire to see a competitive market develop in bioresources, we appreciate the ambition of looking to develop unit cost models. For this reason, our preference would be to adopt Option 2 at PR24. As we suggest below, the possibility of Option 3 being used subsequently at PR29 would be dependent on solutions being developed that address the short-comings in the treatment of financing costs.

(44) Option 3

(45) With regard to Option 3, before discussing the econometric model put forward in Ofwat's Supplementary Bioresources consultation document,[13] we want to raise our fundamental concern with the approach set out by Ofwat. This concerns the protection of legacy RCV.

(46) Under the existing building block approach, it is straightforward to show that legacy RCV is being protected in line with the approach affirmed in Ofwat's May 2016 document.[14] Under Option 3, this is not possible. The potential mechanism for demonstrating what has been allowed within the econometric models for a particular factor is the Implicit Allowance. This equates to the impact of the movement in the relevant cost driver on the assessed value.

(47) There are two underlying issues here in the case of RCV, both of which arose at PR19 in the context of investment related to facilitating growth. Firstly, based on the econometric approach used at PR19, there is no robust way to determine the specific level of expenditure allowed in the determination for growth, rather, the best available method is to calculate an implicit allowance. This is central to our wider Draft methodology response advocating Ofwat seek to implement separate growth modelling for PR24 if possible.

(48) Secondly, there remains the problem that Ofwat cannot say with certainty that legacy RCV is protected when the measure of the protection is an implicit allowance with no obvious cost driver. As we saw at PR19 with network reinforcement and with flooding mitigation this is a substantive problem. A precondition of being able to demonstrate

[13] ibid

[14] "Our price control framework for PR19 will provide the same nature and degree of regulatory protection as at present for the RCV allocated to water resources and bioresources at 31 March 2020." Ofwat 'Water 2020: Our regulatory approach for water and wastewater services in England and Wales', May 2016

RCV protection would be if there were a stable relationship between a cost driver and legacy RCV or a good proxy for legacy RCV. The most obvious cost driver is sludge produced (measured in tons of dry solids). However, normalising MEAV by sludge produced shows wide variability as shown below in Table 2.

Table 2: Net MEAV per tons of dry solids

Company	£000 - NMEAV /TDS in 2021
ANH	2.36
NES	2.15
SRN	1.96
SVH	2.19
SWB	2.04
TMS	4.75
UU	2.38
WSH	3.38
WSX	2.12
YKY	2.30
Coefficient of Variation	34%
Max/min	2.42

(49) The other potential cost driver is number of properties (used in the control variable STW/properties). This too shows a similar level of variability as can be seen from Table 3 below.

Table 3: Net MEAV per property

Company	£ - NMEAV/property
ANH	121.60
NES	116.46
SRN	109.63
SVH	130.74
SWB	113.50
TMS	271.44
UU	139.48
WSH	162.07
WSX	103.91
YKY	145.40
Coefficient of Variation	35%
Max/min	2.61

(50) As we have said, this concern over the protection of Legacy RCV represents our fundamental concern with Option 3 as it currently stands.

(51) From a theoretical standpoint, we can see the ambition of Ofwat's approach in Option 3. It attempts to address directly the point often made that a cost function ought to take account of capital stock as well as in-year costs, albeit without any explicit variable representing capital stock.

(52) We are pleased that Ofwat has accepted the concerns put forward regarding the reliability of MEAV data back-cast to the early part of the total data set. This appears consistent with Ofwat's newly adopted seventh cost modelling principle relating to data quality. In line with our comments in our Draft Methodology response to Question 6.1, we remain very concerned at the idea of using forecast data to augment the historic data set. It runs counter to another of the cost modelling principles, to avoid the use of endogenous data.

(53) We appreciate that the data set is as yet incomplete and Ofwat plans to undertake further cost modelling work on all of its options. As is flagged in the Supplementary Consultation document, the various numbers included are thus only indicative and are subject to change once the additional data and further modelling work has been undertaken. That said, this caveat by Ofwat forms a further part of our concern over Option 3. At base our worry is of going too far, too fast: that

the data are not sufficiently robust – as evidenced by the illogical signs for several cost model coefficients, their lack of significance as well as the level of unexplained (and unexpected) variability between the efficiency and assessment results of Option 3 compared to Option 2 or Option 1. We do not believe that these issues can be dealt with effectively in the short time remaining before the Final Methodology is published. However, it is reasonable to imagine that it should be feasible to adequately address them in the time before PR29.

(54) Given a satisfactory solution to the problem of Legacy RCV protection, and if suitable cost models can be developed, then Option 3 could be implementable. But this is new territory in several dimensions and the risks associated are significant, particularly in potentially impacting negatively the development of a working market given the risk of misdirecting required funding for provision of the service. Robust solutions to these various concerns need be developed and demonstrated over the next few years before implementation at PR29. Again, in line with earlier submissions, most recently that for the Draft Methodology, we would urge Ofwat to consider developing a separate economic model with which to triangulate its single Option 3 model. By separate economic model, we do not mean a variant of the existing model with merely an alternative control variable but instead one which reflects an alternative way of viewing cost causation for bioresources. This is examined below.

(55) Alternative model forms

(56) We look forward to the arrival of the extended and amended data set due soon. We recognize that the data set issued with the Supplementary Bioresources consultation document is a preliminary release of the extended data set and will be superseded when the full data set is released. As such any analysis based on the preliminary dataset has to be viewed with due caution.

(57) For the purposes of this response, we refer to two alternative model forms we have developed on a total cost basis as a first step to validating any such new model. For the reasons we have just set out, these should be seen as being indicative of our current thinking. We will need to analyse these (and potentially other model forms) later in the year when the full new dataset is available. It is our intention to submit our finalised views of alternative bioresources models along with other alternative model forms in line with Ofwat's timetable for such submissions.

(58) We put these forward in this preliminary form partly to respond positively to Ofwat's request for suggestions regarding alternative forms and partly to demonstrate in concrete form what we mean by separate model forms.

(59) Both of these alternative model forms focus in on issues raised by the Office of Fair Trading report on organic waste in a study of 2011.[15] In particular we would cite the following two quotes:

"For instance, and focusing on AD plants, we estimate that increasing the annual throughput of the plant from 5,000 to 10,000 tonnes of dry solids will, on average, decrease total costs (proxied by operating costs plus five percent of RCV) by some 20 percent"[16]

"The difference between operating expenditure between neighbouring WaSCs provides a prima facie case suggesting potential gains from trade. However, given the importance of transport costs, and the existence of potentially substantial variations in costs between plants operated by the same company, a simple comparison of average cost figures is insufficient"[17]

(60) As the key factor driving the variations in costs between plants highlighted in para 4.9 is the size of the plants, which in turn drives the economies of scale, these two quotes highlight the importance of both economies of scale and of rurality.

(61) It is a perfectly fair comment that the two existing models BR1 and BR2 do indeed take these factors into account. However, they are in fact two variants on a single economic model which posits that bioresource costs are driven by the total volume of sludge, modified by the population density. The difference between BR1 and BR2 is that BR1 uses weighted average density and the share of load treated in Bands 1-3 as demographic variables while BR2 uses the ratio of Sewage Treatment Works to properties as the way of capturing sparsity or density.

[15] OFT, "Organic Waste" September 2011
[16] Ibid. Footnote to para 3.18, page 34
[17] Ibid. Para 4.9, page 46

(62) In Table 4 below, we set out some key performance data for BR1 and BR2 along with our two preliminary suggestions, BR3 and BR4 which represent separate economic models.

Table 4: Bioresources model results based on current dataset

Cost driver	B1	B2	B3	B4
ln sludgeprod	1.242***	1.271***		0.980***
	{0.000}	{0.000}		{0.000}
ln swtwperpro		0.429**		
		{0.023}		
ln sparse_sludge			0.531***	
			{0.000}	
ln non_sparse_sludge			0.662***	
			{0.000}	
pct_ADAAD			-0.007***	-0.006**
			{0.004}	{0.020}
pct_Indigenous				-0.003*
				{0.089}
Constant	-0.685	1.393*	-0.172	-0.075
	{0.291}	{0.053}	{0.717}	{0.755}
Econometric_model	Random Effects	Random Effects	Random Effects	Random Effects
Depvar	lnrealbotexbr	lnrealbotexbr	lnrealbotexbr	lnrealbotexbr
N	100	100	100	100
Vce	Cluster	cluster	cluster	cluster
R_squared	0.854	0.823	0.841	0.825

(63) The form of BR3 is markedly different to BR1 and BR2. BR3 takes as its starting point the observation that sludge in rural areas is treated differently to that in urban or metropolitan areas. This in turn is a function of the fact that for sewage treatment, while there are economies of scale in treatment, there are no economies of scale in collection. As sludge is the end product of sewage treatment, it follows that differing demographics produce different proportions of "sparse" and "non sparse" sludge. The use of different sludge treatment technologies can also be expected to affect overall sludge costs. We have used the share of sludge treated by Anaerobic and Advanced Anaerobic Digestion as a control variable.

(64) BR4 bears a stronger resemblance to BR1 and BR2. It also uses total sludge produced as the key cost driver. However, BR4 uses the share of total sludge with is treated at co-located sites (otherwise known as the share of indigenous sludge) as the way of capturing the impact of demographics. The logic behind this is as follows. Advanced sludge treatment is only economically viable above a threshold level. At small works, the only feasible mechanism is tankering to a larger site where the sludge can be treated economically. Consequently, in large metropolitan areas, sludge will tend to be treated at co-located sites (i.e with a high indigenous proportion) whereas in a predominantly rural area, sludge will tend to be tankered (i.e. have a low indigenous proportion). This is not an issue of endogeneity as neither the economics of sludge treatment nor demographics are within management control.

Q S.3: Do you agree with, or have comments on, the proposed, updated approach to calculating asset values and CCA depreciation as set out in annex 6? In particular, do you:

a. Agree with, or have any comments on, our proposed approach to calculating GMEAV and the alternative approach considered?

(65) The second method would be easier to apply industry wide in a consistent manner but still presents issues. The enhancement capex is a forecast and has variables which can change such as Environment Agency drivers on bioresources.

(66) Annual updates of modern technologies and legislation could have significant impact. For example, the removal of disposal to land would require the MEAV to consider incineration which would be very different to the current advanced digestion processes used in our current MEAV.

(67) For these reasons, we remain concerned that both methods, even with a cross check between the two (as suggested by Ofwat as a "hybrid approach"), would introduce uncertainly and error into any econometric modelling approach proposed in the fully reformed approach (option 3 for bioresources funding). Econometric modelling relies on high quality consistent data to avoid erroneous results and therefore to rely on input data with significant shortcomings puts at risk Ofwat's commitment on protection for the pre 2020 RCV.

b. Agree with, or have any comments on, our proposed approach ('gradual unwinding') and alternative approach to estimate changes in the value of the NPV adjustment?

(68) We believe the alternative approach to gradual unwinding (i.e. case by case adjustment) is a better option because the complexities of subsidies and site specifics would make a blanket approach (straight line depreciation) an over simplified result which would introduce errors into the NMEAV calculation.

c. Agree with, or have any comments on, our proposed approach ('bottom-up method) to recording CCA depreciation?

(69) The December submission was based on site level average depreciation not the bottom-up asset by asset approach. A bottom-up approach would require the maintenance of a full CCA register which we do not keep. It would create a second asset register which will be disconnected from that maintained for the statutory accounts. This would require additional resource and accounting systems to maintain and would be of higher complexity than simply updating a spreadsheet. The 2017 submission made use of a varied approach to asset lives, using throughput and run time data which we do not routinely collect for financial purposes.

(70) There will be difficulties for capital maintenance on sub components of assets without a corresponding disposal. E.g. replacing a soft start motor on a mixer where we could incur spend but not register that sub component asset on the CCD register as the asset would be the mixer. The GMEAV value of the disposal would be difficult to calculate and would therefore have to use the assumption that the disposal amount was equal to that spent on the capital maintenance.

d. Agree with, or have any comments on, our proposed approach to the rules on asset life assumptions?

(71) Fixing asset lives would cause a further disconnect between the historic cost and current cost registers if changes in asset lives occur. The assets operate in an aggressive environment and can significantly change in useful life as process changes such as throughput or the nature of digestate changes. We are able to adjust the statutory accounting asset registers to reflect these changes so locking the current cost assets would create further deviation.

(72) Fixing the asset lives is inconsistent with an annual bottom-up approach of individual lives for asset components but would work better with a site average life approach.

e. Have any comments on the options to generate backcasting estimates of asset values and depreciation?

(73) The available time series of meaningful years is relatively small and any data pre 2015 would not be representative of the current asset base and technologies. For example, we previously had a number of liming plants rather than advanced digestion. Any method of adding or subtracting capital enhancement deviates from the true picture over time and without regular rebase lining becomes more and more inaccurate.