

Appendix 8 – Bioresources: Response to IAP

Wessex Water

March 2019

Summary

In this document we provide additional evidence and responses in relation to:

- Fixed and variable revenue: Action reference WSX.CMI.A1
- Our appointed and non-appointed business: Action reference WSX.CMI.A3.

Fixed and variable revenue

In Oct 2018 in response to query WSX-IAP-CMI4-001 we provided information on the split between fixed and variable revenue for Bioresources. Ofwat have asked for further information and we have therefore provided further details of how we determined our variable/fixed revenues for our bioresource activity. These were developed from an analysis of variable costs for our operation in 2020-25. A high-level cross check against reported costs for 2017/18 has been undertaken. We have compared our assessment of fixed revenue as a percentage of total revenue with reported figures from other companies.

Ofwat shared additional guidance with all companies on the 15th March 2019 asking that the methodology included in the guidance is considered and the share of revenue to cover fixed and variable costs updated in accordance with the guidance.

The methodology we adopted is in line with this guidance. Our methodology, described in this appendix, determined a variable unit cost and applied this to our forecasted volumes. As we are proposing to use the theoretical PAYG ratios, this requirements comes pound for pound off the total revenue requirement to leave the balance as fixed revenue. Following the guidance we have extended this same methodology, determined the average percentage of the PAYG line that should be ascribed to fixed revenue and used this percentage across the AMP.

We believe that our assessment provided in Table Bio4 Lines 30 and 31 for the proportion of revenue to cover fixed and variable costs is appropriate and reasonable and we have made no adjustments other than to allow for changes to total revenue driven by other factors and to refine our methodology to meet the guidance provided by Ofwat on the 15th March 2019.

Our appointed and non-appointed business

Ofwat have requested that we should explain the boundaries between the appointed and non-appointed activities within our bioresources strategy and clarify how the risks and benefits are shared with customers.

We have provided information on the boundaries between the appointed and non-appointed businesses and how the benefits of this trading are shared with customers within our business plan main narrative (Section 5).

The appointed business makes a financial net benefit from non-appointed business activities to the value of c£3.7m/year. This is reflected in the operating costs of our appointed wastewater business which has been recognised as the frontier company for efficiency.

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1. Introduction

This document provides our response to Ofwat’s initial assessment of plans (IAP) published on 31 January 2019 with respect to Bioresources. It should be read in conjunction with our business plan main narrative *“For you for life” Section 5.5 - Embracing markets for bioresources* and *Supporting document 5.5 – Bioresources*, submitted in September 2018.

In this document we provide additional evidence and responses in relation to:

- Fixed and variable revenue: Action reference WSX.CMI.A1
- Our appointed and non-appointed business: Action reference WSX.CMI.A3.

2. Fixed and Variable costs

Business plan table and Line ref:	Table Bio4 Lines 28 and 29
Response to Ofwat Action reference	WSX.CMI.A1

2.1 Ofwat's assessment

The average revenue control for bioresources incorporates an in-period revenue adjustment based on measured sludge volumes compared with forecast volumes and a revenue adjustment factor, which reflects the proportion of bioresources costs that are fixed and variable.

In evaluating our submission Ofwat asked for information on the split between fixed and variable revenue. We provided further information in Oct 2018 in response to query WSX-IAP-CMI4-001. Within their IAP Ofwat have advised that further evidence is required. We have therefore reviewed our assessment and provide further information on how we arrived at our figures.

Ofwat shared additional guidance with all companies on the 15th March 2019 asking that the methodology included in the guidance is considered and the share of revenue to cover fixed and variable costs updated in accordance with the guidance.

The methodology we adopted is generally in line with this guidance. Our methodology, described below has been updated to implement the guidance provided by Ofwat.

2.2 Additional evidence

Our assessment of fixed and variable costs has been based on an assessment of the unit costs of our operation. To determine our fixed costs we have undertaken a bottom up calculation of the incremental cost to the bioresources business unit of treating each tonne of dry solids (tds) of sludge. Using this assessment we determined the variable revenue requirement and have subtracted this revenue from the total revenues to give a fixed revenue requirement. We consider the methodology we have adopted, an assessment of variable costs based on the unit cost of operation, provides an appropriate and acceptable split between fixed and variable costs and therefore revenue.

All figures provided below are at 2017-18 CPIH deflated prices.

Transport

For sludge transport we looked at the proportion of costs that relate to the fuel, day to day maintenance and staff costs for transporting the sludge. For 2017-18 this equates to 90% of the total sludge transport opex, which we assumed as variable costs going forwards.

The resulting variable costs are as follows (noting that we have proportioned the figures for each year going forward based on the proportion from 2017-18 data):-

Transportation	20-21 £m	21-22 £m	22-23 £m	23-24 £m	24-25 £m
Tanker Fuel & maintenance	1.147	1.155	1.163	1.171	1.180
Labour	2.667	2.685	2.704	2.723	2.742
Contracted sludge transportation	0.859	0.865	0.871	0.877	0.883

The assumption that labour costs are fully variable is simplistic. In practice there would be small step change increases as the amount of sludge transported increases. A minor increase in volume would be accommodated by the existing labour force, as the volume increases further, an additional tanker driver would be required. Similarly, a small decrease in the amount of sludge would not necessarily reduce labour costs.

Treatment and disposal

For sludge treatment and disposal we undertook an engineering assessment of the marginal cost of sludge treatment at site level. We considered the incremental power, chemical and liquor treatment costs of treating and disposing of sludge, calculating a unit cost of sludge treatment for each site and thus an overall average unit cost of treating sludge. This was then applied to the forecast sludge volumes to calculate an annual variable requirement for the treatment and disposal of sludge. Note that we considered labour for sludge treatment and disposal as a fixed cost. This is because staff engaged on sludge treatment are primarily supervisory, operating and maintaining plant that is largely automatic in operation.

Sludge treatment and disposal costs have been determined based on our proposed bioresources operation in 2020-25 i.e. with Minehead and West Huntspill operating as dewatering centres exporting raw cake to Taunton for treatment and a proportion of sludge from Yeovil Vale Road also exported to Taunton for treatment. This is as described in Section 3 of supporting document 5.5 and is also the basis of our RCV evaluation.

The following table summarises power, chemical, liquor treatment and disposal costs for each bioresource centres operating at typical capacity. Note that the costs for Taunton include the treatment of sludge from Minehead, West Huntspill and a proportion of Yeovil. These costs have been used to determine an average variable cost for each category.

Site		Power	Chemical	Liquor Treatment	Disposal
	tds/annum	£m	£m	£m	£m
Treatment Centres					
Avonmouth	36500	0.229	0.590	0.329	0.973
Berry Hill	8760	0.039	0.149	0.114	0.255
Poole	6570	0.019	0.074	0.296	0.227
Ratfyn	2920	0.007	0.117	0.010	0.122
Taunton	8760	0.038	0.122	0.114	0.286
Trowbridge	9125	0.051	0.125	0.027	0.329

Site		Power	Chemical	Liquor Treatment	Disposal
	tds/annum	£m	£m	£m	£m
Yeovil	1460	0.001	0.060	0.005	0.065
Dewatering Centres					
Yeovil	2190	0.001	0.027	0.008	0.090
Minehead	1095	0.003	0.013	0.033	0.055
West Huntspill	1095	0.003	0.018	0.022	0.032
Total variable cost		0.390	1.295	0.957	2.434
Variable – average cost per tds (£/tds)		5.26	17.48	12.92	32.85

These average unit rates have been used to determine treatment and disposal variable costs over the period 2020-25, as shown in the table below:-

Treatment and disposal		20-21	21-22	22-23	23-24	24-25
Sludge production	ttds	74.4	75.1	75.5	76.4	77.8
Variable costs						
Power	£m	0.392	0.395	0.397	0.402	0.409
Chemicals	£m	1.300	1.312	1.319	1.335	1.360
Liquor treatment	£m	0.961	0.970	0.975	0.987	1.005
Disposal	£m	2.444	2.467	2.480	2.509	2.555

Total variable and fixed costs

The total assessed variable costs are:

Treatment and disposal	20-21 £m	21-22 £m	22-23 £m	23-24 £m	24-25 £m
Variable costs : transport	4.672	4.705	4.738	4.771	4.805
Variable costs : treatment & disposal	5.096	5.144	5.172	5.233	5.329
Total Variable costs	9.769	9.849	9.910	10.005	10.134

As both these elements are opex, and we are proposing to use the theoretical PAYG ratios, this requirements comes pound for pound off the total revenue requirement to leave the balance as fixed revenues.

Fixed revenue is therefore as follows, noting that total revenue figures have been updated since our original submission and we have refined our methodology in line with guidance received from Ofwat on the 15th March 2019.

Wholesale wastewater bioresources revenue to cover fixed costs:-

		20-21	21-22	22-23	23-24	24-25
Table Bio4 Line A1 PAYG	£M	17.346	17.428	17.510	17.594	17.678
Variable costs (PAYG)	£M	9.769	9.849	9.910	10.005	10.134
Fixed revenue (PAYG)	£M	7.577	7.578	7.601	7.589	7.543
Fixed revenue (PAYG)		43.68%	43.48%	43.41%	43.14%	42.67%
Average fixed revenue (PAYG)		43.28%				
Fixed revenue within Table Bio4 Line A1	£M	7.507	7.542	7.578	7.614	7.650
Table Bio4 Lines A2 to A11 – other fixed revenue	£M	16.143	16.643	15.764	15.601	15.355
Table Bio4 Line H30 fixed revenue	£M	23.650	24.185	23.342	23.215	23.005

2.3 Cross check against historical costs

We have analysed sludge treatment and disposal costs in our annual return for 2017/18 (or the base figures used to generate these costs) and made an assessment of variable costs.

These are summarised as follows:-

	2017-18 £m
Power	0.450
Chemicals	1.663
Liquor treatment	1.029
Sludge disposal	2.575
Total variable	5.687

Power

Variable cost assumed as 50% of the reported figure for sludge in Table 4K line 4K.1 columns L to N. Within the treatment process some plant (e.g. pumps, thickeners) operate intermittently depending on sludge being processed and therefore power consumption is directly proportional to sludge throughput. Other plant (e.g. primary and secondary digesters, odour plant) operate continuously, power consumption is therefore fixed.

Chemicals

Costs for supply of lime and polyelectrolyte abstracted from accounts for 2017/18

Liquor treatment

Variable cost assumed as power costs reported in Table 4K line 4K.1 Column K.

Sludge disposal

Costs for sludge disposal abstracted from accounts for 2017/18. Allowance made for a proportion of the income received from selling the cake to farmers.

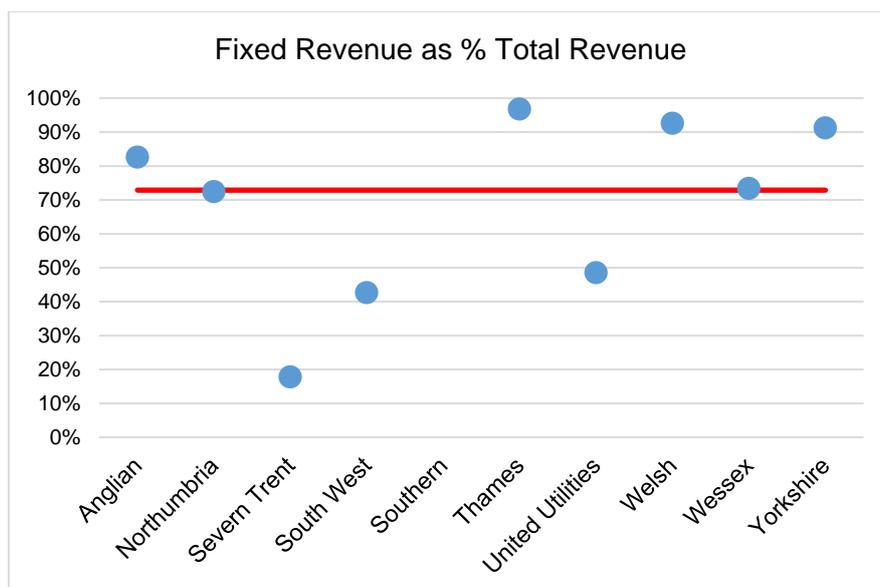
The total variable cost for sludge treatment and disposal is approximately 10% higher than that developed from the theoretical analysis we undertook in preparing our business plan tables. This can be explained because the theoretical figures were based on the operation within the period 2020-25 when:

- Sludge treatment at two of our smaller, less efficient, treatment centres will have ceased;
- We will be using anaerobic digestion rather than liming for treatment of a greater proportion of our sludge production.

We have not reviewed sludge transport costs for 2017/18 as our original methodology used historical costs.

2.4 Company comparison

We have reviewed other company submissions. The percentage of revenue reported as fixed by each company is shown by the following chart:



There is a wide variation in reported fixed revenue as a percentage of total revenue, from 18% to 97%. The median value is 72.9% compared with our assessment of 73.4%.

(We have excluded Southern Water from this analysis as they published figures which were partly redacted).

2.5 Conclusion

We have provided further details of how we determined our variable/fixed revenues for our bioresource activity. These were developed from an analysis of variable costs for our operation in 2020-25. A high-level cross check against reported costs for 2017/18 has been

undertaken. We have compared our assessment of fixed revenue as a percentage of total revenue with assessments made by other companies.

We believe that our assessment provided in Table Bio4 Lines 30 and 31 for the proportion of revenue to cover fixed and variable costs is appropriate and reasonable and we have made no adjustments other than to allow for changes to total revenue driven by other factors and to refine our methodology to meet the guidance provided by Ofwat on the 15th March 2019.

3. Appointed and non-appointed business

3.1 Ofwat’s assessment

Ofwat have requested (Action reference WSX.CMI.A3) that we should explain the boundaries between the appointed and non-appointed activities within our bioresources strategy and clarify how the risks and benefits are shared with customers.

3.2 Response

We have provided information on the boundaries between the appointed and non-appointed businesses and how the benefits of this trading are shared with customers within our business plan main narrative (Section 5).

The appointed business makes a financial net benefit from non-appointed business activities to the value of c£3.7m/year. This is reflected in the operating costs of our appointed wastewater business which has been recognised as the frontier company for efficiency:

Wholesale (triangulated)	
Company	Efficiency score
WSX	0.84
SVT	0.89
TMS	0.96
YKY	0.97
NES	1.00
ANH	1.04
SWB	1.05
WSH	1.10
SRN	1.10
NWT	1.26

IAP Table: **FM_WWW2 Wastewater Catch up adjustment**

Information, which we believe further addresses Ofwat’s information request, is repeated in Annex A below.

Annex A: Extract from section 5 of Wessex Water’s business plan 2020-2025 main narrative.

**5. MARKETS *and* INNOVATION:
WHOLESALE**



5.5 Embracing markets for bioresources

We welcome the separate price control as the first step towards fully embracing market forces to provide bioresources services – an idea we proposed in our Water 2020 paper: [Potential commercialisation of sludge treatment and recycling](#).

The opening of the bioresources market through a separate specific price control will deliver more efficient and sustainable services. We agree that, provided care is taken over the valuation of assets, this approach will ensure ‘no regrets’ when considering if and how to liberalise contestable parts of the supply chain.

Exposing comparative costs and services, commercialising intra-group relationships and setting benchmarked prices, all help to improve efficiency and drive cultural change and innovation across the wholesale business.

This is the approach Wessex Water adopted in 2009 when we created GENeco – a recycling and renewable energy subsidiary, committed to offering customers innovative, cost-effective and sustainable solutions.

In this section we describe:

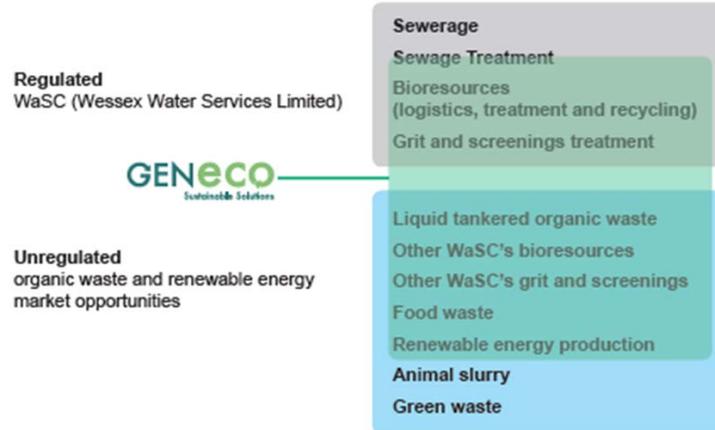
- the management structure of GENeco
- how we have used markets to drive efficiency and innovation
- our long-term strategy for bioresources
- maximising opportunities from the bioresources market.

GENeco management structure

GENeco is a line-management team which undertakes regulated sewage treatment and bioresources activities (sludge tankering, treatment and recycling) for Wessex Water Services Ltd (WWSL) as well as unregulated renewable energy production (such as Combined Heat and Power generation, Gas to Grid and liquid organic waste treatment) for Wessex Water Enterprises Limited (WWEL). (GENeco **Ltd.** is a subsidiary company of WWEL which operates a food waste plant.)

The figure below illustrates the extent of GENeco’s activities.

GENeco operates under a single line-management structure with arm’s length transactions between the regulated (WWSL) and unregulated businesses (WWEL). This separate and dedicated management structure has helped us improve our understanding of costs and service performance and encouraged a greater commercial culture which has delivered for customers and the environment.



How we have used markets to drive efficiency and innovation

GENeco has been successful in identifying and maximising revenue streams in bioresources and related waste treatment and energy generation markets. This has benefited our sewerage customers through greater use of existing regulated assets. It has also created additional profit centres for the broader YTL (UK) Group.

Our approach to the organic waste and recycling market has facilitated innovation and enabled us to drive efficiency for the benefit of our customers and the environment, as explained below.

Benefits for customers and the environment

Our business model is unique in the water industry and the innovations this has brought contribute towards several of the outcomes that customers value:

- protecting and enhancing the environment
- affordable bills
- resilient services.

Table 5-1 below illustrates how the unregulated business has a net positive financial benefit for the regulated customer.

We estimate that, without a market-based approach, our regulated customers' bills would be £3 higher and the impact on the environment would be greater.

Table 5-1: Benefits to customers from unregulated activity

Service provided to WWEL	Annual gross income to WWSL £m/yr	Annual net income to WWSL £m/yr
Food waste centrate treatment	0.1	0.0
Mesophilic digester rental	0.1	0.1
Grit and screenings slab hire and run-off treatment	0.8	0.3
Biogas production	2.0	2.0
Biosolids production	0.4	0.4
Liquid organic waste treatment	5.1	4.1
Staff and overheads	1.1	0.0

Service provided to WWSL	Annual gross cost to WWSL £m	
Electricity purchase	-3.2	-3.2
Total	Annual gross income to WWSL £m/yr	Annual net income to WWSL £m/yr
Total	6.4	3.7