

Considerations for separate sludge price controls

United Utilities Water
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Introduction

As part of Water 2020, Ofwat has proposed that the upstream services “sludge treatment” and “sludge disposal” be exposed to market forces. This would commence with setting a separate binding price control for sludge at PR19, publication of key information on a shared data platform to help stimulate new trading opportunities and provision of guidance on an assessment process for competing bids. This framework could be further developed in the future (perhaps as soon as the following price control) towards a fully competitive market for the provision of sludge management services to the remaining sewerage “network plus” businesses.

Alongside these proposals for changes to the framework, Ofwat has also stated that the separate sludge price control would take the form of a total revenue control, but with an adjustment to reflect variations in volume. Ofwat has also stated that the RCV will be divided between sludge and network plus by applying a “focused” allocation of asset value to sludge – this means that the modern equivalent asset value (MEAV) of sludge will, in full, set an opening RCV for sludge, whilst the remainder of the sewerage service RCV would be allocated to network plus. Finally, Ofwat has committed that the RCV as at 2020 will be protected¹.

United Utilities Water is supportive of Ofwat’s overall direction set out in Water 2020. We agree that the provision of sludge management services could benefit from increased market forces, and support Ofwat’s proposal to establish a separate sludge price control. We believe that any proposal which results in the separation of wholesale price controls should meet both of the following tests.

- It must embody the principle of fairness between incumbents, as well as between incumbents and new entrants – i.e. prices should be established using consistently defined information on costs and assets to ensure a level playing field; and
- It should recognise all potential barriers to trading and, wherever possible, seek to remove them or consider what incentives may be required for market participants to overcome them.

As part of our review of Ofwat’s proposals, we have identified a number of elements which would benefit from some individual consideration. This document is intended to set out a number of those issues and to explain their importance to the process of separating sludge price controls and/or to the ultimate goal of a contestable market for sludge. Where possible we have set out some potential options or recommendations to address these issues.

Potential considerations

It is well known that environmental regulations may present barriers to trading and more understanding is needed of how these might affect a future market for sludge. The table below sets out a number of *other* issues that could affect the consistency between the prices set by different companies, or could present barriers to trading.

We acknowledge that this list of considerations is unlikely to be complete, may not represent every aspect of each of the issues identified, and there will no doubt be other options available to Ofwat in addition to those set out below. However we hope that this can serve as a starting point for further discussion between Ofwat, water companies and new entrants on the issues arising from separation of sludge at PR19.

¹ See also UU’s Water 2020 consultation response document [“Future approaches to the RCV”](#)

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Issue	Impact on separation	Suggested options
<p>Sludge quantities – calculation of sludge produced from a sewage treatment works</p>	<p>Historically, sludge quantities produced from sewage treatment (measured in tonnes of dried solids, or <i>tds</i>) have been estimated either from:</p> <ul style="list-style-type: none"> (a) Bottom up – quantities disposed from the output of sludge treatment processes, plus assumed rates of destruction occurring during the sludge digestion process, or (b) Top down – sludge production estimated from population equivalent plus organic matter added by sewage treatment processes (such as secondary activated sludge). <p>In a sludge market, this assumed level of sludge treated will affect the price offered by providers (based on costs divided by volumes treated).</p> <p>The volumes billed by providers to network plus businesses will undoubtedly be based on measured (not assumed or calculated) sludge volumes. It seems unlikely to be acceptable that third parties would be charged on the basis of estimated quantities of sludge production.</p>	<p>There are a few options, with differing levels of accuracy, effort and potential investment:</p> <ol style="list-style-type: none"> 1. Install metering and monitoring for sludges produced by network plus. 2. Use sampling to improve estimates of sludge production from network plus. 3. Companies to utilise standard methodology and assumptions calculating sludge production (may need different rates for different treatment technologies).
<p>Availability of direct operating costs</p>	<p>Most sludge treatment centres are co-located with sewage treatment works. Whilst it may be possible to identify specific sludge assets, works are (typically) by budget managed as a site. As such most direct costs will likely be subject to an element of allocation (or judgement) to ascertain the element relating to sludge treatment. This means that it is possible that the majority of operating costs for sludge will be subject to allocation and/or judgement. This may not be a significant issue for an integrated wholesale organisation, but such extensive use of allocations seem likely to have an impact on the consistency between companies of costs reported for sludge, and hence prices offered into the market.</p>	<p>There are a few options, with differing levels of accuracy, effort and potential investment:</p> <ol style="list-style-type: none"> 1. Cost separation - implement separate electricity metering for sludge assets, along with separate inventory control for materials and recorded working time. 2. Implement detailed standard allocation rules, which vary based on mix of technologies in place at each site (for both sewage treatment and sludge treatment). 3. Implement high level standard allocation rules, based on industry average split of sewage treatment and sludge (this approach seems likely to cause price distortions).
<p>Data platform</p>	<p>It seems likely that the data requirements of network plus (the customer) and the sludge business (the supplier) will be quite different.</p> <p>For network plus, it seems that only price, location and any environmental restrictions would need to be provided for each sludge treatment centre.</p> <p>For sludge providers, much more information would be required to ascertain the acceptability of sludges being produced by network plus:</p> <ul style="list-style-type: none"> • Volumes – including any annual and seasonal variations • Thickness – % dried solids, and again any potential variability • Quality – some information about the composition of sludges • Freshness – sludge deteriorates over time, so quality information should also be supplemented with age <p>It is important to note that many companies have very many small sewage treatment works, and given the complexity of information requirements, we would question the need for such data to be supplied on every treatment works, regardless of size – this could be excessively burdensome and costly to maintain relative to the potential benefit.</p>	<p>The requirements of both network plus and sludge providers should be investigated to ascertain the information needs of each party.</p> <p>For sludge providers, it would be helpful to develop some simple standardised measures to represent sludge quality and variability.</p> <p>It seems infeasible to expect all sewage treatment works be reflected on the data platform. We suggest that this should only apply to the largest 10%-20% of sites, which account for the majority of industry sludge production.</p>

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Energy generation	<p>Energy generation from sludge treatment processes results in displaced heat and energy usage at the site overall (for both sludge and sewage treatment), sales of any exported energy, and income from renewable energy incentives (such as ROCs).</p> <p>There will likely be differences between companies in how some of these incomes and costs will be accounted for – many of these should be identified and resolved by Ofwat’s targeted review.</p> <p>The treatment of displaced heat and energy is a more difficult issue, as the benefit manifests as an absence of cost, rather than as an observable cost/income value.</p> <p>Consideration would also need to be given to carbon accounting and how the operation of the Carbon Reduction Commitment would separate between network plus and sludge.</p>	<p>Outcome of Ofwat’s targeted review to result in updated specific requirements in the Regulatory Accounting Guidelines (RAGs).</p> <p>All benefits of energy and heat generation to be captured within sludge treatment, and a standard approach is implemented for costing and recharging of displaced heat and energy from sludge treatment to network plus.</p>
Liquor returns	<p>Sludge liquors are typically passed back into the sewage treatment works. This is a transaction that passes the boundary between sludge treatment and “network plus” that imposes additional costs on sewage treatment, to the benefit of sludge treatment.</p> <p>It seems reasonable to expect that a sludge provider should be incentivised to utilise the most efficient means of dealing with sludge liquors, whether that be through the Sewage Treatment Works, or through separate specific assets. This implies that a sludge business should pay network plus for the provision of this service.</p> <p>Charging for liquors raises issues of price and chargeable quantity:</p> <ul style="list-style-type: none"> • Price - arguably the company’s trade effluent wholesale charges could form the basis of charging for liquors. However, there will be an issue with the high ammonia content of sludge liquors which may require specific modifications to Mogden formulae utilised by companies. We also note that would make trade effluent charges part of sludge service costs, hence any inconsistencies between companies’ trade effluent charges could affect the level playing field in the sludge market. • Measuring the liquors – charging sludge providers for liquors would require a robust method for measuring the volume and strength of sludge liquors. We suspect that many companies do not presently measure liquor returns. 	<p>Develop consistent approach to reflecting ammonia (or any other relevant) components as a modification to Mogden.</p> <p>Review company trade effluent charges to test for consistency.</p> <p>Commence measurement and sampling of liquor returns, and recognise the associated costs.</p>

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<p>Definition of boundary between sludge and network plus</p>	<p>It is essential that the boundary between sewage treatment and sludge treatment is clearly defined, to ensure that sludge asset values and operating costs are consistent across companies. Currently there is an issue with the definition of sludge handling assets (holding tanks, screening, thickening and dewatering), as often these are in place on sewage treatment sites that don't have on-site sludge treatment (such as digestion).</p> <p>This definition seems likely to generate inefficiencies and increase the complexity of contractual / trading arrangements which may cause unnecessary friction in the market. Other WaSCSs and new entrants seem more likely to seek dewatered sludge as it will be cheaper to transport and have less handling costs prior to digestion. In this case, a potential sludge trade would have three parties involved, network plus, the incumbent's sludge business (performing thickening/dewatering) and the third party (digesting and disposing of the sludge).</p> <p>It would seem helpful for sludge handling assets to be included in network plus rather than sludge treatment. This would greatly simplify the likely trades in sludge. This would also need to consider the role of inter-works tankering.</p> <p>It seems important that this is resolved quickly, as many other activities rely on it – for example to make preparations to provide information for the data platform, and also to improve cost allocation companies would need to know the boundary to know where sub-meters are to be fitted, which chemicals are in network plus or sludge etc.</p>	<ol style="list-style-type: none"> 1. Re-define sludge treatment to exclude all sludge handling assets (holding tanks, screening, thickening and dewatering) – include them in network plus. 2. Re-define sludge treatment to exclude sludge handling assets (holding tanks, screening, thickening and dewatering) at sewage treatment sites that have no on-site sludge digestion – include them in network plus (may not be feasible as ownership of sludge handling assets would be contingent on the presence of a digester). 3. Leave definition as it is and identify alternative mitigating actions against the issues identified.
<p>Capital costs – valuation of MEAV</p>	<p>We have identified the following reasons which might result in differences between company assessments of MEAV. Given Ofwat's proposal to apply a focused RCV allocation, consistency in MEAVs is essential.</p> <ul style="list-style-type: none"> • Aggregation level – i.e. whether MEAV is assessed at a site level, a process level, or by individual asset. This can result in very different MEAV valuations. • Inclusion – many assets are in varying stages of use: in use, stand-by, mothballed (not in use, but serviceable), down to redundant and fully de-commissioned – it is possible that MEAVs may be inconsistent due to differing approaches to inclusion. • Boundary definition – it is essential that all companies take a common approach to defining the eligibility of assets at the boundary between services operating under different price controls. • Unit costs – different companies may have different approaches to setting unit costs for performing asset valuations. • Treatment of assets with no modern equivalent – there are some particularly large legacy assets which do not simply have a modern equivalent, as they would not (or could not) be built today. • Asset surveys – sampling – it is not practicable or efficient to physically inspect every single asset in operation by the company. However, it is necessary to ensure that a sufficiently representative sample of assets has been inspected. 	<p>Need a consistent approach to each of these to be applied by all companies when performing MEAV revaluations at PR19.</p>

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<p>Capital costs – future treatment of current assets, and price implications</p>	<p>Ofwat is proposing that the asset base for sludge be set on a “focused RCV”, which would result in the 2020 MEAV setting the opening asset base for sludge, and hence would influence sludge prices from 2020. It is as yet unclear how the 2020 RCV and post 2020 sludge investments would be reflected in prices. However, it is essential that companies are not incentivised to make (potentially inefficient) decisions prior to 2020 simply to ensure that the opening level of sludge prices are minimised. Such inefficient decisions may not be in the best interests of customers overall.</p> <p>For example, companies may have assets constructed for resilience purposes – e.g. an incinerator to manage to risk of availability of the (less costly) land disposal route. It is important that such decisions, taken in the round of a company being able to meet its environmental obligations on an ongoing basis, are not undermined – in extremis, companies should not feel incentivised to dispose of such assets to avoid prices being uncompetitive.</p>	<p>It would be helpful to establish rules governing pricing of sludge, the pricing treatment of current assets which are abandoned post 2020, and the interaction with Ofwat’s commitment to the RCV.</p> <p>Also, Ofwat should classify sludge assets currently performing a resilience function as network plus, rather than as sludge assets.</p> <p>Setting this framework early on (or at least the principles that should govern the framework) would provide companies with the confidence to act efficiently in the next few years, without concern for any implications for competitiveness post 2020.</p>
<p>Accountability for sludge</p>	<p>It is currently unclear which party (network plus or sludge provider) would hold ultimate accountability for sludge disposal. This interacts strongly with the previous point on access pricing – for example if accountability was passed to the sludge providers than there would be less for complex transfer pricing arrangements as all sewage sludges (regardless of source) would be an appointed business activity.</p> <p>There is also ambiguous interaction with newly traded sludges – is it that the appointed business can only lose revenue from sludges lost to trading, or is it that revenue can be gained from sludges imported from other companies. Current accountabilities would suggest that the former is true, as the latter would be a non-appointed sludge trade, although it is unclear whether this is intended by Ofwat’s design. If it is intended that the revenue adjustment is symmetric, than this might imply that accountabilities would need to change such that sludges from any company could be considered an appointed activity of a sludge business.</p>	<p>The accountability for sludge treatment disposal needs to be considered alongside any potential design requirements for the sludge price control. Passing accountability to sludge providers may simplify trades and remove many potential barriers, but may not be acceptable to new entrants.</p> <p>Consideration would also need to be given to the status of sludges passing into England and Wales (say) from Scotland.</p>
<p>Transfer pricing – issues with WaSC/WaSC sludge trading</p>	<p>One of the main complexities of the current accountabilities for sludge is the need for transfer pricing arrangements to be in place. Imported sludges would be considered a non-appointed activity (as company licences only provide for the treatment of incumbent sludges).</p> <p>This requires an internal transfer price from the incumbent sludge business into a non-appointed cost category (or to an associate company) to reflect the cost of the trade. This is separate from the price that is then charged (externally) to the other WaSC for the provision of the sludge service.</p> <p>Transfer pricing rules are set out in RAG5, albeit these focus mostly on market testing requirements for purchasing a service from an associate company. The guidance covering the use of appointed assets for non-appointed purposes (set out in section 10.3 of RAG 5.06) is set out only in very general terms.</p> <p>This issue only affects importers of sludge – a network plus business seeking to export sludge to a 3rd party (another water company or a commercial entrant) should simply be a matter of commercial judgement over obtaining the best price and risk.</p>	<p>Price control separation for sludge should result in increased sludge trading - it would seem helpful that requirements for transfer pricing are reviewed, with a view to simplifying and standardising the rules that would apply to any non-appointed sludge trade. For example, it could be the case that the price agreed between the sludge business and any third party effectively also sets the transfer price.</p> <p>Alternatively, our suggested approach to accountabilities for sludge (i.e. that all sludges could be considered as appointed, regardless of source) would negate the need for any complex transfer pricing arrangements.</p>

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<p>Pricing rules – impact on efficiency of potential trades</p>	<p>The pricing rules for sludge trading are a crucial component of ensuring that any potential market works effectively and efficiently. They also provide an important interaction with other elements of PR19, such as:</p> <ul style="list-style-type: none"> • Protection of the 2020 RCV. • The volume adjustment to the sludge revenue control. • Ofwat’s proposed guidance on assessing bids <p>There are many ways in which pricing rules could result in either efficient or inefficient outcomes for customers, or to encourage or discourage trading or entry into the sludge market.</p> <p>Competition is most likely to be effective at the point where a company is making choices between increasing its own capacity and using the services of another provider. These choices are most likely to be made as part of business plans for price reviews. Therefore a process to encourage bids to provide capacity similar to that for WRMPs is appropriate. We believe that LRIC based pricing best provides the right incentives, although it may be that average cost pricing could be a reasonable proxy.</p> <p>However, a short term trade to manage capacity constraints may not be efficient if the price is required to be based on long run incremental or average costs, as the companies would only experience variations in short run marginal costs. Such an approach might incentivise incumbents to over-supply (and potentially duplicate) spare capacity in order to avoid otherwise efficient trades, purely due to the (perhaps unintended) consequences of an average cost basis of price.</p>	<p>First of all it is helpful that standard pricing rules are established to ensure that all companies are entering the market on an equal basis. Work should be undertaken to ascertain whether average costs could provide a reasonable proxy for LRIC.</p> <p>It would be helpful to identify the potential different types of trades are expected to occur, and to ensure that pricing rules are set in a way that encourages market participation, for example long run incremental or average cost pricing seems likely to be appropriate for long term trades (when companies are choosing whether to increase capacity or to export future excess sludge). However, for short term balancing of capacity constraints a short run marginal cost based approach may be more appropriate. In this latter case, such trades should be non-repeating and of a duration less than six months. Additional care would also be needed to ensure that RCV commitments are met.</p>

Next steps

Ofwat has established a working group to consider issues arising from implementing a separate sludge price control – the meeting is attended by water companies, potential new entrants, and environmental regulators. We consider that this would be the most constructive forum at which to discuss any issues arising from this paper.