

Alongside the bioresources data table we have provided a narrative which covers:

- **Assurance:** a summary on what assurance has been undertaken to ensure that the information is accurate and complete, and highlighting any issues identified as part of this process
- **Bidding activity:** the provision or publication of details of the main success criteria that has been used to assess bids from third parties, including a summary (where applicable) of reasons not to award a contract to any third party particularly where the activity continues to be provided by our own internal bioresources service
- **Market development:** information on how the market has changed over the year and how it is likely to change over the next reporting period
- **Risks, issues and barriers:** any risks, issues or barriers we have identified that could hinder the market developing or could cause other unintended consequences
- **Engagement activities/initiatives:** any engagement activities or initiatives undertaken to stimulate interest from third parties who could provide bioresources services

Assurance

To build trust and confidence in our Bioresources Market Information, our regulatory reporting assurance plan was designed to ensure:

- compliance with reporting guidance and appropriateness of processes for timely preparation
- the accessibility, accuracy, reliability, completeness and consistency of information

We therefore put in place multiple internal assurance checks and balances. This included a submission plan and data method statements, information prepared by an appropriate person, reviewed by a competent person, signed-off and approved by a senior accountable manager. Furthermore, we had data and process support provided by our Regulatory Reporting Team and final submission Gate.

Given the importance of this submission, we requested PwC to independently review our reported information in accordance with the International Standard on Related Services (ISRS) 4400 - Engagements to perform agreed-upon procedures regarding financial information. In terms of ISRS 4400, we agreed a set of procedures to be performed by PwC with the objectives of reviewing:

- The completeness and consistency of methodology with policy, rules and guidance;
- The governance process and operation of controls; and
- The accuracy and completeness of data and compliance to methodology.

This review did not constitute an examination made in accordance with generally accepted auditing standards, the objective of which would be the expression of assurance on the contents of the non-financial data, as a result PwC do not express such assurance. The aim of this review was to receive factual results regarding the information we reported based on a set of procedures agreed with PwC.

PwC raised 3 actions on our data accuracy, all of which were addressed prior to publication, as well as one improvement recommendation for us to consider relating to the methodology used. The recommendation was to improve the guidance on what constitutes a bioresources contract.

Bidding activity

During the period (April 2018 to March 2019) no new bioresources specific contracts have been let and we have not identified any where we could provide our service to others.

The existing contracts for sludge cake transport, treatment (of untreated cake) and disposal (to agriculture and restoration) were all awarded in 2016 and are due to expire in 2021. We will carry out market analysis prior to the expiry date to ensure that these activities are still more beneficially delivered via the existing routes. This will also include an assessment of the associated activities carried out in house (such as biosolids farm sales). When these contracts were last awarded this was advertised through the OJEU (Open Journal of the European Union); it is anticipated that the same method will be employed in the future to ensure we obtain the widest service offerings to seek the best outcome for our customers.

The only exception is 'intersite tankering' which was awarded in October 2013 and was due for renewal in September 2018. As we wanted to ensure we obtained the best tankering solution we carried out a market assessment of this contract rather than just adopting an automatic renewal. We wanted to understand if the commercial offerings from the market were still the best option for our customers. As part of this assessment we looked at the commercial arrangements with various haulage companies, identified the size and capacity of the fleet they were able to offer and looked at the flexibility of their operation to meet the varying requirements across our entire business needs. We need tankers to move sludge but also use them for emergency situations such as to tanker effluent from sewage treatment works to protect the final effluent during periods of unforeseen plant outage and to pump out sewers to protect customers from flooding. Having learnt from past contracts, these activities are unforeseen and incur considerable cost from contractors using day rates. The analysis demonstrated that it was beneficial to our customers to bring this activity back in-house. Therefore, this contract was not renewed. In summary, the reasons for bringing the contract back in house were:

- a significant cost benefit in running the operation in-house
- greater flexibility to use tankers across wastewater network, sewage treatment works and bioresources sites
- extended tanker fleet operational time without the heavy out-of-hours expense incurred under commercial contracts
- increased flexibility in use of drivers across both water and waste
- greater management control of the tanker fleets

We will periodically review the commercial arrangements of tanker use to ensure than an in-house service remains the best solution. This will be done at least once every five years but also on an ad-hoc basis should we be offered a service from a third party.

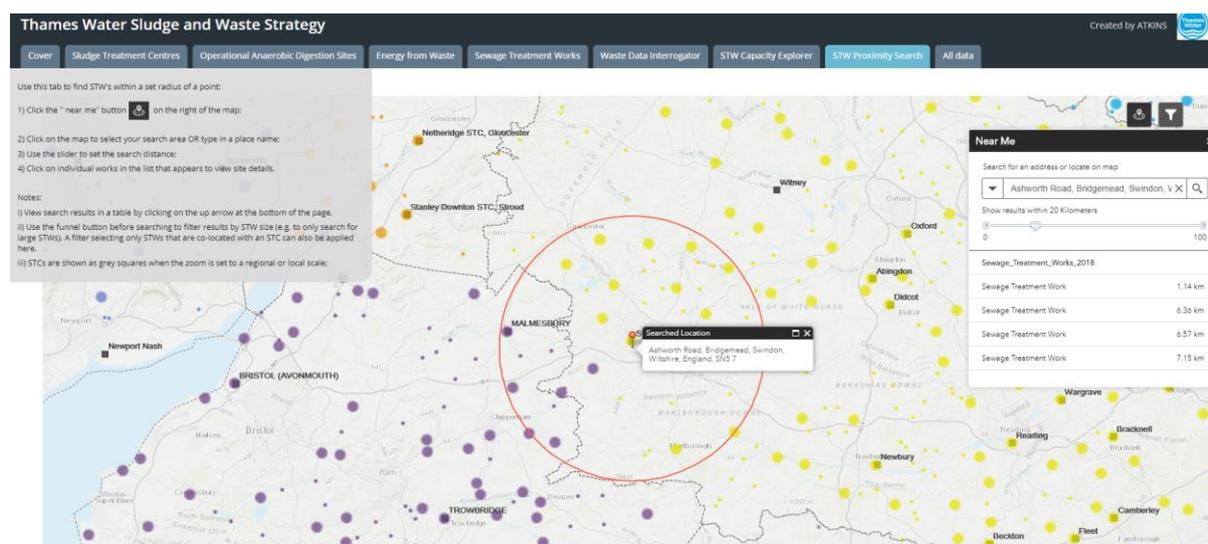
These contracts are all detailed on the ‘contracts’ tab of the “Bioresources-locations-and-successful-contract-market-info” spreadsheet.

No ad-hoc bids for services (transport, treatment or disposal activities) were received, from other Water and Sewerage Companies (WaSCs) or third-party service providers during the period.

Market development

The bioresources market can provide Thames Water with opportunities to treat other companies’ waste (either sludge or potentially other organic materials) and to send our sludge to be treated by others. These opportunities could be as part of our ongoing operations or in the event of short-term capacity constraints and emergencies. On this basis, during 2018/19 we have evaluated potential market opportunities using a geospatial tool and market information data published over the last two years, as presented in Figure 1. Our primary aim is to ensure our customers benefit in the most cost-effective way possible.

Figure 1: Geospatial analysis of bioresources locations



Source: Thames Water / Atkins analysis

As detailed in our Business Plan we have identified a small number of sites that are closer to another WaSC sludge treatment centre than our own. We are talking with these companies to understand if they are or will be able to accept our sludge. Whilst none of these sites are currently suitable as they are running at maximum capacity treating their own incumbent sludge, we have asked companies whether they can make capacity available following any investment in AMP7.

We are progressing with our long term strategy around how we manage our sludge; continuing to maximise the benefits from our advanced anaerobic digestion sites and treating less sludge at our lime stabilisation sites. We are transporting more raw cake to treatment sites than we used to do, and less liquid sludge, which is more efficient but does mean we have increased our average intersite transportation distance (29km in 2018/19, up from 22km in 2017/18). Whilst there is a need to move



sludge to treat it, keeping these distances to a minimum allows greater benefit from the energy recovered. With liquid sludge the financial benefit (from energy recovery) is eroded after around 15km, whereas cake can be moved around 50km before the energy benefit from treatment is outweighed by the higher transport costs.

To improve the intersite transport cost position we have been talking to several technology suppliers that provide mobile thickening and dewatering facilities; along with obtaining feedback from current users on the plant performance. We are evaluating how to trial a few of the technologies that seem to be more beneficial to smaller sites than conventional belt thickening technologies, with the intention that these could offer cost savings in AMP7.

In principle, third parties may also offer treatment opportunities in the same way as WaSCs are able to. In practice, however, it can be the case that waste treatment infrastructure – particularly anaerobic digestion (AD) facilities – is not available in sufficient capacity or close enough to make it commercially viable. Furthermore, some third-party AD operators have told us, as detailed in our Business Plan, that they are concerned about the potential adverse impact on their ‘end-of-waste’ status caused by co digestion with sludge. Nonetheless, we are in discussions with two municipal waste incineration companies to look at the feasibility of disposing of biosolids through their process. These discussions are at an initial stage, but we are hopeful that we will be able to contract with them to accept our treated biosolids to help mitigate land disposal costs and remove the impact of a diminishing landbank.

Currently we manage all biogas in-house, using it within our combined heat and power (CHP) plants and boilers. The improved efficiency of our treatment facilities now means we have four sites where we expect the amount of biogas produced to exceed the installed renewable energy generation capacity. On these sites we are evaluating options to consider alternative uses of biogas. We have two exciting options in development; the first is with a ‘biogas to grid’ company in Enfield to use excess gas from Deephams and inject it into the national gas grid. The second opportunity is at our Hogsmill site, where we are collaborating with the local authority, Kingston-Upon-Thames, to evaluate a district heating system. Both of these are still in an early feasibility stage, but we hope to progress these further in 2019/20 to understand the scale of the possible opportunity. The other two sites are currently being considered for increased CHP capacity in AMP7.

In September 2018, we entered into our first sludge trading contract with a New Appointment and Variation (NAV) to treat their sludge through our Basingstoke sludge treatment facility. We accept the sludge from their 5000 population works, which was previously being sent to landfill near Bristol. The gate fee charged is significantly less than the land fill option, as well as there being an environmental benefit in putting the sludge to beneficial use to generate renewable energy. The NAV undertakes the transport to our site, where we treat it through our advanced digestion process and manage recycling of the final product to agricultural land. The contract was initially awarded on a one year rolling cycle to ensure that both parties were gaining benefit from it. This will be extended to a long-term contract once any initial operational issues are resolved. Whilst this is a small contract, the learning will be transferable to future contacts.

As stated in our Business Plan we conducted extensive research with our farming customers, which identified that:

- Some customers would like to see improvements to communications – clearer information about the product itself, more timely correspondence about the status of their purchase and clearer labelling of the maps used for delivery and spreading. They would also like to feel that any instructions they've given regarding delivery and spreading have been observed;
- Some would like to see more flexibility in the timing of delivery and spreading, particularly in order to co-ordinate with dry weather conditions; and
- Some called for more product to be available and at a lower price if possible.

We will continue to seek feedback from our customers, especially those that accept our treated biosolids, to ensure that the product we provide is of the required quality they require and at a cost that remains competitive within the market

Risks, issues and barriers

We do not foresee any issues with inter-company trading between WaSCs based on marginal costs. Current discussions with respect to long term trades and shared investment opportunities have identified limited opportunities due to uncertainty over potential stranded assets and around long-term gate fee costs.

Discussions with external industry third parties are still being hindered by current regulations around co-digestion. We are working with the Environment Agency as part of their sludge working group to evaluate perceived risks to co-treatment so that these regulatory barriers can be addressed.

Engagement activities/initiatives

Discussions are still ongoing with several technology suppliers to look at shared investment opportunities with the intention to provide greater efficiency across the current asset base. Our innovation team, in collaboration with these technology suppliers, have started to evaluate the next generation of advanced digestion. We anticipate that the results from these trials will be available by March 2020 to help inform investment decisions for AMP7.

Our trial of advanced thermal disposal using low temperature drying and pyrolysis is due to be commissioned by the start of 2020. The results will help inform our future disposal strategy and help mitigate land bank disposal risks.