# A6: Embracing markets

How we're embracing markets to create value for customers





# **OVERVIEW: ABOUT THIS DOCUMENT**

This appendix is part of our 2020-2025 business plan submission. It builds on the markets and innovation chapter in our main business plan document.

This appendix comprises **six** parts:

- **Part 1**: Embracing the opportunity of markets in water resources (including catchments), bioresources, and using direct procurement for customers (DPC).
- Part 2: Water trading proposed trades and resource options.
- **Part 3**: Frameworks and codes for fair and transparent markets.
- **Part 4**: Water resources regulatory capital value (RCV).
- Part 5: Bioresources strategy.
- Part 6: Bioresources regulatory capital value (RCV).

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# PART 1: EMBRACING MARKETS TO CREATE VALUE

We've tried for a number of years to lead the sector's thinking in relation to the adoption of markets where they can add value for customers. With the introduction of new markets in this period, we want to be at the forefront of these opportunities, and make sure we contribute to their success.

We're starting the 2020-25 period with an active track record in markets:

- we've supported the proposed licence changes in 2007 to give Ofwat more flexibility to create separate price caps and introduce competition, when the majority of the sector opposed it;
- our Changing Course publication series which commenced in 2010 has long advocated water trading as a feasible way to introduce greater competition and market forces to the sector;
- we've championed the commercialisation of the bioresources value chain through deregulation and competition and we've already started test trades with Yorkshire Water; and
- we were active in supporting the establishment of the non-household retail market opening in 2017 by forming the Water Plus joint venture with United Utilities in 2016.

# Our thought leadership series strongly advocates markets



- Ecosystems service market
- Catchment system operator

In this section, we explain how we're continuing to embrace markets to drive value for our customers from water resources and bioresources. We also show how we plan to use Direct Procurement for Customers (DPC) to deliver effective solutions that are both market driven and customer focused.

# Shaping a new approach to water resources

We undertook a large scale piece of work in 2008 to consider where competition and markets could drive better outcomes for customers. One of the critical things we learnt was that water trading could be a feasible, sustainable and economically viable model for water supply. While we are well placed geographically to participate in moving water to the south and east, where during dry years there are predicted supply deficits of up to 600MI/day by 2040, water trading is likely to occur through raw water supplies rather than the potable supply network. As such, we may not be substantial beneficiaries of water trading in financial terms; nevertheless, we're committed to making it a reality.



We explain how we've calculated our regulatory capital value for water resources in Appendix A6: Embracing markets

# A market to help reduce supply/demand deficits

The challenges of climate change and population growth are placing greater pressure on water resources. Unsustainable abstraction of water resources and its consequential impact on the natural environment present a very real risk in some parts of the country, including our region. A traded market is a key option to help address these challenges by facilitating better water resource allocation, more sustainable abstraction and increasing resilience. It would mean that scarce resources could be optimised at national, regional and local catchment levels.

# A collaborative approach to existing resources

We're very supportive of a more collaborative approach to water resources planning in order to develop more innovative, efficient and environmentally sustainable options for the benefit of customers, communities and the environment.

We're already active participants in a number of neighbouring water company planning initiatives through Water Resources East (WRE), Water Resources North (WRN), Water Resource South East (WRSE) and West Country Water Resources (WCWR) working groups – and we've undertaken a number of activities to support the development of water trading. We're also active members of the steering committee for Water UK Water Resources Long Term Planning Framework (WaterUK).

To further drive collaboration, we established a partnership with United Utilities and Thames Water, and set up two working groups focused on resource availability, resource development options, the environmental impact of proposed WRMP schemes and river regulation issues. The River Severn Working Group supports River Severn strategic planning issues and includes key stakeholders including environmental regulators. A similar group focused on the River Trent was established with Anglian Water.

Through collaborative working with United Utilities in 2016-2017, we identified joint water resource options and developed proposals for a Severn to Thames interconnector allowing water from the North-West to be transferred south, displacing the need for some abstraction on the River Severn and augmenting additional resource available in the Severn Trent region, which together could have been made available for transfer to the River Thames. These options could offer resilience and best value not just for Thames Water and other companies in the South East, but also our own customers.

While we've identified some barriers to trading, we'll continue to progress the issues with practical proposals. We recognise that progression to trading has not been as swift as we had hoped for. A number of positive regulatory changes have been made, including changes proposed in our 2011 'Changing course through water trading' report e.g. enhancing the WRMP process and improving incentives – though these have not fully realised the opportunities we anticipated and there is still more to be done.

Given the national strategic importance of the Severn to Thames transfer scheme, as recognised by the National Infrastructure Commission report 'Preparing for a drier future', we remain committed to ensuring that momentum is maintained. We will continue to work on the appropriate technical and environmental aspects in AMP7 in partnership with United Utilities and Thames Water, irrespective of whether the scheme is included in Thames Water's final WRMP – to help move forward the overall trading agenda.



We explain the real option mechanism we've proposed to make progress on a Severn to Thames transfer a practical reality in Appendix A8: Securing cost efficiency

# Using the WRMP process to deliver greater water trading

In developing our WRMP, we've taken a progressive view on imports and exports and have proactively investigated third party bi-lateral opportunities forming part of our overall best value plan. We've used a three stage approach to identify options for both potential imports into our region and exports to help meet neighbouring companies' future needs. We started the process assessing potential third party import options alongside our own internal supply and demand side options in December 2016.

# Three stage approach to identifying third party water resource options for WRPM19



Our draft WRMP included several potential options to increase trading of water between Severn Trent and neighbouring companies. These options were shared between companies for consideration in their draft WRMP thinking. Now that all companies' draft WRMPs have been published, it has become clear that there are water trading options included in other plans that don't fully align to our draft WRMP. We've followed up with all companies involved and, while we are disappointed that our active discussions have not generated a new trade within our final WRMP, we have built a strong platform for developing future solutions. We remain committed to the concept of water trading and will continue to work hard to develop viable water transfers.

# Adopting a multi-sector approach to resources

Maintaining our supply demand balance requires us to look beyond the water sector for potential trading opportunities. We're collaborating with third parties in other sectors to develop the best value, innovative and most environmentally sustainable options. We have had a number of productive and engaging third party discussions and interest has been high:

- Canal and River Trust three options identified.
- Coal Authority innovative reclaimed mine water options.
- Energy sector licence transfer/seasonal sharing options.
- Agricultural sector trade in Idle and Torne catchment.
- Wider industry number of trades with abstraction licence holders

Part 2 of this Appendix includes more information on the trades proposed to neighbouring companies and multi-sector opportunities.

# Developing a fair and transparent bidding process

We're committed to ensuring our water resources procurement process is transparent and non-discriminatory, and we are firmly committed to creating a level playing field against which all bids are measured. This ensures third parties are not disadvantaged.

Our water resource procurement governance comprises of three key components:

- Market information (portal).
- Bid assessment framework.
- Trading and procurement code.

We've submitted our water resource zone (WRZ) level data to the market information portal, setting out our supply/demand balance projections to 2045. We welcome the input of water companies and other third parties to identify and share new, innovative, cost effective and environmentally sustainable resource options with us.

Our bid assessment framework (BAF) supersedes the three stage approach and sets out how we assess solutions for consideration into our plan and is our commitment to transparent and non-discriminatory procurement; the process seeks to deliver confidence to third parties that there is no bias against external solutions. All bids are assessed against four key principles to ensure the highest standards are upheld:

#### A bid assessment framework based on the four key principles

# Transparency All bidders have visibility Evo

of the award criteria and decision-based rules for solution selection Equality Everyone has an equal opportunity competing for contracts, including when bidding against our own Proportionality Measures third parties need to take to deliver successful bids are not eyond what is absolutely

#### Simplicity Our framework is straightforward, reducing the bidding costs for third parties

A separate water resources procurement team oversees the third party bidding process. This team will not have been involved in any pre-tender engagement with either third party bidders or the development of our own in-house solutions. Their purpose is to ensure that appropriate governance procedures are observed to maintain compliance with competition law.

# A structured process for bidding into our WRMP plan

The end-to-end process we follow for bidding into our WRMP is set out below. Our full bid assessment framework is included in part 3 of this Appendix.



# Commitment to a clear trading and procurement code

We shared our Ofwat approved trading and procurement code with the market in November 2017. The code clarifies the policies, principles and requirements we will apply when other water companies and third parties enter into trades with us and is based on Ofwat guidance. It covers transparency and audit, contract durations, ending trades, assessing costs, relationship with WRMP, economically rational trades, and environmentally rational trades.

While the code is optional, it further reinforces our commitment to collaborating with third parties in assessing water resources, demand management and leakage services.



Our detailed trading and procurement code is included in Appendix A6: Embracing markets.

# We're addressing trading barriers

We've identified three main barriers to trading, and continue to work with regulators, customers and other stakeholders to progress with proposals to address the issues.

| Trading barriers                          | Reasons   | How we are addressing   |
|---|---|---|
| Environmental and river regulation issues | Water availability, ecological impact, flood<br>risk, losses and WFD compliance<br>Confidence inputs to system can be reliably<br>abstracted downstream | Joint working through River Severn Working<br>Group   |
| Incumbent customer<br>acceptability       | Customers perception their service levels will fall and water may be needed in their region   | Joint customer research on water trading attitudes  |
| Regulatory and commercial issues          | Uncertainty on operational areas of trades including interconnectors and delivery and management of assets  | Published What role for a system operator to help overcome barriers and contribute to the national debate |

# We will protect customers against risks

We have a statutory obligation to plan how we will manage our water resources over the long term, through supply-side and demand-side investments. To ensure customers are protected from the risk of over-building capacity in the future, we've developed a forward-looking long-term risk-sharing mechanism (LTRSM) which can be applied to applicable schemes.

# A role for a system operator

Our recent experiences with the Severn to Thames transfer scheme suggest alternative approaches may need to be considered to help enable widespread water trading opportunities. We've not stood still in our thinking about how to develop a viable trading market and the role a system operator type arrangements may play.

System operators seek to achieve network coordination efficiencies. Such arrangements are prevalent in the energy and other infrastructure sectors and are the subject of continued debate. In November 2017 we published the *report What role for system operators in the water sector?* which we developed in collaboration with United Utilities and Thames Water. It sets out our thoughts on how a system operator could aid the creation of regional interconnection capacity, enabling the co-ordination of inter-regional trades covering multiple water companies.

For example, we're exploring the co-ordination of trades from United Utilities to Severn Trent to Anglian Water to Affinity Water, rather than relying on multiple bilateral contracts. A system operator would also enable better demand forecasting, the development of future trades and management of interconnection capacity, therefore improving resilience and security of supply for our customers in the longer term.

The report was a proof of concept for how a system operator might be an effective solution to inter-regional trade coordination. Building on our thinking in *What role for system operators*? we're exploring whether there is value in developing alternative models for water transfers. For example, is a more centralist approach worthy of consideration and is there a role for a national level system operator?

Our report What role for system operators in the water sector? is available on our website at: severntrent.com.

# Local level catchment schemes

To help facilitate a trading market at a regional and national level, we first need to ensure that catchment level water resources are protected. This in turn requires collaborative, co-ordinated partnership work at both strategic – i.e. national and regional, as well as at the local, sub-catchment level.

We're already actively involved in Defra's catchment based approach (CaBA) – as participants in 14 catchments and as the lead partner in the Tame, Achor and Mease catchments. This partnership approach to tackling catchment issues at source by working with agriculture, industry, NGOs, and central and local government, moves us closer to developing markets for paid ecosystem services. We'll continue our commitment to working through CaBA during the next five years – given its effectiveness, we intend it to be the primary method through which we deliver catchment based activities and better exploit the potential for match funding – giving our customers a bigger benefit for every pound spent.

# Trialling a range of innovative schemes

We pride ourselves on our ambitious approach to catchment management. We've considered a range of schemes and will be trialling the reverse auction platform EnTrade in autumn 2018. EnTrade is an online auction, which allows buyers of environmental services to purchase them in a simple way at a price set by farmers, which may complement our incentive based STEPS scheme. Our schemes are designed so that we only fund 50% of any farm infrastructure or product substitution cost, with the farmer providing the match funding. This ensures we gain the farmer's long term buy-in and the desired behavioural change needed to deliver water quality improvements – in addition to achieving greater value for our customers due to the lower unit cost.

Our approach to catchment management for 2020-25 will continue to push the boundaries of what can be achieved. Our performance commitment of 16 schemes will shift our focus from an inputs based measure of engagement with farmers, to outcomes by seeking to measure the impact of changes in agricultural practices and behaviours on drinking water quality risks. The proposed schemes will also deliver multiple benefits including greater resilience, and wider environmental improvements.

# Ensuring the bioresources market becomes a reality

We are strong supporters of a market for bioresources and our 2015 publication, *Charting a Sustainable Course* promoted removing the regulatory barriers preventing the unbundling of bioresource services to enable greater innovation and value for customers. We believe the creation of a bioresources market paves the way for efficiency and innovation through better information, asset utilisation, capital allocation and improved operational efficiency. We want to be market leaders by 2025.

We intend to capitalise on the opportunities the new market presents, take trading opportunities that extend beyond raw sludge to different parts of the bioresources value chain, and create greater value for both our customers and those outside our region in the process. Achieving the lowest cost to treat will be a key enabler for our strategy, and we're striving to do this through a combination of innovative technology, improved methods of working, and the development of a wide network of trading partners beyond the wastewater sector.

This section is supported by part 5 (bioresources strategy) and part 6 (bioresources RCV) of this Appendix.

# Developing the right foundations to compete

We're starting from a good position. Over the last two years our performance in anaerobic digestion and renewable energy production has been sector leading. In companies' 2017/18 annual performance reports, we're ranked upper quartile for treatment cost and overall sludge processing efficiency – a position that we've consistently maintained for a number of years. This efficiency, in addition to our central location bordering seven wastewater companies, means we are well placed to make the most of a new bioresources market. There is no place for complacency, however, and we intend to drive the market to deliver future benefits. Those who are less efficient will inevitably benefit from the market – reducing their costs by working with efficient operators such as ourselves, to drive overall efficiency, and ultimately lower bills for all customers.

To cement our commitment to making the market work, in April 2018 we split our bioresources activities from wholesale wastewater to create a separate bioresources business. We're already making positive progress, having trailed our new operating model in the Staffordshire region, and the separate focus is allowing early identification and rectification of process inefficiencies.

But we're not standing still. To further ready ourselves, we are:

- Improving volume data of sludge treated across our sites we're spending £1.6 million improving our measurement capability and investing in metering to accurately measure sludge volumes which will further develop our capacity forecasting capabilities to enable trading across multiple time horizons.
- Increasing granular cost information for sludge trading prices we'll be accounting at operational site level to provide more granularity and clarity on cost, in addition to improved visibility of volumes treated, capacity and utilisation. This will enable us to understand where it is economically beneficial to trade with others.
- Ensuring correct application of competition law our methodologies have been independently reviewed to ensure compliance with competition law.
- Investing in people and management we're committed to implementing a leaner management approach to improve performance and reduce operating costs. We've appointed a new leadership team, are supporting our people with additional training and empowering them to operate as a small and agile business would.
- Building a strategy to compete while we're positioning ourselves as net importers, we also recognise potential export opportunities at some locations. We continue to model using available, albeit incomplete neighbouring transportation distance and treatment cost information to determine which trades are likely to be imports or exports. We anticipate trading opportunities will become more material as assets reach the end of their economic life and other companies look to tender for their replacement and will be ready for this.

And we're already engaging in the evolving market – we've shared information in line with Ofwat's templates. We've already engaged with our neighbours and commenced a series of short-term, trial trades with Yorkshire Water to help understand key operational and logistical requirements for each company / site. Along with improving demand forecasting, it will enable us to identify longer term import and export options, which will not only offer greater mutual resilience but also minimises the risk of unnecessary construction to create capacity.

# A long term plan to create value from the bioresources market

During AMP6 we constructed substantial new thermal hydrolysis process (THP) assets (a form of advanced anaerobic digestion) at our Minworth and Strongford sites. This investment has already created efficiencies by reducing the number of sites in our portfolio, lowered costs to operate, lowered tankering and transportation requirements and increased renewable energy production - as well as increasing capacity and improving the quality of our biosolids.

For AMP7 we will be continuing our investment in new capital assets including three new advanced anaerobic digestion hubs. Like our THP sites, these sites will facilitate additional biogas generation for conversion into renewable energy (which can be injected into the gas grid) and increase the proportion of *enhanced* biosolids produced – a better product for our end customers. Our AMP6 THP plants will increase the production of enhanced quality biosolids from 0% to 39% by 2020, and by 2025, 83% of our biosolids with be enhanced quality.

Where sites are outside the range of the THP hubs, our asset enhancement programme will seek best value options to treat. Proposed investment here will be prioritised on delivering improved financial performance through cost reductions, trading opportunities and improving our regulatory performance.

# Improving transportation and recycling costs

We're striving to reduce transportation and recycling costs in line with our top quartile performance in treatment. Costs are being reduced through depot consolidation, increased tanker utilisation and changing working practices. The new advanced anaerobic digestion hubs are expected to further reduce such costs through to 2025.

# Exports may form part of our best value plan

We recognise the benefits of exporting waste where we may be less efficient or comparatively less efficient. Under these circumstances, we will explore opportunities to use both existing water companies' and new entrants' sludge treatment centres.

And where we are not the most cost efficient across all parts of the value chain, we will seek to trade with the lowest cost provider for that part of the value chain to ensure best value for our customers, for example, we may treat sludge produced in Dwr Cymru while sending sludge to Anglian Water for disposal.

# Taking further market opportunities

Beyond the trading market, we plan to grow our bioresources activities by leveraging our core competencies and acquiring existing assets or constructing new assets, or participating in any combination of design, build, finance operate and maintain (DBFOM) solutions for less efficient companies.

Furthermore, while current legislation means that we're unable to co-digest other organic waste (e.g. food, crop residue and garden waste) with sewage, these adjacent market opportunities may well open within the useful life of our assets. We're preparing our capabilities so that we're well positioned to capitalise on any future changes in legislation to deliver further benefits to our customers through more efficient digestion.

# Supported by innovation horizon scanning

Although we're currently focused on advanced anaerobic digestion, the next 20 years could see technologies such as gasification and pyrolysis becoming more prevalent. These have the potential to increase energy recovery and reduce the volume of material recycled to land, leading to improved environmental and financial performance.

We're now actively evaluating a number of these technologies as part of our future plans:

- Pyrolysis / gasification / hydro thermal carbonisation (HTC) highly likely to materialise within the next 10 years, these technologies could potentially enable smaller, more remote sites to deliver higher energy outputs. The final solid is a high chemical potential biochar that can either be further recycled or is a significantly lower volume to dispose to land.
- **Bio-refinery** the extraction of high value materials from sewage during its physio-chemical treatment. Techniques using algae and chemical inhibition appear promising. The extraction of lipids, acids and cellulosic materials are of potential commercial value.
- Ammonia extraction new technology for product disposal or extraction will significantly reduce our £/TDS.
- Hydrogen economy / fuel cells the relatively low efficiency of standard combustion means that hydrogen fuel cells are potentially an interesting opportunity.

Determining the right time to invest will be key to exploiting the best value for our customers - so we'll continue to research, explore and develop the opportunities as they advance.

# Approach to direct procurement for customers

Direct procurement for customers (DPC) presents a viable alternative to traditional procurement models, creating value for customers by driving competitive funding, innovation and efficiency.

We're supportive of the use of DPC where it benefits customers. We've developed a transparent, repeatable framework, with specialist advice from an expert third party, to assess which major projects would create better value for customers if they were delivered through DPC. All projects with a whole life totex of £80 million or greater have been assessed using this approach.

# A robust DPC assessment framework

We've considered the key areas of Ofwat's guidance on what constitutes a DPC project:

- Totex greater than £100 million all projects greater than £100 million totex are included in our analysis. To ensure comprehensive coverage, we've applied a lower threshold of £80 million.
- **Project type** by considering whether initiatives are sufficiently discrete, we can gauge their potential as attractive counterparty investment. As part of this assessment, we've looked at the extent to which projects are integrated within our networks, the complexity of their interfaces and/or operation. We've also looked at the project's technical risks across their lifecycle.
- Value for money for customers we focus on delivering maximum customer value. During the tender process, we considered factors where DPC could erode value, e.g. project specific risk factors, the extent to which innovation can drive further customer benefit and other indirect benefits.
- **Customer engagement** all projects that we considered have been presented for recommendation to our CCG for feedback and challenge.

# In interpreting Ofwat's guidance, we've developed a five stage DPC assessment framework, and assessed all projects meeting the key criteria against it:

| Stage                                     | Approach  |
|---|---|
| Stage 1 - technical methodology design    | We developed a methodology to assess the suitability of projects for DPC via a series of workshops with internal experts (procurement specialists, engineers and asset managers) and external experts   |
| Stage 2 - project identification          | We identified all PR19 projects and programmes with a totex greater than £80 million across our value chain (excluding bioresources)  |
| Stage 3 - technical<br>assessment         | We applied size, discreteness and risk tests to each project to understand its potential independence from our core operations and hence its relative attractiveness to counterparties  |
| Stage 4 - cost benefit<br>analysis        | We assessed the economic attractiveness of technically appropriate projects using cost benefit analysis based on HM Treasury's five case model approach. This allows objective cost benefit assessment of DPC against our AMP6 procurement approach |
| Stage 5 - assurance and<br>Board sign-off | Three lines of assurance include an assessment by an independent third party (Jacobs) to ensure robustness of approach and process, before Board engagement and sign-off  |

Stages two, three and four of our approach are set out in more detail.



# Overview of approach for stages two, three and four of DPC process

# A thorough assessment of projects

Our simple initial assessment at stage 2 quickly identified 11 projects and programmes of work with totex greater than £80 million in our PR19 investment plan and WRMP19. At stage 3, project expenditure was analysed in more detail, with 25 year plus construction expenditure discounted to present values (using the social time preference discount rate as specified in HM Government Green Book guidance). We excluded schemes not selected in our draft WRMP.

Four projects progressed to the discreteness test. Three of these were schemes in our draft Water Resource Management Plan. There was also one water trading project involving an export to Anglian Water. Each of these projects was assessed using qualitative criteria to determine its 'discreteness' and its likely project risks from original outline scheme design information and discussions with asset management teams. Three projects failed the discreteness test due to being disaggregated across many sites or because they were highly integrated within existing processes, with the East Midlands raw water scheme passing all tests. The outcome of the test is set in the next table

#### **Outcome of discreteness analysis**

| Scheme A - East Midlands<br>Raw Water Storage |       | Scheme B - Derbyshire<br>WTW Expansion   |       | Scheme C - Enhanced<br>Metering Programme   |       | Scheme D -<br>Transfer to Anglian  |       |   |
|---|-------|--|-------|---|-------|--|-------|---|
| Cincine                                       | Score | Rationale  | Score | Rationale   | Score | Rationale  | Score | Rationale   |
| Asset location                                | н     | Standalone asset with<br>limited integration<br>with wider network                         | L     | Highly integrated with SVT's<br>ongoing operation at the site                             | L     | Large number of meters<br>highly integrated and SVT's<br>existing assets and network                                       | L     | Multi-staged scheme with<br>construction having impact<br>on ongoing SVT and AWS<br>operation       |
| Interfaces                                    | н     | A number of interfaces but<br>considered relatively simple                                 | м     | A number of physical and<br>informational interfaces<br>with SVT                          | L     | Significant physical and<br>informational interfaces<br>required between a number<br>of parties                            | L     | Physical and informational<br>interfaces with SVT and<br>AWS introduces complexity                  |
| Process                                       | м     | Some ongoing coordination<br>with wider network required                                   | ι     | High degree of coordination<br>with wider network and<br>existing assets required         | м     | Operation of meter requires<br>coordination with other SVT<br>functions, but only relates to<br>informational coordination | м     | Ongoing coordination<br>required between DPC,<br>AWS and SVT to balance<br>flows across the network |
| impact on<br>service delivery                 | м     | Impact of WTW failure could<br>impact quality but this risk is<br>thought to be manageable | L     | Asset failure would have<br>significant and direct impact<br>on SVT's customers           | н     | Impact on service delivery<br>expected to be minimal<br>with potentially some<br>implications for SIM<br>rewards/penalties | м     | Asset failure likely to<br>impact AWS customers only<br>however back up supplies<br>available       |
| Flexibility                                   | м     | Operational is potentially<br>scalable in response to<br>changing requirements             | м     | Scalable and adaptable<br>if needs change over time                                       | L     | Risk of smart meter<br>technology becoming<br>redundant given relative<br>infancy of the market                            | L     | Transfer not scalable over<br>time with limited alternative<br>uses of the asset                    |
|   | м     | Ongoing and frequent<br>coordination required<br>with SVT network                          | L     | Frequent and ongoing<br>interaction required<br>between wider network<br>and existing WTW | ι     | Large number of ongoing<br>interactions needed<br>between smart meters, SVT<br>and communication provider                  | м     | Regular coordination<br>required between DPC,<br>SVT and AWS  |
| Overall score                                 | 14    |  | 8     |   | 9     |  | 9     |   |
|   | Progr | essed to project risks tests   |       |   |       |  |       |   |

# Delivering future value for customers through adopting DPC

The East Midlands raw water storage scheme, is a project to develop a raw water storage facility and construct a new water treatment works by 2031. The scheme is one of 19 that form part of our response to climate change, uncertainty and potential AMP8 environmental programmes. The East Midlands project demonstrated a high level of discreteness due the physical location of assets and single interface with the wider network. Any risk of failure impacting our customers would of course be addressed through contractual agreement.

The outcome of our value for money cost benefit analysis at stage 4 indicated that delivering the East Midlands raw water storage scheme through DPC could result in increased benefits for customers compared to our in-house approach. The present value cost is estimated at £116 million through DPC, compared to £122 million for traditional in-house procurement. This reduced cost is largely driven by assumed capex and opex efficiencies, and lower financing. These advantages, however, are partly off-set by incremental costs associated with procurement and management of a DPC contract.

We analysed key sensitivities to better understand the value for money case, including testing the rate of depreciation and residual value at the end of the concession period, financing costs, level of capex and opex efficiency compared to a base case in-house delivery, and contract tenure.

| Abstraction point                                 | River Soar                              |
|---|---|
| Deployable output benefit                         | 45Ml/day                                |
| Construction period                               | 8 years                                 |
| Notional operational start for modelling purposes | 2028                                    |
| Capex spend                                       | £40 million (AMP7), £126 million (AMP8) |
| Price Control                                     | Network+ (60%), Water Resources (40%)   |

# High level planning assumption of proposed DPC scheme

The sensitivity analysis indicated that DPC drives better value for customers unless:

- DPC yields the same or lower levels of capex and opex efficiency than traditional procurement route;
- DPC bidders seek an IRR at or greater than 12%; and/or
- bidders seek to recover the capital cost of the asset over the contract tenure (20 years) rather than over a longer period or the economic life of the asset (up to 80 years).

#### A mechanism to protect customers

Given the uncertainty regarding the pace and scale of deployable output reduction and the irreversibility of the proposed supply side scheme, we're proposing to include an option in our plan that gives us the right but not obligation to deliver the scheme. Delivery would be dependent on clear triggers being met - and is akin to a financial option.

We'll progress initial feasibility work on 19 water resource schemes in AMP7 and only commit to full delivery once we can show that the risk to deployable output is being realised. This ensures customers are protected, because we will not be paying for schemes that may not be needed.

Furthermore, we intend to use the AMP7 period to identify lower cost supply and demand side options that may defer the need for this large scale investment. We're therefore adopting a twin track approach combining:

- an early tender process, going to the market for innovative options to provide 45Ml/day to the East Midland location and test the market appetite for DPC; and
- early feasibility for the East Midlands raw water storage scheme that will enable a late DPC process should the early process not provide a better option and the uncertainty mechanism is triggered.

If neither elements of the twin track approach delivers the best value for customers, we will progress the scheme in-house.

# PART 2: WATER TRADING PROPOSED TRADES AND RESOURCE OPTIONS

This section provides details of proposed trades with neighbouring water companies, and resource options identified with third parties.

# Proposals to neighbouring companies

Following publication of our draft WRMP, we've continued to meet all neighbouring companies to discuss options named in our draft plan, as well as their own, and explore any new opportunities. The outcome of these discussions ensure that we've fully aligned our final WRMPs. While we're disappointed our schemes have not resulted in a new trade within our final WRMP, we have a strong platform for developing future solutions. We remain committed to the concept of water trading and will continue to work hard to develop viable water transfers.

| A summary of the | e updates that we've | agreed with other | companies is set o | ut in the table. |
|------------------|----------------------|-------------------|--------------------|------------------|
|------------------|----------------------|-------------------|--------------------|------------------|

| Company               | Draft WRMP position  | Update  | Date agreed  |
|-----------------------|--|---|--------------|
| Anglian<br>Water      | We developed five viable water<br>transfer options for<br>consideration in Anglian Water's<br>draft WRMP.<br>The potable water bulk supply to<br>an Anglian Water Water<br>treatment works near Oakham | Changes to the timing of Anglian Water's need for<br>additional supply mean that the transfer option is no<br>longer able to resolve their deficit due to the long<br>construction period. Instead we have offered a<br>further transfer option involving the transfer of<br>Wanlip Final Effluent to Rutland Water for their<br>consideration. | 28 June 2018 |
|                       | was included in their preferred<br>plan.   | Anglian water have confirmed that none of the transfers that we offered are included in their revised preferred plan.   |              |
|                       |  | We have committed to work together to develop an<br>optimised transfer taking in the wider context of the<br>Water Resources East needs. This joint work will<br>involve water resources modelling of the River Trent<br>system.  |              |
| South Staffs<br>Water | A new transfer between our<br>supply network and South Staffs<br>Water's supply network was<br>included in South Staffs Water's<br>draft WRMP.   | South Staffs have clarified that the proposed transfer<br>is for resilience and planned maintenance use only.<br>This transfer option will therefore no longer be<br>reflected in their final WRMP tables.  | 8 June 2018  |

| Company             | Draft WRMP position  | Update  | Date agreed  |
|---------------------|--|---|--------------|
| Thames<br>Water     | We worked closely with Thames<br>Water and United Utilities to<br>develop the River Severn to<br>River Thames transfer scheme,<br>the purpose of which is to<br>augment the flows in the River<br>Severn for transfer to the River<br>Thames near Oxford. The<br>scheme would be used only<br>during periods of dry weather in<br>the Thames catchment.<br>Our principle contribution to the<br>scheme involves improving<br>tertiary treatment of Minworth<br>Wastewater Treatment Works<br>final effluent, transferring the<br>effluent to the River Avon (a<br>tributary of the River Severn) by<br>pipeline and then abstraction by<br>Thames Water near Tewksbury<br>on the River Severn.<br>The scheme was not included in<br>Thames Water's draft WRMP. | Since the draft WRMPs were published the<br>requirement for Thames Water to provide a transfer<br>of their own to the water companies in the Water<br>Resources South East group (WRSE) has reduced<br>from 130Ml/day to 100Ml/d, which means that the<br>River Severn to River Thames transfer is unlikely to<br>be selected in Thames Water's revised draft<br>WRMP19.<br>Given the national strategic importance of the River<br>Severn to River Thames transfer scheme, we will<br>continue to work on appropriate technical and<br>environmental aspects in AMP7, for example<br>ecological work, losses and reliability, water quality,<br>regulation, river temperature, in partnership with<br>United Utilities and Thames Water, regardless of<br>whether the scheme is included in Thames Water's<br>final WRMP.<br>We have included a mechanism in our PR19 plan to<br>manage the uncertainties around this nationally<br>significant trading option and ensure that our<br>customers are protected from any unnecessary<br>expenditure. | 19 June 2018 |
| United<br>Utilities | We have discussed with United<br>Utilities the possibility of utilising<br>water from Lake Vyrnwy into the<br>River Severn for use at our<br>existing treatment works<br>downstream.<br>Our draft WRMP explored<br>investment scenarios that<br>utilised this new trade. However,<br>the uncertainty around the<br>longer term River Severn to River<br>Thames transfer scheme meant<br>that we did not include it in our<br>preferred plan.   | Further joint analysis by United Utilities and<br>ourselves has revealed that this option would not<br>represent best value and it will therefore not be in<br>our final WRMP preferred programme of options.<br>The primary reason for exclusion is an erosion of our<br>Birmingham resilience capability. The complex<br>interaction with a possible River Severn to River<br>Thames transfer scheme will also need more<br>detailed analysis to ensure that we properly consider<br>the wider national interest.<br>We have agreed to work with United Utilities on<br>further modelling in AMP7 to fully understand<br>whether the scheme could work conjunctively with<br>the River Severn to River Thames transfer scheme.  | 9 May 2018   |

| Company            | Draft WRMP position   | Update  | Date agreed |
|--------------------|---|---|-------------|
| Yorkshire<br>Water | We proposed increasing our<br>share of the raw water in the<br>Derwent Valley Reservoirs by<br>20MI/d to help support our<br>future supply / demand balance<br>needs and facilitate an<br>eastwards transfer to Anglian<br>Water. | Discussions with Yorkshire Water and Anglian Water<br>since the draft plan mean that we now intend to<br>progress a different option to increase utilisation of<br>the Derwent Valley reservoirs.<br>The primary reason for this is that Yorkshire Water<br>are unable to accommodate a variation of the<br>Derwent Valley agreement within the timeframes<br>that we had assumed without threatening their<br>customers' level of service. Furthermore the size and<br>timing of Anglian Water's needs since we published<br>our draft WRMP have changed meaning that the<br>transfer option included in their draft WRMP no<br>longer forms part of their preferred plan. | 5 June 2018 |
|                    |   | We have amended the scope of the option to<br>provide a smaller increase in output of 7.5MI/d from<br>the Derwent Valley reservoirs into our Strategic Grid.<br>Our water resources modelling shows that we can<br>sustain this increased output without impacting on<br>the current export arrangements to Yorkshire Water   |             |

# Resource options identified with third parties

Maintaining our supply demand balance requires us to look beyond the water sector for potential trading opportunities. We've taken a multi-sector approach to resources and are collaborating with third parties in other sectors to develop the best value, innovative and most environmentally sustainable options. We've had a number of productive and engaging third party discussions and interest has been high.

| Third party              | Options identified  |
|--------------------------|---|
| Canal and River<br>Trust | Two options that can be deployed in north Staffordshire or Birmingham with the Central Hydrological<br>Unit have been identified, using 15Ml/day of spare capacity.<br>In addition, we have offered to provide 75Ml/d of Minworth final effluent for transfer by canal to<br>Anglian, Affinity or Thames. |
| Coal Authority           | Innovative options of around 39MI/day of reclaimed mine water have been identified. Given uncertainty over yield and water quality, we may undertake joint research to develop these options further for WRMP24.  |
| Energy sector            | Following a successful trade with an energy supplier on the River Severn in 2016, we're exploring further opportunities for licence transfer or seasonal sharing with all energy companies in our region - and discussions are ongoing with several.  |
| Agriculture<br>sector    | Our engagement with the agricultural sector has focused on the Idle and Torne catchment in Nottinghamshire, our most stressed water resource zone. We're actively pursuing a water trade in this area.  |
| Wider industry           | Smaller water trades have been discussed with abstraction licence holders in the industrial sector to help increase their resilience and productivity.  |

# PART 3: FRAMEWORKS AND CODES FOR FAIR AND TRANSPARENT MARKETS

This section sets out the frameworks and codes we use to ensure we assess water resource options fairly and transparently - creating a level playing field against which bids are assessed.

Part 3 comprises two sections:

- Water resources company: bid assessment framework v1.1.
- Trading and procurement code, Ofwat approved v1.1.



# Water resources: company bid assessment framework

# Version 1.1

Author William Mackveley
Date April 2018

# **Acknowledgements**

We are grateful to all of those who provided their time to make positive contribution to the development of this bid assessment framework. They include:

The Canals and Rivers Trust The Environment Agency

# For further information on the bid assessment framework, please contact:

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# Introduction:

Company bid assessment frameworks (BAF) are intended to support the bidding market for water resources, demand management and leakage services. For these markets, third parties submit bids to incumbent water companies, to provide solutions that help incumbents meet their future water needs. Third parties can be independent entities or other incumbent water companies from outside the recipient water company's the area of appointment.

The two main objectives of our BAF are to demonstrate our commitment to searching for the best value solutions, irrespective of who delivers them, for meeting our customers' future water needs, and to reduce third party bidding costs to promote innovation within our sector.

By publishing this document, we want to give third party potential bidders the reassurances required to participate in the water resources, demand management and leakage services markets. We hope to achieve this by making clear the procurement processes and principles we will follow when evaluating bids. This should give assurance that we will evaluate third party bids is a non-discriminatory and transparent way, and not have a bias towards in-house solutions.

The BAF is intended to sit alongside our market information for water resources. The market information includes the key assumptions and economic data used to underpin our water resource management plan (WRMP). This will help third parties identify potential opportunities to provide innovative new solutions.

We developed our BAF in accordance with Ofwat's guidance provided in their final methodology for the 2019 price review: <u>appendix 8: company bid assessment frameworks – the principles</u>.

# **Principles:**

Our BAF has been developed based on the four key principles we commit to deliver against:

# Simplicity

Our principle of simplicity means that we have designed our BAF to be straightforward, so that making bids into our water resources and demand-side management markets will be as efficient as possible for all parties involved, reducing bidding costs and stimulating participation in the markets.

# Transparency

Our principle of transparency ensures that all potential third party bidders have visibility of both the award criteria and decision-based rules involved with selecting solutions. This approach will give bidders confidence that they are not facing information asymmetries with respect to other bidders. We hope this confidence will lead to more participation in the bidding market.

For all bids we will prepare an audit report showing the processes followed at each stage of the bid assessment. These audits will be kept and made available for Ofwat to review, to demonstrate we have complied with our BAF.

Equal treatment / non-discrimination

Our principle of equal treatment and non-discrimination means that all third party bidders will have an equal opportunity for competing for contracts. This principle also applies when third parties are bidding directly against our in-house options.

All third party bids will be reviewed by a separate water resources procurement team that aren't involved with the development of our own in-house options.

The water resources market information we publish will be available to all third parties on our website – this will mitigate the potential information barriers faced by some third parties.

# **Proportionality**

Our principle of proportionality means that the measures we require third parties to take in order to deliver successful bids are not beyond what is absolutely necessary to achieve them. For example, we will not over specify data requirements, as this could increase bidding costs which may result in some or all of the potential bidders withdrawing.

# **Application of principles**

A separate in-house water resources procurement team will oversee the third party bidding process. They will not have been involved with the development of our own in-house solutions. The purpose of the team will be to:

- Protect against potential conflicts of interest;
- Carry out an assurance review of the bidding process;
- Ensure there is no actual (or perceived) bias; and
- Safeguard against the misuse of commercially sensitive information disclosed by third parties as part of their bids.

The separate water resources procurement team will apply our four key principles when assessing third party bids against each other and when assessing bids against our in-house solution(s).

The procurement process will be documented as part of the wider compliance audit that will be retained and made available to Ofwat – should they request it. The process will include the reasons for accepting/rejecting bids.

# Compliance

The principles for company BAFs are based on and reinforce the key principles of procurement and competition law. They also require companies to comply with the requirements of water resource management planning and Ofwat's regulatory framework.

# **Procurement law**

The <u>Utilities Contracts Regulations 2016</u> (UCR16) set rules about the procurement of goods and services by water companies. The application of these regulations are dependent on the nature and value of the contract. However, when these rules do apply, companies are obliged to adhere to the relevant principles and requirements.

# **Competition law**

Companies are required to comply with competition law. Most notably, during the tender process, companies must not:

- Artificially narrow competition, for example where the procurement process is made with the intention to unduly favour or disadvantage certain (or all) parties.
- Distort competition in the market by abusing a dominant buyer position.
- Facilitate collusion between third parties by disclosing confidential bid information.

# WRMP processes

Water companies have a statutory obligation to prepare WRMPs every five years that cover a planning horizon of at least 25 years. The WRMP:

- Shows how incumbent water companies plan to maintain supply/demand balance and levels of service over the planning period; and
- Highlights the options necessary to meet changes in the balance while providing an appropriate level of resilience.

The guidance for the 2019 WRMP stipulates that water companies should engage with third parties that have the potential to provide options at a lower cost, or better value than incumbents' own in-house solutions.

The WRMP guidance sets out a process for appraising all the supply-side and/or demand-side options. This involves developing an unconstrained list of options; identifying the feasible options from the list; and deciding on the preferred option(s). Incumbents are required to evidence that:

- Third parties have been able to propose options for appraisal;
- Third party options have been appraised;
- Consistent screening/evaluation criteria have been applied at each stage of the process; and
- A preferred option (if appropriate) has been identified unless there is a clear explanation why third party options are not feasible.

The BAF compliments the WRMP process by clearly specifying the evaluation criteria that will be used to evaluate and appraise third party bids/options.

# **Ofwat's regulatory framework**

At present, there is no regulatory framework for regulating supply agreements between incumbent water companies and non-regulated third party providers of water resources. However, in due course, when <u>section 12 of the Water Act 2014</u> is enacted, the UK and Welsh Governments will be able to make such provisions about the regulation of such agreements.

# **Trading and procurement codes**

At the 2014 price review, Ofwat introduced water trading incentives for new water trades that were operating during 2015-2020. The trading incentives are subject to a cap, and in order for a water company to be eligible to receive such incentives, they needed to have complied with their Ofwat-approved trading and procurement code. Ofwat's requirements for trading and procurement codes are set out in <u>appendix</u> <u>3 of the 2014 price review methodology statement</u>.

Trading and procurement codes provide assurance that incentive payments deliver net benefits to customers and the environment. Ofwat have set out in <u>appendix 5 of the 2019 price review methodology</u> <u>statement</u> that water trading incentives will be maintained for the 2020-2025 period.

In November 2017, after a public consultation, Ofwat approved our <u>trading and procurement code</u>. We are keen to demonstrate to stakeholders that we are in principle willing to enter into water trades with third parties, providing such trades are environmentally and economically rational to do so.

# **Updating the BAF**

We will keep our BAF updated with the latest Ofwat guidance (and other regulations and guidance) as part of our BAF annual review.

# **Bid application process**

This section sets out each stage of the bid application process.



# Prequalification

The prequalification screening stage is intended to set out the mandatory requirements needed in order to be eligible to participate in the bidding market for water resources and demand-management solutions. This will ensure third parties do not commit resources to a bid if they will automatically be rejected.

To ensure the highest levels of participation possible, we have developed two versions of the prequalification questionnaire dependant on the nature of future bids (based on the size of the potential benefits to our customers);

- 1. Tactical supply options with capacity benefit less than 2MI/d (million litres per day).
- 2. Strategic supply options with capacity benefit greater than 2MI/d and/or all demand-side solutions (including leakage solutions).

Companies that pass the prequalification stage, will be added to our list of approved potential suppliers – this status will last for one year, after which companies will have to re-submit a prequalification application.

# **Needs specification**

The data tables published in our water resources market information (available on our <u>website</u>) set out at a water resource zone level, the key information needed by potential third party bidders to assess our needs for maintaining supply/demand balance.

# Time limits and bid clarification

In order to facilitate more bidding between the WRMP cycles, we will run an annual bidding cycle that coincides with our water resources market information refresh. For example if the annual market information update takes place in September, then the bidding process will run from September to August. During this time, approved potential suppliers that have successfully completed the prequalification screening will be able to submit bids.

We commit to acknowledging receipt of third party bids within ten working days of the bid arriving via email to [e.g. waterresources@ST...], providing the third party bid application forms (available on our <u>website</u>) have been correctly completed. In our response, we will make known any ambiguities or obvious data emission.

# **Bid application**

To reduce bidding costs we have designed a two-part bid application process. The first part is a rulesbased application form that captures the key scheme information needed for a pass/fail evaluation, which includes the following sections:

- Scheme overview
- Mandatory environmental information
- Indicative contract information

The second stage is a scheme-specific water quality (WQ) risk assessment, this will be managed by our inhouse drinking water safety plan (DWSP) team.

# **Evaluation**

We set out our evaluation criteria in our bid application form. This transparent, rules-based decision making process limits discretion and ensures equal treatment and non-discrimination.

The WQ risk assessment is to ensure the WQ risks and their appropriate control measures are identified prior to any binding agreement to progress the bid further.

# Governance

As set out in "application of principles", a separate water resources procurement team will oversee the third party bidding process. This is to ensure fairness, transparency and equal-treatment.

# **Compliance audit**

During preparation for contract award, we will prepare our audit report on both parties compliance with the processes set out in accordance with our BAF, trading and procurement, procurement and competition law, and the requirements of the WRMP planning guidance. This audit will be made available to Ofwat, ensuring the validity of the overall conclusion.

# **Communication of decision**

Our decision will be communicated to all bidders, including the reasons for acceptance/rejection of the bids within 90 days of the annual bidding cycle closing.

# **Disputes and complaints**

In the event that third party bidders have reason for complaints or wish to challenge our contract award decisions, we have setup a complaints portal. We commit to responding to complaints within twenty working days.



# **Trading and Procurement Code**

Ofwat-approved Severn Trent Water Version 1.1

Author WilliamMackveley Date November 2017

# Trading and Procurement Code

# Document guide

- Section 1 introduces our Trading and Procurement Code;
- Section 2 introduces Severn Trent, our main regulators, water resources and position on water trading (including existing trades);
- Section 3 sets out the key principles of water trades;
- Section 4 contains a glossary of terms
- Section 5 provides useful reference materials.

# **Version control**

| Version | Date Completed | Comments            |
|---------|----------------|---------------------|
| 1.0     | August 2017    | Original document   |
| 1.1     | November 2017  | Ofwat-approved code |
|         |                |                     |
|         |                |                     |
|         |                |                     |

# 1.0 Introduction:

This is the Severn Trent Water (Severn Trent) Trading and Procurement Code ("Code"). It has been written to clarify the policies, principles and requirements that are applicable when third parties, including other water companies enter into trades with Severn Trent.

# 1.1 Purpose of the Code:

In this Code we make clear our position that we are in principle willing to trade with third parties including other appointed water companies in a sustainable manner for economically efficient volumes of water. This includes raw, part and fully treated water.

Ofwat, the Water Services Regulation Authority is keen to encourage water trading between appointed water companies and other third parties where it is environmentally and economically rational to do so. Of wat introduced a financial incentive at the 2014 Price Review (PR14) to further encourage water trading in companies' water resource management plans (WRMPs), where it is efficient to do so. To protect customers, Of wat requires appointed water companies wishing to benefit from the financial trading incentives to be able to demonstrate compliance with an approved Trading and Procurement Code. Of wat will assess new trades for compliance at the next price review (PR19), to determine if a trade qualifies for a financial incentive.

# 1.2 Use of the Code:

This Code should be read in conjunction with the Severn Trent Water Network Access Code, available on our website. Where we enter into a trade for the export of water, such trades will be carried out in accordance with the operational and commercial arrangements contained within the Network Access Code.

We expect this Code to form part of a wider set of tools being developed by Ofwat to further encourage efficient water trading. We will keep our Code updates in accordance with Ofwat's requirements and principles.

This Code will be available to view on our website.

# 1.3 Contact Details:

Any queries or clarifications relating to this Code should be directed to:

Mr William Mackveley Senior Business Strategy Analyst Strategy and Regulation Severn Trent Plc Severn Trent Centre, 2 St John's Street, Coventry, West Midlands, CV1 2LZ. Email: William.Mackveley@severntrent.co.uk

# Any general queries relating to our Water Resource Management Plan should be directed to:

Mr Marcus O'Kane Wholesale Environment Planning and Strategy Manager Wholesale Finance and Performance Severn Trent Water Severn Trent Centre, 2 St John's Street, Coventry, West Midlands, CV1 2LZ. Email: Marcus.O'Kane@severntrent.co.uk

# 2.0 The Severn Trent position on water trading

This section provides an overview of Severn Trent, our water resources, our position on water trading, and an overview of our main regulators.

# 2.1 Severn Trent:

Severn Trentis an appointed water and wastewater company providing clean water to 7.7 million people, and sewerage services to 8.7 million people in an area covering 21,000 square ki lometres in the Midlands and mid-Wales. It is one of the largest companies in England and Wales, and is listed on the London Stock Exchange in the FTSE100.

Ourarea of operation shares borders with Dŵr Cymru (Welsh Water), Dee Valley Water, United Utilities, Yorkshire Water, Anglian Water, Thames Water, Bristol Water, Wessex Water and South Staffs Water. We also border on the areas served by newly appointed water undertakers (NAVs) including Independent Water Networks Ltd and SSE.

The water and wastewater supply areas are shown below in figure 1.

Figure 1: Water and Wastewater Supply Areas



# 2.2 Our Regulators:

We provide water and wastewater services to our customers in line with economic, environmental and drinking water quality regulations in accordance with UK and EU law, including the Water Industry Act 1991, the Competition Act 1998, the European Habitats Directive and the Water Framework Directive these are enforced by our regulators:

- Water Services Regulation Authority (Ofwat) is a non-ministerial government department, they are the economic regulator for the water and sewerage sectors in England and Wales, and are responsible for ensuring that the appointed companies provide consumers with a good quality and efficient service at a fair price. Of wat seeks to encourage water trading between appointed water companies and non-water companies, and has developed a financial incentive to facilitate this.
- Drinking Water Inspectorate (DWI) was formed in 1990 to provide independent reassurance that water supplies in England and Wales are safe and drinking water quality is acceptable to consumers.
- Environment Agency is our main environmental regulator and regulates our environmental activities in England.
- Natural Resources Wales regulate our environmental activities in Wales.

# 2.3 Water resources:

For the purposes of water resources planning, we divide the company supply area up into 15 (water resource zones) WRZs. These zones vary widely in scale, from the Strategic Grid which supplies the majority of our customers, to the small WRZs of Mardy and Bishops Castle which supply much smaller populations.

Our 15 WRZs as shown below in figure 2.

Figure 2. Water Resource Zones



OurWRMP is a 5 yearly document we publish to explain our proposals for making sure we have enough water available, in the right place and at the right time to supply our customers in an affordable and sustainable way to 2040.

Overthe next 25 years we face a number of challenges which we must address in order to maintain reliable water supplies to customers. Our plan in 2014 included:

- Replacing approximately 85 million litres per day of licensed water abstraction that is no longer environmentally sustainable due to tighter environmental regulations;
- Meeting the demand for water from the additional 1.6 million people expected to be living in the region;
- Coping with potentially lower riverflows during dryperiods as a result of climate change; and;
- Ensuring that we invest at an appropriate rate to address asset deterioration as our network ages.

Without new investment, our Strategic Grid and Nottinghamshire WRZs face some significant supply shortfalls in the long term as a result of the need to reduce abstraction from unsustainable sources and the potential impacts of climate change. These two zones will require new sources of water supply.

Our other 13 WRZs are less impacted by the need to reduce unsustainable abstractions, our modelling also shows they are more resilient to the impacts of future climate change risks. As a result our long term plans in these zones are to optimise the operation of our existing sources, and to manage demand through water efficiency and leakage control measures. This position will be updated as part of the WRMP19 process.

# 2.4 Water trading

Wefully support water trading between companies where it is environmentally and economically rational to do so. Water trading can be a means of ensuring that existing water resources are used more efficiently and effectively, when water is traded from areas of surplus to areas of deficit. Trading has the potential to protect customers' water bills by helping to reduce the costs of developing new water resources.

We have 43 bulk import and 24 bulk export supply agreements with a number of our neighbouring water companies. Our largest import is with Welsh Water via the Elan Valley Aqueduct, averaging over 300 Ml/day, and our largest export is with Yorkshire Water averaging over 50 Ml/day.

We are actively involved with the water resilience planning of our neighbouring water companies throughour participation in the Water Resources East (WRE) and Water Resources South East (WRSE) working groups. We have setup a river Severn work group to better understand the environmental and regulatory effects of water trading along the river, and also to provide a forum for other stakeholders, including regulators and other water companies to share their views on using the river Severn for additional water trading.

# 3.0 Keyprinciples of the Trading and Procurement Code:

We are prepared to trade with both appointed water companies and other third parties in a nondiscriminatory, transparent and responsible manner. Such qualifying trades will only be agreed to when there is sufficient evidence to ensure that there will be no detrimental impacts to either our customers or the natural environment. We will also only agree to import trades where it is economically beneficial to do so when taking into account quantity, quality, environmental and other relevant criteria.

Our Code is aligned to the guidance offered by Ofwat concerning water trading, any qualifying trades we take part in will be conducted in accordance with this Code. Any appointed water company wishing to receive an incentive for trading, both from imports and exports, must conform to an Ofwat-approved Trading and Procurement Code.

We will keep our Of wat-approved Code up to date with Of wat's requirements and principles, and make publically available on our website.

Water trade exports made by us will be done so in accordance with our Network Access Code, the latest version of which can be found on our website. For all qualifying trades, we will share with Ofwat the processes followed to demonstrate compliance with the Code when applying for water trading incentives. This should reassure both regulators and potential trade partners of the open and transparent processes.

The following Trading and Procurement principles, which set out the way we will approach proposed water trades with companies and third parties, are based on the guidance published by Ofwat.

# 3.1 Transparencyand audit:

We are committed to following transparent processes for assessing and operating water trades, as evidenced by the methodologies set out in our WRMP, without compromising the commercial position of any potential trading partner. We remain committed to working constructively with other stakeholders.

For all successful qualifying trades we will prepare an audit report that will examine the processes followed during the trade negotiations, and demonstrate that we have complied with all aspects of this Code. This will be submitted alongside our business plan for PR19.

# 3.2 Contract durations:

We will seek contract lengths that are fair and proportionate to both parties. Where large volumes of water are to be traded, we would prefer contracts of duration greater than 25 years, with long notice periods. This should allow both parties sufficient time to make alternative arrangements where alternative sources of water are required to maintain resilient supplies.

# 3.3 Ending trades:

We currently have several import and export trades with other appointed water companies, and report to Of wat on these trades on an annual basis. In order to qualify for trade incentives, the qualifying trademust have been agreed no earlier than July 2013 and be operating between April 2015 and March 2020. We assure Of wat and other interested parties that we will not manipulate

any of our existing trades in order to falsely obtain trading incentives. We expect the same of our current trading partners. If we agree to any new water trades, the audit report prepared for Of wat would evidence that the trades are new and not an existing one that had been artificially ended and restarted.

# 3.4 Assessing costs:

We will assess the costs of any potential water trade in the same manner to which options are considered in our WRMP. The environmental and economic credentials of all potential trades will be tested against the same Strategic Environmental Assessment (SEA) criteria as our internal schemes. We will take all reasonable steps to ensure costs are correctly allocated and fully recovered, and that trades are delivered at the least overall economic cost.

# 3.5 Relationship with WRMP:

Water trading will be considered equally against a number of options that will make up our WRMP 19 to maintain supply/demand balance across our 15 WRZs. The approach we will take for WRMP 19 will be similar to that taken at WRMP 14 (further details can be found in WRMP 14 Appendix D) and will comply with the latest water resources planning guidelines.

Trades are also considered as part of our involvement with the WRE and WRSE.

# 3.6 Economically rational trades:

We will commit to agree trades where it is economically sound and to the benefit of our customers, taking into consideration alternative supply and demand management schemes as part of the WRMP. A trade can only be economically rational if the whole-life cost is less than that of comparable alternatives, taking into consideration such factors as; water quality; sustainability; resilience; transport costs, etc.

# 3.7 Environmentally rational trades:

We are committed by UK law to protect the natural environment. Therefore all potential qualifying trades must not compromise our commitments. Our WRMP is aligned with these requirements, and we are proactively working with our environmental regulators to manage both water quality and flow issues arising from our abstractions. We will only agree to qualifying water trades where these would not have a negative environmental impact.

# 3.8 Imports to Severn Trent:

The following principles will be adhered to when pursuing qualifying trade imports:

# Equal and fair treatment:

We will treat all current and prospective trading partners fairly. Trading options will be considered with the same level of scrutiny and rigour as our own internal supply/demand solution options as part of our WRMP.

# Non-discriminatory procurement:

It is obligatory for all appointed water companies to consider water trades during the WRMP planning process. We are willing to enter into trade discussions with any third party on a non-discriminatory basis for example, we will provide all bidding parties with the same information.

As evidenced in Appendix 4 of our WRMP 14 we have considered a number of potential water trades with different parties.

# **Economic purchasing:**

We will only agree to trades where it is economically efficient to do so. Such decisions will be based on the principles set out in our WRMP. This means that we can reassure our customers and regulators that we would only purchase the most economically sound water resources available, taking into consideration factors such as water quality and quantity.

# **Competitive processes:**

Our future position for balancing water supply and demand makes it possible that an import from a thirdparty would be feasible. We are obliged under UK and EU competition law and whole heartedly support the use of competitive processes where more than one supplier is bidding to supply water. Should this be the case, a structured and competitive process would be applied to select the successful supplier. The details of which would be shared with Of wat when applying for any water trading incentives.

# Managing imports:

We manage our public water supply network over 15 discrete WRZs. We will work with our trade partners to ensure water imports into Severn Trent are as efficient as possible. Existing assets will be used where possible.

# 3.9 Exports from Severn Trent:

The following principles will be adhered to when pursuing qualifying trade exports:

# Equal and fair treatment:

We will treat all current and prospective trading partners fairly. Trading options will be considered with the same level of scrutiny and rigour as our own internal supply/demand sol ution options as part of our WRMP.

# **Costassessment:**

All qualifying potential trades will have their costs assessed to the same level of detail as other options considered in the WRMP and will be based on whole-life costings. Economic, environmental and social characteristics will be analysed to ensure that the trade is beneficial and least cost overall. We will seek to allocate costs correctly and ensure that costs are fully recovered from any trade agreement.

# Managing exports:

We will work with our trade partners to ensure our water exports are as efficient as possible, utilising existing assets and infrastructure to ensure costs are minimised where possible. Where new infrastructure and assets are required to enable exports, these will be built as efficiently as possible. If the whole life totex threshold is in excess of  $\pounds$ 100 million we would look to consider using direct procurement from third parties as a means to deliver these investments.

# 3.10 Other key principles:

# **Assignment:**

The trading partner must not assign a qualifying trade agreement to any other party, without the prior consent of Severn Trent Water.

# **Compliance:**

We will comply with all relevant laws and legislation, including the Competition Act 1998, and expect the same from our trading partners. Trades will need to comply with the Severn Trent Water Network Access Code, where applicable. Regulators will be kept informed (where necessary) when qualifying trade proposals are received.

# **Cooperation:**

Severn Trent and our trading partner(s) will cooperate with each other in the interests of the continuous provision of wholesome water in the case of potable trades and water resources in the case of raw water trades. Such provisions will take account of the maintenance and integrity of the public water network including associated treatment facilities where applicable.

# Managing emergencies:

We will have primary responsibility for managing emergency procedures relating to our water networks and water resources. Trading partners will be expected to cooperate with our emergency procedures during times of emergency when security of public water supply is threatened.

# **Qualifying trade:**

A qualifying trade is a new agreement with a third party including appointed water companies for the import of water and a new agreement with appointed water companies in the case of water exports. In order to qualify for trade incentives, the qualifying trade must have been agreed no earlier than July 2013 and be operating between April 2015 and March 2020.

# **Trade agreements:**

A trade agreement will need to be signed by both parties before a qualifying trade can commence. Such agreements will contain the terms and conditions of the trade.

# **Trade effects:**

All qualifying trades must have no detrimental impact to our customers in terms of service provision and/or water quality. In addition qualifying trades should have no detrimental impact on the natural environment.

# **Trade partners:**

A qualifying trade must be made between wholly unrelated parties. This does not preclude other companies within the Severn Trent group entering into trades which do not qualify for water trading incentives.

# Water quality:

Trades can be for potable, raw and part-treated water. Traders must abide by the Water Quality Protocols as specified by the DWI.

# 4.0 Glossary:

| Abstraction                          | The process of removing water from the natural environment.   |
|--------------------------------------|---|
| Abstraction License                  | The licence required to abstract water from the natural environment.  |
| Consumer Council for<br>Water (CCW)  | The statutory consumer body for water and wastewater consumers in England andWales.   |
| DEFRA                                | Department for Environment, Food and Rural Affairs.   |
| Drinking Water<br>Inspectorate (DWI) | The Drinking Water Inspectorate (DWI) is the independent regulator of drinking water in England and Wales, ensuring that water companies supply safe drinking water that is acceptable to consumers and meets the standards set down in law.  |
| Drought                              | A prolonged period of abnormally low rainfall, leading to a shortage of water. In the United Kingdom this is defined as 15 consecutive days with daily precipitation totals of less than 0.2 mm.  |
| Environment Agency<br>(EA)           | Regulator for the natural environment in England.   |
| Instrument of                        | The water (and sewerage) companies operate under Instruments of   |
| Appointment                          | Appointment, granted by the then Secretaries of State for the<br>Environment and Wales, or by the Director, to provide water and<br>sewerage services in England and Wales. The Instrument of Appointment<br>imposes conditions on the companies, which the Director is required to<br>enforce. |
| Megalitre (MI)                       | 1 million litres of water.  |
| Natural England                      | Natural England is the non-departmental public body of the UK<br>government responsible for ensuring that England's natural<br>environment, including its land, flora and fauna, freshwater and marine<br>environments, geology and soils, are protected and improved.                          |
| Natural Resources<br>Wales           | The regulator of the natural environment in Wales.  |
| Ofwat                                | The Water Services Regulation Authority (Ofwat) is a non-ministerial government department they are the economic regulator for the water and sewerage sectors in England and Wales.   |
| Potable                              | Water supplied for domestic consumption and/or food production purposes, as defined by the WIA91.   |
| PR14 (PR19)                          | PeriodicReview-everyfiveyearsOfwat, the economic regulator for the water and sewerage industry, sets price limits that enable water and   |

|                      | seweragecompaniestofinancethedelivery of services to customers, in                       |
|----------------------|--|
|                      | line with relevant standards and requirements. The most recent was made                  |
|                      | in 2014 (PR14) and the next one is due in 2019 (PR19).                                   |
| Price Control        | The limits set by Ofwat on the charges that appointed companies can                      |
|                      | make for their services.   |
| Sustainability       | Reduction in licensed abstractions required by Environment Agency in                     |
| Reduction            | England and Natural Resources Wales in Wales to ensure abstractions                      |
|                      | are not having a detrimental impact on the natural environment.                          |
| Water (and Sewerage) | A company appointed under the WIA91 to provide water (and sewerage)                      |
| Undertaker           | services in respect of a geographical area of England and Wales.                         |
| Water Trade          | An agreement between two or more companies to transfer water between them.               |
| WIA91                | The Water Industry Act 1991.   |
| WRMP                 | The Water Resource Management Plan is an appointed water                                 |
|                      | undertaker's strategic plan for managing water supply / demand balance                   |
|                      | over a 25 year period.   |
| WRZ                  | WaterResourceZone, the largest possible zone in which all resources,                     |
|                      | including external transfers, can be shared and, hence, the zone in which                |
|                      | all customers will experience the same risk of supply failure from a resource shortfall. |
|                      |  |

# 5.0 Useful reference materials:

The following list contains useful documents to accompany this Trading and Procurement Code.

| Competition Act   |
|---|
| Drinking Water Inspectorate   |
| Environment Agency  |
| Habitats Directive  |
| Ofwat's Guidance on Trading and Procurement Codes                     |
| Natural Resources Wales   |
| Severn Trent Water's Network Access Code                              |
| Severn Trent Water's Water Resource Management Plan 2014              |
| Severn Trent Water's Water Resource Management Plan 2014 – Appendix D |
| Water Acts  |
| Water FrameworkDirective  |
| Water ResourcesEast   |
| Water Resources South East  |

# PART 4: WATER RESOURCES RCV

This section sets out how we've calculated our water resources regulatory capital value (RCV).

# Water Resources RCV allocation - update

# About this document

This document includes information to support and explain the rationale for our proposed Regulatory Capital Value (RCV) allocation for Water Resources at the 2019 price review (PR19.)

Our submission is based on the proposed licensed areas as they will exist at 1 April 2020. We have applied to principles of our NAV application (June 2017) in transferring assets and RCV between English and Welsh licenced areas.

This document covers Severn Trent in England.

# Glossary

| Term | Explanation                      |
|------|----------------------------------|
| AMP  | Asset management plan            |
| APR  | Annual performance report        |
| MEAV | Modern equivalent asset value    |
| NAV  | New Appointment and Variation    |
| RAG  | Regulatory accounting guidelines |
| RCV  | Regulated capital value          |
|      |                                  |

# **Executive Summary**

# Proposed RCV allocation

In our January RCV submission we calculated a water resources RCV of 5.5%. This was based on rolling forward the 2014/15 net MEAV for water resources plus the cost of new assets, removing the value of assets no longer in use and adjusting for depreciation, RPI and reclassifications for reservoirs which were close to the 15 day storage criteria set out in RAG 2.07. The RCV was then allocated on the basis of the net Modern Equivalent Asset Value (MEAV) in the price control.

Although feedback on our approach was positive, we recognised that there was an opportunity to improve our calculations. With new water resource and bioresource price controls taking effect from 1 April 2020, it's important that our costs and information systems accurately represent the different price controls – both to support the markets, but also support more effective benchmarking to help drive efficiencies.

We therefore took the opportunity following our January submission to test our calculation and improve our fixed asset register by applying a bottom up methodology. This involved:

- reviewing each asset in the wholesale water asset register;
- using the source data to allocate between water resources and water networks plus on an asset by asset basis;
- re-analysing all WIP (assets under construction), manual journals and adjustments which were previously allocated on a % basis in the brought forward 2014/15 net MEAV and including these on an asset by asset basis which is mapped to the future price controls.

As part of the above program of activity we performed a deep dive on Reservoirs following the specific RAG 4 guidance on the classification of reservoirs into the correct price controls as below:

Water resources (Raw water abstraction) reservoirs are those that have:

- (1) their own abstraction licence or
- (2) natural catchment or
- (3) support downstream abstraction or
- (4) None of the attributes of (1) to (3) above but have 15 days or more usable storage

Water Network + (Raw water storage) reservoirs are those that are:

Storage reservoirs and other storage assets that are not captured by the definitions in raw water abstraction and have less than 15 days usable storage

Water cost centres are set up at an area level whereby multiple sites are assigned to a cost centre. We therefore use the finance location which is assigned to each reservoir site to identify which cost centre and therefore which profit centre and price control business unit the asset has been assigned to in the fixed asset register. The reservoirs were previously reviewed against the RAG 4 guidance and those requiring reclassification were identified and the respective values were then transferred from Water Resources to Water Network + as appropriate.

Through this bottom up approach we identified that one finance location was linked to multiple cost centres and we omitted the value of the second cost centre from the calculation of the transfers mentioned above.

In addition, all WIP (assets under construction), manual journals and adjustments which were previously allocated on a % basis in the brought forward 2014/15 net MEAV have been reanalysed and calculated on an asset by asset basis and mapped to the future price controls. This approach is more transparent, granular and consistent with the methodology we have used for our assured 17/18 APR process.

This results in an RCV of 8.4% or  $\pm$  368m of the 31 March 2020 total water RCV at 17/18 year end prices.

We consider this approach is more transparent, granular and consistent with the methodology we have used for our assured 17/18 APR process.

|  | a comparison to the 2014-<br>15 water resources net<br>MEAV                | <ul> <li>The net MEAV of both the current wholesale water control and the future water resource control using the MEAV fixed asset data at 31 March 2015 is rolled forward taking account of the following adjustments:</li> <li>actual and forecast additions and disposals;</li> </ul>  |
|--|--|---|
|  |  | <ul> <li>depreciation;</li> <li>adjustments of assets between Water Resources and Network plus to reflect RAG 4.06 guidance; and</li> </ul>   |
|  |  | • assets transferring to between English and Welsh licenced areas on 1 July 2018.   |
|  |  | The net MEAV at 2014/15 for water resources was 7.2% as a proportion of the total water wholesale net MEAV. The slight increase between 2014/15 and 2019/20 is due primarily to the net impact of transferring assets between the Severn Trent England and Severn Trent Wales areas of appointment including the large Clywedog and Vyrnwy reservoirs, and the adjustment of reservoirs between network plus and resources which offsets the England/Wales changes. |
|  | The effect on tariffs, total revenue and existing bulk supply arrangements | Since we are using an unfocused RCV allocation based on net MEAV there is zero impact<br>on wholesale tariffs and total revenue. This is because the implicit level of resource cost<br>already included within charges is based on net MEAV.   |
|  |  | Wholesale discounts for large users are based on reduced network charges. Allocating more or less to the water resources price control would change the value for network plus, which could in turn affect the balance between large users and other customers such as households. Using net MEAV preserves the status quo, so this balance does not change.  |
|  | The effect on the draft<br>Water Resources<br>Management Plan              | The proposed allocation has not had any impact on our draft Water Resource<br>Management Plan as we treat supply side and demand side options equally in our<br>adaptive planning process   |
|  | (WRIVIP)   | Our analysis is consistent with Water Resource Management Plan information;<br>Investment for additions in 18/19 and 19/20 is primarily to offset Restoring Sustainable<br>Abstraction licence losses that were required as part of the National Environment<br>Programme at WRMP14. This investment means that water resource capacity does not<br>change.   |
|  |  | Our draft Water Resource Management Plan 2019 includes investment to increase capacity. All schemes deliver changes to capacity between 2027 and 2031 due to long construction periods resulting in no change between 2020 and 2025.  |

# Approach

The approach taken to the RCV calculation is the same as that set out in the January submission. The only changes to the RCV calculation are those which result from the update of the input data to reflect the latest available forecasts, and which update the Price Control allocation of assets, following the detailed review of the fixed asset register.

Summary of changes to NMEAV since the January submission. Note (i) all values area at 17/18 year end prices, and can be found in the accompanying working file on the tab 'MEAV version of WS12a'; (ii) the *changes to the allocation of assets between business units* doesn't add to zero because some of the reallocations were to/from retail and waste.

| Change in Net MEAV vs Previous submission                  |          | £m WN+    |
|--|----------|-----------|
| Changes to the allocation of assets between business units |          | (452.954) |
| Additional assets transferred (England/Wales)              | (3.880)  | (56.308)  |
| Changes in forecast expenditure                            | (31.469) | (30.694)  |
| Changes in forecast capital maintenance charges            | (9.828)  | (67.089)  |
| Inflation from March 2017 to March 2018 prices             | 30.904   | 551.449   |
| Total changes  | 564.167  | (55.596)  |

When the above are translated into the impact on RCV this is as follows (as presented on table WS12a):

| Change in RCV vs Previous submission                       | £m WR   | £m WN+    | % change WR |
|--|---------|-----------|-------------|
| Changes to the allocation of assets between business units | 131.843 | (131.843) | 3.00%       |
| Additional assets transferred (England/Wales)              | 0.270   | (0.270)   | 0.01%       |
| Changes in forecast expenditure                            | (6.033) | 6.033     | (0.14%)     |
| Changes in forecast capital maintenance charges            | (0.774) | 0.774     | (0.02%)     |
| Sub total of changes                                       | 125.305 | (125.305) | 2.86%       |
| Inflation from March 2017 to March 2018 prices             | 7.862   | 134.048   | -           |
| Total changes  | 133.167 | (8.743)   | 2.86%       |

# Governance and assurance

As we noted in the Executive Summary, following the January submission we have taken the opportunity to improve our methodology and underlying data for the calculation of the water resources RCV. Although our feedback was positive we recognised that a further bottom-up assessment could provide opportunities to improve our position but also support more effective benchmarking at the price control level. This involved undertaking a bottom-up review of the asset registry.

We have established assurance and governance processes for our regulatory submissions that are explained in more detail in our <u>annual assurance plan</u>. This includes a three-lines of defence model.

In line with our risk-based approach, and in the light of the significance of this submission, we have employed all three lines of defence – with third line assurance being carried out by external assurance providers. The outcome of this assurance has been scrutinised by our Audit Committee, prior to approval of this submission by Board Committee on delegated authority from the Severn Trent Water Ltd Board.

More information on the outcome of this assurance, and the basis on which the Board has approved this submission, is set out in our accompanying assurance and Board statement.

# Changes to the allocation of assets between business units

# Adjustments to brought forward balances

The changes to the allocation of assets between business units noted above, is by far the most significant change to the allocation of the Water RCV. The change in allocation increases the Water resources RCV allocation by 3.0%. These reallocations are due to changes to the brought forward balances and are explained below.

In January 2018 we provided our initial methodology for allocating our wholesale water RCV and the resulting allocation to water resources based on net MEAVs utilising previously assured data.

This approach was based on a roll forward of the 2014/15 net MEAV for water resources (based on the full revaluation of all water wholesale assets carried out at PR09) plus the cost of new assets, removing the value of assets no longer in use and adjusting for depreciation, RPI and reclassifications for reservoirs which were close to the 15 day storage criteria set out in RAG 2.07.

Since the January submission, we have performed a bottom up approach, looking at source data and allocating between water resources and water networks plus on an asset by asset basis. This focussed program of activity to improve our underlying data within our fixed asset register has led to greater transparency across each component of our RCV allocation.

All WIP (assets under construction), manual journals and adjustments which were previously allocated on a % basis in the brought forward 2014/15 net MEAV have been reanalysed and calculated on an asset by asset basis and mapped to the future price controls. This approach is more transparent, granular and consistent with the methodology we have used for our assured 17/18 APR process.

As part of this complete review of the fixed asset data, we have identified that some of our larger reservoirs (which were not part of the initial review of reservoirs when the adjustment was made) were mistakenly included in the network plus control and we have therefore adjusted these assets from water networks plus to water resources.

This reflects the fact that reservoirs are allocated to different controls depending on certain features. The RAG 4 guidance on the classification of reservoirs helped to clarify this, specifically:

Water resources (Raw water abstraction) reservoirs are those that have:

- 1. their own abstraction licence or
- 2. natural catchment or
- 3. support downstream abstraction or
- 4. None of the attributes of (1) to (3) above but have 15 days or more usable storage

Water Network + (Raw water storage) reservoirs are those that are:

Storage reservoirs and other storage assets that are not captured by the definitions in raw water abstraction and have less than 15 days usable storage

Our cost centres are set up at an area level whereby multiple sites are assigned to a cost centre. We therefore use the finance location which is assigned to each reservoir site to identify which cost centre and therefore which profit centre and price control business unit the asset has been assigned to in the fixed asset register. The reservoirs were previously reviewed against the RAG 4 guidance and those requiring reclassification were identified and the respective values were then transferred from Water Resources to Water Network + as appropriate.

Through this bottom up approach we identified that one finance location was linked to multiple cost centres and we omitted the value of the second cost centre from the calculation of the transfers mentioned above.

The table below shows the total adjustments made as a result of this exercise. We identified a net £136m (0.2%) of assets included on the register which were over and above the value reported in the 14/15 accounts, relating to infrastructure balances. We also identified reclassifications required between the business segments. The large movement in Water Resources shown below is mainly the result of two large reservoirs which were previously reported in Raw Water Distribution.

| Total reclassifications £m           | Water resources | Water Network + |
|--------------------------------------|-----------------|-----------------|
| B/F NMEAV                            | 1,222.8         | 15,769.8        |
| NI GMEAV                             | 46.0            | (68.0)          |
| NI Depreciation                      | (39.3)          | 33.7            |
| NI NMEAV                             | 36.7            | (34.1)          |
| Infrastructure                       | 495.3           | (364.6)         |
| Total NMEAV adjustment               | 532.0           | (398.5)         |
| B/F adjusted NMEAV                   | 1,754.8         | 15,371.4        |
| % change                             | 43.5%           | (2.5%)          |
| Total NMEAV adjustment @17/18 prices | 559.8           | (415.3)         |

# **Other reallocation adjustments**

In the section above we covered the brought forward adjustments as a result of the review of the fixed asset register. There are some other adjustments which have also been made.

| Change in Net MEAV vs Previous submission                  | £m WR | £m WN+  |
|--|-------|---------|
| Changes to the allocation of assets between business units | 578.4 | (453.0) |
| Changes to b/f balances explained above                    | 559.8 | (415.3) |
| Other reallocation adjustments                             | 18.6  | (37.6)  |

# The remaining reallocations are as a result of:

| Description                | WR £m   | WN+ £m  |
|----------------------------|---------|---------|
| Removing intangibles       | (0.03)  | (77.92) |
| Principle user adjustments | (10.74) | 98.23   |
| WIP adjustment             | 30.10   | (58.14) |
| Other adjustments          | (0.74)  | 0.20    |
| Total                      | 18.62   | (37.63) |

As the brought forward balances were adjusted to align to the full register, this included the intangible assets. These have therefore been removed when calculating the NMEAV for the RCV allocation.

On review of the register it was also found that the principle user allocation, and the WIP allocation were based on a historical average rather than an item by item allocation. These balances have now been corrected.

# Allocation of assets between England and Wales

| Change in Net MEAV vs Previous submission     | £m WR   | £m WN+   |
|---|---------|----------|
| Additional assets transferred (England/Wales) | (3.880) | (56.308) |

The large assets moving between England and Wales haven't changed, however, the allocation of the pipeline assets was previously based on a split of the km of main in Powys vs England. When this data was reviewed against the km data to be submitted in the APR, it was noted that the original allocation had included abandoned assets. As there was a higher proportion of these in England the allocation of asset values to Powys has increased on removing these abandoned mains from the calculation. The change moves the allocation from 2.2% to 2.6% of mains infrastructure being allocated to Powys. This includes the raw mains included in water resources. The impact of this change is to move an additional £60m of Net MEAV (at 17/18 year end prices) to Hafren Dyfrdwy. However, as this change is broadly in proportion to the original allocation of NMEAV, this makes little difference to the RCV allocation for Severn Trent between Water Resources and Water Network Plus.

# **Changes in forecast expenditure**

| Change in Net MEAV vs Previous submission | £m WR    | £m WN+   |
|---|----------|----------|
| Changes in forecast expenditure           | (31.469) | (30.694) |

At the time of submitting our original RCV split for Water, we were in the process of reviewing our forward capital programme, in the light of efficiencies delivered and performance improvement required. Therefore our forecast spend was not fully locked down. That process is now complete, and as such this forecast has been updated to reflect our budgets for the remainder of this AMP. As we announced in our year end results, we are reinvesting some of the efficiencies delivered to date into our water capital programme. This additional spending is offset by efficiencies forecast, with the result that our capital additions are expected to be lower than previously estimated. The impact of this reforecast on the RCV allocation is to reduce the allocation to Water Resources by 0.13%.

# Changes in forecast capital maintenance charges

| Change in Net MEAV vs Previous submission       | £m WR   | £m WN+   |
|---|---------|----------|
| Changes in forecast capital maintenance charges | (9.828) | (67.089) |

The capital maintenance charge (depreciation) forecast has increased by £77m since the previous submission. It was found that since 14/15 our ERP system SAP had been using the 14/15 inflation (the annual RPI had been entered, but SAP was still linking to the old value). As this is broadly in proportion to the balances in the system, whilst the NMEAV values change, there is only a small impact which reduces the Water Resources RCV by 0.02% (as Water Resources has proportionally less non depreciating assets and therefore has a slightly larger relative depreciation value).

# **Changes in inflation**

| Change vs Previous submission                          | £m WR  | £m WN+  |
|--|--------|---------|
| Inflation (NMEAV) from March 2017 to March 2018 prices | 30.904 | 551.449 |
| Inflation to RCV from March 2017 to March 2018 prices  | 7.862  | 134.048 |

The values here are the inflation related to the uplift from 2016/17 to 2017/18 year end amounts. This is the only adjustment which actually changes the RCV value, the other adjustments simply rebalance the allocation between Water Resources and Network Plus controls. The inflation amount has been calculated as the uplift on the RCV balance. The split of the inflation impact between Water Resources and Network Plus is calculated based on the January RCV split and therefore makes no difference to the allocation.

# Alternative approaches used to cross check our selected approach

As set out in our January submission, we considered a range of alternative approaches and decided to use two alternative methods as cross checks against our adopted approach.

The two cross checks we applied were gross MEAV and post privatisation investment at full MEAV (CAPEX and IRE.) For simplicity and efficiency this comparison was made on 2014/15 figures (ie pre adjustments). The outcome of this analysis was that GMEAV gave similar results; and the post privatisation investment gave a lower figure. While each of the alternatives could be justified, we continue to believe that the approach to the calculation we have taken is most appropriate and so have not made any adjustment to our approach to the proposed RCV allocation.

# Impact on tariffs, total revenue and existing bulk supply arrangements

As set out in our January submission, the approach to RCV allocation has the potential to create distributional effects by impacting how we recover our costs via our different charges;

We previously considered the impact on tariffs and revenue of different RCV levels arising from different allocation approaches.

For this revised submission we have considered the effect of changing the net MEAV as set out in our final submission. This impact comes through if you look at the difference between net MEAV and alternative methods. This is tiny (less than 1000th of 1% in allocation). Therefore we still consider NMEAV as the most appropriate approach.

# Impact on the draft Water Resources Management Plan

Our analysis is consistent with Water Resource Management Plan (WRMP) information.

WRMP 2014 included investment in 18/19 and 19/20 primarily to offset Restoring Sustainable Abstraction licence losses that were required as part of the National Environment Programme. The water resource capacity at the two key affected sites, Uckington and Bromsgrove, will not change in AMP6 as the implementation phase of the schemes will not be completed until the end of AMP7.

WRMP 2019 includes investment to increase capacity across four sites. All these schemes deliver changes to capacity between 2027 and 2031 due to long construction periods. There is therefore no change to water resource capacity 2020 and 2025. The rest of the AMP 7 deficit is closed through a mixture of leakage reduction, demand side measures and investment to remove constraints in network plus assets. The RCV allocation has no influence on the balance of solutions between price controls in our adaptive planning process.

# PART 5: BIORESOURCES STRATEGY

This part of the appendix sets out our bioresources strategy.

# 1. Executive summary

The new bioresources price control provides us with an opportunity to deliver improved outcomes for customers from our bioresources operations. This part sets out our bioresources strategy to deliver these outcomes, and builds on the strong momentum we have created during AMP6.

Our plan will increase:

- the amount of renewable energy we generate from sewage sludge by approximately 20 GWh (9%);
- our capacity to treat sludge by 10,000 TDS per annum, which is in line with the estimated growth in our region;
- the volume of enhanced biosolids we produce by 68,000 TDS (input) per annum making our biosolids product more attractive for recycling to agricultural land; and
- our resilience to variability in sludge volumes or adverse weather.

Our overarching objective is to deliver the most effective service for our customers through frontier performance. We're investing over £200m in our asset base and optimising our existing operations to enable this, including investing in a further three advanced anaerobic digestion (AAD) sites using the thermal hydrolysis process. This will increase energy conversion, enable us to consolidate operations and close less efficient sites, while increasing the proportion of enhanced biosolids we produce.

The three sites we propose converting to AAD are near the major urban conurbations of Coventry, Gloucester and Nottingham and will complement our existing AAD sites in Birmingham and Stoke, and ensure we have the capacity to meet population growth.

Market opening provides opportunities for new suppliers, technologies and innovation. We'll explore and utilise the market to deliver the most cost effective service to our customers. We'll also market test all of our activities such as asset delivery, operations, liquor treatment and biosolids recycling. We plan to be active participants in the market by providing our services to other companies and have already actively engaged with all of our neighbouring water and wastewater companies, as well as the wider market place to ensure we're identifying and maximising market opportunities.

The key risks to our plan include accurately forecasting our sludge volumes, and legislative changes relating to renewable energy incentives, which may impact our operational capability and the recycling of biosolids to agricultural land. We have plans in place to mitigate these risks.

We've reviewed our RCV submission for bioresources and we're submitting a revised value of **£501m**. The detail of these changes are outlined in part 6 of this appendix and largely focuses on decisions taken before 2020 in order to utilise our anaerobic digesters in a more innovative and value-adding way.

In summary, we've prepared a plan that we believe will deliver exceptional value for our customers, and will push at the frontier of the new bioresources price control.

# 2. Our current position

By 2020 our AMP6 programme will have delivered:

- A 35% increase in renewable energy generation from sewage sludge;
- Two new thermal hydrolysis process (THP) digestion sites at Minworth (near Birmingham) and Strongford (Stoke-on-Trent);
- An additional 23,500 tonnes of dry solids (TDS) of capacity per annum; and
- A further 23,000 TDS of enhanced biosolids processing capability above our PR14 commitments a total of 81,180 TDS per annum.

We've already started trading with other water and wastewater companies to better understand the value of opportunities and the controls needed in the new price control environment. These early trades will inform legal and operational practices, and ensure we establish robust trading arrangements for the long term. Our view is that there are some immediate opportunities, which we've included in our plan. The longer-term, larger-scale opportunities are less clear and will need to be tested through conventional procurement processes. Our aim will be to provide maximum value and resilience for our core operations.

Our THP programme in AMP6 has created the capacity that allows us to deliver the growth and quality requirements that we outlined in our PR14 plan.

The rest of this plan outlines how we intend to build upon this performance and deliver further improvements, as we establish the operations to deliver in AMP7 and grow our capability by 2025.

# 3. Our bioresources strategy

Our objective is to be at the frontier for bioresources performance in 2025 to deliver the best outcome for our customers.

We are seeking to deliver the lowest whole life cost to treat a tonne of sewage sludge and will do this by building upon our AMP6 strategy of AAD using thermal hydrolysis process (THP) at three additional sites. This technology improves our renewable energy generation and also enhances the quality of our biosolids, which is essential to ensure a high quality product to recycle to agricultural land and is the best environmental option for sewage sludge.

The implementation of three further THP sites enables us to continue to consolidate operations into fewer strategic sites that deliver a lower unit cost to treat. The three sites we propose to convert to THP are near the major urban conurbations of Coventry, Gloucester and Nottingham and are surrounded by a number of smaller sludge treatment facilities (STFs) which will be closed as digestion sites and converted to dewatering and transport facilities. THP hub sites can process sludge with higher solids content, which therefore reduces our overall cost of transportation.

Bringing larger volumes of sludge into these more efficient sites enables us to increase the volume of biogas produced for export. Our current plan focuses on the use of biomethane, either for grid injection or use in transportation. We understand these technologies well, and we've already developed two biomethane sites of our own.

Moving forward, we envisage using THP in a slightly different way. We're assessing a number of potential process flowsheets to ensure we implement the technology so it adds the most value for the least capital cost. We believe that by utilising emerging market opportunities and engaging with new technology suppliers we'll improve the value and resilience of our digestion process.

We'll also optimise the routing of our raw sludge to treat it in the most cost efficient way, including the use of third party digesters where it's cost beneficial to do so. We've included this in our plan. And where it's cost beneficial for our neighbours, we intend to import our neighbouring wastewater companies' sludge into our treatment process. Any benefits from this activity will be shared with our customers.

We will invest to ensure our existing capacity is efficient and available for operation. This includes investing in new capacity for chemical sludges from wastewater processes and population growth if required. Overall our investments are focused on developing long-term resilience at an efficient unit cost to treat (UCT). We've challenged all our investment decisions to focus on the lowest possible capex and developing the lowest UCT.

# 4. Harnessing technology and innovation

In addition to utilising the latest THP flowsheets to enhance value, we're also considering a number of innovation investments to ensure we achieve the lowest cost to treat. Our application of technology and innovation focuses on delivering against four key value drivers which are summarised in the table below:

| Improved energy recovery              | <ul> <li>New processes for advanced thermal conversions are available in other waste treatment markets. So far market penetration into wastewater has been slow due to energy balance challenges. We intend to explore the possibility of thermal conversion of materials from processes like:</li> <li>pyrolysis</li> <li>gasification</li> <li>super critical water oxidation</li> <li>If any of these processes can be commercially advanced they have the potential to increase energy generation from sewage bioresources to much higher levels.</li> </ul> |
|---------------------------------------|--|
| Lowering the cost to treat<br>further | The current industry view is thermal hydrolysis delivers the lowest cost to treat,<br>however does consume large amounts of heat and power.<br>Key to pushing the industry forward will be the delivery of new technology that can<br>produce better quality outputs and consume less energy. There are many potential<br>processes which may deliver future benefits. We'll keep a watching brief and invest<br>where appropriate.  |
| Recovery of high value<br>materials   | Biosolids contain high value chemicals; the challenge is how to extract and market these chemicals in a better way. We'll look at options for the extraction of ammonia, carbon dioxide and phosphorous as saleable products as well as more complex fats and amino acids that could be utilised in other industries.  |
| Enhancement of energy generation      | Combined Heat and Power (CHP) remains the industry benchmark for electrical generation. We'll look at the potential for new energy production like fuel cells and the conversion to hydrogen. We'll also explore the potential for utilising power and gas in vehicles to decarbonise our transport fleet.   |

Our people are key to ensuring we operate and maintain our assets in the most cost effective way. To ensure we focus on the new opportunities in bioresources, we've separated the activity from our waste operations to ensure clear accountability and a focus on performance. We'll develop our people to ensure they have the skills for operating the new processes and for driving improvements. And we will be undertaking capability development with our people to ensure they are trained and empowered to deliver the best outcomes.

# 5. Exploring emerging market opportunities

As the bioresources market develops, we anticipate a range of opportunities emerging. We've already explored three areas:

# Sludge Trading

In readiness for the 2020 market, we've already commenced engaging with other water and wastewater companies to identify the best bioresource opportunities and how we can deliver efficiency through cross border trading.

We've agreed cross border trading terms with three neighbouring companies, which has resulted in us importing sludge. This is a step to enable mutual resilience in the short term and reduce the need for unnecessary construction.

The geographical arrangement of the North Eastern corner of our region in particular makes it an ideal location for trading where we and our neighbours have sludge treatment centres in a practical proximity. This will improve collection routes and methods of operation. We will develop relationships with our neighbours over the next two years as we prepare for 2020.

We've also included a provision in our plan for exporting sludge to neighbouring companies and/or third parties for treatment and disposal. An initial study undertaken using shared GIS data and pricing for treatment/tankering has shown an opportunity to drive best value by exporting around 4,300 TDS.

We've included efficiency in our plan resulting from market efficiencies. For example, our quality and growth capital spend is £10m below our forecasted cost if we had to deliver our own capacity to treat.

#### **Liquor Movement**

We currently have a mixed portfolio of sites - some that utilise liquor treatment processes to reduce ammonia and others that discharge liquors back to the inlet of a co-located sewage treatment works. Currently, we believe the benefit of transporting these liquors away is low and is cost prohibitive. We are developing our understanding of the content of our dewatering liquors so that we can understand the relative benefits of liquor treatment versus effluent treatment at all sites.

Our plan currently forecasts no additional capital investment for liquor treatment. If liquor treatment is needed we expect it will be self-funding.

With regards to liquor treatment cost allocation, we do not currently, nor plan to, recharge costs to sludge treatment from sewage treatment when liquor is returned to the inlet of a co-located sewage treatment works. This is based on the current guidance in RAG 4.07 (appendix 5 – page 118) where liquor treatment activity sits within 'sewage treatment and disposal' on a co-located site for all returned liquors. Where there are dedicated liquor treatment plants, this activity and cost is captured within sludge treatment activities and not recharged to sewage treatment. This ensures costs are only captured once for the net liquor returned to the sewage works; aligning to business activity and conforming to regulatory guidance. We recognise that the output of each process could impact the other, but viewing costs in this way should drive efficiency by ensuring the activities are fit for purpose and deliver the best outputs possible.

#### **Biosolids recycling**

We're already investigating how we may effectively recycle other companies' biosolids waste after digestion. We're developing arrangements to take it to land on behalf of one company in the North West of our area. By improving the quality of our biosolids, we increase the availability of the land bank in our region which we can use to offer a service to other water and wastewater companies to benefit both sets of customers. We are hopeful that reciprocal arrangements will be available if we need them.

# 6. Key risks

The creation of the bioresources price control and introduction of competition, exposes a wide range of risks, which we are actively seeking to mitigate. The two most material risks relate to forecasting sludge volumes and changes to legislation, specifically in relation to renewable energy incentives.

#### Managing our sludge volume throughput

As outlined in Appendix 6 of the Delivering Water 2020 plan, we're evaluating our sludge volume throughput position. We believe it's our largest risk area and the precise measurement of bioresources solid content is variable on a site by site basis. However, while we do have some concerns over the quality of this data, we have plans in place to address this.

We've initiated a £1.6m investment in the installation of improved sludge loggers with the aim of producing more reliable data for all sites at the end of 2018/19 financial year. The loggers provide complete coverage for all sites and we are confident this will provide a more complete view to accurately determine our sludge volumes.

If we discover a variance from the new loggers from our reported sludge volumes prior to 2020, we will engage with Ofwat before the start of the charging period to determine the implications. We believe this will satisfy the objective to improve the quality of our sludge monitoring and ensure we give even greater transparency and confidence to our costs and throughput. It will also protect our customers from bill uncertainty as we approach the start of the new charging period in 2020.

# Legislation

The current plan utilises and assumes continuing government support for Renewable Energy Incentives. Biomethane is currently supported under the Non-Domestic Renewable Heat Incentive (NDRHI) but this support will be closed to new entrants in April 2021. The Government has published a number of strategy papers – most significantly the Clean Growth Strategy which has indicated there will be a level of support for renewable energy beyond 2021. In building our plan, we've assumed we'll be able to deliver a level of income that could change if government support changes. If the risk materialises, we will re-evaluate the best way to generate income from biogas.

# 7. Summary

We welcome the new price control opportunities. Our plan seeks to balance costs, opportunity and risk to deliver best value for our customers, and provides a framework for future growth, delivering:

- sustainability by producing more renewable energy and enhanced biosolids for recycling;
- the lowest cost of construction for multiple schemes;
- innovation in the use of technology and markets to find best value;
- a focused team to deliver on the opportunities; and
- improved resilience of capacity by establishing effective trading routes.

# PART 6: BIORESOURCES RCV

This part of the appendix sets out our how we have calculated our bioresources regulatory capital value (RCV).

# **Bioresources RCV adjustment**

As part of the plan we've re-valued the bioresources business when the price controls are split in 2020. We originally submitted our first view of the plan in September 2017. Since that date we've reviewed some of our submission in light of feedback from Ofwat and changes to our strategy between now and 2020. We've also given greater consideration to the impact of inflation between financial years. We've set out the changes to the bioresources RCV as previously submitted on 29 September 2017 (the 'previous submission').

# Overview of changes (£m)



The net overall increase from the submission on 29 September 2017 is £45.140m.

# Inflation from March 17 to March 18 prices

This is the calculated impact of the change in RCV from March 17 to March 18 prices. RPI has increased from 269.3 to 278.3 (3.34%) generating an increase of £15.2m on the previous submission.

# Change to sludge assets in existence (and land valuation)

As previously submitted and highlighted in the financial statements for the year ended 31 March 2018; we've identified a number of sites that will no longer be used for sludge digestion in AMP7. In addition to those previously listed, Sutton in Ashfield has now been identified as a site that will no longer be used for digestion and as such the £1.7m of RCV value ascribed in the previous submission has been removed from bioresources (enterprise value £1.0m, land value £0.7m).

More than offsetting this is the proposed new investment in Minworth (referred to as Minworth A block) that will see four, currently surplus, digesters reconfigured to work with the new THP plant that's being commissioned in 2018. It will allow for an additional 30tds/day (circa 11,000 tonnes/year) to be treated and will cost £8.5m. This valuation is consistent with the incremental cost to construct the asset for a hypothetical entrant.

We note that the intended closure of Sutton in Ashfield and opening of Minworth A block will have no impact on our tanker fleet or the assets thereof. We're currently undertaking an exercise to rationalise our tanker bases down to 11 key sites, with assets being used throughout the network so that sludges can be moved efficiently.

The net of the above represents an increase of £7.5m in 17/18 prices relating to the sludge assets in existence.

#### Changes to the gross cost of hypothetical new assets (excluding land)

As identified in the feedback from Ofwat and our subsequent reviews of site capacity, we've noted that our initial submission understated the capacity of the hypothetical assets by circa 20,400 tonnes of dry solid (this excludes the incremental Minworth A block capacity). The feedback now leads us to determine the RCV based on the expected asset capacity rather than forecast flow (after adjusting for confidence) for the new entrant at 2020. This improvement has been enabled by updated forecasts based on another year of data, further refinements of our sludge logger data and a review of retention times to provide more robust information for this exercise and the PR19 process.

The amended total capacity available in 2020 will be 332,000 tonnes of dry solids per year after the completion of Minworth A block. This represents headroom of 28.9% based on updated forecast sludge volumes in 2020 of 257,600 tonnes of dry solid. Maintaining this level of headroom allows for winter peaks to be managed more effectively and supports a lower maintenance costs with the ability to shut sites for proactive works.

Using our existing and assured model for calculating the size of assets required to deliver such a throughput of sludge, we have net overall uplift to the theoretical value of assets a new entrant would require of £17.9m.

#### Changes to differences in revenue and costs between hypothetical and new assets

As outlined in our document on 8 December 2017, we've corrected a number of issues in our initial submission at that date, having the effect of increasing the RCV by £8.3m (£8.1m in 16/17 prices) relating to:

- an input error for maintenance costs at Scunthorpe; and
- two incorrectly calculated NPVs for ROC income at Barnhurst and Newthorpe.

The additional capacity of Minworth A block includes an investment in a new biomethane to grid rig to use the extra energy generation and drive better value from existing gas production. The RHI application has been submitted with completed financial close assurance, leading to a new income stream not available to a new entrant, adding £10.8m to the RCV in NPV terms. While this increases the value of the RCV, it will drive down the overall cost to treat and therefore lead to a better result for customers (i.e., those customers who pay for the new bioresources capability will benefit from the reduced overall price).

We highlight that aside from the above adjustments, no further changes are made with respect to this category. We previously outlined that a new entrant would not be able to access legacy renewable incentives that the existing business has use of and therefore would not generate any additional income to close the gap of an existing company – giving rise to an increase in the RCV of the existing business. We're not aware of any changes to legislation that would impact these legacy locked-in agreements nor any future changes that would erode the RCV value and future income streams.

We also highlight that while we are driving efficient treatment costs in bioresources, a new entrant would be expected to perform at the same level of an upper quartile company. Therefore, there is no difference between the operational running costs of the existing and hypothetical new entrant as previously proposed, despite average costs to treat decreasing in the current financial year.

# Converting inputs to real not nominal prices to allow discounting at WACC

The previous submission included the difference between income and cost of the current company and a hypothetical entrant at nominal prices. However as per the guidance received, to discount at the current WACC (3.6%) these needed to be returned to real prices. This adjustment represents the change as already communicated, uplifted to 17/18 prices.

# **Other adjustments**

The remaining categories of adjustment as outlined in table WWS12 are discussed below and why there is no change to the original submission:

| Category   | Commentary  |
|--|---|
| Changes to the allocation<br>of assets between<br>business units                         | Whilst completing the assured APR process for the year ended 31 March 2018 no changes to the allocation of assets used between business units were identified. The relatively low percentage value of ascribed shared assets between bioresources and waste network plus is not unexpected. Directly allocating assets to one or the other covers the vast majority of the asset base with the remaining split on the most prevalent driver for that asset type. Our large investment in new technologies drives the majority of the value and it is directly aligned to bioresources.  |
| Changes to the<br>adjustment for the<br>remaining economic life<br>of existing processes | After reviewing the fixed asset register and SEAMS model for the age of our sludge assets we have not made any adjustments to those submitted previously. Assessing the condition of our assets is subjective and opinions on condition and capability will therefore differ as a result. Basing our RCV value on the accounting age is more akin to the RCV run off and the difference in the maintenance costs will be fed through the operating costs. The maintenance schedules are driven by the asset age and expected maintenance programmes and so using this approach provides a holistic view with an observable baseline, in asset age, that is consistent to both capex and opex spend and therefore most aligned to totex. |
| Changes to land<br>valuation   | The valuations completed of the land allocated to bioresources in the previous submission have not changed given this type of land is not readily saleable as a result of its proximity to large waste treatment works (excluding the uplift for inflation). The total RCV value attributed to land has only decreased as a result of our decision regarding the use of Sutton-in-Ashfield.   |

#### Impact to customers

The overall increase of the above adjustments is to raise the RCV of bioresources by £45.140m; £29.896m without the effect of the changing price base. As previously set out, the expected impact of this on a customer's sewage bill as a result of having an RCV around £500m will be an increase in the range of 0.31% and 0.87%, as a result of RCV run off. However, offsetting this increase, will be the reduction in net operating costs driven as a result of the new Minworth A block program that will reduce overall net operating costs of the operation. Therefore, whilst a customer who receives a bioresources service will pay more as a result of increased RCV run off, they will also benefit from the reduced operating costs of this investment to pay less on a net basis. As with the creation of this price control, these adjustments have the desired effect of transferring the assets relating to providing the bioresources service to the customers who will pay for them and ensuring the cost efficiencies are returned through the appropriate bills.