

Water Infrastructure



Thames Water Utilities Limited: The Business Case of a Regulated Utility

CASE (A)

The Business Case for Sustainable Infrastructure

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Prof. Spiro N. Pollalis prepared this case study with researcher Evgenia Hagistavrou at the Zofnass Program as the basis for research and class discussion rather than to illustrate either effective or ineffective handling of the design, the construction, or an administrative situation.

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Part 1: Introduction

A water company's singular nature of business

The water sector provides vital public services, including potable water supply, sewerage treatment, flood control, and environmental protection. A water company is by definition a social enterprise, meeting some of the most basic needs of a society, so its corporate culture and service should reflect such public purpose. Customer service is also integral to the full breadth of services that water and wastewater companies provide.

The water sector faces challenges in performing its mission at affordable prices. Uncertainty and volatility as future attributes, to a degree not historically witnessed, make it rather inappropriate to predict what a business needs to do in the future based on past experience. *Utilities find themselves in uncharted territory for 2019 and beyond.*¹ In the case of the UK, the challenges of the sector are more complex and dynamic than ever before: population growth, increased frequency of extreme weather events that will be further exacerbated by climate change, rising customer expectations as service expectations are being redefined by the global online economy, and macroeconomic and financial market changes that make day-to-day operations increasingly expensive. Utilities are expected to provide a “business as usual” service while preparing for the transformation required for meeting future challenges.

What it means to be a private utility

A private² utility has the privilege of being a monopoly provider of essential services.³ The responsibility, in the absence of competition for most of its activities, is to safeguard the customer against excessive charges. The company spends money on behalf of its customers to deliver the level of service that customers need and are willing to pay (Customer Willingness to Pay, or “WTP”).⁴

Water and sewerage companies implement large-scale investment programs to maintain their assets and meet their legal environmental and quality obligations. Where these investments are in excess of amounts collected from customers, they fund this investment from the financial markets, either through borrowing (debt) or through investment from shareholders (equity).

Important to the nature of a private utility is the issue of how value is created and shared among investors, customers, and the environment and how risks and rewards are balanced, with the company's business plan being assessed not only in economic but also in environmental and social terms. They perform a vital public service with the imperative to continue in the long

¹ Suzanne Heneghan, “It’s time for change,” New Deal for Utilities, January 18, 2019.

² In this case study the term “private utilities” refers to non-state-owned utilities either privately held or publicly listed.

³ As stated in the September 2018 regulatory submission of the Thames Water PR19 Business Plan (title: “Here for you: Thames Water Business Plan 2020-2025”): “We recognize the responsibility of being a monopoly provider of essential services and the need to build trust with those who rely on us – our customers and stakeholders. They need to understand what we’re doing and why.”

⁴ As an example of Customer Willingness to Pay estimates: Work led by Water UK on the water resources long-term planning framework identified a central estimate of household willingness to pay of £80 per year per avoided day of interruption per year from emergency drought orders.

term. If vital public services lose legitimacy, they will attract enormously negative press that will, among other things, put the sector at risk.⁵ This is why water companies are subject to regulatory monitoring and public scrutiny.

Business reporting is one of the critical drivers of the vital public trust and confidence in the sector. “Particularly when it comes to provision of essential services, like water, people care about corporate behavior, dividends, executive pay and whether a company is providing a social and environmental benefit.”⁶ The companies report their performance and commitments in annual reports and financial statements, and annual performance reports. Furthermore, depending on the circumstances, companies produce corporate responsibility and sustainability reports. These reports contain a baseline level of information comparable across companies, based on guidance by the regulator, e.g. view of the companies’ progress towards objectives, but also provide information on where companies have fallen short, with details of fines, regulatory rewards, and penalties. The quality of information provided is rated by the regulator.

The UK water sector and Thames Water Utilities Ltd

This case study focuses on Thames Water Utilities Ltd (TWUL) , a UK privately owned utility or licensed utility as defined in note 2. Thames Water is the largest water and wastewater services provider in the UK, serving 15 million customers across London and the Thames Valley, equivalent to approximately 25% of the population of England and Wales. The UK water industry consists of 10 water and sewerage companies and 7 water-only companies. They are natural monopolies subject to high levels of scrutiny and economic regulation. Water companies operate under a 25-year rolling license.

TWUL service:	
water	Supply of 2.7 bn L/day of potable water to 10 million people
wastewater	Treatment of 4.4 bn L/day of sewerage for 15 million people (c. 25% of England and Wales population)
TWUL manages:	
water	31,000 km of water distribution network
	97 treatment plants
	221 pumping stations
	26 freshwater reservoirs
	235 clean water service reservoirs
wastewater	32 water towers
	109,000 km sewer collection network
	351 wastewater treatment plants approx. 4,780 pumping stations

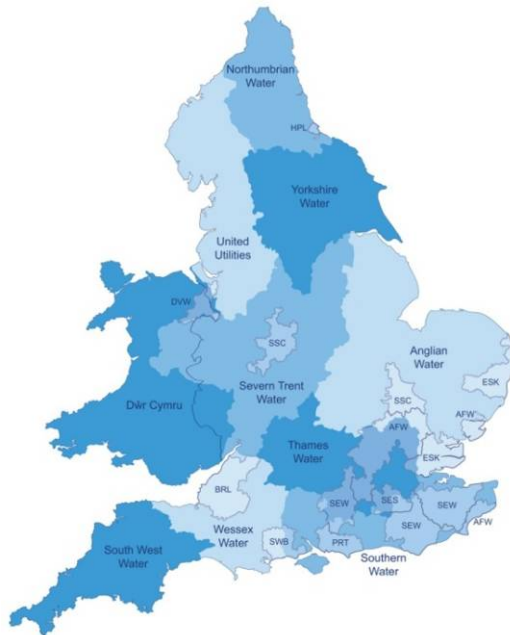
Thames Water, due to its specific area of service, is in the center of the most challenging future scenarios of population growth and concentration in the south and east of the UK, where water is scarcest.

⁵ Cathryn Ross, Chief Executive of Ofwat, “Sector Challenges and Water 2020,” October 15, 2015. There is a growing trend toward environmental, social, and governance (ESG) integration amongst companies and investors, not just as a socially responsible act but also as a key differentiator, providing organizations with a competitive advantage and leading to improved long-term financial performance.

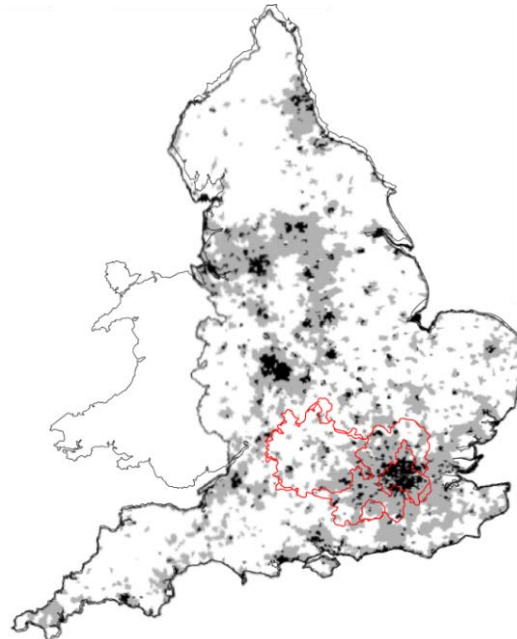
⁶ According to Rachel Fletcher, chief executive of Ofwat UK’s water industry economic regulator.

- In 2018 London surpassed its highest ever population, and the Thames Valley is a focus for ever more ambitious housing development plans⁷.
- Some of the most deprived boroughs in the UK are within its service area, and income inequality is likely to increase during the next four years in historical record terms (since 1980s).⁸

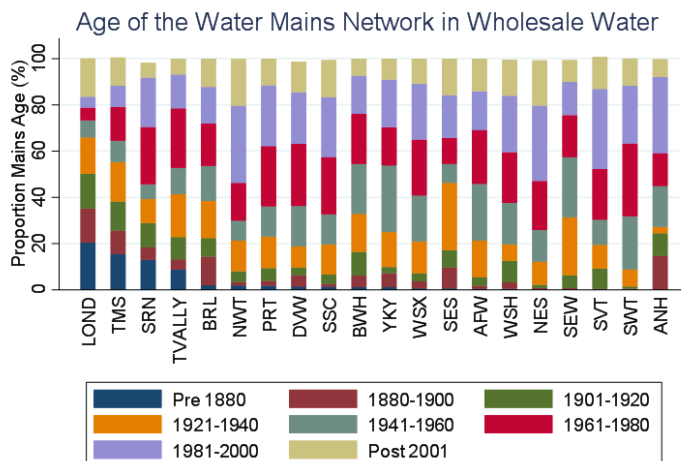
Moreover, the company’s network is aged: “our pipes are on average, 80 years old, with 34% of our pipes over 100 years old. 67% of our leaks are under London, making them more challenging, disruptive and costly to access.”⁹



UK water and wastewater companies service areas¹⁰



TWUL service area vs. urban centers distribution across the UK



Summary of Abbreviations	
AFW	Affinity Water
ANH	Anglian Water
BRL	Bristol Water
DWV	Dee Valley Water
NES	Northumbrian Water
PRT	Portsmouth Water
SBW	Sembcorp Bournemouth Water
SES	Sutton & East Surrey Water
SEW	South East Water
SRN	Southern Water
SSC	South Staffordshire Water
SVT	Severn Trent Water
SWT	South West Water
TMS	Thames Water
UU	United Utilities
WSH	Dŵr Cymru
WSX	Wessex Water
YKY	Yorkshire Water

LOND	London portion of TMS network
TVALLY	Thames valley portion of TMS network

⁷ Foreword by Steve Robertson, September 2018 submission of Thames Water PR19 Business plan.
⁸ Projections based on a report from the Resolution Foundation think tank (as referenced in September 2018 submission of Thames Water PR19 Business plan).
⁹ September 2018 submission of Thames Water PR19 Business plan, Appendix 4, Resilience.
¹⁰ <https://corporate.thameswater.co.uk/>

As of the end of 2018 and during 2019, the company is in the process of discussing with the regulator the need for investment and related customer charges for the period ranging from March 2020 to March 2025. The process is called price review (PR), and companies and the economic regulator need to agree on a plan able to take into account customers' preferences and present and future-related challenges (for example, the company analyzes water supply-demand balance for the next 80 years). Apart from the asset and future-related challenges, the company has to account for its past performance, mainly through fines for pollution incidents and penalties for missed leakage targets. These aspects are reflected in a certain level of negative press and impact the company's public image. Furthermore, there has been a general public criticism against levels of executive pay in UK utilities and water companies relative to their performance. Steve Robertson, Chief Executive of Thames Water, highlights that "Thames Water is a company in the process of transforming itself, which is being shaped by this sort of meta-dynamics." It is interesting to focus on how the company has responded and how such responses are reflected in its five-year business plan.

Part 2: The UK privatized water sector

The Thames Water Authority was founded in 1974 under the terms of the Water Act 1973. Before that, the ownership of water and wastewater systems across the UK was divided among 180 bodies with increasingly difficult coordination. The 1973 Act simplified the way that water and wastewater services were provided and regulated, leading to the creation of ten major water authorities, defined geographically around river basins.¹¹ Thames Water Authority was the largest, serving the most densely populated area.

Privatization of the water and wastewater sectors in the UK

The water and sewerage sectors in the UK were privatized in 1989, with the passing of the 1989 Water Act, and entered the stock market. A key reason for the privatization was to address the many years of underinvestment in water and wastewater infrastructure during public ownership. Moreover, faced with impending EU environmental legislation, it became apparent to the authority's management that the existing structure could not facilitate the significant changes in investment levels that the new laws would require.¹²

Privatizing the water industry raised the issue of preventing the use of monopoly power and identifying which functions should be privatized. The Act was a complex and ambitious piece of legislation, which created the National Rivers Authority (Environment Agency) and a regulatory framework to prevent the abuse of monopoly power.¹³ The water and wastewater undertakers' functions and duties were outlined in the 1991 Water Industry Act.

What privatization has delivered so far

Privatization has raised investment of £130 billion into the UK water sector as of 2017.¹⁴ In the case of Thames Water, the company's average yearly investment has increased from £350

¹¹ <https://corporate.thameswater.co.uk/About-us/our-business/our-history/Water-treatment-and-privatization>

¹² <https://corporate.thameswater.co.uk/About-us/our-business/our-history>

¹³ <https://corporate.thameswater.co.uk/About-us/our-business/our-history>

¹⁴ Ofwat, "Water sector overview," <https://www.ofwat.gov.uk/regulated-companies/ofwat-industry-overview/>

million per annum prior to privatization to £1.1 billion in 2017.¹⁵ Post-privatization investment levels delivered significant environmental, water quality, and service improvements for the sector, including a 5-times reduction in unplanned supply interruptions, 8-times reduction in internal sewer flooding, and 100-times less likely low pressure.¹⁶

UK water sector's risk profile

“British utilities are increasingly seen as ‘prized assets’ for investors because they deliver steady returns” (*Financial Times*, March 2017). However, maintaining stability and predictability of the regulatory framework is crucial for attracting investors in the long run. Unpredicted or adverse changes to regulation are likely to decrease investors’ appetite to invest. Historically, the UK water sector has proven to be a favorable and stable investment and an attractive destination for global investment. Investors in a regulated natural monopoly enjoy returns which are (in normal conditions) more protected than in unregulated businesses, although they are lower than in nonregulated monopolies.

Independent source analysis has verified that the water industry companies performed better than other UK regulated companies during the global financial crisis and UK economic recession, demonstrating financial robustness and suggesting that “the water industry is less exposed to macroeconomic and broader systematic risks than other regulated companies.”¹⁷

Part 3: The UK regulatory framework

Overview

The UK water industry’s “well-established and transparent regulatory framework” has so far secured “stable and predictable cash flow generation” for the water companies.¹⁸ Three primary regulators, (a) the economic Water Services Regulation Authority (usually referred as Ofwat), (b) the Drinking Water Inspectorate (DWI), and (c) the Environment Agency (EA), set the conditions for the industry and monitor the performance of the companies.

Ofwat was created in 1989 to serve as an economic regulator against the risk of limited competition, challenging companies towards more efficiency and providing the best value for customers. Ofwat reviews the aggregated level of bills (as well as bills allocation procedure) that companies charge their customers every five years (the five-year periods being called “asset management periods” or AMPs). As part of this review, Ofwat challenges levels of proposed capital expenditure and operating costs, looking for propositions that clearly demonstrate efficiency. When setting the aggregated level of bills, Ofwat makes a judgment on a reasonable rate of return (making sure that a notionally run company is financeable)¹⁹ and factors in an

¹⁵ Thames Water, “Our Finances Explained,” November 2018, <https://corporate.thameswater.co.uk/-/media/Site-Content/Thames-Water/Corporate/AboutUs/Investors/Our-Finances-Explained.pdf>

¹⁶ Cathryn Ross, Chief Executive of Ofwat, “Sector Challenges and Water 2020,” October 15, 2015.

¹⁷ PwC Economics & Policy, “Cost of Capital for PR14: Methodological Considerations,” July 2013. This is a report assigned by Ofwat to consult on methodological issues related to setting allowed returns for PR14 in the water and wastewater sector.

¹⁸ Moody’s rating, February 2019.

¹⁹ Companies must be able to finance the proper carrying out of their statutory functions as water and sewerage undertakers and the activities authorized by their license, through securing reasonable returns on their capital.

amount of spending necessary to maintain and improve services. The aggregated water bill is therefore a function of macroeconomic elements (such as the reasonable rate of return) as well as past and current levels of spending. Ofwat and the water companies also agree on specific service levels, determining whether the targets set by companies are sufficiently demanding or insufficiently ambitious.

There is direct or indirect regulation on:

-
- **price to customers:** by means of setting an aggregated level of bills and bills allocation procedures,
 - **allowed return on investment:** by means of setting a reasonable rate of return for debt and equity investors,
 - **level of investment:** by means of setting what the regulator considers an efficient level of investment,
 - **service level outcomes:** by means of directly set expected level of outcomes and reward/penalties for over/under delivery.
-

Although Ofwat sets what they consider to be an efficient level of expenditure (“allowed total expenditure”), companies are still bounded by outcomes, so the level of investment is only indirectly regulated. Ofwat allows for a certain cost of debt; however, what companies pay is not regulated but rather purely based on market forces.

Aggregate bill level (“revenue cap”) is set for every 5-year period during the price reviews (PRs) of companies’ plans. Plans are submitted to Ofwat, negotiated, and confirmed for the next 5 years.

Regulatory toolkit for risk and reward management

A key feature of regulation is risk allocation. Risk is borne either by customers, companies, or investor groups through the right balance between affordability, service delivery, investment, and investor returns. Economic regulation offers some level of protection as long as (1) the company is efficient and (2) the regulator is successful in replicating market-type returns. Ofwat has six key tools for monitoring companies’ performance, managing risk, and remunerating companies for bearing risk:

1. **Allowed Return:** Ofwat set an allowed weighted average cost of capital to compensate lenders and equity investors for the non-depreciated portion of regulatory capital invested in the business. Allowed returns are calculated as the product of regulatory capital value (RCV)²⁰ and weighted average cost of capital (WACC). RCV is a rolling title to future cash flows from customers that the regulator has promised on their behalf to compensate debt and equity investors for the capital invested by the company. Every year the RCV increases

²⁰ The UK was the first to create the concept of RCV, also called regulatory asset base (RAB). The RCV has been developed for regulatory purposes and is primarily used in setting price limits. One of the elements we consider when assessing the revenues that the companies need is a return on the capital invested in the business. The value of the capital base of each company for the purposes of setting price limits is the RCV. The RCV starts with a direct measure of the value placed on each company’s capital and debt by the financial markets following privatization. Thames Water is Britain’s biggest water supplier not only in terms of customers served but also in terms of RCV, with a regulatory capital value of £13.7 bn as of March 2018 (in nominal terms). Source: <https://www.ofwat.gov.uk/publication/regulatory-capital-values-2018/>

by the amount that the regulator has indicated as efficient investment for the year and decreases by a certain level of depreciation (i.e., a portion of RCV received from customers). The allowed WACC should reflect the fair level of return requested by lenders and equity investors of the company; it should therefore be reflective of the level of riskiness of the UK water industry. At the beginning of each 5-year management period, the company and the regulator agree on a business plan and the regulator publishes the allowed WACC.

2. **Totex allowance** is the amount of expenditure, both operational and capital, that Ofwat sets for companies to spend in each price control.
3. **Totex incentives** is the percentage of underspend that companies are allowed to retain when actual Totex are below the allowed Totex, or the percentage of overspend that companies have to fund if actual Totex are above the allowed Totex.
4. **Performance commitments (PCs)** are the service levels that companies commit to deliver, that hold them to account and determine whether they deliver a higher or lower level of service than required. Performance commitments are at the heart of a customer-driven service by regulated companies, and they are related to sustainability and resilience: they include measures of drinking water quality, security of supply, sewer flooding incidents, property flooding incidents, leakage, compliance with environmental regulations, pollution incidents, resilience to future extreme weather events, sustainable urban drainage, etc. Proposed new projects are considered in part based on their relative merits in terms of how they impact PCs.
5. **Outcome delivery incentives (ODIs)** link some performance commitments (PCs) with financial rewards and penalties for over- or under- performance. The reward is in the form of an allowed additional charging to customers in future years, while the penalty is returned to customers as bill reduction and is entirely borne by the shareholders. Each company, after having listened to its customers, creates its own package of incentives, assigning certain strengths to a proportion of the PCs that will determine the rewards or penalties.
6. **The service incentive mechanism (SIM)** links customer service performance with financial rewards and penalties. SIM compares water and sewerage companies in two main areas: customer satisfaction score and complaints. Companies are then ranked according to performance, and rewards/penalties are allocated according to their relative positioning

The risk and reward package (i.e., the combination of allowed rates of return, performance targets, and incentive mechanisms) is a key determinant of customer bills, the allocation of risk between investors and customers, and ultimately whether customers receive value for money.²¹

Based on Ofwat's key tools, the required rate of return on equity for companies to manage risk is the sum of:

- The allowed rate of return on equity (one of the two components of the WACC),
- Over/under performance against Totex allowance,
- Over/under performance against ODIs and SIM,

²¹ Ernst & Young LLP, "Towards a Risk and Reward Framework for PR19: An Exploration of the Relationships between Incentives, Cost Allowances and Rates of Return," report prepared for Thames Water Utilities Limited, March 2017.

- Over/under performance against other regulatory allowances (such as cost of debt).

Ofwat's incentive mechanisms mimic the incentives that firms face in competitive markets which encourage them to deliver the outcomes that customers want. The regulatory context is supportive of investment (including investments on sustainability and resilience) through both its outcomes delivery incentive (ODI) and Totex incentive schemes.

Ofwat along with the quality regulators, Drinking Water Inspectorate and Environment Agency, monitors the performance of the companies to make sure they are making the investment in services they promised they would deliver.²²

Evolution of the regulatory model

Ofwat continuously reviews its methodology and assumptions to make sure that the regulatory scheme is able to deliver current and future population needs. There has been a gradual shift in the regulation model since 2014, as witnessed by changes in Ofwat's expectations in the business plans and the methodology for assessing companies in the last two price reviews, PR14 and PR19. The economic regulator has been pushing companies towards:

- Frontier-shifting levels of performance and cost efficiency,
- A more customer-centered model, with customers as active participants in the creation of the business plans,
- Long-term planning for resilience.²³

Rewarding efficiency

Efficiency is a key element of Ofwat's methodology for assessing business plans, in an effort to deliver more with less. In the Price Review 2014 (PR14), Ofwat changed its approach by:

1. Setting a total spending allowance (Totex) instead of separate Capex and Opex allowances. The previous approach had led to companies favoring capital spending at the expense of potentially more cost-effective operations.
2. Changing company efficiency assumptions – the Totex is set on what an efficient company would spend: not on the basis of median-company efficiency but on the top quarter of the most efficient companies of the previous period. So, less efficient companies are expected to catch up with the most efficient.

²² Companies are required to submit an annual performance report with a baseline level of information that can be compared across companies, based on guidance by the regulator. The quality of information provided is rated by the regulator.

²³ Submitted plans will be assessed against nine key test areas that represent the key themes for PR19:

Engaging customers,
Addressing affordability and vulnerability,
Delivering outcomes for customers,
Securing long-term resilience,
Targeted controls, markets, and innovation,
Securing cost efficiency,
Aligning risk and return,
Accounting for past delivery
Securing confidence and assurance.

3. Establishing separate price controls for water and wastewater, as well as having a retail and wholesale provision, to enable better cost forecasts, better comparability of costs across companies, and rapid efficiency gains.

What the establishment of the Totex allowance means is that it encourages companies to provide required outcomes at a minimum whole-life cost. Although it seems minor, it is a fundamental change, because it asks the private sector to find the most efficient solution. Comparing each company with the most efficient companies makes everyone strive for efficiency, although each one is a monopoly.

The changes were well received by the companies. Ofwat's new methodology has been a strong incentive²⁴ to deliver £3 billion in operational savings that will result in an average 5% reduction in customer bills, after inflation, and has incentivized £44 billion of new investment over the 2015-2020 period.²⁵

The expectations for PR19 are even higher, with water industry experts referring to a "difficult" deal for frontier-shifting levels of performance and cost efficiency, posing major restrictions on spending. Ofwat's approach is heavily reliant on successful innovation to deliver outperformance, yet innovation is an inherently risky activity with uncertain outcomes.

Ofwat's early proposal of allowed WACC for PR19 is an indication of the level of challenge faced by the companies. Real (on an RPI basis) vanilla WACC²⁶ for wholesale activities decreases from 3.60% to 2.30%.²⁷ A lower level of WACC implies lower equity returns for shareholders. Outperformance on Totex (through adoption of innovative cost solutions), performance commitment (through the ODI),²⁸ and cost of finance can lead to higher equity returns. However, underperformance on these themes would further erode returns.

Towards a customer-centered model

The role of the regulator is to ensure that customers receive affordable services for what they need. However, apart from changes in purely economic terms, the regulator has been gradually establishing a more customer-centered approach. This trend was first articulated with the establishment of customer challenge groups (CCGs) for PR14. The CCGs are independent local groups of customer representatives and other stakeholders with a mission to challenge water

²⁴ Ofwat, PR19 initial assessment of business plans: Investor conference call, 31 January 2019.

²⁵ This is sector-wide data. Source: Ofwat, "Overview of Setting Price Controls for 2014-2020 Final," December 2014.

²⁶ The regulator refers to this as vanilla WACC because the cost of debt is not adjusted to take tax shield into account. Vanilla WACC is therefore a combination of pre-tax cost of debt and post-tax cost of equity. Tax payments from water companies are then accounted for through a separate tax allowance.

²⁷ 2.3% reflects the indicative level of real (RPI-based) vanilla WACC as per December 2017 draft methodology. The WACC will be confirmed at a later stage of the PR19 process.

²⁸ In December 2016 Ofwat published a consultation on the outcomes framework for the 2020-25 period suggesting ways to make ODIs more powerful, such as removing the previously aggregate cap and collar which limited rewards/penalties to +/- 2% of the return on regulatory equity, thus encouraging companies to increase the proportion of ODIs that carry financial rewards. More powerful ODIs demand more stretching PCs. Source: "Ofwat Seeks Tougher Rules on ODIs, Performance and Resilience," article by Karma Loveday, December 2, 2016.

companies on the quality of customer engagement, “delivering affordable, sustainable plans [...] that consider the impacts on the environment and wider society in a customer context.”²⁹

In PR19, the regulatory regime is clearly moving to a model where the customer replaces the regulator, from “the old and relatively narrow concept of economic regulation” to “delivering so-called fair outcomes for consumers.”³⁰ Rather than building plans upon their perception of what their customers’ expectations are, water companies must show how they have listened to their customers and acted on their views, “not because the regulator says so, but because that is what society expects.” In the current price control (PR19) Ofwat expects a “step-change” in the way companies are engaging with their customers. The shift is taking place in a post-austerity context in which debate on restoring public ownership over utilities has resurfaced.

Initially, in purely economic terms, the market through competition drove down prices. However, “economics cannot tell you what fair outcomes are, but economic regulators are now being called upon to ensure that outcomes are fair.” Ofwat “explores ways to influence corporate culture, particularly where we cannot rely on competition to align companies’ interest with customers’ interest.”³¹

Securing long-term delivery of service through resilience

An analysis by the National Infrastructure Commission suggests that more ambitious long-term plans are needed to address leakage, undertake more comprehensive water metering and demand management, and create a resilient national water network for the long term.³²

The Water Act 2014 gave Ofwat additional powers to act as an agent to promote long-term planning and investment in managing water resources in sustainable and resilient ways. Resilience is one of the four key themes for PR19, along with great customer service, affordability, and innovation, and Ofwat requires five-year performance commitments for 2020-25 to be supported by longer-term assessments of financial resilience. It asks companies to take a holistic approach that covers operational, financial, and corporate resilience. Ofwat uses various tools to monitor financial resilience. One such tool includes water companies’ issuance of a long-term viability statement (LTVS) within their respective annual reports. This requires the board to assess whether their business is resilient to a range of severe but plausible downsides over a long time period of at least 5 years.

²⁹ Thames Water Customer Challenge Group, “CCG Response to Ofwat” (regarding PR19).

³⁰ Utility Week, David Blackman, “Regulators Rule on What’s Fair,” New Deal for Utilities report, January 01, 2019.

³¹ Utility Week, David Blackman, “Regulators Rule on What’s Fair,” New Deal for Utilities report, January 1, 2019.

³² There are various initiatives to develop resilience metrics, such as by EA in EPAs; the Water and Wastewater Resilience Action Group; the UK Water Industry Research; the National Infrastructure Commission.

Common performance commitments as proposed by Ofwat³³



Area of focus

■ Customer satisfaction ■ Current performance ■ Resilience/future performance

The PR19 methodology aims to encourage frontier shift performance levels for companies. However, Ofwat recognizes companies will have to take additional risk to deliver more stretching³⁴ outcomes and should have financial returns. Ofwat designated ten PCs as important to customers and compulsory for all companies to include in their outcome packages, mostly related to resilience and future performance. Moreover, Ofwat requests common commitment across companies regarding: (a) water quality compliance, (b) customer water supply interruptions, (c) customer property sewer flooding, (d) wastewater pollution incidents, (e) water mains bursts, and (f) sewer collapses.

Part 4: Thames Water Company

As already mentioned, the water industry is regulated in five-year periods. In 2018-19, water companies are in the process of regulatory review of their business plans for the period 2020-25. Draft plans were submitted in September 2018 and will be finalized in December 2019 (see EXHIBIT: Price Review for 2020-25 (PR19) Timeline).

Water companies’ business plans for the next five years are a concrete example of how utilities respond to the challenges they expect to face in the future, based on regulatory guidance and requirements. The preparation, submission, negotiation, and final determination of a business plan is a lengthy process, and it is not purely financial engineering: a long customer engagement process also takes place in the development of business plan.

Thames Water actively engaged with more than a million customers to determine the balance of customer bills, the quality of service, investment in resilience, long-term features, and long-term planning. Responding to customers’ priorities, the September 2018 submitted plan featured record-level investment to deliver what the company deems to be stretching performance commitments for the environment and long-term resilience. It was initially assessed by Ofwat in January 2019 as requiring significant scrutiny, with Ofwat challenging the company to deliver more stretching performance commitments in terms of pollution, internal sewer flooding, and

³³ Ofwat (2016), A consultation on the outcomes framework for PR19.

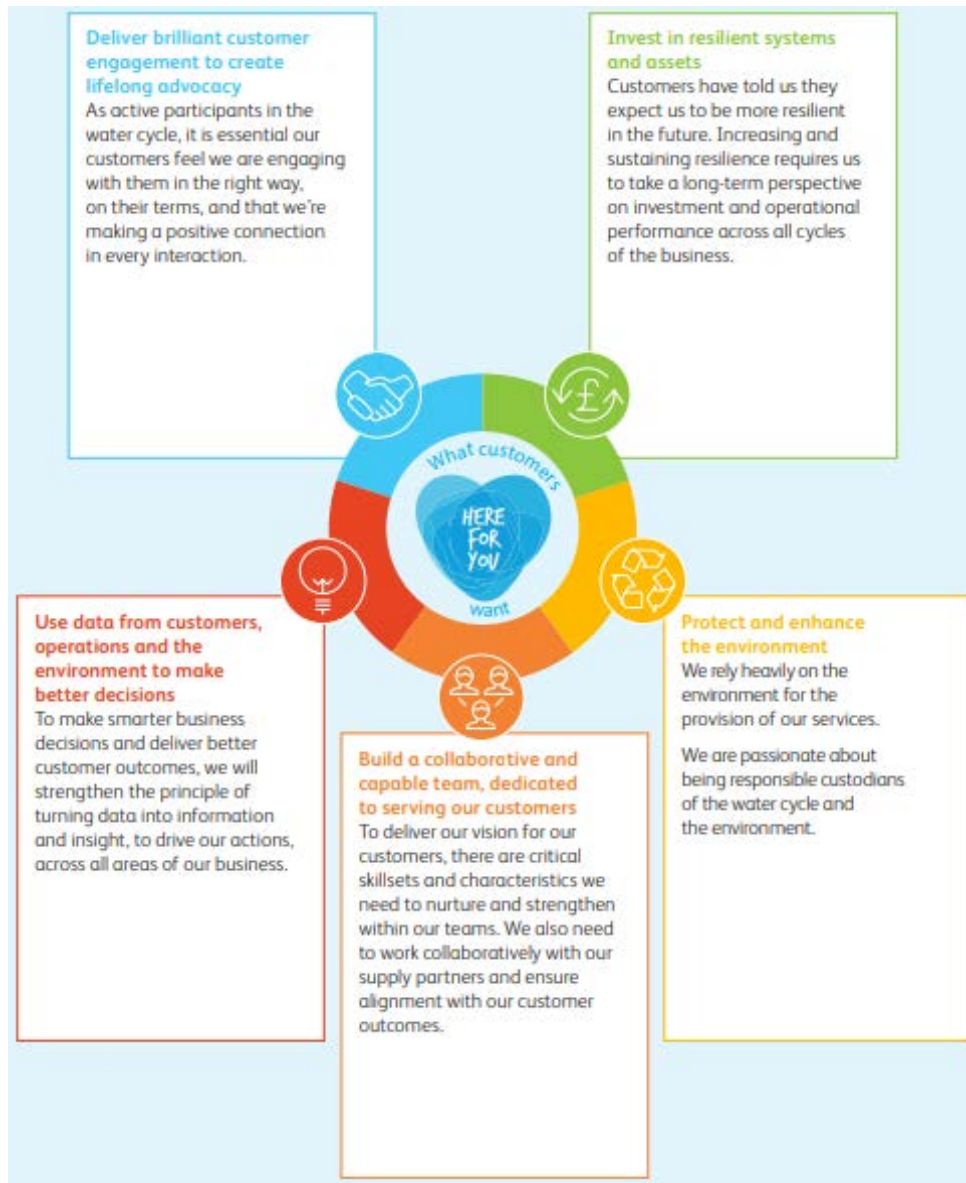
³⁴ Stretching: to be achieved with great difficulty, at the limit.

supply interruptions and leakage, while reducing its projected spending levels of £11.7 billion. The company responded on April 1, 2019, resubmitting a revised plan in line with the principles set out in September 2018. The additional stretching of its base and enhancements are estimated to cost £10.9 billion, while reducing average combined bills by 1.3%.

How the Thames Water business plan was built

The Thames Water business plan was built around 5 strategic priorities:

- Deliver brilliant customer engagement to create lifelong advocacy,
- Invest in resilient systems and assets,
- Use data from customers, operations, and the environment to make better decisions,
- Build a collaborative and capable team, dedicated to serving our customers,
- Protect and enhance the environment.



TWUL corporate restructuring / accounting for past performance

The Thames Water business plan was developed with a significant focus on governance, including:

- building a strong company, able to handle unpredictability;
- improving public perception; in the period 2015-2020, Thames Water expect to meet 40 out of 55 performance commitments. However, historic pollution incidents resulted in a £19.75 million fine in 2017, and the company agreed a £120 million settlement with Ofwat in 2018, having failed to meet recent leakage targets;
- adapting to the regulatory shift to a customer-centered approach and the new “social contract.”

In the period 2017-19 Thames Water has set a new strategic direction to build trust as a responsible water and wastewater services provider and develop the capabilities to respond dynamically to a changing external environment. The company’s CEO referred to a “company in transformation,” and this is also reflected in its draft business plan for the next regulatory period.

Since 2017, Thames Water has seen a 51% change in ownership, with a new chairman and executive team. It is also in the final stages of a major review of governance, with a board restructure and the recent closure of its Cayman Islands subsidiaries (a feature of a number of UK water companies’ financial structures). Today, Thames Water is jointly owned by 10 institutional investors. The profiles of the investors determine the company’s approach to risk. Almost 90% of the investors are pension funds or sovereign funds, with a long-term investment horizon, seeking steady returns. Thus, they are supportive of the long-term investment needed for resilience. Moreover, the new shareholders agreed not to take a dividend in the first three years of their ownership, allowing the company to invest further in providing a resilient service and underlining their commitment to a long-term vision.

Negative public perception of Cayman Islands subsidiaries led Thames Water to close them down in an effort to improve transparency and rebuild trust. The subsidiaries were perfectly legal and did not provide any tax benefit but they did not resonate well with the public.³⁵ As Tom Bolton, Head of Corporate Finance at Thames Water, highlights, “as water supplier for London we got far more negative attention than other companies. Even though there was a financial cost to closing the entities, it was definitely the right thing to do.”

The company also revised its executive compensation and links it to the delivery of customer outcomes. “As a first step in this policy, Steve Robertson, our CEO will forgo his bonus until April 2020, and will only be paid a bonus if we meet our customer commitments – specifically 50% of his bonus is dependent on fully recovering our AMP6 leakage target.”

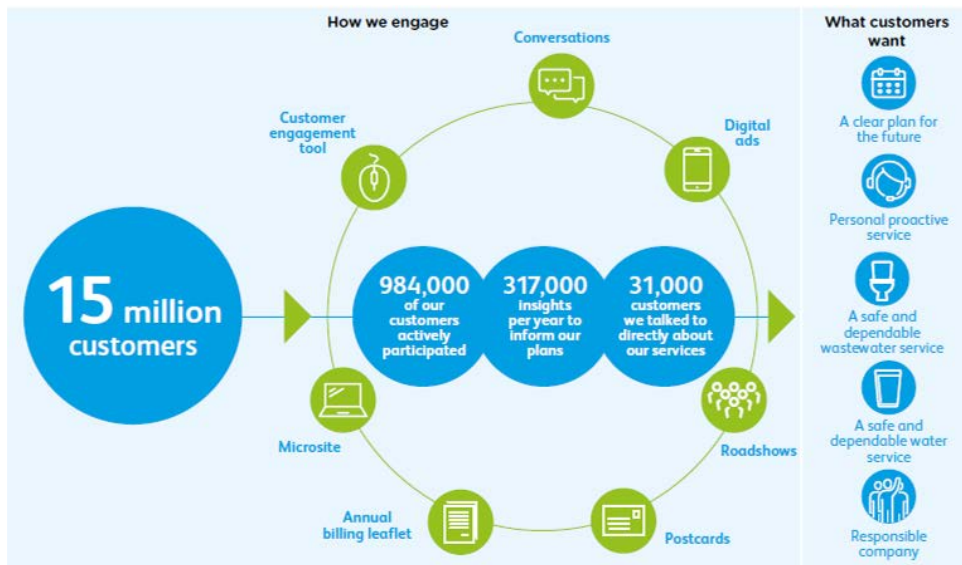
Customer engagement to create lifelong advocacy: A fair deal for customers

The transformation of the company towards a customer-centered approach is overseen and reported by the Thames Water customer challenge group (TW CCG), which confirmed: “It is important to say at the outset that Thames Water is a very different company now to the one

³⁵ Utility Week, David Blackman, “Regulators Rule on What’s Fair,” New Deal for Utilities report, January 1, 2019.

that existed when the PR19 exercise began. The CCG has seen at first hand a demonstrable and genuine desire to listen to and deliver for customers and tackle issues around trust and confidence.”³⁶

The PR19 business plan outcomes and strategic priorities are rooted in a program of customer engagement and insight with approximately one million customers, the most extensive such program ever undertaken. The PR19 performance commitments (PCs) were tested with customers through a series of workshops to engage them on the real-life tradeoffs between service and bill impacts, as well as intergenerational fairness. They were asked their willingness to pay for different levels of service / performance; this helped shape Thames Water’s level of investment and impact of ODIs. The final suite of 48 PCs was built upon what customers want.



“Customers expect us to behave in a way that demonstrates corporate and financial responsibility, such as having performance linked pay and making information accessible to customers on our financial structures. They want us to reduce future exposure to financial shocks and are particularly interested in us reducing the level of gearing in a way that minimizes the impact on their bills. [...] Our customers have clearly told us that they want us to be more resilient by protecting the future water supply and waste service.”

Key aspects of the plan were tested with customers, including the WRMP, water supply resilience in North East London, drought resilience and protecting chalk streams, PCs and ODIs. The plan is supported by the majority of customers with 87% acceptability, and is considered affordable by 81%.³⁷

³⁶ Thames Water Customer Challenge Group, “CCG Response to Ofwat” (regarding PR19).

³⁷ “PR19 | Building a Better Future: Response to Ofwat’s Initial Assessment of Thames Water’s PR19 Business Plan,” April 2019.

Ensuring the company's financeability

"For every £1 we collect from bills, we need an additional 19 pence (2017/18) to help fund our spending."³⁸

Because of the need for investment, Thames Water has an ongoing funding requirement. The company has a low business risk profile as reflected by its external (investment grade) credit rating³⁹ by Moody's and Standard & Poor's (S&P) that allows the company to access capital and liquidity on an ongoing basis to fund its investment program.⁴⁰ The company's funding strategy for managing financial risk is diversification and new markets. This means borrowing money from different sources, on different interest payment bases and with diversified debt maturities, spreading refinancing⁴¹ risks and reducing them to an acceptable level. It continually explores market opportunities for favorable low-interest rates to minimize cost of debt, given that achieving a lower cost of finance than assumed by Ofwat has a margin of cost of finance outperformance gain. Yearly the company pays c. £350 million interest on its debt.⁴²

Since 2007, Thames Water has operated under a Whole Business Securitisation (WBS) structure, a highly-covenanted framework widely used in the UK by water and other core infrastructure businesses. The structure is designed to provide a platform to efficiently access a broad range of debt markets, to ensure a stable and diversified base of long-term funding and liquidity on attractive terms. Ratings agencies' evaluations of WBS structures reflect these credit-enhancing features, allowing issuers to achieve similar ratings to nonsecuritized companies with lower levels of gearing.

A metric for the company's financial resilience against financial shocks is gearing, calculated as the ratio of a company's net debt to its RCV. The regulator sets an indication of gearing, a 62.5% threshold for the purpose of determining the WACC; however, gearing has historically been handled by the company's management and shareholders choices.

High levels of gearing potentially expose companies to increased levels of risk and increased debt costs. Thus, to further ensure its financial resilience against financial shocks, Thames Water plans to reduce its gearing by about 4%, from the current 81.3% to 77.7%, while increasing the equity buffer by £2 billion to £4.35 billion by the end of 2025. Suspension of dividend payments, agreed by the shareholders until the end of March 2020, will enable more investment and

³⁸ Thames Water, "Our finances explained," November 2018.

³⁹ Water companies' licenses set minimum investment grade expectations to ensure companies can efficiently access financing. All the companies with this requirement currently have credit ratings which are at least one notch above the minimum investment grade level. External ratings are performed by Moody's and Standard & Poor's as an independent view of companies' performance and future outlook.

⁴⁰ "The Baa1 corporate family rating (CFR) reflects the company's low business risk profile as the monopoly provider of essential water and sewerage services, its relatively stable and predictable cash flow generation under a well-established and transparent regulatory framework, and creditor protections incorporated within the company's financing structure." (Moody's).

⁴¹ A refinance occurs when a business or person revises the interest rate, payment schedule, and terms of a previous credit agreement. Debtors will often choose to refinance a loan agreement when the rate environment has substantially changed, yielding potential savings on debt payments from a new agreement.

⁴² For example, 2018/19 the company paid £346 million interest on its debt. <https://corporate.thameswater.co.uk/-/media/Site-Content/Thames-Water/Corporate/AboutUs/Investors/Debt-investors/Thames-Water-utilities/TW-Utilities-Limited/Investors-reports/Thames-Water-Utilities-Limited-Investor-Report-31-March-2018.pdf>

contribute to enhanced financial resilience, injecting approximately £850 million back into the company. Moreover, for the period 2020-25, they agreed to receive a modest dividend of approximately £20 million per annum, for a total of £100 million.⁴³

For PR19, Ofwat are proposing a mechanism to incentivize companies to degear by applying a 50/50 sharing of a penalty calculated as the difference between the cost of equity and the cost of debt for all gearing above 65% (subject to a deadband up to 70%). While Thames Water has challenged the theoretical basis for creating such a mechanism, they have proposed an alternative mechanism aimed at incentivizing degearing.

Responding to investors' demand – sustainable financing

A company's choice, which exceeds requirements, are alternative financing options such as green bonds and ESG-linked financing, highlighting the company's commitment to sustainable performance and increased transparency.

In September 2018, the company was recognized by the Global Real Estate Sustainability Benchmark (GRESB) for Infrastructure for its commitment to sustainability. GRESB is an independent, external ESG benchmark which assesses the sustainability performance of real estate and infrastructure portfolios and assets worldwide. With a score of 86/100 for infrastructure, Thames Water is ranked top globally in the Water and Sewerage category and 3rd in Europe out of 173.

In October 2018, Thames Water published its first ESG Statement, exceeding statutory reporting requirements to highlight a “new chapter for Thames Water, one where increasing openness and transparency is embedded into the way we operate,” according to Robertson. The ESG Statement brings together key metrics to provide stakeholders and investors with an overview of performance in an accessible format.⁴⁴ This is a step in the right direction: “Investors are increasingly aligned around a desire to understand the company's long-term value creation plan and receive credible, standardized information to support long-term risk assessments. But many corporations, even when they have a good story to tell and robust processes to manage ESG risk, are not giving investors the right information in the right format. A few straightforward steps could bring the two sides together.”⁴⁵

Thames Water explored ways to align sustainable performance and financing. In January 2018, it launched its Green Bond Framework, under which TWUL can issue green bonds, alongside a £705 million Green US Private Placement. A key definition was “Eligible Green Projects,” meaning sustainable water projects with a reduced climate footprint, wastewater projects with a reduced climate footprint, and renewable energy projects. As Tom Bolton, Head of Corporate Finance at Thames Water, commented: “The feedback we have had from institutional investors in various geographies is that they wanted to see increased reporting in the ESG area and to see

⁴³ In the previous 5-year period shareholders had receive a total of £600 million.

⁴⁴ Thames Water publishes first Environmental, Social and Governance Statement, October 25, 2018.

⁴⁵ Governance Insights Center PwC's ESG Pulse 2019, “Mind the Gap: The Continued Divide between Investors and Corporates on ESG.”

that the business is buying into it on a cultural level.”⁴⁶ Moreover, “one of its strengths is that you are not linking performance to a specific project, so the structure is much more holistic and sets up a platform that can evolve over time and be used for future funding projects.”⁴⁷

In November 2018, Thames Water was the first UK utility to tie the interest rate on a new £1.4 billion revolving credit facility to its sustainability performance. This means that the company’s cost of debt on the loan is tied to its annual performance against ESG metrics. Progress will be measured through GRESB by benchmarking the company’s performance against an overall score assessed against environmental, social, and governance factors. Outperforming the ESG benchmark will result in a lower interest rate, with any financial gains boosting Thames Water’s charitable fund. Conversely, any underperformance will be borne by Thames Water.⁴⁸ This is a pricing impact that demonstrates the commitment to sustainable performance. In 2017/18, the fund donated £103,395 to 21 charities and community groups across London and the Thames Valley, relating to water and the environment.

Overview of the business plan

What the plan commits to deliver

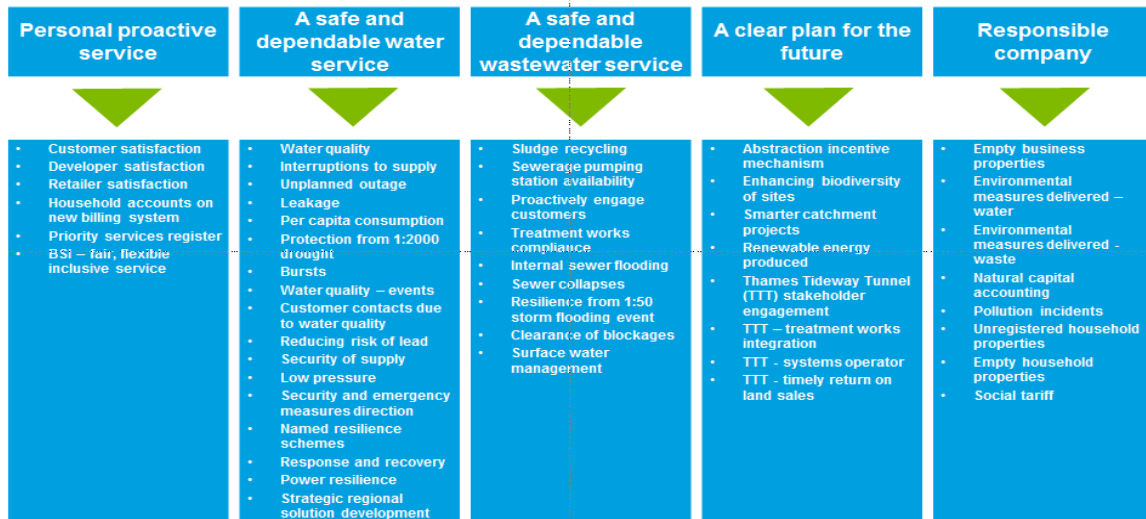
In its business plan, Thames Water sets the Totex to carry its operation and implement its capital program, and what the customers will pay through bills. Although the customers pay for the improvements, the combined bills will be reduced by 1.3% by 2025, while improving service and returns.

Average annual combined bills	→	£5 or 1.3% reduction by the end of AMP7; Flat average household bills in AMP 8
Priority Services Register (number of customers benefitting)	→	410,000 (Ofwat’s benchmark)
Key Outcomes	→	
Pollutions	→	30% reductions
Internal sewer flooding	→	20% reductions
Supply interruptions	→	20% reductions
Leakage	→	636MI/d to 509MI/d, a 20% reduction
Cost of improved outcomes	→	No additional costs requested
Costs	→	
Average Unit base opex efficiency per customers	→	22.5% reduction
Totex	→	£10.9 billion (£10.65 billion + £0.25 billion Uncertainty Mechanisms)

⁴⁶ Sustainable finance is becoming an increasingly prominent issue for investors. European sustainability bank Triodos estimates that in the UK alone, the socially responsible investing market will grow by 173 percent to reach £48 billion by 2027. Source: Katey Pigden, “Share the Rewards and Shout about It,” New Deal for Utilities report, 14/02/2019.

⁴⁷ <https://www.euromoney.com/article/b1c5z8pp3v9gxw/esg-thames-water-puts-its-money-where-its-mouth-is?copyrightInfo=true>

⁴⁸ Discounts and penalties for sustainable improvement loans tend to vary between 5% to 10% of the total margin. Given that interest rates are still at historic lows, that does not sound like much. Source: <https://www.euromoney.com/article/b1c5z8pp3v9gxw/esg-thames-water-puts-its-money-where-its-mouth-is?copyrightInfo=true>



As already mentioned, the plan includes a suite of 48 performance commitments. For each one, Thames Water identified the appropriate baseline level of performance, set an initial target, and proposed whether financial incentives should be attached for testing with customers.⁴⁹

PCs associated with three strategic priorities of the plan are underpinned by an incentive scheme that puts up to £474 million at risk if the commitments are not delivered. The three priorities are:

1. Deliver brilliant customer engagement to create lifelong advocacy,
2. Invest in resilient systems and assets,
3. Protect and enhance the environment.

What it will cost to deliver the plan

To ensure a financeable plan required balancing affordability, service levels, investment, and financial resilience, to be tested against Ofwat’s “early view” on WACC. According to Thames Water, £10.9 billion of regulated expenditure (Totex) is necessary to deliver the outcomes set for 2020-2025:⁵⁰

- Base Opex of £4,697 million to maintain current levels of service,
- Capital maintenance of £3,215 million to ensure existing assets and equipment maintenance and replacement for operational reliability and resilience,
- Enhancement investment of £2,991 million to improve operational resilience and growth as well as for new obligations.

The company’s plan features investment required to respond to customers’ priorities, such as resilience enhancement and environmental protection: £953 million to reduce leakage by 20%, from 636MI/d to 509MI/d; £238 million to reduce supply interruptions by 20% to only 8.5 minutes per property; £399 million for building additional capacity at sewerage treatment; £358

⁴⁹ September 2018 submission of Thames Water PR19 Business plan, updated based on April 2019 resubmission.

⁵⁰ £10.9 billion +c. £0.25 billion uncertainty mechanisms. Source: “PR19 | Building a Better Future: Response to Ofwat’s Initial Assessment of Thames Water’s PR19 Business Plan,” April 2019.

million to reduce internal sewer flooding by 20%; and £877 million to reduce pollution incidents by 30%. The company adopts a twin-track approach combining reducing demand (including leakage reduction) with long-term investment in increasing supply, which according to studies of the National Commission has lower cost and is most sustainable to increase resilience.

Thames Water has invested over £1 billion, on average, every year for the last 13 years. The table of the last three years' expenditure shows the growth in capital expenditure based on the successive reduction of operational expenses. The company challenges itself to improve value for money, by further reducing operational unit cost for the period 2020/25.

	YE Mar-16	YE Mar-17	YE Mar-18
Opex	900.8	816.8	768.6
Capex	995.5	1,046.3	1,082.1
Grants	93.9	81.9	82.9
Totex	1,802.4	1,781.2	1,767.8
Capex %	55.2%	58.7%	61.2%

What the customer will pay

Thames Water average combined bills are the third lowest in England and Wales, at an average of £398 per year (2019/20 in outturn prices, including a bill reduction for leakage performance). Bills are kept low through a combination of factors: efficient operations and investment, low-cost financing, and Totex allowances.

In the period 2020-25, the average residential bill is forecasted to be £384.4 (in 2017-18 CPIH price base and excluding leakage bill reduction) and will include an additional £79.4 to deliver the plan (in terms of operational and capital expenditure). This increase is offset by a reduction of £84.4 as a result of:

- £71.7 savings through more efficient operations,
- £13.9 through lower returns to investors due to the lower WACC for the period,
- £1.3 bill increase due to true-ups for past performance.

Between 2020 and 2025 the average annual combined household bill will be lower by £5 in real 2017-18 CPI terms, equivalent to 1.3% in real terms. In the period 2025-30, bills will be kept flat in real terms.

Approach to secure value for money

Encouraging companies to deliver higher service levels is not simply a matter of high PCs and ODIs, since setting more “stretching” targets implies increasing risks borne by investors and also transferring more risk to customers, either of cost overruns, some of which would be passed on

to customers, service failures, or upward pressure on the cost of capital (if investors' confidence in the regulatory regime is undermined).⁵¹

"Our approach to securing the best value for money over the long term is underpinned by four principles: customer need, whole-life cost, systems thinking, and getting it right first time." The company's system-level strategy and long-term "whole-life cost" basis for all asset management decisions are consistent with and supportive of resilience. "For each system we will continue to refresh and enhance a 5-year, a 30-year, a 80-year strategy that is based on: expected population growth, system headroom, risk of failure changes to asset/system health, water resource conditions, and our expectations on how the local environment will change. These update the short and medium-term investment plan. Any specific investment decision takes into account the associated operations and maintenance cost for the life of the asset."⁵²

Through a combination of "innovative solutions, price benchmarking and challenges, systems independency reviews and whole-life cost benefits reviews," the company removed £660 million of cost from its investment plan.⁵³ Moreover, it calculates that c. £0.6 billion of the £3.2 billion invested in capital maintenance directly underpins improvement in performance commitments outcomes (c. £0.3 billion in resilience-related and c. £0.3 billion in environment-related outcomes).

Owat provides incentives for efficient and accurate business plans. Throughout the planning process, Thames Water has challenged itself to improve value for money, and this has resulted in operating unit costs falling by 22.5% and capital efficiency. The company has a five-stage process to support the development of an efficient plan for capital spending:

- Identifying customer need through the use of asset planning systems for the entire business. These are risk-based decision support tools, which identify needs and assigns them scores based on risk. Statistical models, risk maps, etc. predict asset performance and consequence of failure, or mitigation required.
- Selection and right pricing of solutions –the company develops a range of asset-level and Totex scenarios taking into account cost, capabilities, and outcomes, and prioritizes solutions based on the lowest whole-life cost.
- Price validation –the company uses four methods of ensuring proper cost estimates.
- Deliverability of plan through rigorous testing
- Operation efficiency on a whole-life basis – delivering the "business case."

This approach resulted in £1,833 million efficiency for the 2020/25 plan.⁵⁴

⁵¹ "Towards a Risk and Reward Framework for PR19: An Exploration of the Relationships between Incentives, Cost Allowances and Rates of Return," report prepared by Ernst & Young LLP for Thames Water Utilities Limited, March 2017.

⁵² September 2018 submission of Thames Water PR19 Business plan, updated based on April 2019 resubmission.

⁵³ September 2018 submission of Thames Water PR19 Business plan, updated based on April 2019 resubmission.

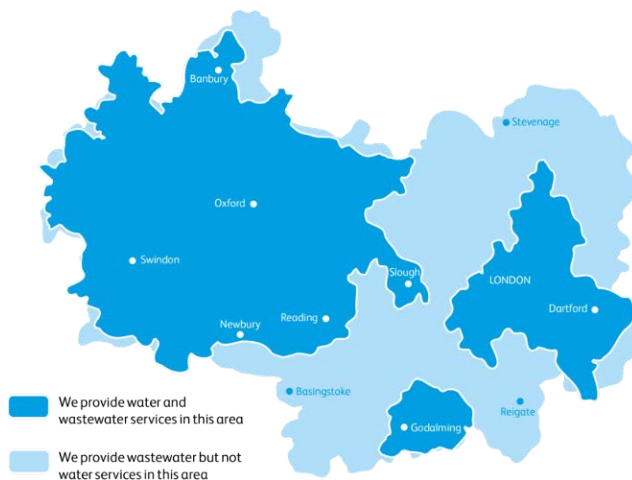
⁵⁴ September 2018 submission of Thames Water PR19 Business plan, updated based on April 2019 resubmission.

ABBREVIATIONS

<u>AMP</u>	Asset management period
<u>Capex</u>	Capital expenditure
<u>CCGs</u>	Customer challenge groups
<u>ESG</u>	Environmental, social, and governance
<u>ODI</u>	Outcomes delivery incentive
<u>Opex</u>	Operational expenditure
<u>PR</u>	Price review
<u>RCV</u>	Regulatory capital value
<u>Totex</u>	Total expenditure
<u>TWUL</u>	Thames Water Utilities Limited
<u>WACC</u>	Weighted average cost of capital

APPENDIX

EXHIBIT: Thames Water service area



TW Water supply service area



The TW Wastewater treatment service area is wider than the one of water supply

EXHIBIT: Company's shareholding structure

Thames Water company shareholding structure⁵⁵

OMERS	Canadian pension fund	31.777%
Universities Superannuation Scheme (USS)	British pension fund	10.939%
Infinity Investments S.A.	Abu Dhabi sovereign wealth fund	9.9%
Wren House Infrastructure Management Limited	Kuwait sovereign wealth fund	8.772%
bclMC Investment Corporation	Canadian pension fund	8.706%
Hermes GPE (BriTel Fund Trustees Ltd. BT Pension Scheme)	British pension fund	8.699%
Cicero Investment Corporation (CIC)	Chinese sovereign wealth fund	8.688%
QIC Infrastructure management Pty Ltd	Australian infrastructure investment manager	5.352%
Aquila GP Inc. (Fiera Infrastructure Inc.)	Canadian Infrastructure investor	4.996%
PGGM (Stichting Pensioenfonds Zorg en Welzijn)	Dutch pension fund	2.172%

EXHIBIT: Price review for 2020-25 (PR19) timeline

December 13, 2017: Ofwat’s final methodology for the 2019 price review published
Consultation for business plans

April 26, 2018: Consultation on the methodology for the 2019 price review launched

May 30, 2018: Consultation closed

July 3, 2018: Statement by Ofwat and announcement of changes in its 2019 price review (PR19)

September 3, 2018: Submission of draft business plans

January 31, 2019: Initial assessment of each water company’s draft business plan by Ofwat published

April 1, 2019: Resubmission of enhanced and revised business plans, addressing the shortcomings Ofwat has identified

July 18, 2019: Publication of draft determinations for revised business plans by Ofwat

December 11, 2019: publication of final determinations for all companies by Ofwat

April 1, 2020: Price controls for 2020-2025 come into effect¹

⁵⁵ Thames Water, “Our Finances Explained,” November 2018.