The background features a large, abstract graphic composed of overlapping, semi-transparent blue polygons in various shades, ranging from light sky blue to deep navy blue. The shapes are arranged in a way that creates a sense of depth and movement, with some shapes appearing to recede into the background while others come forward.

TA 12.WW05 Wastewater Growth Business Case

September 2018
Version 1.0

Contents

1. Executive Summary	3
2. Scope of business case	6
3. AMP6 Strategy	8
3.1. Investment Strategy	8
3.2. Customer Benefits and Resilience	10
4. Drivers for change.....	14
4.1 Customer and stakeholder views.....	14
4.2 Future trends & pressures	15
5. AMP7 Strategy	20
5.1 Investment Strategy	20
5.2 Plan Options	23
5.3 Innovation	28
5.4 Customer Benefits and Resilience.....	30
5.5 Value for Customers	33
5.6 Use of Market Mechanisms	34
6. Costing Strategy.....	35
7. Key Risks and Opportunities.....	35
7.1 Risks	35
7.2 Opportunities.....	35
Appendix 1: List of schemes	37

1. Executive Summary

Name of business case	WW05 Wastewater Growth		
Context	The rate of growth has increased in AMP6 and we are forecasting over 100,000 new connections in AMP7, in line with Local Area Plans. We need to ensure we have appropriate capacity in our drainage and treatment network to support the delivery of new homes and businesses, minimising any impact on existing customers.		
Customer and stakeholder views	Customers are concerned with the level of development and the impact on infrastructure in the region. They expect us to ensure that future generations have access to the same level of wastewater and water services as we do today and are willing to invest now to provide no deterioration in services in the future.		
Our aim	Our aim is to transform the way we deliver additional capacity, working more collaboratively with developers, local authorities and the Environment Agency. We will plan more proactively, deliver quickly and efficiently, while protecting our existing customers from increased flooding and pollution risk and maintaining our treatment works compliance.		
Scope of this business case	Enhancement expenditure providing on-time investment to support growth while protecting our existing customers and the environment.		
	Enhancement	Contributions	Total
Totex (£'m)	£271.9m	£89.1m	£182.8m
Opex (£'m)	£4.5m	£0m	£4.5m
Capex (£'m)	£267.4m	£89.1m	£178.3m
Residual, post-AMP7 capex (£'m)	Growth investment will be ongoing		
20-year Whole life totex	£176.0m		
Materiality (% of the wholesale wastewater plan)	11.5% (Wastewater Network+)		
Relevant business plan table lines	WWS18: 1,25,26	N/A	N/A
Enhancement			
Need for enhancement / investment	The rate of growth has increased in AMP6 and we are forecasting over 100,000 new connections in AMP7, in line with Local Area Plans. Our plans are based on our network models, Drainage Area Plans and a robust assessment of treatment works capacity.		
Overview of AMP7 proposals	Our investment proposals contained within this investment area are summarised in the below table.		

	AMP7 Totex (£k)				
	Wastewater Network Reinforcement and Growth	Section 101A projects	Wastewater Flooding new additions	Wastewater Treatment Capacity Increase	Total
Gross Totex	127,990	4,577	11,294	128,086	271,947
Contributions	-89,093	0	0	0	-89,093
Net Totex	38,897	4,577	11,294	128,086	182,854

Why the proposals are the best programme-level option for customers	<p>Within our two major programme areas of Wastewater Network and Wastewater Treatment growth we have considered various options.</p> <p>For networks, our plan is based on specific catchment solutions with a programme level efficiency applied. The programme level efficiency of £70 million is based on re-engineering our planning and delivery process to take much greater account of innovative and collaborative approaches. This efficiency is in addition to our initial cost efficiency and calibration applied to all programmes Options within the Wastewater Treatment programme are site and catchment based. The option selection process has been based on lowest whole life cost</p> <p>Further information can be seen in Section 5.2.</p>
Customer and stakeholder support	<p>Maintaining the health of our water and wastewater assets is a high priority for customers. They expect us to ensure we can deliver the same level of services in an environmentally friendly manner for future generations. Developers and Planning Authorities want us to work more collaboratively to develop shared approaches and facilitate housing and growth targets.</p>
Need for a CAC (if relevant)	<p>There is a Cost Adjustment Claim associated with growth. This is related to the extraordinary costs associated with provision of a new treatment works for the Whitfield development in Dover.</p>
Extent of management control (if relevant)	<p>Growth is largely driven by external factors, but we are adapting our processes to work more collaboratively with various stakeholders. This enables integrated forward plans to be developed, reducing risks to stakeholders and providing greater resilience in the round.</p>
Robustness and efficiency	<p>Our proposals are based on specific catchment needs and include significant efficiencies at scheme and at programme level.</p>
Customer protection (if relevant)	<p>To protect customers, our Cost Adjustment Claim for Whitfield includes an ODI to return outperformance to customers, reflecting our ongoing work to explore more innovative options and the wider risk of growth occurring more slowly than anticipated in local plans.</p>
Affordability considerations	<p>We have applied a further £70m efficiency to our network proposals, recognising the expected benefits from re-engineering our growth planning processes and opportunities from Sustainable Drainage 2030 approaches.</p>
Board assurance (if relevant)	<p>This enhancement business case has been externally reviewed by Jacobs, with no material exceptions identified.</p>

Performance Commitments supported by this business case			
PC	How relevant is this business case?	Comment	
Growth (Cost adjustment claim)	High	This PC protects customers against delivering the solution at a lower cost than the claim value	
Surface water Management (no Properties)	High	The PC is a key measure of a mechanism we propose to use to free up capacity in our existing wastewater network to accommodate growth	
D-Mex	High	The PC will measure our successful implementation of many of our new approaches for supporting growth from a customer and stakeholder perspective	
Schemes and options			
Schemes over £20m	Options		
	Description	Cost	Selected option and rationale
Aylesford Network	Option B – catchment solution	£33.6m	Option B – Lowest whole life cost
Budds Farm Network	Option A – catchment solution	£41.6m	Option A – Lowest whole life cost
Ebbsfleet Network	Option B – catchment solution	£20.8m	Option B – Lowest whole life cost
Whitfield Combined solution	Option D – New WTW coastal discharge	£35.7m	Option D – Lowest whole life cost

2. Scope of business case

Our wholesale plan for PR19 totals £3.9b. This business case relates to £271.9m (gross) planned investment in Wastewater Growth or £182.8m including contributions from developers and other customers. How this investment relates to our wider wholesale plan is detailed within Figure 1 below.

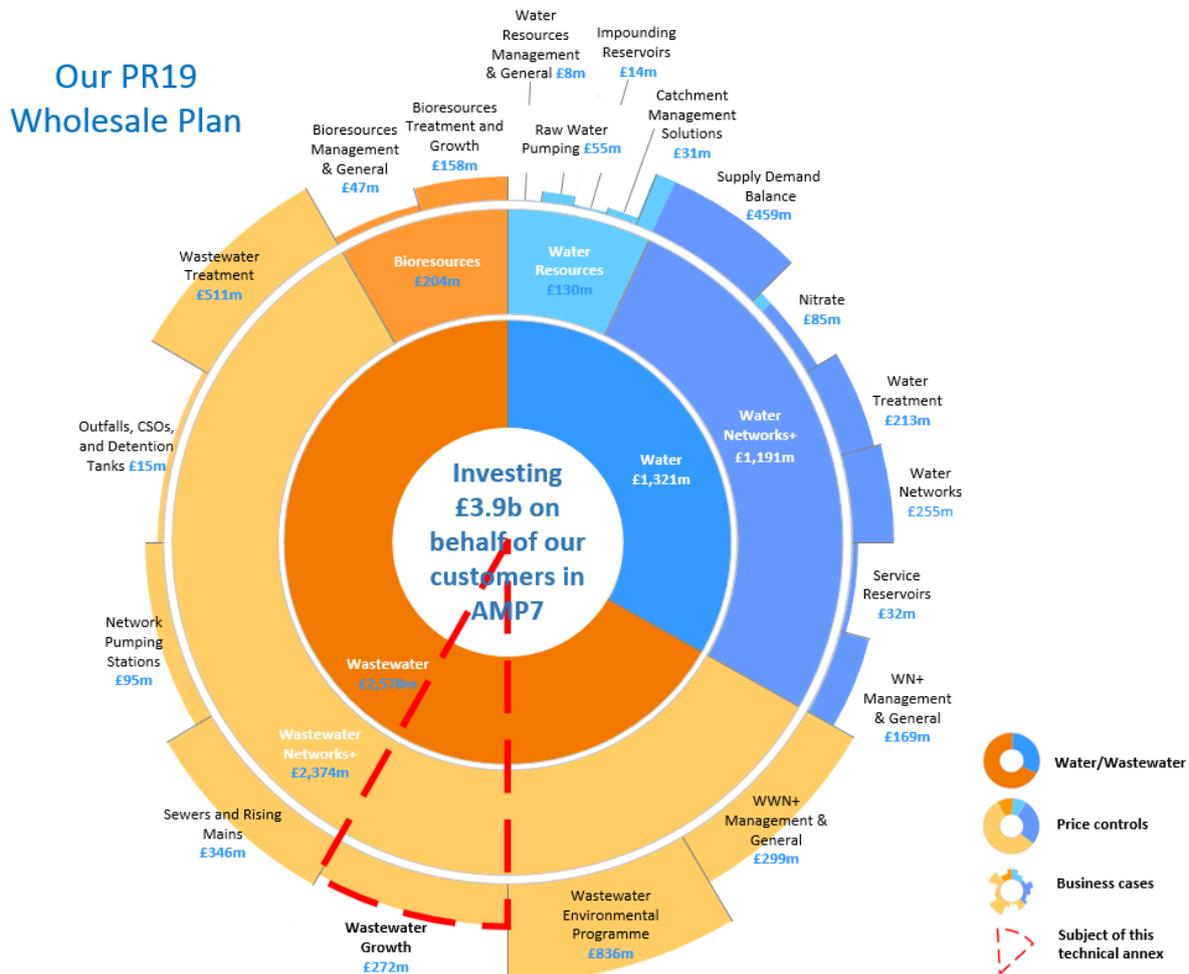


Figure 1: Southern Water PR19 Wholesale Plan

This business case focusses on the key areas of:

- Wastewater network reinforcement (sewers, rising mains, pumping stations)
- Wastewater treatment
- New sewerage and treatment via s101a
- Strategic growth for significant new towns and large-scale developments

As population grows, so does demand for our wastewater services. To ensure resilient services for our customers, protect the environment and meet demand from growth we need to secure additional capacity. Schemes are categorised as growth if the investment need is driven through an increase in population in AMP7. Sites with existing effluent compliance risks due to historic growth are excluded and are considered within the base capital maintenance case for wastewater treatment.

Failure to provide additional capacity can have adverse impacts for customers and the environment by increasing flooding and pollution with potential detriment to water quality.

We propose three growth-specific performance commitments in AMP7. The primary one relates to the new D-Mex measure, one relates to removing surface water from our sewers to create additional capacity, and the other is specific to our proposed Cost Adjustment Claim at Whitfield.

Our transformational programme **Sustainable Drainage 2030** is driving new ways of working to adopt more collaborative, environmentally sustainable approaches to address capacity limitations.

3. AMP6 Strategy

3.1. Investment Strategy

The growth rate has increased during AMP6 over AMP5. For wastewater, the rate of growth is broadly in line with our PR14 predictions.

Our investment strategy for wastewater treatment has focused on:

- Maximising existing process and Dry Weather Flow (DWF) permit headroom to accommodate growth, reducing need for growth expenditure. Action plans were created for sites with risks of exceeding their DWF permit to identify the most cost-effective solution
- Optimising the import of cess waste to make sure of existing capacity in our wider network
- Including growth investment within existing quality schemes to deliver long-term efficiencies
- Putting forward specific growth schemes where growth at a treatment works was causing a high risk of permit non-compliance

Our investment strategy for wastewater networks has focused on:

- Delivery of the majority of network growth through developer requisitions once the need is confirmed, with the use of Grampian Conditions on developments to allow time for appropriate network reinforcement
- Planned investment of £17m for a new strategic main in Chichester
- Surface water separation projects to reduce pressure on the existing network and unlock capacity for growth
- Reduction of properties at risk of internal flooding due to hydraulic overload, where the schemes are cost beneficial based on our customers' willingness to pay for improvements

Our approach has been heavily influenced by two factors, resulting in network growth investment not starting until a late stage in the planning process

- We were criticised at PR09 about our inability to attain the levels of developer contributions seen by other companies. This contributed to a greater focus on the use of developer requisitions to deliver network growth schemes
- Significant investment in new trunk sewers for Ashford in AMP4 resulted in premature expenditure when development was stopped at a late stage

Recognising a growing dissatisfaction from developers we undertook a thorough review of our approach in autumn 2017, working with developers and planning authorities to better understand their needs and concerns. We identified the following improvements required in AMP6:

- The need for a more forward-looking approach to meeting growth needs in our wastewater networks:
 - Planners and developers stressed the need for us to become more proactive in planning for growth to avoid delays to development. This includes reducing our reliance on Grampian Conditions, where developments are delayed until sewer capacity is available – a significant source of developer dissatisfaction (see [T.A.4.4 Customer Engagement Deliverables](#) for Developer and Stakeholder

feedback). Planning authorities are under increasing pressure to deliver their housing targets so are reluctant to delay construction – meaning we must be more proactive

- The new charging mechanism, introduced in April 2018, is helping reduce barriers to investing proactively to support new developments. Firstly, the clear rules and guidance outline expectations for improved accountability, customer service and delivery timeframes. Secondly, removing the requirement for network capacity improvements to be development specific (costs now being aggregated across all connections) supports greater use of catchment management
- A comprehensive, forward-looking review of wastewater treatment growth, reducing risks to compliance and minimising operational action plans

In AMP6, responding to the challenges, commitments and pressures outlined above, we took a more medium-term strategic view of growth needs. We completed 103 Drainage Area Plans, each providing outputs to support growth and reduce flooding, with several areas brought forward for outline design, allowing for construction in AMP7. These adaptive plans and solutions ensure a risk-appropriate, resilient approach to meeting the challenges of growth, climate change and environmental protection.

Additionally, we improved the visibility and accessibility of our capacity modelling to developers. We reduced our modelled flows from new developments, due to our success in reducing per capita consumption, and reviewed modelling on factors such as urban creep to reduce the parameters used to assess capacity.

Our standards are now resulting in lower capacity improvements being required for many developments. This will reduce the costs and complexity of network reinforcement by reducing both the frequency of when additional capacity is needed, and the scale when it is.

During AMP6 we also implemented an extensive internal and external flooding mitigation strategy. This, along with our wider programme, has successfully reduced flooding frequency – we are on track to deliver our customer promise of reducing internal flooding by 25%. For further information on our flooding strategy please see [TA.12.WW07 Flooding and Pollution Strategies](#).

In AMP6 we developed a more comprehensive understanding of capacity, headroom and bottlenecks at our Wastewater Treatment Works (WTWs). For each WTW we developed an AM410 tool, which forms part of our Asset Management Manual. The AM410 provides a comprehensive capacity assessment, enabling us to make informed judgements as to when the capacity of each process stage will be exceeded.

Combining this with greater business as usual forward planning activities allows a longer-term assessment of likely growth investment triggers. This includes DWF permit exceedances, hydraulic bottlenecks or treatment capacity limitations. It is now possible to model and predict when growth triggers will occur, enabling a more strategic, efficient approach to growth investment, including alignment with other projects and drivers.

All WTWs in the AMP7 growth plan have been assessed using the AM410s. The assessment identified where key permit conditions, hydraulic or treatment capacity is predicted to exceed beyond an acceptable level of risk during AMP7. The sites identified move into our Asset+ process for detailed assessment and engineering development. For more information [TA.14.4 Bottom-Up Cost Estimation](#) technical annex.

In addition to working to improve our internal processes, we are increasing our collaboration with developers, planning authorities and the Environment Agency. We have successfully trialled “Charettes” in two locations – Paddock Wood, Kent and Lidsey, West Sussex. Charrettes are joint workshops to review and shape our proposals for growth. By sharing our plans, we can take better account of local issues and priorities, achieving a more integrated

set of proposals. Stakeholders welcomed the early engagement and the insight has allowed us to address key concerns at the earliest stages of our design and development work.

We are working with Kent County Council on innovative methods to separate surface water and highway drainage from sewers. We are also working closely with the master planning team for the Otterpool development in Kent to identify innovative, and more sustainable, approaches to manage flow from large scale developments and garden cities in advance of planning approval.

Many of these new approaches have informed of the key focus areas within **Sustainable Drainage 2030**. This will promote a completely new way of thinking and drive a new approach of how we support growth. Further details can be found in Section 5.

Table 1: AMP6 Actuals (Yr. 1&2) & Forecast (Yrs 3-5) Gross Figures (17/18 Prices) – Wastewater Growth

AMP6 Actual						
(£'k)	2015/16	2016/17	2017/18	2018/19	2019/20	AMP6 Total
TOTEX	11,619	23,516	46,271	44,791	46,308	172,504
CAPEX	11,619	23,516	46,271	44,791	46,308	172,504
101A Schemes Capex	891	3,209	5,913	2,163	4,362	16,537
Infrastructure capacity increase (infra) Capex	6,194	16,110	24,361	27,543	32,182	106,391
Internal Flooding new additions Capex	2,669	1,180	3,261	3,255	615	10,979
Infrastructure capacity increase and New treatment capacity (non-infra) Capex	1,864	3,017	12,737	11,830	9,150	38,598
OPEX	Opex is within Sewers & Wastewater Treatment Opex					

Expenditure to meet network growth requirements is not fully covered by external contributions, largely due to the incorporation of a degree of income-offsetting in the redefined Infrastructure Charge. This means some costs must be provided through the revenue price control. Further AMP7 reforms mean residual income offset from site-specific work will be transferred into the Infrastructure Charge. This is included within our income projections associated with network reinforcement, detailed within the App 28 Data Table.

3.2. Customer Benefits and Resilience

Investment is usually triggered by modelled impact on serviceability or resilience. Furthermore, network investment is only designed to maintain existing levels of serviceability due to the regulations on network reinforcement. Any further enhancements must be, fully or partially, funded from alternative sources. Where possible, we use existing network and WTW headroom to accommodate growth, with minimal impact on serviceability targets. We will invest to reduce risk against the following key measures:

- Not increasing the number of internal flooding incidents in customers properties due to hydraulic limitations
- Protecting the environment for our customers by not increasing the number of pollution incidents due to hydraulic limitations
- Protecting the environment for our customers by maintaining DWF Compliance at wastewater treatment works

Our strategy to optimise use of existing headroom has secured capacity for growth to date, but it means we have more limited options to defer investment in network and WTW capacity.

3.2.1 Internal Flooding due to Hydraulic Capacity

An important metric for the wastewater network regarding growth is the number of internal flooding events due to hydraulic limitations.

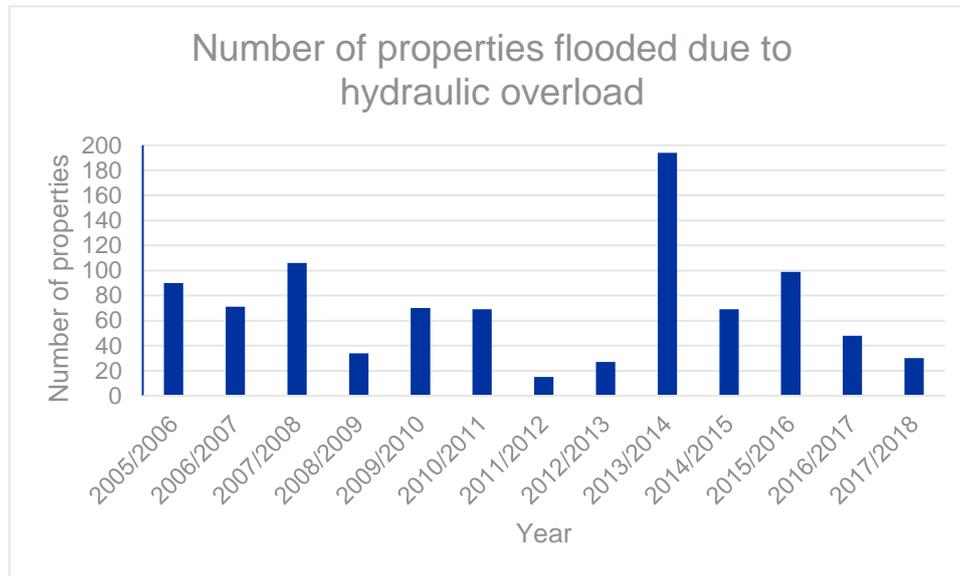


Figure 2: Number of Internal Flooding incidents due to Hydraulic Overload

Flow from new developments can contribute to increased risk of flooding by adding further volume into existing sewers.

Aside from the peaks in 2013/14 and 2015/16 performance has remained stable. The high levels of hydraulic flooding in 2013/14 and 2015/16 align to extremely wet years with high groundwater levels. As a result, our investment case [TA.12.WW04 Sewers and Rising Mains](#) includes additional expenditure to reduce infiltration.

3.2.2 Pollution due to Hydraulic Capacity

The likelihood and severity of pollution incidents may increase due to additional foul and surface water entering our network or increased groundwater infiltration due to an enlarged sewerage network.

The number of pollution incidents has reduced since AMP5 as shown below in Figure 3.

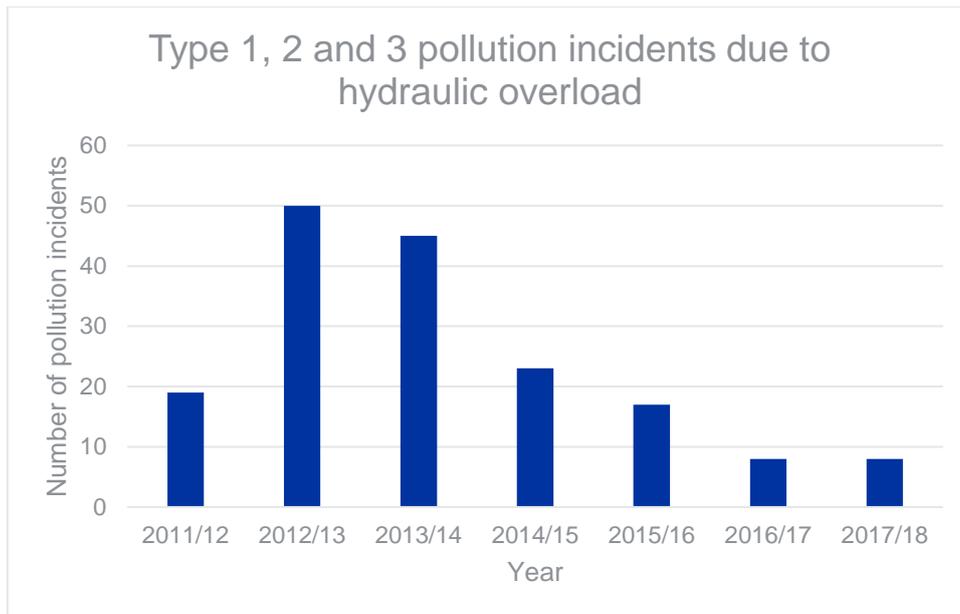


Figure 3: Number of Pollution Incidents due to Hydraulic Overload

Avoiding increased risk of spills due to reduced capacity is a key element of our growth expenditure. Common techniques for increasing capacity include upsizing sewers, pumping stations and rising mains and transferring wastewater flows to other wastewater treatment works or points within the same catchment with spare capacity.

3.2.3 DWF Compliance

Wastewater treatment works have a limit on the dry weather flow for the influent sewage received. Increased flow due to growth and increased trade discharge can lead to more frequent operation of overflows therefore increasing the potential for an adverse impact on the water environment.

The performance of wastewater treatment works with regards to growth is indicated below in Figure 4 through the number of sites that are exceeding dry weather flow consents.

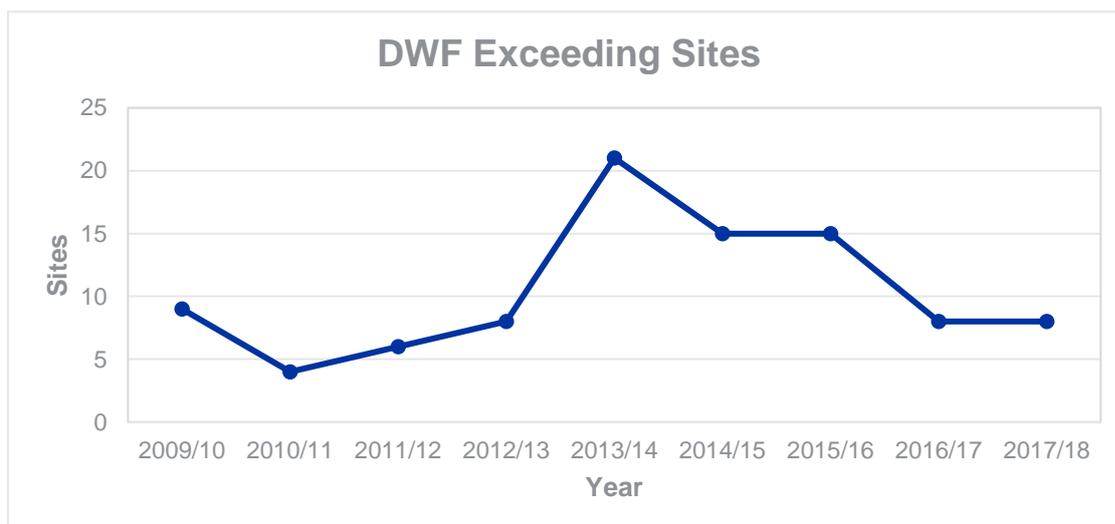


Figure 4: Number of wastewater treatment sites exceeding DWF consents

Figure 4 indicates a slight rise in dry weather flow exceedances over this period, resulting in a number of proposed capital maintenance schemes within the [TA.12.WW01 Wastewater Treatment](#) business case.

Compliance is usually maintained by providing additional capacity as required or developing storage tanks and balancing tanks to reduce high flows. If cost effective, growth can also be managed by transferring wastewater to other treatment works with spare capacity.

We intend to upgrade a number of sites with current descriptive consents to comply with future numeric permits. This is due to the size of the population served by the sites increasing above the 250 population equivalent threshold.

3.2.4 Developer Services Customers

Customers of our Developer Services have specific demands and expectations of what they should receive. We have often not met developers' needs and expectations and, as a result, feedback has been negative.

To better understand the frustrations of developers, NAVs and Self Lay Practitioners (SLPs) we held a workshop in October 2017 with representatives from developers and the planning community. From this, we developed a number of plans to significantly improve four key areas identified as priorities:

- Greater forward planning
- Clear and consistent charges
- Transparency, communication and accountability
- Fast and efficient delivery

We are working to improve our capabilities in the above areas and have a much deeper understanding of the challenges AMP7 holds. A wider, organisational transformation and improvement plan has been initiated to build an aligned organisation with well-defined and developed capabilities.

As a direct result of feedback from key stakeholders about confused accountabilities and difficulties securing information, we are implementing a new account management approach.

The largest 30 developers now have dedicated Account Managers, along with specific leads for the NAV, SLP and planning communities. This will deliver stronger customer support, improved customer outcomes and a platform for improved engagement and collaborative approaches into AMP7.

The introduction of D-Mex, and associated financial penalties and rewards, will continue to incentivise and drive improvements.

4. Drivers for change

Levels of growth increased between AMP5 and AMP6 and we forecast that these will continue to accelerate into AMP7. Housebuilding is subject to national levels of scrutiny and policy and in 2017 the government released its white paper 'Fixing our Broken Housing Market'¹. The primary goal is accelerating rates of housebuilding, particularly in areas where demand is currently outstripping supply.

This is particularly relevant within the South East region. Many local authorities are responding with updated plans that include for large scale development that, while securing the opportunity for desirable levels of housebuilding, provide a major demand on our capacity and infrastructure.

4.1 Customer and stakeholder views

As outlined in **Chapter 4 – Customer & Stakeholder Engagement**, we used insight from our extensive programme of customer & stakeholder engagement to develop a deep understanding of their views and priorities. From an environmental perspective, we have also drawn on the views of a diverse range of non bill-paying customers who utilise water across our region through stakeholder panels, workshops and audits, including the Environment Agency, Natural England and local authorities. All insight gathered from our customer and stakeholder engagement programme can be found in **Chapter 4 – Customer and Stakeholder Engagement** and its technical annexes.

Our customers believe we have a duty to protect and enhance the environment. 'Doing no harm to the environment' has been outlined as a minimum requirement for customers, whilst protecting and enhancing the natural environment is the level of service that customers expect. Customers want water and wastewater services to be delivered in an environmentally friendly way now and in the future.

Maintaining the health of our water and wastewater assets is a high priority for customers. They expect us to ensure we can deliver the same level of services in an environmentally friendly manner for future generations. The focus of our customers of the future is on protecting and enhancing the environment in the short and long term. They relate treatment works compliance to protecting the environment, and as such, generally rank this measure higher other customer groups.

Customers generally put more priority on current issues that have a direct impact on their daily lives. However, customers are concerned that in the future an increase in rainfall, due to climate change, and an increasing population / number of homes will mean the current sewer network will not be able to cope. Furthermore, they recognise that the sewer system is old and requires investment to avoid pollution and flooding.

Customers expect us to ensure that future generations have access to the same level of wastewater and water services as we do today, and are, themselves, willing to invest now to ensure that there is no deterioration in services in the future.

Moreover, developers have outlined that they want us to work more closely with them and the planning authorities to better predict the impact of future growth on the network. They believe this will help to ensure the necessary infrastructure is in place ahead of time and will

¹ Department for communities and Local Government – Fixing our Broken Housing Market, 2017.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/590464/Fixing_our_broken_housing_market_-_print_ready_version.pdf

allow them to provide the public with confidence that development will not cause issues such as flooding.

Government expects utility companies to play their part in supporting economic growth by “ensuring timely connections of new developments²” and want to see strategic plans for wastewater which deliver long-term resilience. The House Builders Federation has criticised the support we provide their members in meeting government housing targets. Many stakeholders, particularly local authorities, feel we should be more proactive and visible in the planning process.

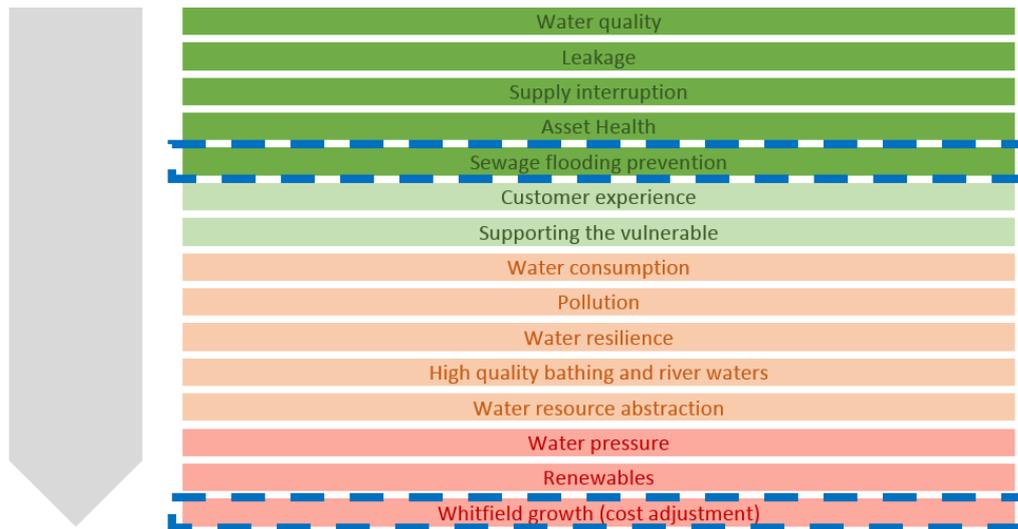


Figure 5: Relative priority of services according to our customers

We have used this understanding of our customers’ priorities to define a set of performance commitments and investment proposals, validated then refined these over the course of our programme of customer engagement. Our success at delivering on these priorities for our customers will be measured by the performance commitments outlined in this business case.

When tested across our wider customer base, the Whitfield growth Cost Adjustment Claim Performance Commitment scored as a relatively low priority, primarily due to the highly localised nature of the investment requirement. Feedback from customers within the Dover area who understood the nature of the development was more supportive.

4.2 Future trends & pressures

Growth in the South East region is predicted to be higher than the UK average. In addition to the increase in population, climate change is expected to magnify peak flows.

In order to forecast growth in population and properties, we engaged an external consultant (Experian Ltd) as part of a group project with other water companies in the South East. The other companies in the group were Affinity Water, Portsmouth Water, South East Water and Sutton & East Surrey Water (now SES Water). The benefit of this project is to have an aligned view of growth in the South East. These forecasts were produced in line with the recommended UKWIR methodology³ and Environment Agency guidelines⁴. The

² Department for communities and Local Government – Fixing our Broken Housing Market, 2017. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/590464/Fixing_our_broken_housing_market_-_print_ready_version.pdf

³ UKWIR, 2016. Population, household property and occupancy forecasting. Report no. 15/WR/02/8.

⁴ Environment Agency and Natural Resources Wales, 2016. Final Water Resources Planning Guideline, Bristol.

Environment Agency’s guidelines state that water companies should base their forecasts on Local Authority local plans.

Figures 6 and 7 show the historic growth of the Southern Water region as well as our forecast projection of growth.

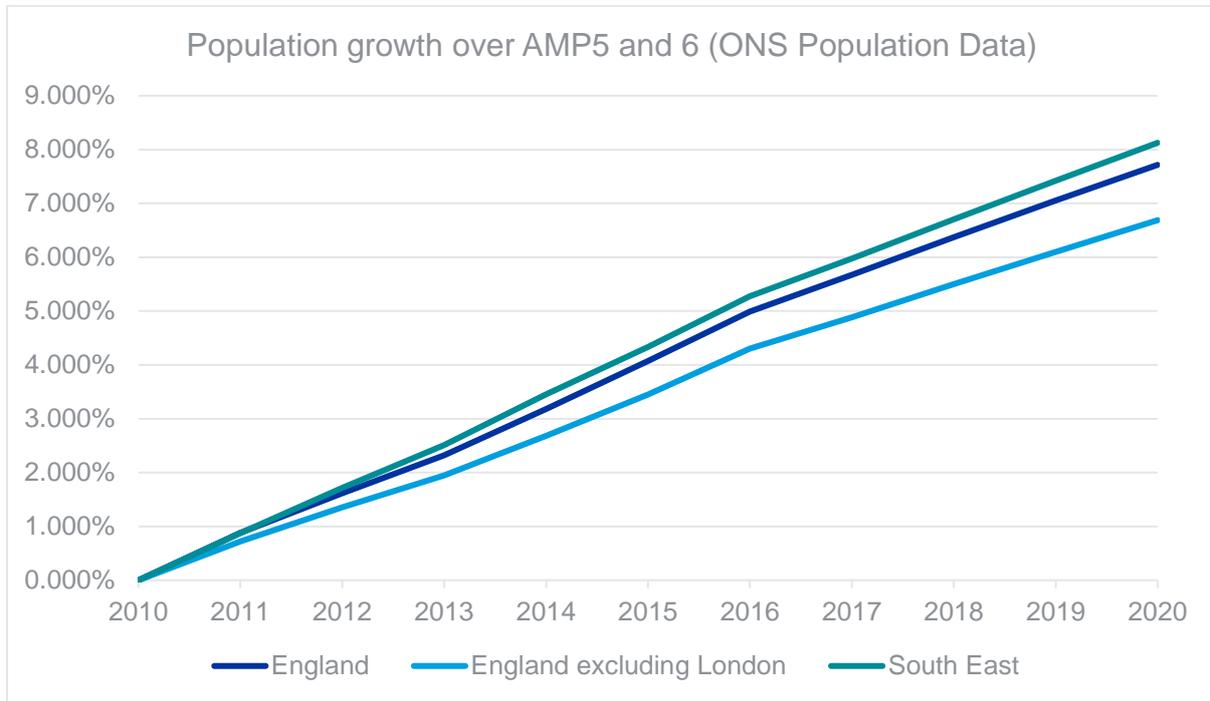


Figure 6: Population growth over AMP5 and 6⁵

⁵ ONS Analysis of Population Estimates tool.

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/analysisofpopulationestimatestool>

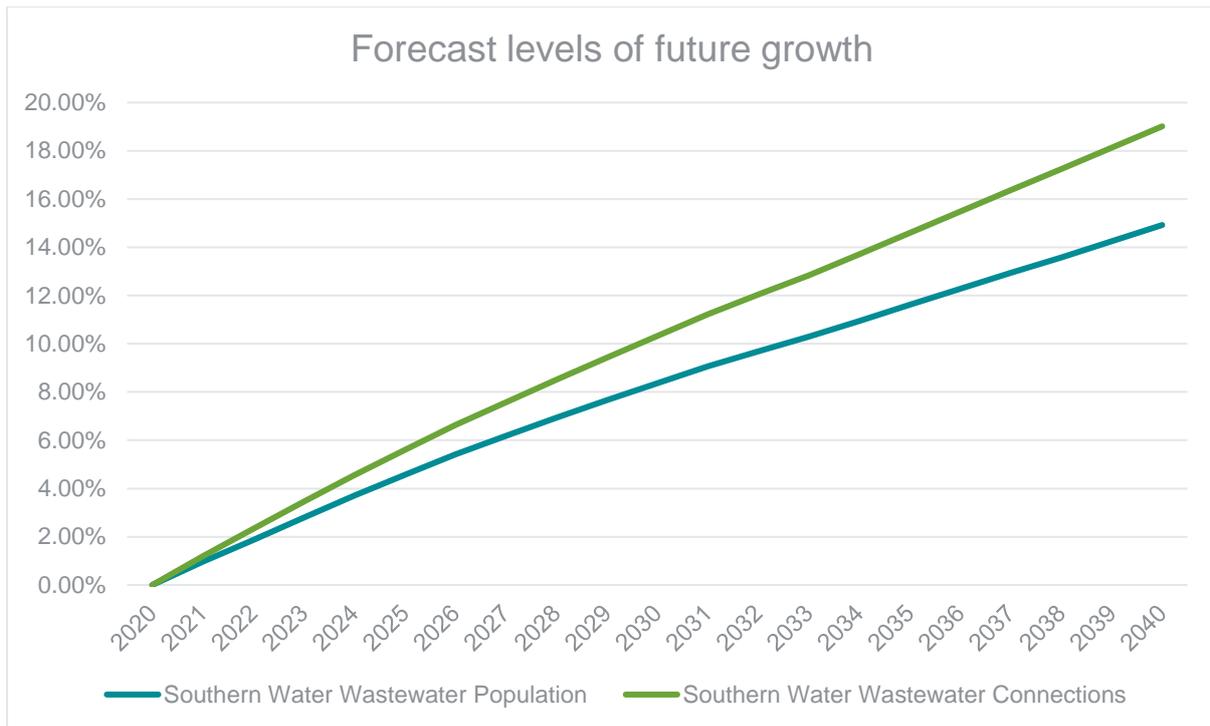


Figure 7: Future forecast population and connections growth⁶

Providing additional capacity in our region is often costly due to the constrained nature of the urban areas. Most of the population live on the South Coast, situated between the sea and the South Downs National Park, leading to congested, densely populated urban areas, often necessitating more expensive solutions with a smaller footprint, covered or underground treatment works and expensive pipeline routes.

Due to historic levels of growth, development within the South East is increasingly on large scale Greenfield sites on the outskirts of existing towns and catchments. Serving these developments is particularly difficult as local infrastructure is usually small with low available capacity and not suited to receiving additional flow from large developments.

In addition to the pressures discussed above, customers, stakeholders and regulators expect improved operational and customer service performance. Government has ambitious targets of building an annual average of 300,000 new homes by the mid-2020s and has specific expectations of utility providers⁷. We fully support government’s ambitions and will ensure we become more proactive and forward-looking to plan and deliver additional capacity for growth.

Our **Sustainable Drainage 2030** transformation programme combines collaboration, new technology and sustainable practices to optimise the capacity of our existing infrastructure. Growth considerations inform the cross-cutting themes of compliance and resilience ensuring we at least maintain performance. Details of **Sustainable Drainage 2030** are below and in **Chapter 3 – Our Ambition**.

⁶ ONS Population Projections for Regions.

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/regionsinenglandtable1>

⁷ Department for communities and Local Government – Fixing our Broken Housing Market, 2017.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/590464/Fixing_our_broken_housing_market_-_print_ready_version.pdf

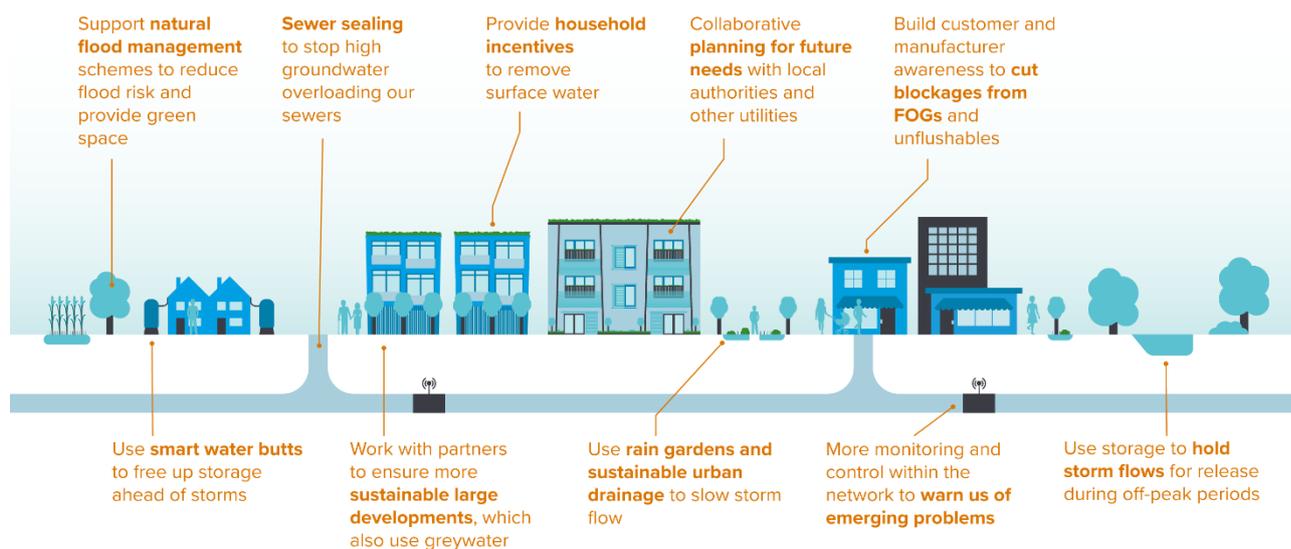


Figure 8: Sustainable Drainage 2030
Sustainable Drainage 2030

Creating capacity across the sewer network by implementing surface water solutions, building smart networks and increasing customer awareness.

We are trialling some of the approaches within Sustainable Drainage 2030, including a pilot of Smart Water Butts in Lewes, East Sussex. The Smart Water Butts effectively disconnect the properties roof surface water drainage from the sewer network and drain them into water butts. The butts automatically maintain capacity for storm events by trickle releasing water during ‘off peak periods’ (for example dry nights) if full or near capacity. This could have a significant effect by unlocking capacity for growth previously used by surface water run-off.

We are developing partnership approaches with various stakeholders to remove excess surface water from the sewer system. In Folkestone, we are working with Kent County Council to remove highway drainage from the sewer network by building rain gardens which allow surface water to discharge to ground naturally. These approaches could be used to both reduce flooding and increase capacity for growth, dependent upon catchment need.

We are also collaborating closely with the master planning team for The Otterpool Garden City in Kent, one of the largest developments expected in to start in AMP7, continuing over multiple AMPs. It is in the early stages of development and we are exploring various approaches to minimise water consumption, such as recycling of grey water. Innovative approaches at the development level must be designed in as early as possible, and our close relationships are allowing a multi-organisational approach to delivering the best possible outcomes for customers and the environment.

We will assess the cost and benefits of these projects and learn from our successes and challenges to continually develop our strategy and embed it into business as usual ways of working. In addition to financial measures, we will review customer and environmental outcomes to ensure we take a balanced approach.

To meet stakeholders', customers' and regulators' expectations about how we support growth we are developing further innovative approaches, detailed in Section 5.

5. AMP7 Strategy

5.1 Investment Strategy

Our AMP7 strategy is to become more proactive in addressing growth requirements for both our networks and WTWs to ensure timely provision of services – meeting both our statutory duties and developers’ expectations.

It is vital we provide the best value solutions for customers, both direct bill payers and developers, maintain services which are fit for the future and ensure new developments do not have any negative impact on existing customers or the environment. Investment is required to ensure we strike this balance.

Opportunities to use existing headroom are limited, and we are increasingly exposed to the full cost of delivering infrastructure for new growth. This pressure is greater than for many other companies as the population of our region is predicted to grow faster than the England and Wales average⁸, as it has over the past 2 AMP periods⁹. The ONS forecasts national average population growth at below 3%¹⁰, however our population forecasts incorporating local developer projections suggest the Southern Water region will experience average growth above 4% – a significant differential compared to the rest of the country.

There are several strategic developments creating growth hotspots and representing significant planning, resourcing, engineering and environmental challenges that need to be addressed in AMP7. Two garden cities, Ebbsfleet and Otterpool, and strategic developments such as Whitfield, Kent and Welbourne, Hampshire, will significantly increase the population we serve and require the construction of end-to-end wastewater infrastructure. There are little synergies available with existing networks or treatment capacity to cater for these new large-scale developments therefore, due to dense high levels of population growth, the above requirements are not well represented by historic Ofwat revenue models.

In AMP6 we focussed on operational and incident management strategies, successfully outperforming industry averages for internal flooding and pollution incidents – and heading towards upper quartile performance. We will continue building on this performance in AMP7, further details are in the [TA.12.WW07 Flooding and Pollution Strategies](#) technical annex.

Key elements of our AMP7 strategy include:

- Increased use of catchment approaches to secure capacity and deliver social and natural capital benefits
- Maximising synergies with other future investment drivers to deliver outcomes as cost-effectively as possible
- Phasing and planning of engineering and construction works over multiple AMPs to reduce overall costs
- Using temporary or operational approaches to defer capital works to align with our wider strategies

⁸ ONS Population Projections for Regions.

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/regionsinenglandtable1>

⁹ ONS Analysis of Population Estimates tool.

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/analysisofpopulationestimatestool>

¹⁰ ONS Population Projections for Regions.

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/regionsinenglandtable1>

- Identifying innovative approaches to unlocking capacity, based around the principles for:
 - Sustainable Drainage 2030
 - Target 100
 - Collaborative planning with local authorities, developers and the EA

We will transform our approach to growth, particularly relating to customer services and make the most of the opportunities from the new connection charging mechanism. This reform is a crucial enabler for the key pillars of our strategy, along with our customer service and performance improvement activities detailed within the following section. A more detailed breakdown of how we intend to deliver this transformation is detailed in Section 5.2 below.

Our AMP7 performance commitments for growth are detailed below:

Table 2: Performance commitments directly associated with growth

PC	Definition	Outcome
Developer services measure of experience (D-Mex)	The developer services measure of experience (D-Mex) is a mechanism to incentivise water companies to provide an excellent customer experience for developer services (new connections) customers. These customers include small and large property developers, self-lay providers (SLPs), and new appointments and variations (NAVs).	By working together, we can secure a resilient economy for the south east.
Growth (Cost Adjustment Claim)	This measure is designed to monitor and assure the delivery of one enhancement scheme related to population growth in Whitfield. The measure ensures that customers are protected in the event that the scheme is delivered at a lower cost or if the scheme is not delivered in AMP7.	The services we provide are effective and fit for the future
Surface water management	This is a co-delivery measure with our customers to reduce the amount of surface water entering our combined or surface water sewerage network including through the use of SuDS, soakaways and other innovative methods. Removing surface water from the sewer network can help alleviate flooding and pollution.	We innovate to create sustainable communities

Table 3: Performance commitments that can be impacted by growth

PC	Definition	Outcome
Internal sewer flooding	The performance commitment is Internal Flooding Including Severe Weather.	The services we provide are effective and fit for the future
Pollution incidents (categories 1, 2 and 3)	The total number of pollution incidents (categories 1 to 3) in a calendar year emanating from a discharge or escape of a contaminant from a company sewerage asset affecting the water environment. Incidents affecting amenity of the water environment, e.g. Bathing Waters, are included.	The services we provide are effective and fit for the future
Risk of sewer flooding in a storm	Risk of sewer flooding in a storm is a new risk-based resilience metric for wastewater. It is measured by the percentage of population at risk of sewer flooding in a 1 in 50-year storm.	The services we provide are effective and fit for the future
External Sewer Flooding	The number of external flooding incidents. External sewer flooding is defined as per Ofwat's guidance.	The services we provide are effective and fit for the future
Asset Health: Treatment works compliance	Measured using the Environment Agency Environmental Performance Assessment (EPA) methodology.	The services we provide are effective and fit for the future

The summary of our AMP7 expenditure is detailed in the following table.

Table 4: AMP7 Forecast Post-Efficiency Figures (17/18 Prices) – Wastewater Growth

	AMP7					
	Price Control	QBEG	Ofwat Table	AMP7 Total	Contributions	AMP7 Net
TOTEX				271.947	-89.093	182.854
CAPEX				267.458	-89.093	178.365
101A Schemes	Wastewater networks +	Growth	WWS2 1	4.577	0	4.577
Infrastructure Capacity increase and networks	Wastewater networks +	Growth	WWS2 25	127,950	-89.093	38,857
New treatment capacity (non-infra)	Wastewater networks +	Growth	WWS2 26	123.637	0	123.637
Internal Flooding new additions	Wastewater networks +	Growth	WWS2 30	11.294	0	11.294

OPEX				4.489	0	4.489
Infrastructure capacity increase	Wastewater networks +	Growth	WWS2 72	0.040	0	0.040
New treatment capacity (non-infra)	Wastewater networks +	Growth	WWS2 73	0.164	0	0.164
AMP6 Enhancement Opex Adjustment	Wastewater networks +	Growth		4.285	0	4.285

5.2 Plan Options

Our plan options are based upon base solutions derived from our engineering development work. This section discusses options at programme level for network growth and at project level for treatment growth. This is due to network projects being far greater in number, generally of a lower value and more difficult to forecast as they are highly dependent on development specific demands that arise within the AMP. The projects are largely required to support localised development and are less predictable and foreseeable than treatment growth needs.

5.2.1 Programme Options - Wastewater Network Growth

Option 1 – Base plan including challenged scope on named catchments Chickenhall, Peel Common and Aylesford.

Detailed reviews and enhanced modelling work were undertaken on these catchments to test how far we could push efficiency through more innovative solutions, using the principles from **Sustainable Drainage 2030**, localised storage and updated modelling criteria. Significant savings of 30% were generated utilising this updated approach (see table below).

Table 5: Savings from the scope challenge in 3 target catchments (pre-efficiency values)

	Pre-challenge capex value (£k)	Post challenge capex value (£k)	Saving
Peel Common	7,622	2,827	63%
Chickenhall	23,285	12,390	47%
Aylesford	44,124	37,444	15%
Total	75,031	52,661	30%

This exercise resulted in a saving of approximately **£22m**. These values are incorporated into the base plan as the projects have been through the Asset+2 governance process. This option is lowest risk in terms of delivery, however it is the costliest.

Option 2 – Extrapolation of Option 1

Taking the results from Option 1 above and extrapolating across the remaining programme of strategic projects. This resulted in a potential additional savings of **£32m**.

This option is slightly higher risk than Option 1, however we are confident that the opportunity for savings is achievable. This would represent a higher efficiency saving (manifested in lower customer charges) at a lower level of risk. This is preferable to Option 1.

Option 3 – Transformational change of how growth is managed

This option involves a complete overhaul of our AMP7 approach to delivering growth solutions as detailed in Section 5.3. Although many areas of the transformation plan are focused on service improvement, financial savings can be predicted in several areas. The full details of the benefits will need to be developed as part of the programme definition phase although an early assessment is summarised in the following table.

Table 6: Projected financial savings as a result of the implementation of the transformation programme

Efficiency	Notes and assumptions	Gross Value
Extrapolated efficiencies	As option 2	£32m
Site specific sewers	Allowance for elements of the strategic catchments to allow for site-specific sewers (funded separately and differently from AMP7) ¹¹	£8m
Commercial properties	Development of a new approach to align more closely with billing and metering data on actual water usage, reducing predicted flow rates and anticipated scope	£4m
Updated modelling standards	Changes to modelling standards will reduce modelled flow rates for developments and reduce storage scope (only relates to element of costs that are based on AMP6 extrapolation – not bottom up estimates)	£7m
Supply chain	Improvements to the supply chain for delivering WW network activities (only relates to element of costs that are based on AMP6 extrapolation – not bottom up estimates)	£4m
Forward planning	Improved forward planning optimising AMP7 investment timing based on more comprehensive risk and resilience understanding (predominantly profiling into AMP8)	£15m
Total		£70m

This option is higher risk than both Option 1 and Option 2 as it is a fundamentally different approach for delivering growth investment. We believe the above activities have clear financial savings and the likelihood of delivering the savings is acceptable – therefore, the higher risk is also acceptable.

This option has significant savings over both Option 1 and Option 2, and results in a slight price increase in the infrastructure charge between our current charge and the forecast AMP7 charge (on a like for like calculation basis). We believe our customers and stakeholders will find this acceptable, especially as our water charge is likely to reduce significantly (see App 28 – Infrastructure Charge Income).

¹¹ New connections charges rules from April 2020. Ofwat, 2017. <https://www.ofwat.gov.uk/wp-content/uploads/2017/11/New-connections-charges-rules-from-April-2020---England-Decision-Document.pdf>

Option Selection

Our option selection matrix is detailed below.

Table 7: Option selection matrix for network growth

Option No.	Description	AMP7 Totex (£m)	Full Whole Life Cost (20 years) (£m)	Willingness to pay support	Ofwat Priority	Other regulator priority	Customer priority	Business strategic alignment	Is this option recommended?
1	Updated base plan including results from Chicken Hall, Peel Common and Aylesford detailed reviews	£183	£65	●	●	●	●	●	No – this plan is least risky however does not allow for recent solution and standard developments, transformation activities or future supply chain additions
2	Extrapolating the above results across the remaining programme of strategic catchments	£151	£51	●	●	●	●	●	No – this plan includes for the extrapolation of modelled solution savings but does not include the benefit from the transformation activities, standards improvements or supply chain additions
3	As option 2 but also including forecasted benefits from improved forward planning, updated model standards and supply chain improvements	£113	£35	●	●	●	●	●	Yes – this option increases the level of risk but within an acceptable tolerance. This keeps charges at a similar level to today and incorporates key transformational activities that will be delivered ahead of AMP7

As well as being the lowest cost option, Option 3 is most likely to meet the requirements of key stakeholders. The proposal has financial benefits, both in the value of income offset implied within the overall programme, and the costs to developers and other customers associated with the Infrastructure Charge. These costs are summarised in the following table.

Table 8: Income and infrastructure charges for the programme options

Option	AMP7 Capex	Income from customers*	Residual income offset*	Redefined Infrastructure Charge*
WNR1	£183m	£95m	£88m	£835
WNR2	£151m	£83m	£68m	£736
WNR3	£113m	£70m	£43m	£619

* Including the accommodation of the residual AMP6 income offset from requisitions

Option 3 has therefore been selected as our preferred option.

5.2.2 Scheme options - Wastewater Treatment Growth

Within the overall treatment programme, we have developed options at an individual project basis. The options for the process only solutions are summarised in the below table. The totex values for WLC comparisons are the pre-efficiency, project estimates.

Table 9: Wastewater treatment project level options*

Scheme	Description	Totex (£k)	WLC (£k) 20 yr. NP	Preferred	Reason
Park Rd Hancross WTW	Option 1	2,042	1,865	Y	WLC
Sandown WTW	Option 1	3,317	3,259	Y	WLC
Sittingbourne WTW	Option 1	23,583	21,117		WLC
	Option 2	23,233	20,340	Y	WLC
Bishops Waltham WTW	Option 1	3,121	3,750	Y	WLC
Faversham WTW	Option 1	11,453	11,019	Y	WLC
	Option 2	10,151	11,231		
Hurst Green WTW	Option 1	4,138	3,589	Y	WLC
Goddards Green WTW	Option 1	22,069	21,515	Y	WLC
Forest Green WTW	Option 1	2,025	2,047	Y	WLC
Stonegate WTW	Option 1	3,615	3,351		
	Option 2	3,603	3,393		
	Option 3	2,475	2,009	Y	WLC
Warninglid	Option 1	3,502	3,162	Y	WLC
Westwell WTW	Option 1	5,046	3,702		
	Option 2	3,213	2,202	Y	WLC
	Option 3	3,868	3,398		
	Option 4	3,207	2,564		
Gravesend WTW	Option 1	34,900	30,052		
	Option 2	20,165	18,373	Y	WLC
Northfleet WTW	Option 1	11,019	10,590	Y	WLC
Ford WTW	Option 1	19,394	15,515	Y	WLC
Otterpool WTW	Option 1	19,983	19,516		
	Option 2	13,194	11,174	Y	WLC
	Option 3	24,426	23,250		
Peel Common WTW	Option 1	18,955	19,356	Y	WLC
Lenham WTW	Option 1	10,104	9,571	Y	WLC

* These option totex values are pre-efficiency, pre-overhead, pre-synergy values as this is the basis that the option selection is made. Efficiency, QBEG, Q synergy and overhead values are only applied to the selected projects within the plan

The preferred option for Whitfield is based on the 20-year Whole Life Cost assessment for the combined network and process solution, as this is an integrated solution. Given the exceptional costs and circumstances surrounding this scheme, this has been developed into a Cost Adjustment Claim. The Whole Life Cost assessment is detailed below. This is explained in more detail within the technical annex [TA.14.3 CAC03 Growth - Whitfield](#). The below option costs are detailed as post-efficiency, post QBEG allocation, post overhead to align with the content of the Cost Adjustment Claim.

Table 10: Whitfield combined solution options

Scheme	Description	Totex (£k)	WLC (£k) 20 yr. NP	Preferred	Reason
Whitfield Growth	Option 1	39,743	29,863		
Whitfield Growth	Option 2	48,102	39,844		
Whitfield Growth	Option 2a	46,211	36,588		
Whitfield Growth	Option 3	34,122	28,681		
Whitfield Growth	Option 4	35,713	29,385	Y	Viable and WLC
Whitfield Growth	Option 5	35,959	30,229		

We have carried this programme level option into the business plan and Cost Adjustment Claim.

5.2.3 Other Programme Investment

We have estimated costs of £4.6m for Section 101A schemes in AMP7. These schemes are related to a potential 3 sites where we believe that we may have AMP7 obligations. These sites are not currently confirmed therefore our estimate is based upon historic spend data.

We are forecasting £14.9m of investment in Wastewater Requisitions. This is based on our historic assessment of the proportion of requisitions that we delivered in AMP6 that were considered 'Site-Specific' under the new definitions within the New Connection Charging rules¹².

We are forecasting £11.3m of investment to protect customers from flooding associated with new growth. Although our larger developments and larger catchments will have detailed modelling work undertaken, smaller developments and catchments often don't due to the inefficiencies in modelling all developments. There is therefore an increased risk to customers in areas where smaller developments can have a cumulative impact. This estimate is to manage heightened customer risk from flooding and resolve as and when this becomes apparent. These costs are based on our AMP6 levels of activity but include our AMP7 efficiency targets.

5.2.4 General Optioneering

Many of the sites and catchments we have selected have been through a rigorous optioneering and challenge process to drive innovation and efficiency.

A significant number of the initial solutions we developed were high cost / low risk approaches to delivering the outcomes required. We challenged these solutions through our Asset+ process to explore innovative approaches and ultimately lower costs. These alternative solutions often increased some form of risk, however for each site our Asset+ process allowed for an objective level of risk to be agreed. For both Wastewater Treatment and Network projects we identified and secured considerable savings at multiple sites.

We have undertaken several challenge and review sessions focused on the growth portfolio, designed to place targeted efforts on key catchments, sites or asset types to drive efficiencies. These sessions have generally been successful and allowed greater confidence in the extrapolated efficiencies.

¹² Charging rules for new connections. Ofwat, 2016.

<https://www.ofwat.gov.uk/wp-content/uploads/2016/12/Charging-rules-for-new-connections-%E2%80%93-decision-document.pdf>

5.3 Innovation

Given the high level of growth predicted for the South East, we face significant challenges to providing the capacity required for development whilst maintaining, and improving, current levels of service, compliance and performance. Innovative ways of working and technology are critical to meeting demand whilst keeping bills affordable.

5.3.1 Growth Transformation Plan

Our plan to transform how we support growth is centred on key capabilities which we will develop to ensure our approach becomes more forward-looking, collaborative and integrated. Our initial thinking, detailed below, will be complemented with external support to build a holistic strategy which meets the needs of future growth investment.

We are working with a business change specialist to fully review our end to end organisational approach to supporting growth, and the below areas will be key pillars and considerations when building our long-term model. Our recent work with customers and stakeholders highlights several areas requiring, and a clear mandate for, substantial change.

5.3.1.1 Treating customers as customers

Feedback from developers, NAVs and SLPs is that they do not feel treated as customers (see [T.A .4.4 Customer Engagement](#)) despite the fact they often fund large elements of work or have significant engagement with us. A perceived lack of accountability, disjointed service provision, poor quality information and lack of ability to work within development schedules are all issues they have raised.

We propose moving from a transactional approach focussed on discrete services to focussing on the whole customer journey, including investigating building an integrated service for all developer customers' requirements. New connection charging creates an opportunity for development-specific estimating and planning to be implemented, creating integrated, specific proposals and options for customers.

By creating Account Managers, we have started to address this. However, we need to ensure they have access to technical support to provide customers with the quality and speed of service they expect. All members of our team must be able to deliver high quality customer service, in line with the aspirations of our transformational programme and wider customer engagement strategy.

We will work collaboratively with customers and stakeholders to build a stronger understanding of the development and growth picture. We will develop shared plans and strategies to ensure our delivery proposals align more closely with development schedules, promoting growth and reducing delays and disruption.

5.3.1.2 Creating a transparent, performance driven culture

Stakeholders highlighted the need to improve accountability, timeliness and certainty of costs for growth schemes. While the new charging rules will address many issues around certainty, some of our charges (particularly wastewater) are amongst the highest in the industry whereas others (water) are relatively low.

While we have improved performance against the Water UK performance measures¹³, developers have made it clear this is not always indicative of their experience. Currently, there are no reference time targets to deliver network reinforcement projects, resulting in a lack of certainty. A consistent, clear and open set of performance metrics will be designed to increase certainty, drive delivery of solutions in line with customers' expectations and reduce costs, at an acceptable level of risk, in the long term.

¹³ Water UK Developer Services Level of Service Report. <https://developerservices.water.org.uk/latest-reports>

5.3.1.3 Stronger upfront planning capability; aligned with Local Area Plans and development schedules

Developers and local authorities have commented our planning is often reactive and utilises tactics which, from their perspective, slow development, with Grampian Conditions¹⁴ being one of their biggest frustrations. We have committed to significantly reduce our use of Grampian Conditions.

We propose to align our planning approach with Local Authority Local Area Plans. This provides a longer-term planning horizon, moving our approach away from localised, development specific solutions to catchment-based approaches.

To become more effective at forward planning, we propose consolidating our various planning functions into an integrated team, responsible for planning related outputs across the organisation. This will include conceptual design of growth schemes, sponsoring work through delivery, responses to local authorities' plans and investigating catchment schemes that deliver multiple benefits to multiple sites.

We will collaborate with a range of stakeholders to co-create plans that meet the needs of all involved. These include local planning authorities, developers, suppliers and other water companies.

5.3.1.4 Adoption of more creative, innovative, risk-appropriate solutions

Much of the network growth construction activities are relatively traditional. When developing solutions, we will undertake a series of best practice reference approaches. For larger, catchment-based solutions these will include considering surface water removal, infiltration reduction, smart water butts, smart pumping stations and both online and offline localised storage.

These are key to **Sustainable Drainage 2030** and will be embedded in our business as usual approaches. Our surface water removal performance commitment will be aligned and targeted with growth management.

For smaller more localised developments, simpler, more straightforward solutions will be adopted, eliminating disproportionate effort on detailed modelling and solution development. We anticipate significant cost and time savings can be secured using alternative approaches that are embedded as industry best practice.

We have identified peak flows reaching wastewater treatment works can largely be diluted through groundwater infiltration. Network infiltration reduction options have been assessed along with alternative approaches at WTWs. The use of simpler, cost-effective side stream processes can be better suited to these dilute flows rather than a traditional approach of upsizing treatment processes – allowing for savings and maintaining high final effluent compliance.

5.3.1.5. Development of an aligned supply chain, incentivised and rewarded to deliver excellent customer outcomes

The AMP7 delivery model is currently under review and it is likely there will be opportunities for performance improvements within this area. Early proposals for our AMP7 model include procuring aligned delivery partners that specialise in network construction. Performance standards, timeframes for delivery and integrated working will be established as part of implementation. Effective incentive mechanisms, designed to align with our overall growth strategy, will be developed. These will include measures to promote strong customer

¹⁴ 'Grampian Conditions' are planning conditions that are placed on developments to request progress does not begin until the supporting infrastructure is constructed

outcomes, such as timely delivery and strong customer services, in addition to traditional financial measures.

5.3.1.6 Build truly effective delivery processes

Following the review of our organisational structure and model, there is an opportunity to review the supporting processes. Inputs, outputs and processes (including content and quality standards) will be comprehensively mapped to ensure effort is undertaken in the right place, capabilities are maximised, and risk is managed by the appropriate roles.

5.3.2 General Innovation in Supporting Growth

Strategic, catchment-based growth schemes will be included in AMP7 in growth hotspots. These solutions will look across catchments at both network and WTW capacity to determine the most cost-effective way to collect and treat wastewater. This will build on refined and updated Drainage Area Plans.

We will be piloting a co-creation approach to catchment plans in 2018, with the aim to develop joint investment plans where there is significant growth. Working with planning authorities, developers and the EA we intend to:

- identify potential synergies
- identify innovative solutions
- maximise wider benefits from planned investment

If successful, this will be adopted for business as usual planning, and form part of the forward planning element of our transformation plan detailed above.

Catchment First and **Sustainable Drainage 2030** will improve how we manage our existing wastewater networks – including separation of surface water, creating smart networks to manage peak flows and increasing customers' awareness to reduce demand on the system.

Advancements in these areas will result in more affordable and sustainable approaches to providing additional capacity, resolving internal flooding incidents whilst helping to ensure affordable bills and charges.

We will explore opportunities to work more effectively with developers SLPs and NAVs to better align activities and ensure cost-effective delivery of infrastructure. This could include agreements to construct various elements utilising each other's capabilities and supply chains to select the most efficient, integrated and least disruptive approaches to support growth.

5.4 Customer Benefits and Resilience

Through planned investment in AMP7 on growth for wastewater assets, we are confident of accommodating the additional population with no deterioration in service levels provided.

The industry standard is to design additional capacity able to accommodate rainfall from 1 in 30-year events. In response to Ofwat's new resilience metric, we will consider options to increase new infrastructure's capacity to 1 in 50-year events.

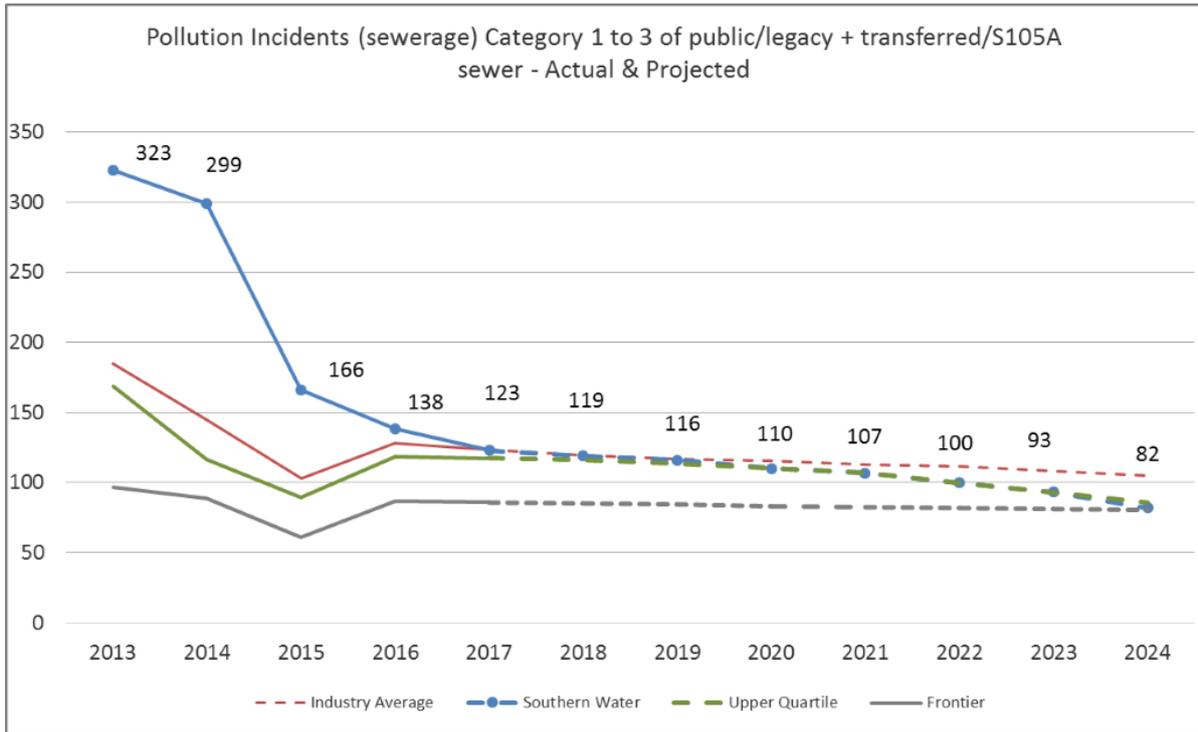


Figure 9: Projected Cat 1, 2 and 3 pollution incidents through AMP7

Supporting growth is fundamentally about maintaining a resilient asset base which meets the needs of current and future customers. Understanding resilience, particularly redundancy in the existing asset base is crucial to understanding the investment required to maintain existing serviceability. Understanding capacity and redundancy will become a critical part of our forward planning process, ensuring resilience is understood, balanced and not compromised as part of our plans.

As part of the 21st Century Drainage¹⁵ project we have started to map out available capacity as part of the Capacity Assessment Framework. This is designed to provide a consistent approach for the indication of available capacity throughout our network. This work is starting to inform wider resilience and investment plans and is also useful in understanding and communicating current levels of available capacity. Figure 10 indicates relative levels of capacity in our key catchments.

¹⁵ Water UK. <https://www.water.org.uk/policy/improving-resilience/21st-century-drainage>

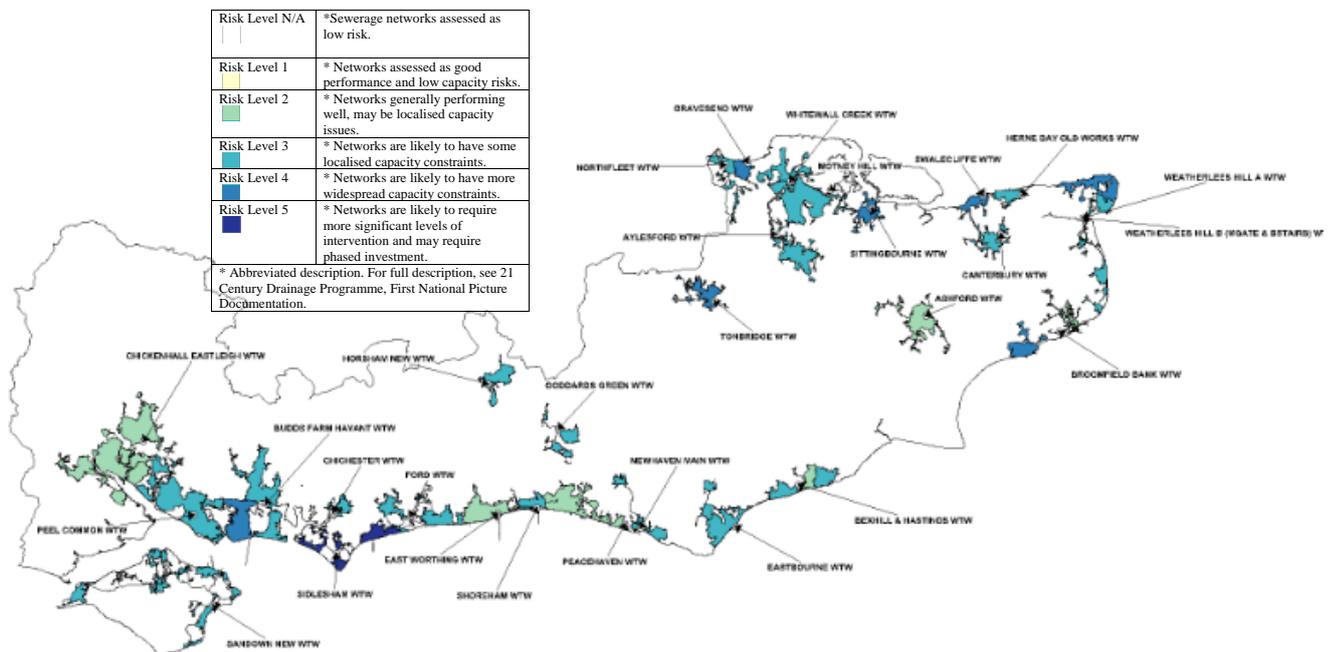


Figure 10: 21st Century Capacity Assessment Framework – Southern Water Catchments

Whilst this gives visible understanding of capacity constraints at an overall level, within catchments capacity constraints are often localised. This means although the overall catchment may appear to have available capacity, localised constraints mean network reinforcement is required to facilitate development.

An example is our Ashford catchment as detailed in Figure 11. At an overall catchment level, the risk is categorised as Level 2, however the location of proposed AMP7 developments (detailed in the orange polygon) are in areas of limited capacity. The map demonstrates the need for network reinforcement to avoid exacerbating existing capacity issues and further increasing risk to customers and the environment.

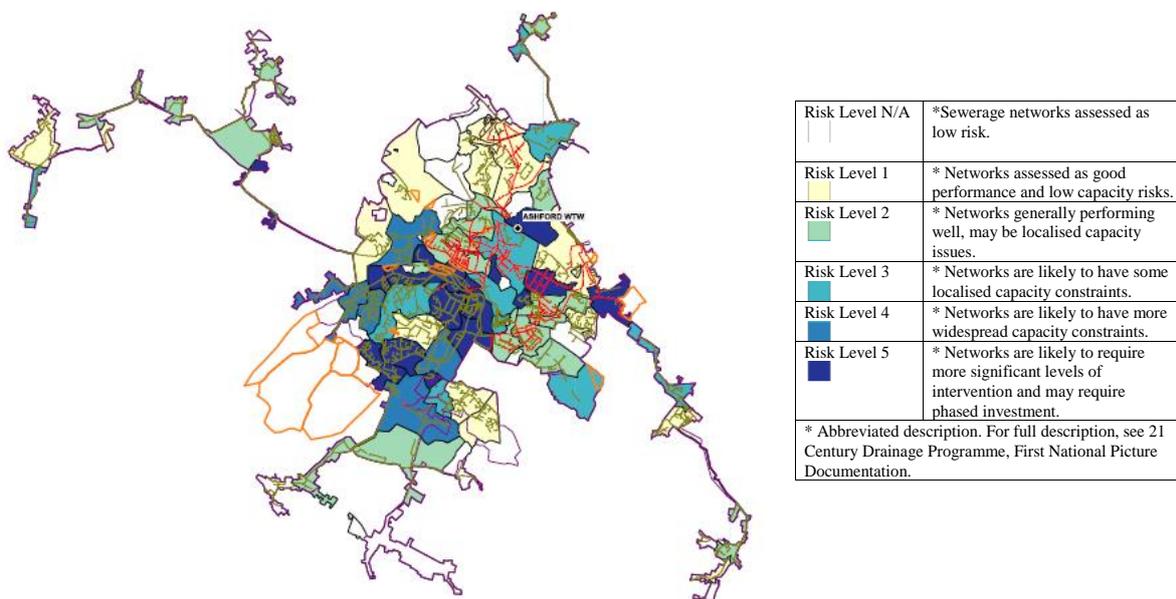


Figure 11: 21st Century Capacity Assessment Framework – Ashford Local Area Catchment

These tools can assist in the understanding and communication of capacity restrictions with key stakeholders. Proposals to improve resilience will need to take account of the rules for network reinforcement expenditure (with contributions from developers), which can only be made to maintain serviceability, not to enhance existing serviceability or network capability.

5.5 Value for Customers

The customer performance commitments that are impacted by investment in a resilient water future for the South East are consistently shown to be high priority for stakeholders and generally medium priorities for customers. We found that customers place the highest priority on commitments that impact their daily lives, and lower priority on areas that will affect them in the future. In contrast, our diverse range of stakeholder groups generally place high priority on investing in ensuring the resilience of our networks for future generations in an environmentally friendly manner.

Our triangulation of the relative priority of our proposed PCs highlighted internal sewer flooding as the highest priority for customers and stakeholders. External sewer flooding is also a high priority for customers and reported as a medium priority for our stakeholders. The number of pollution incidents and river water quality are reported as medium priorities for our customers and a high priority for stakeholders.

Relative to the PCs outlined above, Surface Water Management was highlighted as a medium priority for customers and a high priority for stakeholders. D-Mex was reported as a low priority for customers and a medium priority for stakeholders. Our growth specific Cost Adjustment Claim was reported as a low priority for customers and stakeholders.

Customers are highly averse to accepting reductions in service in exchange for lower bills, and in general are willing to pay for improvements in service levels for our proposed wastewater measures:

- the total amount that SW customers would be willing to pay for a reduction of 1 in the number of cases of **'Sewer flooding inside customers' properties** was **£100,207** per property per year.
- the total amount that SW customers would be willing to pay for a reduction of 1 in the number of cases of **'Sewer flooding outside customers' properties** was **£6,899** per property per year.
- the total amount that SW customers would be willing to pay for a reduction of 1 in the number of **'Pollution incidents'** was **£708,481** per incident per year.

Our additional ODI research into willingness to pay for service level improvements indicated that our customers demand and are willing to invest in significant improvements to internal sewer flooding and pollution incidents. Customers reported willingness to pay for significant improvement to external sewer flooding and surface water management, and for minimal service level improvements to improve river water quality, to reduce risk of sewer flooding in a storm and in growth. Full detail on our customer engagement findings can be found in [Chapter 4 – Customer and Stakeholder Engagement](#).

Table 11: Willingness to pay for Wastewater measures

Service Attribute	Unit	WTP [£/Unit/Year]		
		Central	Low	High
SEWER FLOODING INSIDE CUSTOMERS' PROPERTIES	Case/prop	£100,207	£75,641	£124,773
SEWER FLOODING OUTSIDE CUSTOMERS' PROPERTIES	Case/prop	£6,899	£5,237	£8,562
POLLUTION INCIDENTS	Incident	£708,481	£539,656	£877,305

There are different revenue models for wastewater treatment and network growth. Wastewater treatment is delivered within the wholesale revenue control, with the revenue assessed through Ofwat's models likely to be based on historic expenditure. Our forecast spend is significantly higher than the likely revenue model, even with our plans to deliver significant performance improvements in this area

Funding for network capacity improvements is shared, with the majority of funding coming from developer contributions through the redefined infrastructure charge. The remainder comes from residual income offsetting, incorporated within the infrastructure charge during the transition to the current approach. Developers are therefore a key customer as they directly contribute towards network capacity improvements.

The above means there is a strong degree of customer protection in terms of investment levels. There is limited scope for further significant reduction to the Wastewater Treatment growth portfolio as the investment is required to meet our statutory duties. With network reinforcement, customers' contributions through the Infrastructure Charge aligns with a rolling five-year average of expenditure. As such, if investment is lower (through efficiency or delayed investment), customers' charges will fall.

Whilst our wider customer base has a strong desire to support growth, many developers feel our wastewater infrastructure charges are high, particularly compared to other companies. Our plans include significant levels of efficiency when compared to more recent expenditure. Building strong, effective relationships with developers is a key goal for AMP7 so they do appreciate the value of the infrastructure and support investment to build a resilient water future for the South East.

A primary aim of the transformation plan will be to stabilise and optimise developer customers' satisfaction and build stronger relationships. This will ensure we have a deeper understanding of our customers' needs and they have a strong appreciation of our investment plans and proposals. Achieving these will support strong D-Mex performance, reducing the risk of financial penalties.

5.6 Use of Market Mechanisms

Part of our transformational approach is to investigate alternative delivery mechanisms for elements of the growth portfolio. We are exploring collaborating with developers, especially where they are in control of, and manage elements of, site-specific works. It could be possible to construct storage on their sites or allow their suppliers to construct elements of network reinforcement. If greater value, or more efficient delivery, could be achieved through this approach it could be a key area to drive value for customers.

We are also investigating working closely with NAVs to provide appropriate long-term solutions for customers. The increasing prevalence of large-scale developments means collaborative approaches with NAVs may be the best long-term value proposition for customers. We are currently looking to work with NAVs on case studies, including Whitfield where we have a Cost Adjustment Claim, to understand the best value option for provision in the market.

6. Costing Strategy

Costing for AMP7 investment in wastewater growth has used both historic expenditure and bottom up estimates for schemes to resolve the highest growth risk sites.

Costing for wastewater treatment is based on site-specific solutions targeting main growth risks.

The network growth schemes were compiled from prioritised Drainage Area Plan growth position statements.

The solutions developed have been costed in accordance with our standard cost estimating approach for PR19. An allowance has been made for routine network reinforcement based upon historic spend rates which have been subjected to our PR19 efficiency targets.

The project-based solutions have been developed in line with the standard PR19 Asset+ scoping and CET estimating models. Further details can be found in our [TA.14.4 Bottom-Up Cost Estimation](#) technical annex.

7. Key Risks and Opportunities

Key risks and opportunities relevant to this business case are highlighted below.

7.1 Risks

- There is a risk that the new property connections required in AMP7 occur more frequently than assumed in catchments where growth is complex and expensive. This might be because of a lack of available land and/or additional loads trigger a requirement for expensive treatment and network investments. This could lead to significant additional costs in AMP7.
- There is a risk that we will not be able to deliver new capacity to the timetable required by developers. This is because their formal forecasts are often unavailable, often optimistic and it is difficult to us to identify those developments which will be delayed for local technical or commercial factors. Collaborative approaches with developers to develop realistic forecasts will mean we do not invest inefficiently ahead or behind actual need.
- There is a risk that the [Sustainable Drainage 2030](#) principles may not divert the assumed levels of flood and storm water away from our drainage network. This may result in new developments overloading parts of our network and this will require us protect customers by investing in costly additional engineering works.
- There is a risk that political or economic pressure may result in local authorities choosing to approve higher levels of developments than is currently assumed. This may not give us enough time to plan, design and re-configure our drainage and wastewater treatment networks to accommodate these requirements. In addition, as only some of the costs for extending our network are funded by connections and related income from customer charges this will impose additional unfunded costs on us.

7.2 Opportunities

- There is an opportunity that the success of [Target 100](#) will result in even lower than predicted household consumption of water and therefore reduced wastewater volumes.
- There is an opportunity that by working closer with local authorities we can better align their local plans with our catchment plans and so encourage them to promote

growth and development in areas where network reinforcement is easier to deliver without excessive cost.

Appendix 1: List of schemes

The below schemes include the total post efficiency project costs, prior to any QBEG assessment, programme efficiencies, income and other allocations.

Scheme Name	Business Case Investment Line	AMP7 Totex (£m)
Aylesford Growth 2025	Infrastructure capacity increase (infra)	33.584
Ashford Growth 2025	Infrastructure capacity increase (infra)	9.306
Budds Farm - growth 2025	Infrastructure capacity increase (infra)	41.583
Motney Hill Growth 2025	Infrastructure capacity increase (infra)	11.499
Peel Common Growth 2025	Infrastructure capacity increase (infra)	11.342
Romsey Growth 2025	Infrastructure capacity increase (infra)	1.476
Whitewall Creek - Growth 2025	Infrastructure capacity increase (infra)	2.227
Goddards Green Growth 2025	Infrastructure capacity increase (infra)	3.360
Chickenhall Eastleigh Growth 2025	Infrastructure capacity increase (infra)	2.588
Bognor Growth 2025 Option 1	Infrastructure capacity increase (infra)	14.720
Littlehampton Growth 2025 Option 1	Infrastructure capacity increase (infra)	1.863
Lidsey to Ford	Infrastructure capacity increase (infra)	6.920
Whitfield	Infrastructure capacity increase (infra)	4.291
Otterpool (network)	Infrastructure capacity increase (infra)	1.977
Ebbsfleet (network)	Infrastructure capacity increase (infra)	20.837
Wastewater Network Growth Unallocated	Infrastructure capacity increase (infra)	39.176
Wickham	Infrastructure capacity increase (infra)	0.233
AMP7 Wastewater requisitions	Infrastructure capacity increase (infra)	14.944
101A Schemes	101A Schemes	4.577
Bishops Waltham WTW Growth	New treatment capacity (Non-Infra)	2.717
Faversham WTW - Growth	New treatment capacity (Non-Infra)	10.343
Goddards Green – Growth	New treatment capacity (Non-Infra)	6.502
Hurst Green WTW - Growth	New treatment capacity (Non-Infra)	3.753
Park Road Handcross WTW - Growth	New treatment capacity (Non-Infra)	1.869
Sandown Growth	New treatment capacity (Non-Infra)	1.214
Sittingbourne WTW - Growth	New treatment capacity (Non-Infra)	14.718
FOREST GREEN WTW	New treatment capacity (Non-Infra)	1.818
GRAVESEND WTW	New treatment capacity (Non-Infra)	18.021
LENHAM WTW	New treatment capacity (Non-Infra)	3.734
STONEGATE WTW	New treatment capacity (Non-Infra)	2.263
WESTWELL WTW	New treatment capacity (Non-Infra)	2.932
Whitfield	New treatment capacity (Non-Infra)	31.422
Welbourne (Peel Common WTW)	New treatment capacity (Non-Infra)	16.724
Warninglid	New treatment capacity (Non-Infra)	3.178
Ford	New treatment capacity (Non-Infra)	17.510
Otterpool (process)	New treatment capacity (Non-Infra)	2.746
Ebbsfleet (process)	New treatment capacity (Non-Infra)	9.885
Internal Flooding new additions	Internal Flooding new additions	11.294