

Appendix 12 – Securing long-term resilience: Response to IAP

Wessex Water

March 2019



Wessex Water

YTL GROUP

Summary

This appendix provides additional evidence in relation to Ofwat’s initial assessment of plan for resilience.

We provide further explanation of our resilience framework in response to the actions raised by Ofwat in relation to:

- Ensuring our performance commitments associated with operational resilience are clearly defined and stretching, with long term incentives
- There is a line of sight between resilience and package of outcomes
- A commitment to provide by August 2019 an action plan to develop and implement a systems based approach to resilience in the round and an integrated framework.

Regarding supply interruptions, the table below summarises our response to the cost assessment in the initial assessment of plans received in January 2019, and the actions that we would like Ofwat to consider in the draft determination.

Ofwat model / Driver	Value challenged £m	Our response	Suggested actions for Ofwat
Supply interruptions (WS2 lines 24 & 63) <ul style="list-style-type: none"> • Reducing supply interruptions to the forecast upper quartile by 2025. 	13.9	<p>We do not agree with Ofwat’s assessment that a step change in performance can be achieved through its IAP base cost allowances i.e. with no additional funding.</p> <p>While we can see a case not to make additional allowances above the base level for some companies, we consider that there is a strong case for allowing the efficient costs of a step-change for a company with our overall efficiency and track record of delivery in this area.</p>	<p>Reconsider allowances ensuring that sufficient allowance is made in costs over and above the allowances calculated from the base models to deliver the step-change in performance.</p> <p>Line-by-line review of all dimensions of service quality to come to an evidence-based view on what level of performance is funded by the allowances from models of historical base costs.</p>

Contents

Summary	1
1. Introduction	3
2. Our resilience framework and approach	4
3. Performance commitments related to resilience	8
3.1 Performance commitments	8
3.2 Line of sight between risks to resilience and package of outcomes	8
4. Our integrated approach to effective resilience	13
5. Supply interruptions	18
5.1 The approach to supply interruptions in the IAP	18
5.2 Historical performance	18
5.3 Our PR19 proposals	19
5.4 Ofwat’s cost assessment	21
5.5 Suggested actions for Ofwat.....	21

1. Introduction

This document provides our response to Ofwat’s initial assessment of plans (IAP) published on 31 January 2019 with respect to resilience. Relevant documents in our September 2018 submission include Section 4 of our main business plan narrative and *Supporting document 4.1 Providing resilient services*.

In section 2 we provide further explanation of our resilience framework and approach. Responses to the actions in the IAP are provided in sections 3 and 4:

WSX.LR.A1: *The company should ensure that its common and bespoke performance commitments associated with operational resilience are clearly defined, sufficiently demanding for AMP7 and the long term, and supported by the right incentives. We expect the company to satisfy the relevant actions set out in relation in the outcomes areas ensuring a line of sight between risks to resilience and package of outcomes. See section 3 below.*

WSX.LR.A2: *The company should provide a commitment that it will, by 22 August 2019, prepare and provide to us an action plan to develop and implement a systems based approach to resilience in the round and ensure that the company can demonstrate in the future an integrated resilience framework that underpins the company’s operations and future plans showing a line of sight between risks to resilience, planned mitigations, package of outcomes and corporate governance framework. See section 4 below.*

We also provide further explanation of our approach to reducing supply interruptions, the associated costs and comments on Ofwat’s cost assessment.

2. Our resilience framework and approach

As we stated in our main business plan narrative in September 2018, we define resilience as our ability to:

- maintain high-quality and reliable services for our customers
- protect the natural environment in the face of disruptive events
- ensure the long-term viability of those services against a backdrop of strategic pressures and a changing external environment.

In line with Ofwat's seven principles, we have developed proposals for each of the four components of resilience:

Resilience component	Proposals
Corporate resilience	<p>Regular review of governance, accountability and assurance processes. Further develop well established processes for the identification and management of risk.</p> <p>Progress our People Programme to address the long-term risk around people and shortfall in STEM skills.</p>
Financial resilience	<p>Annual stress-testing for our long-term financial viability statement, with assurance by the board and review from an independent third party.</p> <p>Ensure corporate structure is consistent with the guidelines and principles for board leadership, transparency and governance.</p>
Operational resilience	<p>Continuous improvement of our processes and policies, based on a maturity assessment against the six guidelines in BS65000, the British standard for organisational resilience.</p> <p>Based on assessment of the full range of potential hazards, cost beneficial investments to address residual risks to service:</p> <ul style="list-style-type: none"> • flood protection at one of our major sewage treatment works • resilience improvements at our largest water treatment works • improvements to the robustness of our operational technology and communications systems. <p>Industry leading service levels for hosepipe bans and drought restrictions, and sewer flooding.</p>
Environmental resilience	<p>Catchment partnerships in Stour and Bristol Avon.</p> <p>Catchment management to tackle water quality at source, including:</p> <ul style="list-style-type: none"> • nitrates in catchments to our drinking water sources • catchment interventions and catchment wide permitting to deliver phosphorus reductions in rivers • catchment management to offset nitrogen in the Dorset Stour. <p>Enhanced community engagement to encourage efficient use of water and avoid sewer misuse.</p>

Our customers need to trust us to always act responsibly in their best interests and to continue to provide industry leading services and environmental stewardship now and for the future.

We recognise and take seriously the important part we play in managing the natural environment for the future. Our approach is to develop long-term partnerships.

We are very proud of our unmatched record of resilience. By the end of the next 5-year period we will have achieved 35 years of uninterrupted industry leading resilient services and environmental stewardship. In this period, we have had to deal with various shocks and stresses and our success has been as a result of forward planning, working with the community and always focusing on protecting the environment.

We are now planning for our next 25 to 50 years, focusing on strategic and holistic solutions to the challenges we face.

Our integrated resilience strategy pulls together three of the core facets of our business:

- Forward planning and development of multi-AMP overlap programmes to achieve long-term improvements
- Working in partnership with our community and environmental stakeholders to find the lowest impact solutions such as catchment management and catchment nutrient balancing
- Providing industry leading services to our customers while protecting the natural environment for the future. We have set ourselves one of the most challenging packages of performance commitments aimed at environmental improvement.

We are fortunate in where we live and work, it is a beautiful part of the country and this is reflected in the fact that a significant part of our region has one or more environmental protection designations. This is one of the drivers for a large environmental programme over the next five years.

Environmental resilience is captured across significant elements of our programme, ensuring that we promote solutions which deliver the regulatory outcomes whilst being sustainable.

This is evidenced in the following approaches:

- Catchment management to improve raw water quality and the development of EnTrade
- Working with local authorities to deliver our sewerage and flooding programmes
- Catchment permitting to optimise existing assets to deliver phosphorus reductions.

These approaches are described in the main business plan narrative and in the following supporting documents:

Supporting document 5.1 Protecting and Enhancing the Environment
Supporting document 5.3 Providing Excellent Drinking Water Quality
Supporting document 5.7 Accommodating Growth and Development.

In addition, we promote a partnership approach to enhancing the natural environmental resilience within our region, primarily delivered through:

- Catchment Partnerships
- Biodiversity Action Plan (Partners Programme)
- Bathing Water engagement.

These activities are component parts of two performance commitments:

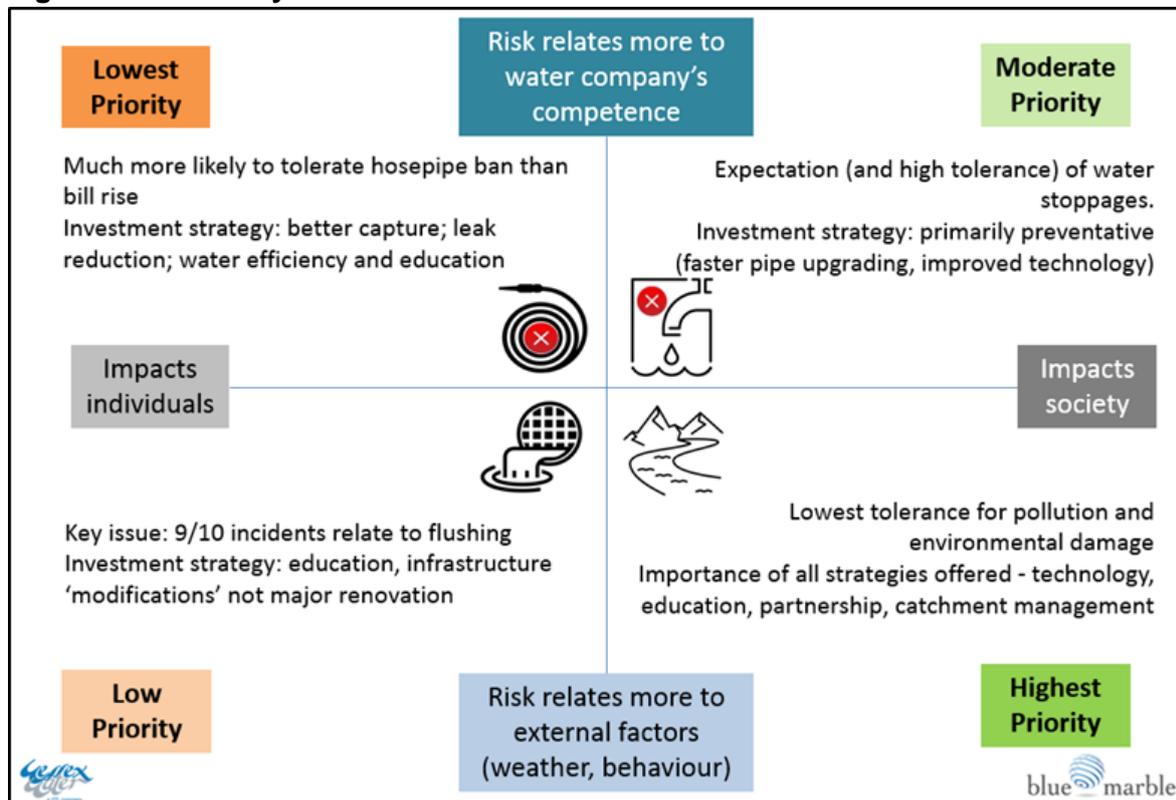
- Working in partnership to deliver natural capital benefits
- Community projects to deliver bathing water amenity.

We recognise the efficiencies from working collaboratively to deliver environmental improvements. This includes working with a range of partners and communities to increase awareness and deliver natural capital improvements. We aim to align with Defra guidance included in the 25 Year Environment Plan and the Catchment Based Approach.

The environmental challenges which we face cannot be tackled by a single organisation in isolation. Partnerships, collaborations and new ways of working are required to provide solutions. This includes working with Local Authorities, regulators, the charity and voluntary sectors, communities and academia.

Research has shown support amongst customers for partnership and community delivery of environmental projects. This focus on environmental improvements was confirmed by our customers when we engaged with them on their priorities for resilience as summarised in the following diagram (Figure 2-1).

Figure 2-1 summary of customer research on resilience



Preventing pollution and environmental damage were our customers highest priority. Our plan to protect and improve the environment was set out in our PR19 submission in September 2018:

- *Supporting document 5.1 – Protecting and enhancing the environment*
- *Supporting document 5.4 – Minimising sewer flooding*
- *Supporting document 8.9.A – Claim WSX05 - Flooding programme*
- *Supporting document 8.10.A – Claim WSX06 - Pollution reduction strategy.*

Further information is provided in our response to the initial assessment of plans (IAP):

- *Appendix 4 – Protecting and enhancing the environment: Response to IAP*
- *Appendix 7 – Minimising sewer flooding: Response to IAP.*

Customers next priority was to reduce supply interruptions. They had an expectation and a reasonably high tolerance of short term water stoppages but expected us to be investing in upgrading plant and infrastructure and employing new technology to reduce the service outage interruptions. Our plan to maintain our asset base and improve our supply performance was set out in PR19 submission in September 2018:

- *Supporting document 4.1 – Providing resilient services*
- *Supporting document 5.6 – Maintaining our services.*

Further information is provided in our response to the initial assessment of plans (IAP):

- *Appendix 5 – Using water efficiently: Response to IAP*
- *Appendix 9 – Maintaining our services: Response to IAP.*

3. Performance commitments related to resilience

3.1 Performance commitments

In developing our business plan we have strived to make sure that all common and bespoke performance commitments are clearly defined, sufficiently demanding and supported by the right incentives, including those performance commitments related to operational resilience.

Appendix 3 includes an updated version of supporting document document 3.1.A Performance Commitment detail, covering definition, stretch, outcome delivery incentives etc.

3.2 Line of sight between risks to resilience and package of outcomes

Resilience is the ability to cope with, and recover from, disruption and anticipate trends and variability in order to maintain services for people and protect the natural environment now and in the future.

In assessing our resilience, we considered a diverse range of both acute shocks and gradual stresses which would impact our performance and service to our customers, stakeholders and the environment. In the Table 3-1 below, we have set out the most relevant shocks and stresses that could impact our business and aligned these to the price controls and individual performance commitments ensuring a line of sight between risks to resilience and our package of outcomes.

Based on our four forms of resilience model we have assessed the impact of the stresses and shocks as follows:

- **Corporate.** Corporate resilience is the ability of an organisation's governance, accountability and assurance processes to avoid, cope with and recover from disruption of all types; and to anticipate trends and variability in its business operations.
- **Financial.** Financial resilience is the extent to which an organisation's financial arrangements enable it to avoid, cope with and recover from disruption.
- **Operational.** Operational resilience is the ability of an organisation and its infrastructure, people and skills to avoid, cope with and recover from disruptive events.
- **Environmental.** Environmental resilience is the ability of natural systems to recover from disturbances and to tolerate or adapt to change.

Shocks and stresses have the potential to impact performance and service and therefore the performance commitments (PC's).

In Table 3-1 overleaf, for each price control and outcome, the appropriate PC's are aligned to potential shocks and stresses in order to provide a line of sight between the risks to a resilient service and the package of outcomes.

Table 3.1 Providing line of sight between risks and performance commitments

Area	Shocks and stresses	Affordable bills				Excellent service for customers			Better relationships with customers and communities		
		Total bill reduction to customers on social tariffs	Successful applications for assistance	Void sites	Gap sites	Customer measure of experience (C-MeX)	Developer measure of experience (D-MeX)	Value for money	Priority Services Register	Delivering for customers in vulnerable circumstances	Number of children/students engaged
Internal operational	Critical asset failure										
	Long term loss of critical asset										
	Skill Shortage					✓	✓		✓		✓
	Technical obsolescence										
Customer service	Change in customer behaviour / expectations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Environment	Extreme cold / rapid change in temperature					✓					
	Extreme rainfall / flooding					✓					
	Strong winds										
	Drought					✓					
	Hot weather										
	Sea rise										
	Environmental pollution					✓		✓			
Social	Disruptive technology					✓	✓	✓			
	Cyber attack					✓	✓				
	Industrial trade dispute					✓	✓				
	Vandalism										
	Terrorist attack					✓					
	Population growth										
Supply Chain	Supplier failure	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Loss of critical supplied product										
	Skill shortage										
	Significant cost increase										
Financial	Financial crisis	✓	✓	✓	✓	✓	✓	✓			
Government / Regulation	Significant policy change	✓	✓			✓	✓				✓
Health	Major outbreak of an infectious disease	✓	✓	✓	✓	✓	✓	✓	✓		✓
Energy Sector	Power Failure										
	Significant cost increase										
Transportation	Major industrial / transportation incident										
Communications	Communications failure					✓	✓		✓		
Agriculture	Land use change										
	Environmental pollution										
	Major disease outbreak										

Area	Shocks and stresses	Efficient use of water				Excellent drinking water quality				
		Volume of water leaked	Volume of water used per person	Customer reported leaks fixed within a day	Volume of water saved by water efficiency engagement	Compliance risk index (CRI)	Water quality customer contacts (appearance, taste and odour)	Tackling water quality at home and in the work place	Lead communication service pipes replaced (WW assets)	Event risk index (Wessex Water) (ERI WW)
Internal operational	Critical asset failure					✓	✓			✓
	Long term loss of critical asset					✓				✓
	Skill Shortage	✓		✓		✓		✓	✓	✓
	Technical obsolescence	✓				✓	✓			✓
Customer service	Change in customer behaviour / expectations		✓	✓	✓	✓	✓			✓
Environment	Extreme cold / rapid change in temperature	✓				✓				✓
	Extreme rainfall / flooding					✓				✓
	Strong winds					✓				✓
	Drought	✓	✓			✓				✓
	Hot weather	✓	✓			✓	✓			✓
	Sea rise									
	Environmental pollution					✓				✓
Social	Disruptive technology									
	Cyber attack					✓	✓			✓
	Industrial trade dispute					✓				✓
	Vandalism					✓				✓
	Terrorist attack					✓	✓			✓
	Population growth		✓							
Supply Chain	Supplier failure					✓			✓	✓
	Loss of critical supplied product				✓	✓				✓
	Skill shortage	✓		✓		✓				✓
	Significant cost increase	✓		✓					✓	
Financial	Financial crisis									
Government / Regulation	Significant policy change	✓	✓	✓	✓	✓			✓	✓
Health	Major outbreak of an Infectious disease					✓		✓		✓
Energy Sector	Power Failure					✓	✓			✓
	Significant cost increase									
Transportation	Major industrial / transportation incident									✓
Communications	Communications failure	✓				✓	✓			✓
Agriculture	Land use change					✓				✓
	Environmental pollution					✓				✓
	Major disease outbreak									✓

Area	Shocks and stresses	Minimise sewer flooding				Resilient services						
		Customer property sewer flooding (internal)	Customer property sewer flooding (external)	Sewer flooding risk	North Bristol Sewer Scheme - Trym catchment	Water supply interruptions	Risk of severe restrictions in a drought	Risk of sewer flooding in a storm	Water mains bursts	Unplanned outage	Sewer collapses	Restrictions on water use (hosepipe bans)
Internal operational	Critical asset failure	✓	✓			✓				✓		
	Long term loss of critical asset	✓	✓			✓				✓		
	Skill Shortage	✓	✓	✓	✓	✓		✓		✓		
	Technical obsolescence							✓		✓		
Customer service	Change in customer behaviour / expectations	✓	✓				✓					✓
Environment	Extreme cold / rapid change in temperature					✓			✓	✓	✓	
	Extreme rainfall / flooding	✓	✓	✓						✓		
	Strong winds											
	Drought	✓	✓			✓	✓		✓		✓	✓
	Hot weather						✓					✓
	Sea rise	✓	✓	✓								
Social	Disruptive technology											
	Cyber attack	✓	✓			✓						
	Industrial trade dispute				✓							
	Vandalism	✓	✓			✓					✓	
	Terrorist attack	✓	✓			✓						
	Population growth	✓	✓	✓			✓	✓				✓
Supply Chain	Supplier failure				✓					✓		
	Loss of critical supplied product				✓							
	Skill shortage	✓	✓		✓							
	Significant cost increase				✓					✓		
Financial	Financial crisis				✓							
Government / Regulation	Significant policy change						✓	✓			✓	✓
Health	Major outbreak of an Infectious disease	✓	✓		✓					✓		
Energy Sector	Power Failure	✓	✓			✓				✓		
	Significant cost increase											
Transportation	Major industrial / transportation incident	✓	✓								✓	
Communications	Communications failure	✓	✓			✓				✓		
Agriculture	Land use change	✓	✓	✓								
	Environmental pollution											
	Major disease outbreak	✓	✓			✓						

Area	Shocks and stresses	Protecting and enhancing the environment											
		Treatment works compliance	Wastewater pollution incidents - category 1-3	Abstraction Incentive Mechanism (Mere)	Natural capital: improve Sites of Special Scientific Interest (SSSI sites)	Greenhouse gas emissions	Working with communities to improve bathing water experience	Working with catchment partners to improve natural capital	Satisfactory sludge disposal	Reduce frequent spilling overflows (non-WINEP)	Length of river with improved water quality through WINEP delivery	Km of river improved (non-WINEP)	Abstraction Incentive Mechanism (Stubbampton)
Internal operational	Critical asset failure	✓	✓			✓			✓		✓	✓	
	Long term loss of critical asset	✓	✓			✓					✓	✓	
	Skill Shortage	✓	✓		✓		✓	✓	✓	✓	✓	✓	
	Technical obsolescence								✓	✓	✓	✓	
Customer service	Change in customer behaviour / expectations	✓	✓			✓	✓	✓				✓	
Environment	Extreme cold / rapid change in temperature	✓	✓	✓					✓		✓		✓
	Extreme rainfall / flooding	✓	✓		✓	✓			✓		✓		
	Strong winds								✓				
	Drought		✓	✓							✓	✓	✓
	Hot weather			✓									✓
	Sea rise	✓									✓	✓	
	Environmental pollution				✓		✓	✓	✓				
Social	Disruptive technology												
	Cyber attack	✓	✓								✓	✓	
	Industrial trade dispute										✓	✓	
	Vandalism	✓	✓			✓			✓		✓	✓	
	Terrorist attack		✓			✓			✓				
	Population growth					✓					✓		
Supply Chain	Supplier failure	✓					✓	✓	✓	✓	✓	✓	
	Loss of critical supplied product	✓				✓			✓	✓			
	Skill shortage		✓					✓		✓	✓		
	Significant cost increase								✓	✓	✓	✓	
Financial	Financial crisis									✓			
Government / Regulation	Significant policy change	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
Health	Major outbreak of an Infectious disease		✓						✓				
Energy Sector	Power Failure	✓	✓			✓					✓		
	Significant cost increase					✓					✓		
Transportation	Major industrial / transportation incident	✓	✓								✓	✓	
Communications	Communications failure	✓	✓								✓		
Agriculture	Land use change				✓		✓	✓	✓		✓	✓	
	Environmental pollution	✓	✓		✓		✓	✓	✓				
	Major disease outbreak		✓		✓				✓		✓	✓	

4. Our integrated approach to effective resilience

We commit that we will provide an action plan to develop and implement a systems based approach to resilience in the round and ensure that we can demonstrate in the future an integrated resilience framework that underpins the company's operations and future plans showing a line of sight between risks to resilience, planned mitigations, package of outcomes and corporate governance framework by the 22nd August 2019.

We summarise below how we currently apply an integrated approach to managing shocks and stresses aligned to our business plan submission.

Since September 2018 submission we have carried out a review and agreed with the Board that the following will be in place by March 2020:

- An integrated risk and resilience framework
- Updated maturity assessment aligned to our price controls and activities including assessment over long term horizons
- Revised governance structure placing risk and resilience at the heart of our decision-making process
- Improved tools to allow the active management of resilience and response plans to protect services to customers and the environment.

These activities will be supplemented by findings of the ISO55000 surveillance visit being undertaken in April 2019.

We have a forward-looking and objective risk assessment process identifying and appraising all the diverse risks to the resilience of our services which ultimately feeds in to the investment and strategy business processes.

Our current resilience framework is shown in Figure 4-1. Shocks and stresses impact our operational, environmental, corporate and financial systems. These are mitigated through four key interventions:

- resistance to the hazard
- reliability of the asset
- redundancy built in to the systems
- response and recovery when an event occurs.

Our risk and resilience management group (RMG) are responsible for reviewing the current and emerging risks and resilience issues across the business, scoring the risks according to the appropriate criteria and identifying appropriate mitigation actions. Individuals from key business functions are responsible for escalating risks and emerging resilience issues which are highlighted by the operational management systems and forums which feed into the RMG and the corporate risk register.

For each of the hazards we have considered the full range of mitigation options using these four key interventions, with the baseline option of maintaining the existing response and recovery arrangement rather than undertaking additional investment. Whole-life cost benefit

assessment is used to determine the most cost effective and beneficial solution to ensuring we provide an appropriately resilient service to our customers, stakeholders and the environment. Example of the high level assessment for operational service resilience is shown in Figure 4-2.

Figure 4-1: Resilience Framework

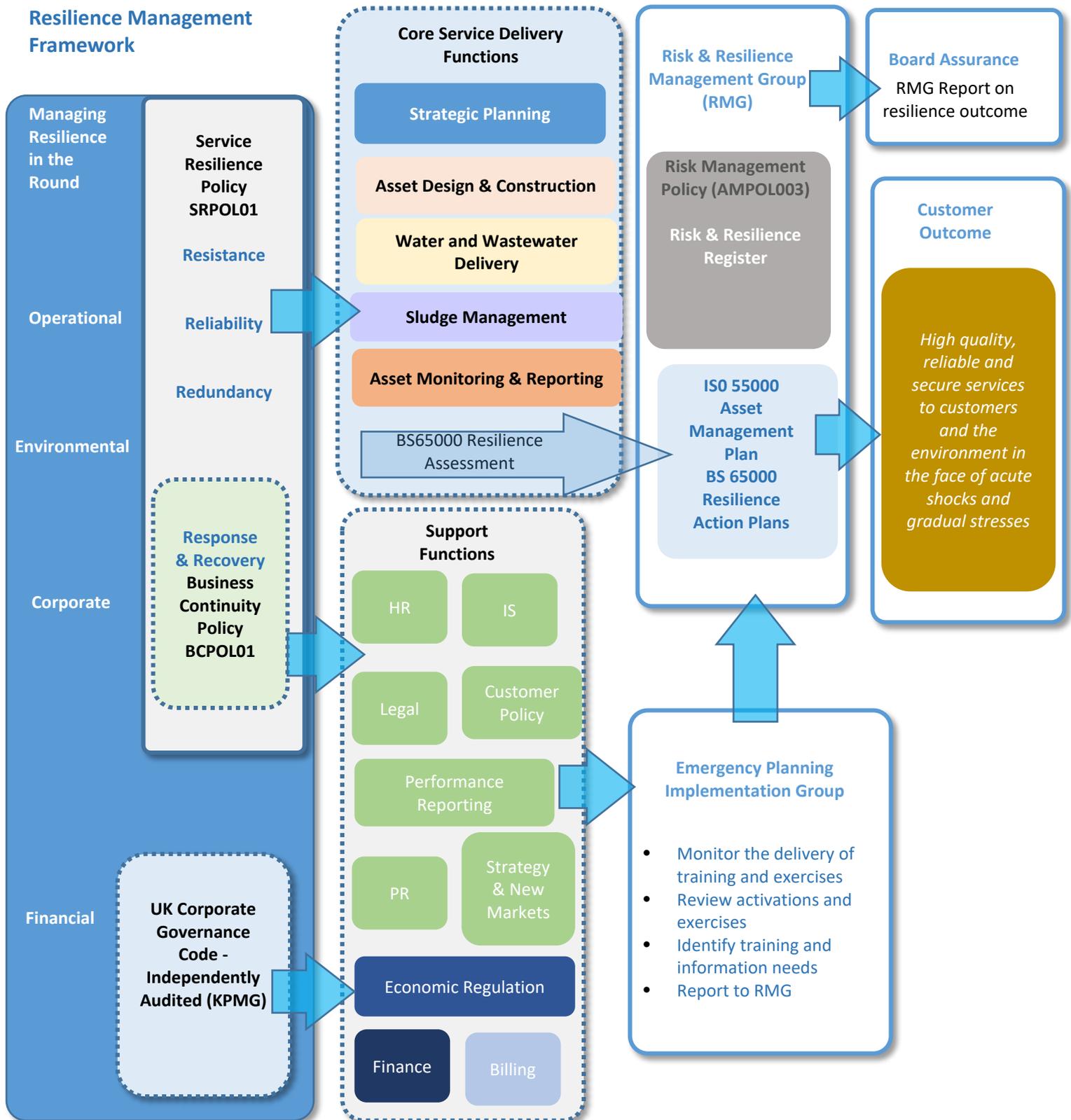


Figure 4-2: Operational resilience assessment

Shocks and stresses to operational service	Mitigation			Assessment of future risk trend	Current level of resilience to service failure	
	Response and Recovery	Resistance	Reliability			Redundancy
Critical asset failure	✓		✓	✓	↔	●
Long term loss of critical asset	✓	✓	✓	✓	↔	●
Technical obsolescence			✓	✓	↑	●
Disruptive technology	✓		✓		↔	●
Skill Shortage			✓	✓	↑	●
Extreme cold / rapid change in temperature	✓		✓	✓	↑	●
Extreme rainfall / flooding	✓	✓		✓	↑	●
Strong winds	✓	✓		✓	↑	●
Drought			✓	✓	↑	●
Hot weather			✓	✓	↑	●
Sea rise		✓			↑	●
Environmental pollution	✓			✓	↔	●
Cyber attack	✓	✓			↑	●
Communications failure	✓	✓	✓	✓	↑	●
Vandalism	✓	✓		✓	↔	●
Terrorist attack	✓	✓		✓	↔	●
Supplier failure / loss of critical product	✓			✓	↔	●
Major outbreak of an Infectious disease	✓		✓		↔	●
Power Failure	✓			✓	↑	●
Significant cost increase / financial crisis	✓	✓			↔	●
Major industrial / transportation incident	✓		✓	✓	↔	●
Major industrial trade dispute	✓	✓				●
Significant regulation / policy change	✓				↑	●
Population growth				✓	↑	●
Environmental Pollution	✓			✓	↔	●
Land use change	✓	✓			↑	●

Level of remaining risk to operational service following mitigation:

High residual risk to service ●

Medium residual risk to service ● Low residual risk to service ●

Using the assessment process enabled us to undertake more detailed analysis in specific areas of the business resulting in the only areas where we needed AMP7 investment driven solely by resilience being those that were identified in section 4.1 of the plan:

- Improving additional redundancy at single points of failure at the critical asset Maundown water treatment works
- Additional flood resistance at Portbury Wharf sewage treatment works
- Additional Cyber and site resistance beyond that which we currently employ
- Increasing investment to reduce supply interruptions.

5. Supply interruptions

5.1 The approach to supply interruptions in the IAP

In the IAP Ofwat's assessment of the costs for reducing supply interruptions costs assumes that upper quartile performance can be achieved by all companies from their base expenditure allowances.

In the main response document we set out our views on the enhancement cost modelling for the IAP, which also apply to our supply interruptions reduction programme. Whilst we accept that base service cost allowances may cover the cost of maintaining historical levels of service, we do not agree that they are sufficient to meet future stretching service levels.

5.2 Historical performance

This is one of 14 common measures outlined by Ofwat with a cross company target. It is defined as the number of minutes lost per property due to supply interruptions greater than three hours including planned, unplanned and third-party interruptions.

Since this Key Performance Indicator was first introduced in 2010-11 we have significantly reduced supply interruptions greater than 3 hours from around 50 minutes per property in 2010-11 to the current level of around 12 minutes per property.

This reduction has been achieved by:

- Change in reporting – previously we reported the full duration of the time we warned customers of a planned interruption, rather than the actual duration, this was changed following the introduction of this new KPI as agreed with our auditor.
- Change in approach to planned works – previously we used to warn customers with a conservative estimate of the duration of interruption to ensure that we completed the work within the time window. A complete change in our approach and mentality was needed to move away from the previous approach of completing the work within the warned window, to a new approach of minimising the period of the interruption. This took some time to be fully implemented.
- Change in approach to planned works – over the last few years we have adopted a number of innovative techniques and equipment to allow planned works to be completed without an interruption of more than 3 hours
- Change in approach to planned works – over the last few years we have incurred additional costs in our maintenance activities to enable works without an interruption of more than 3 hours
- Improved response time for unplanned interruptions – over the last few years we have undertaken a number of internal process improvements to enable us to react in the most timely and efficient way to minimise the duration of unplanned interruptions.

We now effectively have no planned interruptions to supply. We are close to the technical limit of what can be achieved on unplanned interruptions through process improvements and incremental change, and to drive interruptions down further will need a step change in performance with associated step change in costs as detailed below in section 5.3.

5.2.1 Supply Interruptions targets

All of the work to date has allowed us to reduce supply interruptions from around 50 minutes per property in 2010-11, to just over the 12 minute target in 2017-18. Ongoing incremental changes should ensure we meet the 12 minute target in the last two years of this AMP subject to there being no major unplanned incidents.

Table 5-1: AMP6 Interruptions targets

	2015/16	2016/17	2017/18	2018/19	2019/20
Target	21.3	16	12	12	12
Outturn - Forecast	14.8	12.8	12.3	<12	<12

On supply interruptions we are furthest away from our aspiration of delivering the best levels of service and therefore the AMP7 target may be one of the most challenging to deliver and will require a step change in performance.

Table 5-2: AMP7 Interruptions targets

	2020/21	2021/22	2022/23	2023/24	2024/25
Target	04:17	03:58	03:40	03:22	03:00

5.3 Our PR19 proposals

On supply interruptions our performance is currently above average but we need a further step-change in performance levels (c.70% improvement) to achieve the 2025 target. It is clear that we cannot deliver this step-change simply through process changes.

As set out in *Supporting document 5.6 – Maintaining our services* we are committed to reducing supply interruptions to the lowest possible level. We will ensure that planned interruptions are all completed within three hours. We will change our mains replacement and rehabilitation techniques so that work on live mains is avoided and interruptions are minimised.

The greatest focus will be on unplanned interruptions, due to a burst main or third party damage of our infrastructure. We will change the way we work, based on our experience that the first 30 minutes of any incident is critical in determining the response and the impact of the incident.

Currently, out of normal working hours, when over 80% of interruptions occur, the initial assessment is completed by the distribution inspector when he or she arrives on site, after having been called to site by our control room. We propose to provide a central resource that can determine rezoning options, provide customer support and act as an incident manager. This will enable the analysis to be carried out while the distribution inspector is traveling to site, saving valuable time and helping to ensure a better outcome.

As well as changing the way we work, we propose to:

- **Improve our 24/7 response capability.** We plan to increase the number of staff in our control room to provide 24/7 cover for an “always on controller” who with enhanced corporate systems can ensure we have the optimal response to any incident regardless of when or where it occurs. We also plan to increase standby out of ours cover to ensure we can access more resources to deal with an incident out of normal working hours.
- **Improve our real-time data and knowledge management.** Parts of our network have limited flow and pressure data with data only updated every 24 hours. Our first warning of a supply interruption is often when the customer calls to say they have no water. We will install live data monitors to alert us before customers experience a loss of service, managed through a data analytics and visualisation system.
- **Improve interconnection.** The more interconnection options that we have the greater chance we have of restoring supplies to customers quickly. We will increase in our network modelling capability, focused on exploring options to improve the interconnectivity of our system. Candidate projects will be prioritised through our mains replacement programme.
- **Increase equipment.** We will procure additional equipment and train our staff in their use, including network infusion by pumping into the network from a tanker, to maintain supplies.
- **CALM networks.** All our staff will be trained to ensure that they can operate valves without causing pressure transients, which can damage the network. We will extend this to other sources of transients such a commercial customers and other users of the network.
- **Operational modelling and drain down analysis.** We already have good coverage of hydraulic models of our network for planning and design of network improvements. We plan to make more use of these models for post event recovery, rezoning assessments and mobile tanker deployments.
- **Improve the resilience of large standalone water treatment works.** We will improve the resilience of our largest works, and in the longer term undertake a detailed study of the supply system to assess all the options for reducing the number of customers at risk of a prolonged outage.
- **Continue to enhance our cyber security.** We plan to enhance our industrial control systems resilience initially by risk assessing our sites to the impact of a cyber security breach. We will improve our resilience by defining appropriate industrial automation control system zones, improve network hardening, implement appropriate system separation and architecture practices.

We included £13.9m as enhancement expenditure (capex £7.1m and opex £6.8m) to deliver the step change in supply Interruptions performance. The costs to achieve this service improvement are incremental totex over and above our current baseline business as usual expenditure.

We obtained an independent external review of the proposals and costs to support the proposals, and benchmarked the costs in the same way as the remainder of our enhancement programme.

5.4 Ofwat's cost assessment

As mentioned above we do not agree with the assumption in the IAP that upper quartile performance can be achieved by all companies from their base expenditure allowances.

In the main response document we set out our views on the enhancement cost modelling for the IAP, which also apply to supply interruptions. Whilst we accept that base service cost allowances may cover the cost of maintaining historical levels of service, we do not agree that they are sufficient to meet future stretching service levels.

5.5 Suggested actions for Ofwat

We consider that there is a strong case for allowing the efficient costs of a step-change in supply interruptions for a company with our overall efficiency and track record of delivery.

We request that Ofwat considers these issues again when it calculates our draft determination, ensuring that sufficient allowance is made in costs over and above the allowances calculated from the base models to deliver the stretching and step-change levels of performance proposed. In line with the suggestions in Reckon's report on opex we recommend that Ofwat goes line-by-line through all dimensions of service quality and environmental performance and comes to an evidence-based view on what level of performance it considers is funded by the allowances for models of historical base costs.

Ofwat should also recognise that, with ongoing efficiency reflected in a 1.5% productivity challenge, efficient companies will need additional costs to achieve the future upper quartile targets.