



South West Water

Freeze and thaw - lessons learned and action plan



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1.0 EXECUTIVE SUMMARY

This document responds to points raised during the Ofwat industry wide review of the extreme weather event report '[Out in the Cold](#)', and the company specific issues highlighted in the subsequent [letter to South West Water](#) which set out Ofwat's assessment of the company's performance during that event. This response should be read alongside those documents.



We welcome Ofwat's overall assessment of South West Water's performance that "it performed well and largely met its customers' expectations", whilst recognising that there is still room for improvement in some areas. We have carefully considered the issues highlighted in this assessment and are pleased to be able to provide a response outlining how we have applied learning from this event as we do with all such events to ensure we can continue to provide a resilient service to customers both over the short term and for future generations.



Progress on key actions to date across the areas identified in Ofwat's assessment are summarised in the table below.

Area identified	Issue(s) raised	Actions taken to date
Planning and preparation	- None	<ul style="list-style-type: none"> - Debrief session and third party hosted workshops - Review of group wide emergency planning processes and procedures - Enhanced weather reporting capability procured - Enhanced daily reporting to Executive and Senior Management - Learning points shared with all staff and supply chain teams - Review of supply chain arrangements and procurement processes - Sharing of experience and best practice with Severn Trent Water
Incident response	<ul style="list-style-type: none"> - Supply interruptions - Water Quality 	<ul style="list-style-type: none"> - Enhanced iSCADA and business intelligence (BI) reporting functionality - Trialling of dedicated supply interruptions / alternative water supply (AWS) teams - Further tactical investment in network connectivity schemes - Enhanced network logging and automated pressure management capability - Detailed review of alternative water supply arrangements - Liaison with DWI – meeting 6 September 2018 - Development of Resilient Service Improvement programme
Communication and support	<ul style="list-style-type: none"> - Targeted communication - Communication with NHH customer and retailers 	<ul style="list-style-type: none"> - Paid for, targeted social media campaigns - Staff re-training and awareness - Increased resource invested in social media channels - Identification of vacant non-household (NHH) sites - Improved retailer communications - Enhancements to the identification of sensitive NHH customers - Geo-spatial mapping of sensitive NHH customers
Vulnerable customers	- Lack of awareness of Priority Services Register	<ul style="list-style-type: none"> - Post-event surveys - Priority Service Register (PSR) media campaign - Staff training and awareness - Geo-spatial mapping of vulnerable customers - Outcome Delivery Incentive (ODI) development for PR19
Compensation	- N/A	- Support Ofwat consultation on GSS through customer research (focus groups)

Further details of our track record on resilience and our plans for the next investment period, 2020-2025 can also be found in our PR19 supporting document '[securing long term resilience](#)'.

During the production of this response, South West Water has also been in discussion with Severn Trent Water and other industry partners to share learning points and highlight examples of best practice that will benefit the wider industry. Over the coming months a number of sessions are planned where other companies and representatives from the wider supply chain will be invited to come and share their experiences of recent extreme weather events with a view to developing best practice principles that will benefit all companies and their customers.

We are also committed to continued engagement with our Customer Challenge Group (the WaterFuture Customer Panel - WFCP) and will report on progress to them against the recommendations made every six months as a minimum. We will also engage members of the panel in review of submissions made in respect of such events. Professor Ian Bateman, Director of the Land, Environment, Economics and Policy Institute at University of Exeter and a member of the WaterFuture Legislative, Resilience and Environmental Investment (LREI) sub group carried out a thorough review of the company's initial response to the freeze / thaw. For the purpose of this response, we have had this report reviewed and validated by Professor Richard Brazier also of the University of Exeter, and have included his observations as APPENDIX A.

2.0 BACKGROUND

At South West Water we strive to deliver an excellent level of service to our customers, whatever the weather conditions, drawing on our past experience of dealing with varied events, such as the 2007 foot and mouth outbreak and the 2013 floods for example.

Back in March 2018 large parts of the United Kingdom experienced a period of extreme cold weather, followed closely by a rapid thaw. This placed significant strain on national infrastructure and the delivery of critical services was, in some areas, significantly impacted.

For the South West region the weather was indeed so extreme that the first ever red weather warning experienced in England was issued by the Met Office. Despite these extreme conditions supplies to the majority of our customers were maintained throughout the event. However the conditions placed significant strain on our people, systems and assets, and in a few localised areas our service levels fell below the high standards we set ourselves, and that our customers have come to expect from us.

More detailed information on the background and sequence of events, can be found in our response to the Ofwat '[request for information – review of freeze / thaw incidents](#)' that was undertaken post the event and led to the recommendations outlined in the letter of assessment.

The remainder of this response takes each of the Ofwat observations in turn and details improvements we have made to date and plans for future improvements in each of following the areas identified.

- Vulnerable customers
- Communication and support
- Planning and preparation
- Incident response.

3.0 VULNERABLE CUSTOMERS

In this particular area Ofwat have highlighted the need for improvements in how companies in all regions identify and engage with customers in vulnerable circumstances. This has been validated by our own customer research undertaken for PR19 and through specific post event 'cold snap' surveys following the freeze / thaw event.

We are committed to delivering significant improvements in this area and have already acted to encourage customers to sign up to our Priority Services Register (PSR) and to provide training for customer service staff to support them to identify where a customer may be in a vulnerable situation.

3.1 PRIORITY SERVICES REGISTER

Those customers who already subscribe to our text messaging service and PSR told us they were largely satisfied with the support we provide for them during events. Some other customers told us they had help from neighbours and friends during the events – and would have struggled without that support. Whilst it's to be expected that friends and families will help each other, we do need to be there as the primary source of assistance during an event. We have therefore realised that we must be more proactive in promoting the PSR and ensuring that we provide the appropriate levels of support when events occur.

Based on our research, we have developed three performance commitments to support these customers' views around the PSR:

- Increase number of customer details checked every 2 years
- Number of customers on the PSR register
- Overall satisfaction of services received on the PSR.

In our PSR research, we asked customers on the PSR about the quality of the services they receive through the PSR. Customers on the PSR told us that they do not generally need to access the additional services on the PSR as our service levels are good. But for those that have actually had services delivered through the PSR, there are high levels of satisfaction at 85%.

This research also helped us to understand how long customers are on the register; how often their details are checked; their views on sharing data with other organisations such as the Red Cross to improve support during an incident; and the extent to which they are registered for other PSR services, e.g. other utilities.

We have tested our PSR targets with customers in the regional focus groups and in our acceptability testing, and our plans to provide more support and raise awareness of the PSR have very high levels of acceptability and affordability.

We have proposed Outcome Delivery Incentives (ODI's) to ensure we do the right thing in this area. Our incentives are designed to avoid perverse incentives. In our ODI research, our customers told us they do not want us to put just anybody on the PSR to hit a target. They want us to provide the right support to the right people and that is what our proposed ODI incentives are designed to do.

In our PR19 stakeholder workshops we presented our plans and targets to stakeholders, including councils, charities and other interested parties. They indicated strong support for our plans to strengthen performance commitments and targets in this area.

4.0 COMMUNICATION AND SUPPORT

We welcome the view from Ofwat that South West Water was suitably proactive in communications with customers and utilised a range of different channels to raise awareness and to provide advice both ahead of and during the event. It is however clear from Ofwat's assessment, and from our own post event research, that further improvements are required in this area. This section of the response details the lessons learned, and mitigation actions for both household and non-household customers.

4.1 HOUSEHOLD CUSTOMERS

Following the disruption caused by the event specific post-event surveys were undertaken to engage with affected customers and understand how we dealt with the event and to inform lessons learned for dealing with these more severe resilience-based events in the future. We surveyed over 200 household customers in the worst affected areas through a mix of face to face and telephone surveys to cover households in our most rural areas

During the survey we asked customers about awareness and preparedness for the storm, the impact of supply interruptions on their household, and their perception of South West Water's handling of the event in terms of communications, support, speed of recovery and response overall.

Customers surveyed considered communications to be reasonable, although nearly half of customers felt that communications could be improved both before and during such events. Those who received updates from our text alert service felt very up to date and supported; those that did not receive this relied more on friends, family and our staff at distribution points to keep them updated. Some customers that could be classified as being in vulnerable circumstances were not aware of the Priority Services Register (PSR); this is a key learning point and is covered in section 3.0 of this response.

Generally customers felt that the process of ensuring water was available from fixed collection points (tanks and bowsers), bottled water distribution points and direct bottled water delivery worked very well. Customers accepted the weather was particularly extreme, and thought the level of impact and disruption was largely proportionate to the severity of the weather.

We have taken on board this feedback and have undertaken a review of processes and realignment of resources to ensure that communications channels are effectively promoted and our customer facing staff are trained in registering customer for these services.

4.2 NON-HOUSEHOLD CUSTOMERS

After consultation with non-household customers and retailers we have drawn up a response plan which ensures non-household customers receive a resilient service which meets their individual needs.

In line with Ofwat's assessment we have focused on the following specific areas for improvement:

- Identification of vacant non-household sites
- Improved Retailer communications
- Enhancing the identification of non-household sensitive customers.

4.3 IDENTIFICATION OF VACANT NON-HOUSEHOLD SITES

At any time we prioritise the fixing of bursts and leaks as quickly as possible to ensure we protect our water resources and provide a resilient high quality service to all our customers. Being able to quickly and efficiently locate bursts and leaks on our own network and on customer properties form a vital part of this process. During the freeze / thaw a number of non-household properties were unoccupied, either because they had chosen to close as a result of the severe weather or because they were vacant. As soon as the severe weather subsided and road access was restored businesses reopened and we were able to quickly work together to identify and expedite repairs to bursts and leaks that had been identified.

This was not the case for some vacant non-household premises, such as caravan parks, camp sites and holiday cottages. Because they were temporarily unoccupied as a result of the weather, contact with owners and the identification of leaks was more challenging. Being able to better identify these properties would allow our operations teams to make faster decisions to temporarily isolate services and stem the loss of water.

We already appoint a non-household lead during operational events and incidents. As a result of the lesson learned the responsibility to collect up to date void property information directly from the Central Market Operating System (CMOS) has been formalized within our response plans. This information can be combined with South West Water's own work management data and further refined by geographical area using our GIS systems, to provide an accurate picture of impacted vacant non-household properties to help guide and expedite any action required.

We recognise that the quality of vacant property details can be further improved. South West Water have therefore joined the recently formed Retailer-Wholesaler Group, set up to look primarily at vacant properties, de-registration and associated issues within the non-household market. One of the objectives of this group is to improve confidence in this information as part of a broader market improvement strategy.

4.4 IMPROVED RETAILER COMMUNICATIONS

We have put in place a number of practices in order to improve communications. These improvements focus on three key areas:

- Retailer communications
- Establishing clear lines of responsibility for wholesaler and retailers
- Working with local business stakeholder networks.

4.4.1 RETAILER COMMUNICATIONS

Since market opening we have always sought to provide proactive communications to Retailers. We want to ensure that we provide timely up to date information which is relevant to the individual needs of non-household retailers and customers.

We have an established event communication process in place. This includes an initial event communication sent via SMS which informs retailers of the type of event, expected impact and resolution status. We also provide a link to our online live events page and our non-household customer portal, where retailers can access all of the latest up to date information 24 hours a day.

Since the severe weather event we have reviewed and updated our direct contact points with each retailer to ensure we provide all of the necessary information to enable retailers to communicate relevant information to their customers. This means that in addition to our existing proactive

communication process, during relevant events we will contact retailers and speak to them individually. This way, working together, we can better understand and resolve any specific challenges or difficulties.

This direct contact has also been taking place during the recent dry weather. Direct retailer communications have included the provision of additional information such as; current and historic reservoir levels, the steps we were taking to manage water supply and production, as well as tips for water efficiency that can be shared with our non-household customers. We also worked closely with retailers to develop bespoke solutions for customers with specific water issues, such as farmers and food producers, demonstrating the individual tailored nature of our communications and solutions.

4.4.2 ESTABLISHING CLEAR LINES OF RESPONSIBILITY FOR WHOLESALER AND RETAILERS

We recognise the need for all parties to work together, have a clear understanding of their responsibilities during a significant operational event, to ensure non-household customers receive a great end to end service from both their wholesaler and retailer. To this end, South West Water is hosting an event later in the year to which all Retailers who operate across the region have been invited. The aim of this event is to really understand the requirements and expectations of retailers and their customers, sharing ideas and best practice.

Working collaboratively in this way we will co-create a set of improvements which will allow us to deliver an exceptional level of service to all customers during challenging operational events in the future. In particular we will explore how we can work together to ensure that sensitive customers are appropriately supported during extreme events.

4.4.3 WORKING WITH LOCAL BUSINESS STAKEHOLDER NETWORKS

Being able to reach and communicate with a wide group of non-household customers via multiple channels during operational events is critical. We have reviewed and updated a register of business stakeholder networks, through which we will be able to share targeted messages, updates and advice relevant to individual sector needs. This will ensure we are able to support those in need and minimise the impact on local businesses.

For example we recently worked with local authorities and the Trading Standards Animal Health Lead to provide and promote specific information and solutions for farmers regarding animal welfare in extreme events. We will continue to reach out to these organisations to help better understand the needs of our end users.

4.5 IDENTIFICATION OF NON-HOUSEHOLD SENSITIVE CUSTOMERS

We recognise the importance of being able to quickly and accurately identify sensitive customers during any operational event. Through direct liaison with the Care Quality Commission we have cross referenced our records to ensure we are aware, and have locations for all residential care homes within our supply area. We have also conducted a similar exercise with the National Health Service (NHS) contacts in our supply region. As a key secondary responder we continue to work with the Local Resilience Forum (LRF) and NHS England Resilience Lead to obtain key hospital information such as onsite storage; normal / emergency water usage and identification of tanker fill points. This work has been integrated into our Alternative Water Supply (AWS) plans.

As a company we are committed to working collaboratively with key stakeholders, business partners and customers to improve the service provided to all non-household customers during any future events.

- This information has been shared with Source Contact Management, who handle front end customer contacts on behalf of South West Water
- This information will also be shared with Retailers to update their records and the relevant fields in the CMOS
- This information has also been collated by our in-house Information Services team who have produced a layer for access within our BI tool which will display contacts in a geo-spatial environment.

4.6 COMPENSATION

Although there were no recommendations for improvement in this area we welcome the opportunity to outline our approach to compensation payments during events of this scale and impact, including the reasons behind the Board level decision to pay compensation by means of a cheque.

Normal procedures for compensation were not applied to payments related to this event. A decision was made early on in the incident by the South West Water Executive that compensation would be paid to customers irrespective of any force majeure or similar exclusions that could have been applied to not pay compensation.

In particular, there were three communities in isolated rural areas which experienced found themselves in and out of water for several days due to the freezing of their own supply pipes, complicated repairs required to the network supplying these areas and site specific prevailing challenges linked to the extreme weather such as access problems. We recognised that despite our best efforts to consistently maintain supplies to customers this was not universally possible across these rural isolated communities. As a result we decided to automatically pay ex gratia compensation to all customers that may have been impacted. The decision to make the payment by cheque was based on the fact that many of the communities affected most severely by the weather were those in deprived rural areas with higher numbers of individuals employed in low wage occupations. It was felt that those customers would appreciate a tangible credit to their bank account rather than a credit to an account where the benefit would be less immediate. Where an account may have been in arrears we gave the option for accounts to be credited, only four customers requested this option rather than receiving a cheque - these requests have also duly been completed.

Our post event surveys, as detailed in section 4.1, indicate that customers were very satisfied with the compensation paid, both in terms of the speed of payment and the amount of compensation.

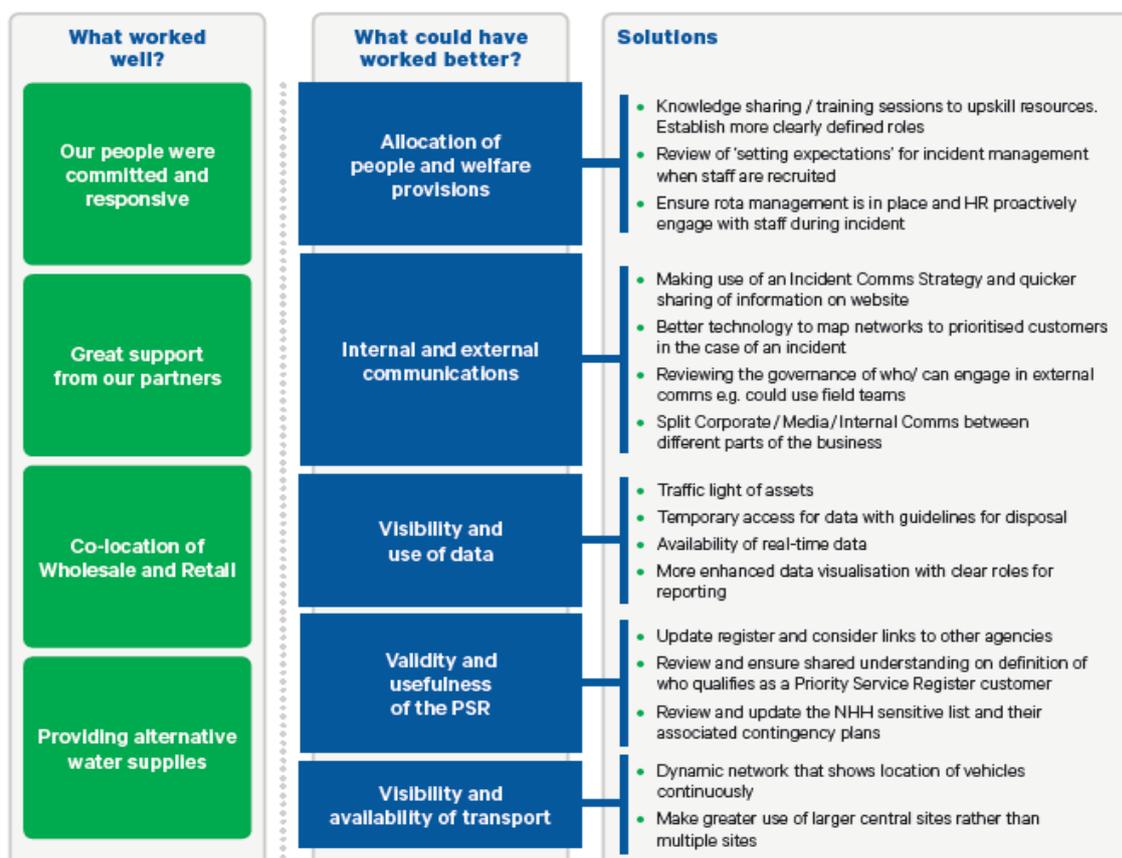
5.0 PLANNING AND PREPARATION

We welcome Ofwat’s overall assessment in this area that ‘as a result of the range of proactive measures taken by the company, South West Water appears to have been in a good state of preparedness ahead of the event’.

We are proud of our track record of planning effectively for severe weather events but recognise that the nature, increased frequency and severity of such events will require continuous improvement in this area. Operational decision making must continue to evolve and move away from experience and anecdote towards a more data driven decision making process that maximises data feeds from assets, operational activities, third party expert advice and customer contacts to give a complete picture of any given situation.

Since the freeze / thaw event all staff and supply chain partners involved in the incident have been involved in structured review sessions in accordance with our emergency procedures (including hot and cold debrief sessions at specified intervals). In addition to these internally led sessions all staff and key supply chain partners were present at a number of third party hosted workshops where lessons learned and areas for improvement were discussed, verified and prioritised. Outputs from these sessions are detailed in the graphic below. Key learning points from all sessions have been collated and where applicable have been communicated to core staff and partner organisations through a range of methods, from formal briefing sessions to ‘toolbox talks’ and re-training on an individual basis.

Freeze and Thaw incident review findings



The period of severe cold weather affecting our region has been closely followed by a period of extremely dry and increasingly hot weather affecting the whole of our operating area. This has led to

a number of the points for future improvement, detailed in our response to the freeze / thaw request for information, being implemented and tested during this period.

Water demand in our region has been consistently higher than forecast with a sustained period in excess of 10% above normal peak demand. The peak demand period has also been around 100% longer in duration than forecast; peak demand levels will have been met or exceeded for eight weeks across the summer period where our normal peak is four weeks. In addition, visitor numbers are at record levels, with recent press releases from Visit Cornwall estimate a 20% increase on the average 4.5 million visitors per year across the wider South West.

Due to effective planning, forecasting and application of learning from the freeze / thaw event we have again been able to maintain operations throughout this challenging period without impacting on our services to customers. Engagement with our LRF has been maintained throughout and we continue to build on our joint capability in understanding and responding to the needs and requirements of our region in times of extreme weather.

5.1 PREPAREDNESS AND EMERGENCY PLANNING

With particular regard to emergency planning and preparedness South West Water recognise that there is learning from the freeze / thaw event that must be considered when planning for the future. South West Water is currently undertaking a review of emergency planning processes and procedures at a group level (Pennon Group). This initiative, which has the full support of the Board, is being led by the Group Head of Safety & Security (a recently established role) and is looking at how we can leverage maximum benefit from group knowledge, experience and resources to deliver better responses to events and incidents across the full range of activities. The deployment of additional HGV drivers from Viridor (a Pennon Group company) during the freeze / thaw incident is a prime example of the benefit of leveraging the group's wider capabilities during such extreme events. Progress is regularly reported to the Executive who will ultimately oversee delivery and embedding into the wider business.

Specific objectives and desired outcomes for this programme of work are as follows.

- Bilateral transfer of best practice and sharing of lessons learned
- A common understanding and language of risk that can be applied across the group
- Standardised processes and procedures allowing for enhanced people resilience when dealing with events and incidents, within whichever group company they may arise
- Standardised reporting and incident management systems, improving accessibility and visibility of information during events and incidents
- Formalised supply chain arrangements, both within the group and with third parties, for example Viridor transport and logistics capability available to South West Water
- Consultation with LRFs and voluntary organisations, such as the Red Cross, to strengthen links and formalise support arrangements
- Establishing links with LRFs outside of our South West Water operating areas to provide greater resilience when dealing with events on a national scale.

5.2 SUPPLY CHAIN COLLABORATION

In addition to the review of planning and preparedness we continue to evolve our core operational supply chain arrangements and operational contracts to ensure we are leveraging maximum benefit with regard to resilience, customer service and efficiency.

The performance of our Networks Service Alliance (NSA), a collaborative service delivery arrangement between South West Water and Kier utilities, was one of the key factors in our highly effective response to the freeze / thaw event. Collective responsibility for preparedness ahead of known high risk periods such as winter and our summer peak demand requires a common understanding of risk and clear delivery plans that are effectively communicated across both organisations. In addition to this the nature of the alliance requires staff at all levels to be trained and equipped to undertake a wide range of roles and to interchange between these roles seamlessly.

We recognise that while performance of the NSA was excellent during the incident there are further opportunities for improvement, particularly with regard to the timely transfer of operational data between organisations and the role that customer data must play in enhanced decision making. This has highlighted the need for further systems integration across both organisations. In particular a real-time, seamless end to end view of an activity, from initial failure and customer contact through to final resolution, is required in order to ensure communication to customers is both accurate and timely. We must also ensure that where live asset performance data is available it must be accessible to all, which requires investment in systems and technology, including protection against the threat posed by cyber crime.

We are currently in the process of tendering our Engineering Alliance contract and in light of the success of the NSA, much focus has been placed on the value added services and innovative approaches that our chosen partners can provide (both our construction and consultant partners). Part of the initial tender process looked in detail at these aspects and all tendering parties were asked to provide a specific response on their capability and flexibility in responding to events and incidents. Responses will be considered in the final selection decision which is due shortly.

5.3 WEATHER FORECASTING CAPABILITY

We have also invested to strengthen our arrangements with regard to weather forecasting on both a tactical and strategic level.

5.3.1 OPERATIONAL PLANNING

South West Water have partnered with a weather forecasting supplier, MeteoGroup for twice weekly weather forecasts providing rainfall, temperature and wind speed for the forthcoming three weeks. We use this data to factor in our production plans and to inform how we might best balance our reservoirs and abstractions. We also use to inform when the need may arise to implement 24 hour site manning and enhanced strategic network management resourcing.

5.3.2 STRATEGIC PLANNING

Our weather supplier also provides three month weather forecasts each month. We use this to determine if we should begin strategic preparations, such as evaluating the need for and progressing preparation for Temporary Use Bans or strategic engineering supply schemes.

5.3.3 MULTI FACTOR RISK ASSESSMENTS

The cold weather event was exacerbated in our region because of the combined effect of both the low temperature and the high winds, producing extreme wind chill and drifting snow. South West Water applied this experience into summer planning to improve our forward risk assessment for each of our resource zones, taking not only the traditional factors such as demand and water resource availability into account, but wider exogenous factors. These include the combined effect of population increase due to higher number of tourists as a result of the exceptionally hot weather

and the behaviour of unmetered households and non-household customers (such as livestock farmers) in seeking to mitigate the impact of the extreme temperatures.

6.0 INCIDENT RESPONSE

Again we welcome Ofwat's assessment of our performance in this area, the recognition that our production and network assets were resilient to the extreme demands placed upon them. Our ability to manage and control our assets effectively is testament to our mature approach to resilience management which is embedded in our culture. We ensure we have the right skills, leadership, systems, processes and infrastructure in place to support the delivery of a robust, affordable and reliable service to our customers today and in the long term. This includes the training of many of our management resources to operate in LRF gold and silver command roles.

We do however recognise that in some areas the high standards of service we set ourselves were not achieved during the incident. In particular some localised water quality issues and longer duration supply interruption events were identified and improvements have been, and continue to be, targeted in these areas.

6.1 SUPPLY INTERRUPTIONS

Supply interruptions performance during the freeze / thaw event fell below the standards we at South West Water set ourselves, we have responded positively to ensure we do not see a repeat occurrence of this scale in any future extreme weather events.

Since the freeze / thaw, and in response to more recent demand challenges, we have invested in a number of tactical network inter-connectivity schemes which will allow us greater flexibility in moving water around our network and optimising outputs from our production sites, predominantly in remote rural areas with limited connectivity. For example, we have increased the number of network connection points in rural areas to enable rapid connection of mobile tankers or temporary booster pump installations. We have also recently invested in a pilot scheme to test the effectiveness of a dedicated supply interruption / alternative water supply (AWS) team, to work alongside our existing networks team. This team are tasked with the rapid identification and deployment of alternative water supply options where a supply interruption event is considered to be at risk of creating more prolonged periods of outage. If successful this approach will be rolled out across our entire operating area.

We have also considered a number of larger strategic resilience interventions and these will be delivered in the next AMP (2020-25) subject to acceptance of our PR19 submission which will be made to Ofwat on the 3 September 2018, details of these can be found in APPENDIX B.

6.2 ASSET OPERABILITY AND VISIBILITY

During the freeze / thaw event and for periods during the recent dry weather, we manned our production facilities and strategic networks team on a 24/7 basis. Later this calendar year, once we have moved out of our peak demand season, we will begin to formalise aspects of this temporary arrangement with the creation of a central Process Control Team. This team will be responsible for out of hours monitoring, optimisation and control of our production sites and our strategic distribution network. This change in operating philosophy will allow for a more proactive approach to be taken with earlier identification of, and response to, issues based on improved data analytics and streamlined management decision making processes. This has been further enhanced by our ongoing investment in network logging capability and the installation of 'Modulo' pressure reducing valves, which gives us greater visibility of emerging issues and further options to remotely manage network flows and pressures during events and incidents.

Enhanced visibility of our production and networks assets have also been realised through improvements to our ISCADA and award winning BI reporting platforms. This has enabled our Strategic Networks and Production teams to keep ahead of peaks in demand and ensure that our assets are optimised at all times. Service reservoir levels are now visualised on a regional BI dashboard which details current storage levels and demand profiles. This has allowed us to be even more accurate when planning to match supply and demand within specific geographic locations. This can again be evidenced during the recent spell of hot dry weather where supply interruptions performance has been excellent with no large scale or long duration interruptions occurring within our operating area, despite the rapid reduction in soil moisture and associated ground movements, illustrated in the graphic below.

Soil Moisture Deficit

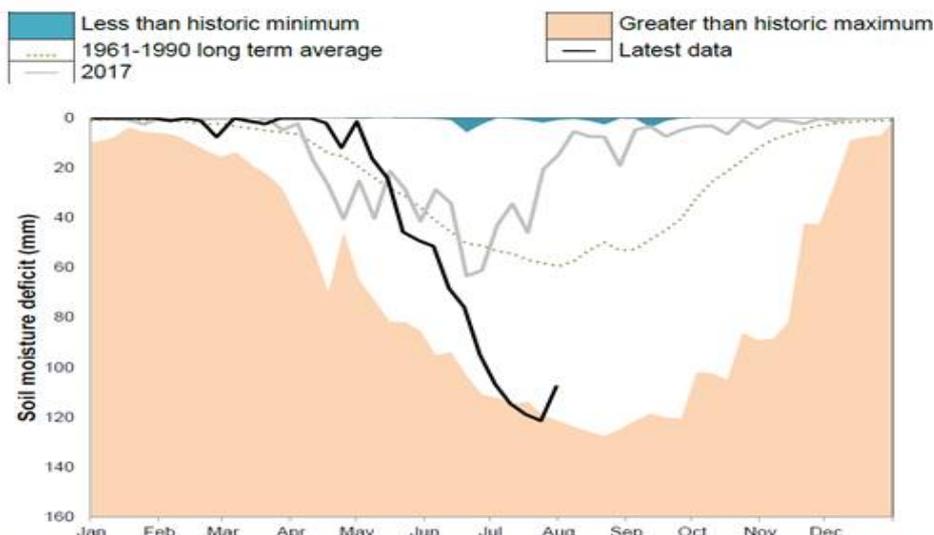


Figure 2.1: Latest soil moisture deficit compared to previous year, maximum, minimum and 1961 – 1990 long term average. Weekly MORECS data for real land use (Source: Met Office © Crown Copyright, 2018).

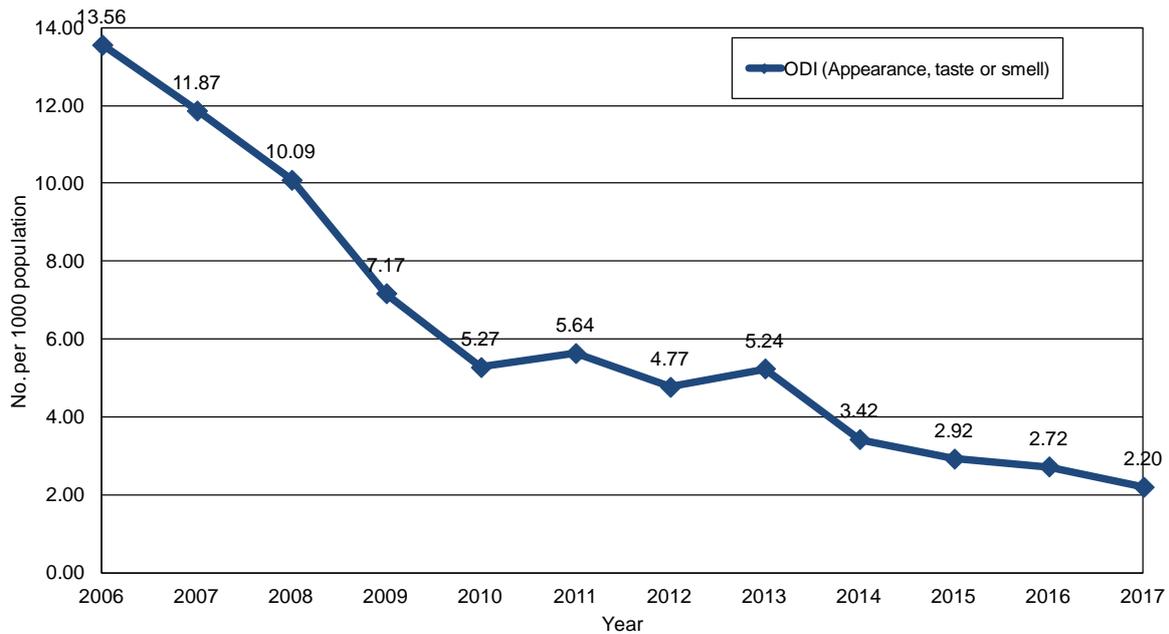
6.3 ALTERNATIVE WATER SUPPLIES

The freeze / thaw also highlighted the logistical challenge of delivering alternative water supplies in rural areas with limited connectivity. South West Water have used this learning to refresh our plans for a drought event which one might reasonably expect to last longer than a cold weather event which is more transitory in nature. As a result our Alternative Water Supply (AWS) arrangements are currently undergoing a detailed review to ensure that they are fit for purpose whatever the scale or duration of challenge we may face in the future.

6.4 WATER QUALITY

Our performance in terms of discolouration, taste and smell has been steadily improving over the last decade (as illustrated below) but we recognise there are still isolated areas where the full benefit of strategic investments is not yet fully realised. Our long term drinking water quality strategy outlines our approach and more detailed plans shared with the DWI have been well received and supported for future investment during 2020-25. In the shorter term we will continue to deliver several major capital schemes in the remainder of this AMP period alongside more tactical operational improvements (such as distribution flushing) to minimise the risk of consumers noticing changes in their supplies even in extreme circumstances. We have always worked closely with the DWI to ensure a balance programme of investments over several AMPs and will continue to do.

Taste, smell and appearance - Customer contacts as number per 1000 population (SWW)



We have recently received the DWI’s Event Assessment Letter regarding our notification of the impacts of the freeze / thaw period freeze in which they have made three recommendations and one (national) suggestion. We have accepted all of these and have clear plans in place to address them when we are forced to significantly modify our sources of supply to different supply zones during extreme weather. We will continue to work closely with the DWI and industry to ensure the best outcomes for consumers as we understand the importance of water quality to consumers locally and nationally.

We are meeting with the DWI on 6 September 2018 to further discuss our risk assessment process and actions taken to mitigate the specific issues relating to the freeze / thaw event.

6.5 RESILIENT SERVICE IMPROVEMENT PROGRAMME

We are in the process of reviewing the points above in even more detail and our findings will form part of our Resilient Service Improvement (RSI) programme that will be the vehicle for service delivery excellence during 2020-25. This transformation programme focuses primarily on our operational response and recovery by developing our organisational capability through the more effective use of data, business systems, processes, people skills and working arrangements. This is one component of our overall resilience investment strategy which considers the most appropriate solution to identified resilience risks, which could range from investment in our assets and systems so that they can withstand challenges by increasing defences, training our staff in new skills (such as the deployment of temporary flood barriers, as shown below) or providing additional asset redundancy if this is appropriate.



APPENDIX A – INDEPENDENT OBSERVATIONS



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Mr Stephen Bird

Managing Director
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01 September 2018

Ref: Review of South West Water's response to Ofwat industry wide review 'Out in the cold'.

Dear Stephen,

As a hydrologist and water resource specialist, I welcome the opportunity to scrutinise South West Water's response to Ofwat's 'Out in the cold' review. I have a track-record of undertaking research into the way in which water companies manage supply, demand and quality of drinking water provision over the last 10 years. Therefore, I feel well placed to consider South West Water's response to the extreme weather conditions of the last 8 months and furthermore the long-term strategies that you propose to mitigate such events in the future. I set out my response following the structure of your report to Ofwat and would be happy to expand upon or provide more detail of any of the points that I raise.

Planning and preparation

It is positive to note that no issues were raised by Ofwat in this area, however, the actions proposed clearly reflect a recognition that progress could be made to prefigure scenarios of extreme cold weather in the future.

Clearly important and well summarised in the 'Freeze and thaw incident review findings' figure. The list of solutions is impressive and well-tailored to the problems caused, even down to the level of individual re-training of staff. It would be useful to see these solutions put in action via a series of case studies, should extreme weather scenarios occur in future years, such that recommendations can be reflected upon and improved as necessary.

Whilst visitor levels since the cold winter have been at record levels, most probably due to the dry and hot summer weather, it is likely, given UKCP09 long-term predictions that such weather and therefore visitor numbers to the region will become more 'normal', thus consideration of such stresses on water supply is critical as part of the PR19, 2020-2025 process and beyond.

Preparedness and emergency planning

The Pennon Group level review of emergency response procedures is timely and should deliver a strategic understanding of how South West Water can be more prepared for emergencies – learning within the group, from sister company Viridor Waste for example, and from external partners and supply chain, as well as other water companies. Managing the flow of information and training to

implement emergency procedures will not be easy, especially given the large number of employees who need to be involved when emergency scenarios occur. Thus it is heartening to see a move to standardise 'reporting and incident management', 'formalise supply chain arrangements' and development of a 'common understanding and language of risk' all of which should ensure that emergency plans are delivered more efficiently in the future.

Supply chain collaboration

Central to the implementation of emergency protocols will be the degree to which supply chains to South West Water are also cognisant of plans and how they will be delivered. To implement joined-up action across the region requires an understanding of how supply-chains responded so it is clearly useful to have captured 3rd party input to the cold weather period this year. The integration of Kier staff within SWW appears to be working well and the use of your Networks Service alliance appears to demonstrate good practice, which worked well this year and can be built upon for future years. To this end it is good to hear that in the re-tendering for your Engineering Alliance you are seeking to work with groups who bring more and better practice to incident response and indeed that you will use the responses of potential partners to determine who delivers your engineering contract work in the 2020-2025 period.

Weather forecasting capability

Operational planning – twice-weekly weather forecasts suggest a high level of understanding of variability in water supply via rainfall, but must also be tailored to allow prediction of where freeze events may compromise water supply, or water treatment processes, should snowfall and icy conditions prevail for extended periods as was the case this winter. Whilst the highly variable climate across the south west region can make accurate predictions of sub-zero temperatures difficult, it is certainly an area that should be focused upon to improve operational response.

Strategic planning – based upon 3 month forecasts is welcomed, but also difficult given uncertainty surrounding forecasts, for example, did we know in November 2017 that the cold weather of February 2018 was likely? Probably not, so strategy must incorporate a wide range of likely scenarios.

Multi-factor risk assessments – become increasingly important as climate variability increases. Therefore, consideration of all key stressors on the water supply and treatment networks is critical. It is good to see that important variables have been considered, but it might also be useful to consider other scenarios – such as those felt under cold, but dry future winters, where off-grid water use increases (for livestock etc...) but riverine, reservoir and groundwater recharge rates are below average.

Incident response

Two main areas required response – interruptions to supply and water quality.

Supply interruptions - were clearly a problem not just in the south west region. It is good to see response in terms of a more flexible water supply network, which can mitigate lack of supply from certain infrastructure.

Asset operability and visibility

Continued, formalised operation of facilities and strategic networks based on lessons learned from the temporary period over the last 8 months is welcomed and should be implemented smoothly via the creation of your 'Process Control Team'. Bringing the analysis of time series data (for example) to this team and allowing therefore more pro-active, but also responsive operation of the network is a good idea. Review/evaluation of how these proceeds will be important.

Alternative water supplies - Detailed review of alternative water supplies is critical, so it is useful to hear that this is underway. This review should consider multiple scenarios of compromised supply, including both summer and winter drought, as mentioned above, even though winter drought may be very unlikely in the south-west region.

Water quality – Acceptance of the Drinking Water Inspectorate’s recommendations is sensible and the plans to alter the provenance of water supply in certain areas that may be compromised by cold weather is a forward-thinking strategy, as the need for alternative water supplies was keenly felt this winter. Reductions in the number of customer contacts related to water quality clearly demonstrate that direction of travel in this area is correct, though it might also be useful to see similar graphics for the cold weather period, which could be compared with customer response to future emergencies, once changes have been implemented.

Resilient Service Improvement Programme – The AMP7 deployment of this program is critical as the south west is prone to flood risk in particular, as has been demonstrated on multiple occasions in recent years. Indeed, response to the multiple stressors of flood risk, even during drought periods (when intense convective rainfall can lead to local pluvial flooding) demonstrates the need for a more resilient water supply and treatment process during all types of extreme weather.

Communication and support

Two main areas/issues were identified; targeted communications and communications with non-householders/retail customers. A number of actions have already been undertaken and further solutions proposed, following analysis of the type and content of communications, with more emphasis now being placed upon social-media communications, which might be considered the most rapid suite of approaches to update householders on emergency procedures etc... The value of text-based updates for household customers, for example, was proven to be high, whereas those customers who did not receive such ‘official’ updates had to seek input from elsewhere, thus further roll-out of such a service, particularly building contact with the number of customers on the Priority Services Register would seem to be sensible.

Non-household customers – A number of areas for improvement are focused upon:

Identification of vacant non-household sites – clearly a difficult task, but could be improved via high-resolution geo-spatial mapping and updating of such data regularly. However, even when it is known that properties are not occupied, it is still difficult to identify if leaks are occurring, therefore improved understanding of which properties are occupied, when and how they are supplied may lead to targeted understanding of where leaks may occur in future cold weather periods.

Improved Retailer communications – three-pronged strategy to improve communications with retailers involves the following work:

- Retailer communications
- Establishing clear lines of responsibility for Wholesaler and Retailers
- Working with local business stakeholders networks

Proposed work in these areas seems appropriate, for example to build upon direct contact with customers via SMS seems a pragmatic and highly responsive approach to deal with weather events. The further engagement of business users is also progressive, though it is also recognised that this is a two-way process and that sensitive business users are most likely to be in regular contact with SWW due to the need to maintain water supply under all weather scenarios.

Identification of non-household sensitive customers – Direct liaison with the Care Quality Commission and the National Health Service would, including cross-referencing with all residential care homes across the region should enable the location of sensitive customers to be well understood. Detailed information that is held by these organisations who are primarily responsible for customers can be accessed in terms of water supply needs, which should also ensure the continued service that these sensitive customers need during periods of extreme weather. Such information should also be useful to manage water supply for vulnerable customers, the response to which is detailed below.

Vulnerable Customers

Priority Services Register – Further engagement with customers is critical to ensure that the register represents all vulnerable customers. It is good to see that the following commitments have been put in place:

- Increase number of customer details checked every 2 years
- Number of customers on the PSR register
- Overall satisfaction of services received on the PSR

It is also positive to note that 85% levels of satisfaction have been recorded by those who have used the PSR. It will be useful for the above criteria to form part of the Outcome Delivery Incentives proposed under PR19, such that progress under these areas can be quantified and evaluated which should lead to enhanced delivery.

Compensation

The approach to compensation seems appropriate and thoughtful. The case study of rural communities who were adversely affected by the cold weather is an interesting example – it is good to understand that customers within the three communities mentioned felt fairly treated via this approach.

Yours sincerely,

Professor Richard Brazier

APPENDIX B - RESILIENCE INVESTMENT TO 2025

As part of our ongoing efforts to ensure continuing resilient services for our customers, we are planning a comprehensive range of interventions during the 2020-25 period. These range from operational improvements, infrastructure and non-infrastructure asset improvements to long-term catchment scale investments.

We have developed a balanced plan to improve the resilience of our services during 2020–25:

WATER RESOURCES

From a water resources perspective, our resilience performance to date has been sector leading. - we have not needed to implement any restrictions on demand since 1996. In addition our security of supply index – a measure of our ability to meet forecast demand to our levels of service – is at 100%. We are also classified as low risk by the Environment Agency in their Water Resource Management Plan process.

Our work has shown that our supply area should meet a 1 in 200 year drought based on our historic demands, so there is not an immediate need to address a supply / demand resilience issue. That said, we are still planning for the long term resilience of supplies, especially with regard to timely reinstatement and recovery opportunities.

Drawing on our experiences of a long standing partnership with Wessex Water around the deployment of the shared Wimbleball reservoir resource we have played a leading role in helping set up the West Country Water Resources Group with a view to helping produce more integrated plans for our region, and also identifying possible opportunities to transfer surplus water in the Bournemouth Water area to address deficits. This work will continue in to AMP7.

The more challenging natural environment means and population growth means we are seeing increased stress on our supply system. This requires us not only to think smarter on how to get more reliability from our system, but also develop our people and tools for the future. Feedback on our Draft Water Resource Management Plan from customers and stakeholders was that in the round they would like us to go further on leakage and water efficiency, despite the offsetting cost this could incur.

Our overall approach in this area is to focus on a twin track approach of understanding and planning ahead, together with specific low cost, high value supply and demand interventions to improve resilience.

Amongst these plans is a programme of testing of our existing drought options to see how they will perform in the future if we face more extreme droughts. We are also extending our work with the Met Office on future drought analysis. Unlike other parts of the country, the small, flashy nature of our catchments means drought analysis is a much more complex. It requires greater innovation in understanding and we will be continuing our partnering with the Met Office to use their expertise to help manage the future risk. We will also be undertaking a study of our largest reservoir, Roadford Lake, which supplies a zone of nearly 1 million people, to understand the feasibility of a new pumped storage scheme to improve the resilience to extreme events. Both Wimbleball and Colliford already have this functionality as a result of our long term planning decisions.

Collectively these studies will help protect the resilience of current and future customers to more extreme droughts.

WATER RESOURCES NATIONAL PLANNING FRAMEWORK

We are supportive of the move to an overall national framework for water resources and are part of the leadership group developing this with Defra, the EA, Ofwat and others. To support this and future decision making we are developing innovative risk based tools that can support our region and also input into the new regional plans that we will see developed in the 2020 to 2025 period. This will ensure that we are continuously improving our understanding of risk and avoiding where possible end of pipe solutions. It will also upskill our staff with the tools and techniques we will need in the future.

In addition, we have already identified a potential water transfer to Southern Water and have developed this collaboratively with Wessex Water, Bristol Water and Southern Water. Subject to approval of Southern Water's Water Resource Management Plan, we plan for this to be opened up to the market for competitive delivery in line with the timing of their plans. We do not expect this to have a cost impact on our customers, if anything the process should offer an opportunity for our customers once a trading mechanism has been established by the respective regulators

LEAKAGE, WATER EFFICIENCY AND METERING

In line with the Ofwat PR19 Methodology, and our own findings from customer research in the development of our WRMP, we are targeting a significant 15% reduction in leakage by 2025 at no additional cost to customers. We will build on our industry leading track record of leakage reduction to drive the delivery of this significant performance commitment and recognise that this will provide long-term benefits for our supply-demand position.

PROTECTING WATER ASSETS FROM EXTREME EVENTS AND PROVIDING OPERATIONAL FLEXIBILITY

Identifying the risk of extreme floods affecting our water treatment assets, we will invest to protect a number of key sites from 1 in a 1000 year flood events. We also propose to upgrade or replace old control equipment as this is more vulnerable to cyber attack. This will deliver improvements in line with the Security and Networks Information Standard. An additional risk we face relates to the impact of electrical storms on our treatment operation. We will install additional protection at a number of key sites which will ensure continual running of our sites in the event of severe storms. Additionally, we are reviewing our provision of fixed and portable emergency power supplies (generator plant) and are proposing a comprehensive and targeted strategy to ensure this aspect of our contingency arrangements is as robust as possible for the long term.

NEW WATER TREATMENT FACILITIES FOR BOURNEMOUTH CUSTOMERS

One of the most significant elements of our plan for 2020–25 is the replacement of Knapp Mill and Alderney water treatment works in our Bournemouth Water operational area. This builds on the success of our delivery of the new Mayflower water treatment works serving the Plymouth area in 2018. Both works have reached the end of their serviceable life and the existing legacy treatment processes are not robust enough to assure the quality of drinking water supplies to the area can be maintained in all conditions. Knapp Mill is also situated on a flood plain which increases the risk to the treatment operation at this location. Our proposal is to replace the existing process with advanced treatment technology similar to that used at our Mayflower site and we are currently

piloting the proposed treatment configuration before finalising the detailed design. Our intention is complete the Knapp Mill upgrade and commence Alderney during the 2020–25 period.

IMPROVING THE RESILIENCE OF OUR SUPPLY NETWORK WITH IMPROVED CONNECTIVITY

We have identified a number of network improvements to improve the flexibility of our supply network and further develop the inter-connectivity of strategic supply areas. Additionally, we are planning schemes to address areas of single source supplies for key centres of population, and automation improvements to some of our strategic network.

ENSURING A RESPONSIVE SERVICE ALL DAY, EVERY DAY

We are also planning to improve our responsiveness to challenges to our operation by enhancing our operational preparedness and incident management capabilities. This will ensure our response and recovery capacity is as efficient as possible. Our existing operational centre in Exeter will be developed to enhance and enrich our 24 / 7 strategic control and decision making capability. This will provide a seamless ability to ‘ramp up’ our response to incident scale when needed, but our focus will be on proactive management and control such that we identify emerging issues and fix them before our customers become aware. We are embarking on a transformation programme under our ‘Resilient Service Improvement’ programme which will result in a new service delivery model, based around the key themes of customer service, effective data and systems and our people strategy. The programme will ensure we deliver a responsive, agile and effective service delivery model with a focus on quality, right first time responses and proactive interventions.

CATCHMENT MANAGEMENT

Our long term programme of natural water catchment management will continue. Now in its third cycle, the programme will encompass 80% of the drinking water catchments in our operating area. We consider this programme as an essential long-term component of our resilience strategy to deliver sustainable benefits to water quality, water storage and reduced flooding risk. Our approach during 2020-25 will further develop our approach to natural capital assessment to ensure that our investments are targeted to maximise the benefits for customers over the long term.

Similarly our drainage catchment management programme will continue with our targeted sewer flooding improvement programme. We will build upon our work during 2015-20 on Downstream Thinking to carry out sewer separation work at those sites most at risk of impacting the environment or the flooding of customers during extreme weather events. Key projects to improve surface water drainage include: Camborne and Redruth, Torbay, Plymouth and Exeter where we plan work to prevent flooding and reduce the burden placed on sewers during periods of heavy rainfall. Our new Drainage and Wastewater Management Plans (DWMPs) will be formalised, building on our previous Drainage Framework Management Plans. DWMPs are key to cost-effective, sustainable performance improvements and resilience and will bring a range of benefits, including:

- Delivering integrated and holistic long term planning for both sewerage and wastewater treatment
- Enabling planning for economic growth, resilience, protection and enhancement of the environment

- Facilitating partnership working and co-creation of solutions for multiple benefits to achieve best value to the economy, society and the environment over the long term.

WASTEWATER ASSET RESILIENCE

Additionally we will address, on a priority basis as agreed with our key LRF partners for our key wastewater services operating risks

- Coastal and fluvial erosion
- Cyber security to our key strategic wastewater assets
- Sewer flooding risk – our 25 year goal is to reduce the percentage of the population at risk by more than 50% (33% to 15%). For AMP7 we aim to reduce the population at risk to 28% (currently at 33%)
- Wastewater treatment works flood response resilience - we identified sites within the Extreme Flood Outline (1 in 1000 year), flood contour (National Flood Resilience Review, September 2016). We plan to deliver 20 Response Recovery Plans per year following the 4R's approach through the DWMP process.

BIORESOURCES

Good sludge management is a vital part of a resilient wastewater service as it serves the upstream treatment processes which are exposed to increasing extremes of climate. Protecting biosolids product quality is essential to provide products that are competitive and desirable in the agricultural recycling market. Ultimately, biosolids product quality protects agricultural recycling route, which is the most cost-effective solution for customers and support a thriving regional economy.

As well as our planned maintenance, the bioresources market creates new opportunities for innovative solutions that can improve the resilience and efficiency of bioresources services and the wastewater treatment provision that they support. Maintenance driven improvements have been made to our bioresources asset reliability and availability, but continuation of this progress is needed.

Market approaches are already underway – we have set-up the principles of a shared (non-exclusive) resilience pilot arrangement with Wessex Water to avoid duplicating resilience provision to cope with asset downtime. We have also undertaken a cross border tankering pilot with Wessex Water to understand the logistics of transfers and compliance matters which can be applied to future arrangements with any suitable third parties.

Our maintenance plans will continue to provide a resilient base service in terms of assets, but resilience is not just about assets or markets, but also how we operate and plan. These plans draw on our experience of managing bio-hazard related risks with our LRF partners, such as foot and mouth, H5N1 bird flu and invasive species control.

A RESPONSIVE SERVICE

Our existing operational centre in Exeter will be developed to enhance our 24 / 7 strategic control and decision making capability. This will provide a seamless ability to 'ramp up' our response to incident scale when needed, but our focus will be on proactive management and control such that we identify emerging issues and fix them before our customers become aware. We are embarking on a transformation programme under our 'Resilient Service Improvement' programme which will

result in the delivery of a new service delivery model, based around the key themes of customer service, effective data and systems and our people strategy. The programme will ensure we deliver a responsive, agile and effective service delivery model with a focus on quality, right first-time responses and proactive interventions.