

How Anglian Water responded to the 2018 Freeze/Thaw Event

Executive Summary

The 2018 Freeze-Thaw event put significant strain on infrastructure across the UK. In the water sector the rapidity of the thaw following an extended freeze caused unavoidable problems with burst mains and leaks from customer pipes and company networks. The **bad weather occurred across the UK: the East of England's exposure was similar to the rest of the country**. Indeed, the combination of freeze and rapid thaw caused substantial ground movements and resultant mains bursts, a more significant issue in our region (particularly the Fens) than elsewhere.

However, **our actions ensured that customer impacts were minimised**. Almost no business customers were significantly affected (so cross-infrastructure effects were eliminated), and only 163 homes were off water for more than 12 hours, mainly in the Cromer area. Over 99.6% of our customers experienced no impact from this event. Where problems did occur they were quickly rectified. Other business priorities continued to be progressed during the event.

Our success in minimising the impact on customers stemmed from a number of factors, including:

- Putting **innovation** at the heart of what we do: from the work of our Insight and Data Science team and our dashboard information system, which drove our operational response and ensured we targeted our resources to address areas of greatest need, to how we work differently with our supply chain and our customers, to investments in our Integrated Remote Intelligence Service (IRIS) system, including our leading Integrated Pressure and Leakage Management System (ILPM), co-developed with Schneider, to our enhanced telemetry, condition monitoring and modelling and information systems (*See sections C & F*);
- Our industry-leading position on **leakage**. This means we lose less water from our networks, and so are better placed to cope with spikes in demand that flow from an event like this (*Section F*);
- Our **resilience** approach, based on ISO22301 and developed with Arup in our Resilience Framework, we used to test the resilience of the firm and its partnerships (*Section B*);
- Our **customer-centric** approach of 'restore, repair, recharge' to focus first on meeting customer needs (including redeploying water recycling assets) rather than fault repairs (*Sections C, E & F*);
- The **collaborative** approach we have pioneered with our supply chain: our unique alliancing model saw us quickly deploy 119 gangs and over 400 people to address issues (*Sections B&C*);
- The quality of our customer and stakeholder **communications**, both proactive and reactive, across all channels to try to reach the widest range possible (*Section D*);

Investment in resilience schemes, which has reduced the numbers of customers dependent on a single source of supply, gave us more options to minimise customer impacts in this event. This was combined with strong preparation across the company for this event, to ready ourselves operationally and to ensure proactive communications with customers before the event occurred. We executed our resilience planning systems and incident room approach, before the incident (to ensure we were ready) and during, and showed strong leadership throughout, with a Director heading our response, 24 hours a day. Finally, we would praise the resilience and skills of our frontline operational teams, drawn from across Anglian Water, our alliance partners, and our Anglian Work Force volunteers, all of whom worked tirelessly to avert impacts on customers in very challenging conditions.

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SECTION A: FACTUAL DETAILS OF FREEZE/THAW EVENTS

For questions A1 and A2, please refer to the spreadsheet already submitted

A3. How responding to the incident impacted on your wider business's "business as usual" operations during the incident period.

Despite the huge pressure and significant additional demand on resources at all levels within the business from the freeze thaw event, Anglian Water was nonetheless able to demonstrate its resilience in the round by continuing to deliver other priorities.

For example, the event coincided with the City Conference, which necessitated immediate and detailed follow-up work with our investors and Board. This included arranging and preparing for two short notice additional Board meetings. In turn this allowed us to make a series of major announcements about changes to our financial structures and governance in early March which responded to the challenges that were set out from Government and Ofwat around transparency and legitimacy of the sector as a whole.

Also in the midst of the weather event, we were concluding sensitive negotiations with national Trades Unions on changes to our pension scheme, and continued with a major Customer Engagement Forum session, an important element of our preparations for the PR19 business plan. Colleagues were able to cover for those otherwise engaged with manning the incident room for example.

Similarly, whilst coping with significant pressures from the severe weather, our water recycling operations were able to continue to operate (albeit with some constraints) and we redeployed assets from the water recycling side of the business to help deal with the more immediate pressures being faced on the water side of the business. Whilst this required some rescheduling of activities on the water recycling side, we were able to minimise any impacts for customers.

A4. What have you judged to be the cause of the issues, particularly water supply interruptions, for your customers (by customer type) during this period? What factors were relevant?

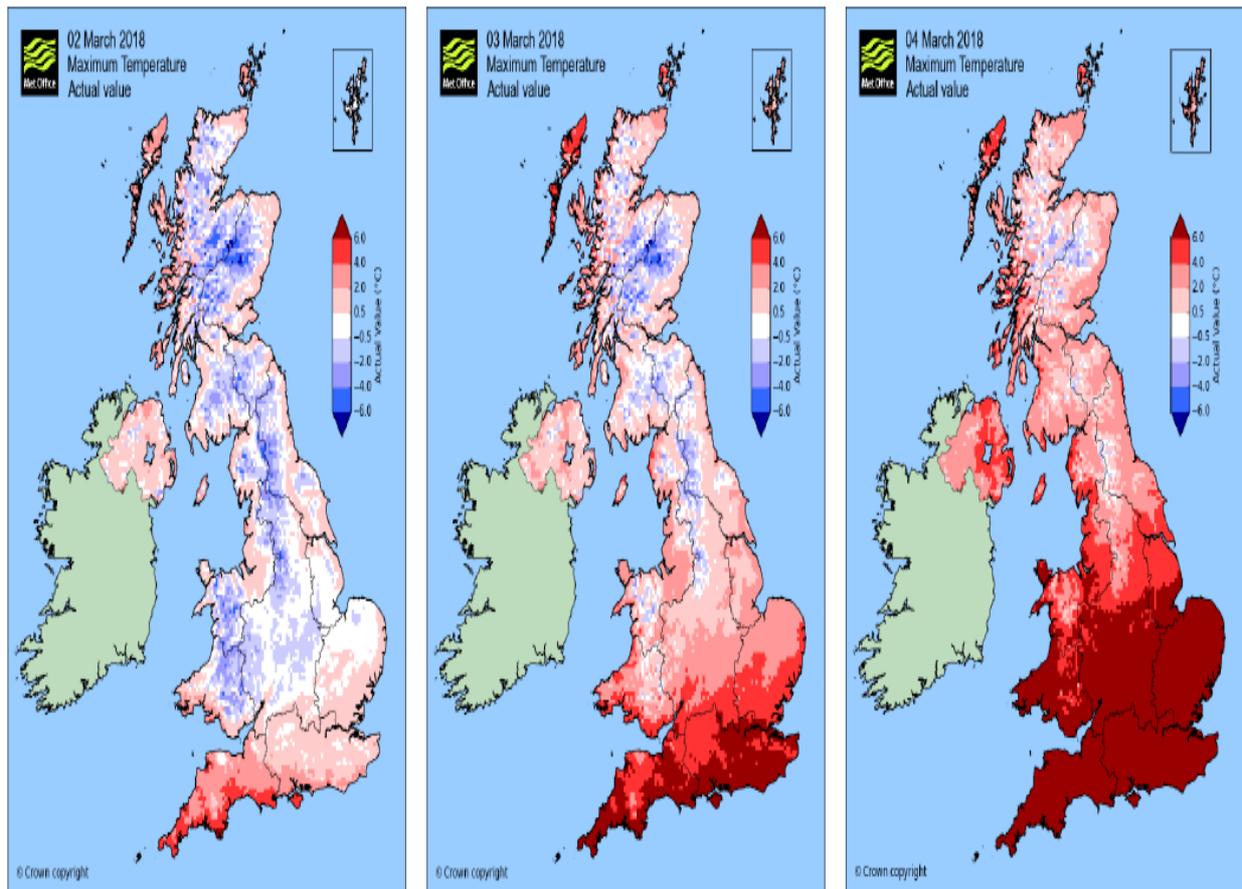
Weather conditions

We have reviewed information from the Met Office to understand whether there was a differential impact on our region compared to other parts of the UK. This analysis shows that, whilst there was some variance in the specific weather being experienced in different regions, the key parameters of the level of freeze and rapidity of thaw were very similar across the UK.

In essence, the evidence shows that we faced the same difficulties as other companies, the weather conditions were just as bad and the impact on us in terms of soil temperature changes, bursts and leaks just as significant. Indeed as we note below, the position is actually worse for our region given the impact of such events on ground movements in soil types that predominate in the East of England and which contribute to mains bursts and leaks.

The Met Office data shows that our region showed some of the greatest negative temperature anomalies during the freeze event. This was then followed by a very rapid thaw, which affected all regions to the south of the Humber. Within the Anglian Water Region, the Met Office data shows that the 4 day temperature swing of 13.3 degrees Centigrade was the greatest since January 1993. Measured

soil temperatures reacted in a similar way, with soil temperatures in the east of England responding in an equivalent way to those in the south of England.



Why Mains Bursts and leaks happen in our region during freeze-thaw events

What does the research tell us?

Anglian Water has for some time sought to better understand the phenomenon of ground movement, affected by temperature and levels of precipitation and the consequential impacts on leaks and mains bursts. We therefore undertook some industry-leading research with Cranfield University to:

- Understand exactly how extreme weather impacts AW assets;
- Prove the AW region due to its topography and associated soil types is more vulnerable to ground movement as a result of weather extremes (the shrink-swell effect);
- Build a dynamic model with predictive capability to plan for the impacts of the shrink-swell effect on AW assets.

The research with Cranfield concluded that the Anglian Water region does have high susceptibility to burst mains.

This is as a direct result of significant areas of our region being vulnerable to ground movement, a key factor in weather-related burst mains (known as the shrink/swell effect – see appendix previously submitted for detail).

Our ability to understand the impacts of weather extremes, and which mains are at greater risk of failure because they are located within soil types more vulnerable to ground movement, now allows us to plan more effectively in terms of anticipating the effects of severe weather.

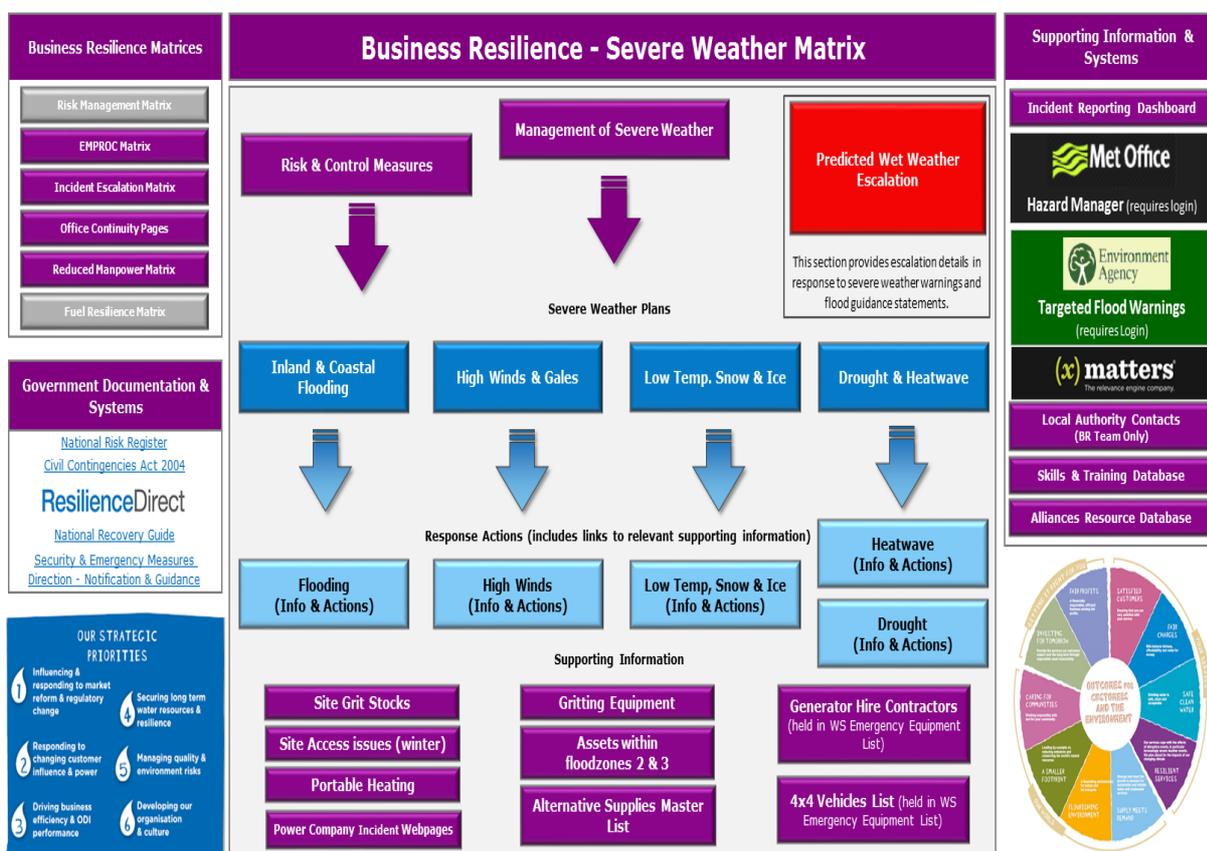
The investment we made in this work gave us a key operational advantage during the freeze-thaw event, and we are continuing to build on this through the development of the next generation WISPA 2 model in preparation for AMP 7.

SECTION B: PLANNING & PREPARATION

B1. How did your established processes for gathering intelligence and insight into the potential effects of forecast bad weather on your network help you to prepare for this event? Did they highlight any particular risks and what did you do to mitigate these? Did you share insights with other utilities/services?

Business Continuity

Our business continuity arrangements are certified to ISO22301 standard. We were the first water utility to achieve this. We have documented policies and procedures for management of severe weather events. These are based on principles of preparedness, response and recovery. Defined triggers escalate our business on to a level of heightened readiness. We regularly exercise our readiness to respond to these events, including sharing insights with external partners.



Together with this, we believe that our *Anglian Water Force*, a network of trained experts within our core business and alliance teams, and our ability to deploy information and analytics in an agile way, provides an extra layer of resilience when we need to respond to incidents.

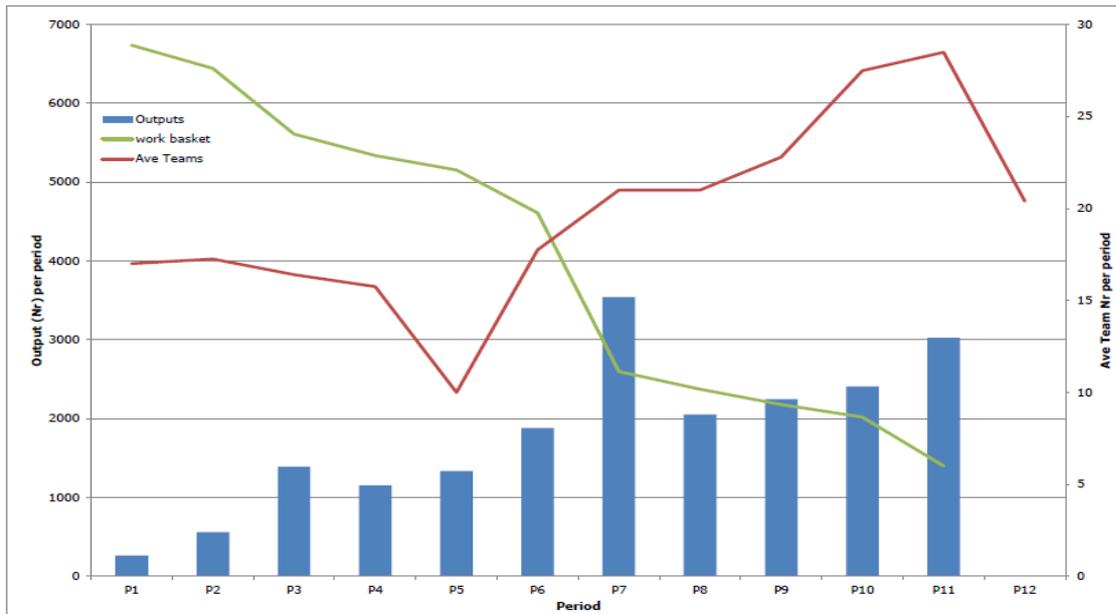
Contact Centre Resilience

Calls into our Operational Contact centre were double their normal levels during the incident, and peaked at 500% of normal levels on Sunday 4th March. This was the busiest Sunday for contact on record. **We managed these volumes effectively by preparing in advance and switching contact agents from Billing and Metering teams into Operational contact.** Through this and the use of our *Anglian Water Force* teams we were able to triple the size of our Operational contact centre. This meant speed

of contact for our customers on traditional and digital channels remained at good levels despite the much increased demand. During this period calls were answered on average in around a minute.

B2. What impact, if any, did your preparation have on your ability to handle this event? What role did your Executive take in preparing for these severe events?

As can be seen from the graph below, during the period up to the freeze thaw event we increased our level of activity on planned work. We were able to utilise the flexibility of our alliancing business model to target resources appropriately during the period before the event. This ensured that backlogs were low in advance of the event that we knew was coming and provided additional resilience.



We take a dynamic approach to balancing resource levels between reactive and planned work. The drop-off in planned teams in P12 shows the teams who were sent across to assist with reactive work during the burst outbreak. Our business as usual operation is headed by a 24/7 Senior Operations Manager leading a team providing operational and service oversight across our business through our Operational Management Centre. Members of the Management Board have been actively engaged in preparing for these events over many years.

B3. What emergency plans were in place and were they adequate to cope with the problems? Were those emergency plans appropriately enacted? If so, when?

All of our emergency plans were in place and enacted when needed, in fact slightly in advance to ensure we were ready for the event we knew was coming. These systems performed as they were designed to, with minimal impacts on customers. Over 99.6% of our households saw no material service reduction impacts from this event

B4. What training have your staff had for responding to severe weather events, particularly freeze/thaw incidents?

B5. What did you learn from previous incident management events, including through working with other water companies, local / regional partners, emergency services or other service providers, and how is this reflected in your current processes?

As mentioned above, our business continuity arrangements are certified to ISO22301 standard. Maintaining this standard requires us to ensure all relevant training is completed, and that key staff have gone through “dry run” exercises.

In addition, we have now adopted our Resilience Framework approach, to strengthen further the robustness of our approach and ensure it applies system wide.

Anglian Water has developed its approach to resilience over many years. In 2017, we appointed Arup to assist us in bringing together our various resilience streams in to a coherent framework, which we published alongside our refreshed Strategic Direction Statement¹.

The framework builds on Arup’s resilient cities approach, Cabinet Office guidance, and Ofwat’s guidance in the PR19 methodology and “resilience in the round” thinking. The framework has then been tested against the key shocks, stresses and risks that Anglian Water may face to ensure that the framework, and our implementation of it, will deliver a resilient business and continuity of services for customers and the environment.

We have used the framework to assess our maturity and to identify any gaps, where we could make improvements to further increase resilience. Arup will carry out an independent maturity assessment as part of our PR19 business planning process.

A key part of our approach to being a resilient organisation is learning from others – one such example of recent learning was of direct relevance to our ability to cope with the recent freeze/thaw event. One of the key learning points that we took from the United Utilities’ crypto event last year was the importance of having a readily available workforce that we could deploy in managing customer contact, helping vulnerable customers and deploying alternative water; we have set up AWF (Anglian Water Force) - a widespread network of Anglian Water employees that can be readily deployed across the region to talk to customers and assist them as needed.

¹ http://www.anglianwater.co.uk/assets/media/55189_AW_Long_Term_Strategy_single_pages.pdf

SECTION C: INCIDENT RESPONSE, AND HOW OUR ALLIANCING MODEL HELPED

C1. Provide details of your established processes for responding to issues during severe weather events, particularly late winter freeze/thaw incidents (e.g. operational, governance, communications, working arrangements with other authorities through local / regional partnerships). Were these processes effective during this incident? In your response, make clear the role of your Executive in any decision making within these processes.

Our established processes are well-tested, as mentioned above, and worked well during this incident, contributing to our ability to minimise the impact on customers. Our Executive was fully involved in decisions around opening the incident room (with at least one Director always engaged), redeploying of resources, managing proactive and reactive communications and responding to changing situations.

Incident Room

Our incident room opened on Weds 28th February, in order to ensure we were prepared for the events to come and after defined triggers (temperatures not greater than zero degrees Celsius for two days, and lowland snow deposits of >10cm) had been met. The incident room initiated the following actions:

- Enhanced monitoring of key storage points, pressure, flow and leakage in our network
- Increasing levels of field, alliance, contact centre, alarm monitoring teams
- Scenario modelling
- Increasing holding of alternative and bottled water supplies and engagement of bottled water suppliers to increase stock across the region by 150% (usual baseline stock is 100 pallets and increased to 248 pallets of bottled water)
- Liaison with Partner agencies
- Setting up of alternative supplies hub
- Proactive communication to customers about ensuring private pipework is adequately lagged.
- Proactive communication regarding 'Watercare Register'
- Postponing planned activity on our network and treatment works

We also actively participate in Local Resilience Forums (LRF), and during the event we were involved in a number of LRF teleconferences, Tactical Co-ordination Groups and Strategic Co-ordination Groups across 10 counties; a total of 61 teleconferences across the period.

C2. For this incident, please describe how your company went about deploying the resources required to respond to the incident. In responding, please detail the scale of resource deployed and from which parts of the business and/or external resources (eg supply chain, local / regional partners, business retailers) they were drawn.

We are increasingly seeing the benefits of our alliancing approach in improving our customer experience, our ability to respond quickly and decisively to network incidents and our ability to manage our financial performance.

The freeze-thaw event presented us with some big challenges but also gave us an opportunity to learn about how we can respond with our alliances when under extreme pressure.

Our alliancing models provide long term platforms that allow the delivery partners and extended supply chain to align to, have influence over, gain satisfaction from and be rewarded for achievement of our business goals, SIM and ODI requirements, daily challenges and major incidents.

Through these alliancing models, strong relationships have formed between us and our delivery partners. From Chief Executives to front line operational staff there is a unity and collaborative nature that has developed allowing all parties to take a longer term view of resource requirements, security, stability and commitment required to deliver.

Critically, this models looks beyond the immediate work requirements and stretches for the full period the AMP cycle. Success is measured by total collaborative accomplishment not by individual achievement.

The alliancing model within the Integrated Maintenance and Repair (IMR) alliance was revised in 2017 with a view to ensuring it provided a sustainable and equitable platform for all parties. The alliance model now reflects a position whereby it recognises that resource availability and stability is at its core. There are circa 89 teams of dedicated resources that are dedicated to delivering the mixed basket of work activity across both reactive and planned environments. This provides the IMR with the flexibility of resource it needs to be able to proactively manoeuvre between short-term peaks of reactive work whilst balancing the whole efficiency and productiveness of it resources through the utilisation of a planned work book.

The alliance has also recognised that its success in achieving SIM and ODI delivery requires a flexible and skilled resource base. That it is informed by previous work trends, weather impacts and network challenges, that it looks forward to provide insight and a non-complacent view of how it will robustly manage the network and structure itself for long term benefit and issue mitigation. Working in this way has allowed the alliances to have teams and the mechanisms in place to deploy to the most “in need” areas with immediate effect.

The alliance and its resource needs are aligned to a view of the network condition and potential impacts over a 10+year period. This long-term view that means it is not susceptible to the short-term “boom and bust management” which is often associated with operating in a reactive maintenance and repair arena, and which is challenging to manage under traditional contractual, commercial and operating models.

Additionally we are operating pan-Alliance working methodologies that allow us to recognise where there is an opportunity to have a more joined up and aligned workforce. An example would be the sharing of resources across the IMR and the Integrated Metering and Developer Services Alliance (IMDS). Through the linkages that exist at all levels of these two alliance, the same supply chain delivery partners, aligned management teams, joint working groups etc there has been the creation of a flexible and multi skilled resource base, each team with capability to deliver the specific needs of each delivery route whilst providing the right training and development of key resources to enable the movement across alliance and geographic boundaries.

Further the alliancing models have also enabled the active deployment of assets, plant and equipment sharing across the entire water network.

Specifically in response to the recent network incident we had the Integrated Main Works (@one) alliance providing support to our IMR Water colleagues. We had the Integrated Supply Chain function operating out of our Thorpe Wood House site supporting the OMC Incident Room on Alternative Supplies. We had IMR Water Recycling alliance providing additional traffic management to the IMR Water alliance. We had Integrated Operational Services alliance supporting maintenance of existing Traffic Management on planned works that had to be put on hold for a week.

In total, through the alliancing delivery models, rapid access to some 400 plus people were available to Anglian Water to provide support on the ground across all areas of the network and operation to proactively manage our response to the significant issues created by the bout of bad weather.

Also, as mentioned above, we redeployed assets from the water recycling side of the business to help deal with the more immediate pressures being faced on the water side of the business.

Further to the direct support enabled by the alliancing models and redeployment of resources, and to help manage large operational incidents, we have created an Anglian Water Force (AWF) incident community. AWF is a network of trained experts within our core business and alliance teams comprising 763 people.

These arrangements, together with our ability to deploy information and analytics in an agile way, provides an extra layer of resilience in our ability to respond to incidents.

This is a way in which we recognise that although large operational incidents do not happen often, we can be proactive and plan our approach to them.

C3. Provide details of how your company assessed the operational implications and prioritised its responses during the incident period.

In addition to the responses above, we were also able to use our advanced information and data analytics capability to assess situations and prioritise responses.

Making best use of data

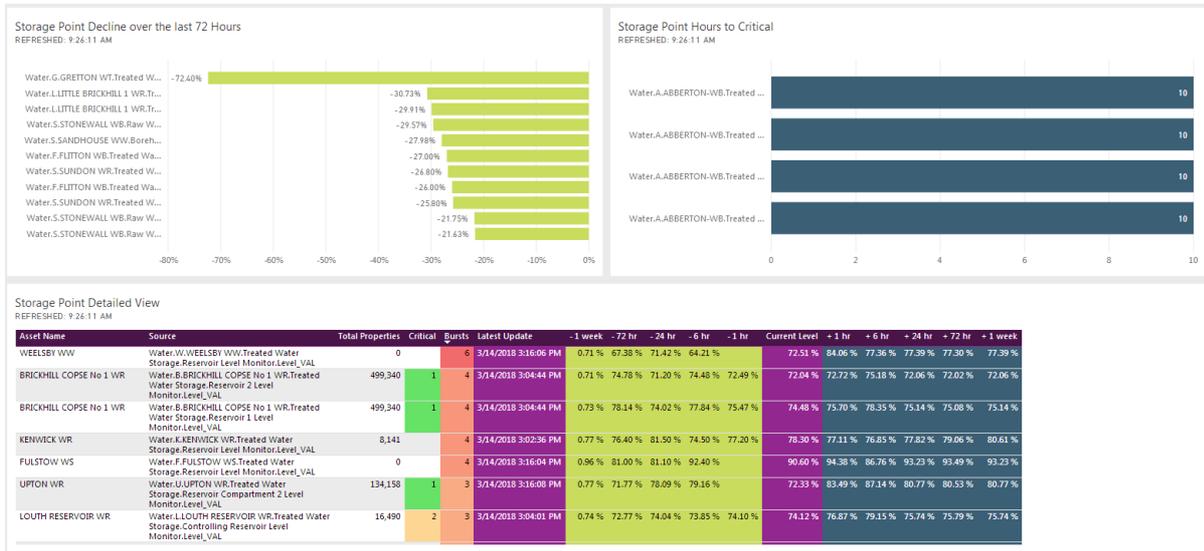
The team use the largest telemetry system in western Europe, with over 750,000 separate points monitored, sophisticated modelling, mapping and analytical tools to ensure a seamless service is maintained to our 6 million customers. Our investment in our Integrated Remote Intelligence Service (IRIS) system, and our leading Integrated Pressure and Leakage Management System (ILPM), co-developed with Schneider gives us high quality information which our data scientists can then use to allow us to target our actions to minimise customer impacts. This is backed up by dedicated field teams whose primary aim is to restore supplies to our customers following an interruption.

Investment in our information capabilities to exploit current technologies and to build a business wide analytics community of practice has enabled us to undertake analysis in an agile way, using expertise from across the business to inform decisions. During the freeze-thaw event, this enabled us to:

- Analyse our current customer issues at scale to identify potentially vulnerable customers and respond accordingly;
- Identify high risk areas using geospatial tools that account for topography /contour height;

- Keep customers informed of our plans and prioritise workloads.

Our dashboard mapping incoming customer contact allows our teams' quick and visual access to emerging issues. We have created a single dashboard view, which provides a single risk dashboard on critical storage point levels, storage points in decline, and hours until those storage points become critical. This allowed for proactive intervention before situations become critical.²



Key strategies that were put in place included targeting leakage teams to critical zones, and increasing works output to ensure demand was met and rezoning supplies to affected areas.

C4. What challenges/barriers did your company face in resolving problems that customers experienced? How did you overcome them?

C5. Provide details of how your company identified customers in vulnerable circumstances before, during and after the incident. What support was offered to these customers and how was this delivered?

In answer to both of these questions, we were pleased that impacts on customers were minimised during the event, and that for the small number of customers affected we were able to resolve problems quickly. Only a handful of NHH customers suffered material interruptions to supply over this period, with only seven customers suffering an interruption of more than 12 hours and no NHH customer suffering an interruption to supply of greater than 24 hours.

Between 28th February and 7th March, 163 customers had a supply interruption of greater than 12 hours, nearly all in the Cromer area. The maximum interruption was 30.75 hours for 4 properties. We prioritised vulnerable customers and delivered bottled water to all affected customers (346 packs in total) and put in place contingency arrangements with local hotels and laundries should the situation have continued. No formal complaints were received and the Parish Council has confirmed that it was not seen as a big issue.

² See Appendix for further examples

SECTION D: COMMUNICATIONS AND SUPPORT

D1. How effective were your communication processes before, during and after this incident for each of the below:

- a. **Customers? (residential and business);**
- b. **Customers in vulnerable circumstances and business customers for whom a water supply is critical (eg hospitals, schools)?;**
- c. **Water retail businesses?; and**
- d. **Wider stakeholders? (eg local authorities, other agencies, Government, Ofwat)**

a) Effective proactive and reactive communications with customers

Before and during the event we communicated across a wide range of channels with customers and other stakeholders to ensure we were doing all we could to help them avoid problems in the first place, and explain what we would do to alleviate any issues that did emerge. We elaborate on this below.

b) Vulnerable Customers and business customers for whom water supply is critical

As we mentioned above, our investment in data analytics meant we were able to analyse our current customer issues at scale to identify potentially vulnerable customers and those business customers for whom supply is critical and respond accordingly. As impacts were minimal for any customers this was not a major issue during this event (but was deployed within the customer groups affected).

c) Retailers

We also set up information conference calls with our retail customers throughout the event, recognising the sensitivity of our non-household (NHH) customer base. Feedback from our Retailer customers was extremely positive.

d) Other Stakeholders

Although impacts were minimal for customers in our region, we also maintained open communications with local and central Government and agencies during the incident, including through the Local Resilience Forum contacts detailed above.

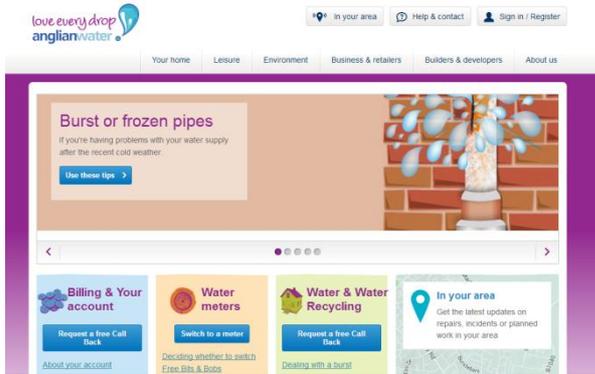
D2. What channels did you use for communication with customers and key stakeholders before, during and after the event? (eg local, regional or national news media, social media, e-mail, SMS, hard copy letter) What were your key messages at each stage? Please provide examples of your communications material with your submission.

D3. How did you proactively engage with customers (by customer type) before, during and after the event?

Anglian Water's Keep Your Pipes Cosy campaign

Ahead of any freezing weather conditions each winter we reactivate our Keep your Pipes Cosy (KYPC) campaign via, media, web and social. This is a campaign strand that has run for several years, with notably significant success when distribution of the story is timed to respond to national weather warnings.

Multiple communications assets with a lifespan of several years have been developed since this campaign's inception. Targeting and appropriate localisation keep these assets fresh each year.



A link to cold weather advice appears on the Anglian Water homepage, while a unique short URL - anglianwater.co.uk/winter – takes customers directly to information on protecting their pipes from cold weather. Further advice is signposted at various stages throughout the customer journey.

Online content is supported by printed collateral, also available for download.



Here are our top tips for saving water and money:

Insulate your pipes and water tank, especially in the loft. Pipes can be protected using ready-moulded lengths of insulation foam (known as lagging), taped together to close gaps. Elderly and vulnerable people may be eligible for grants to cover the cost of insulation and lagging. Replace roof matting which may have been wrapped around pipes – this type of insulation has not stood up to the test of recent winters. The sides and top of cold water tanks can be wrapped in an insulating jacket.

Fix those drips. This is a small thing to do, but stopping a regular drip could prevent a slow build up of water freezing and blocking your pipes.

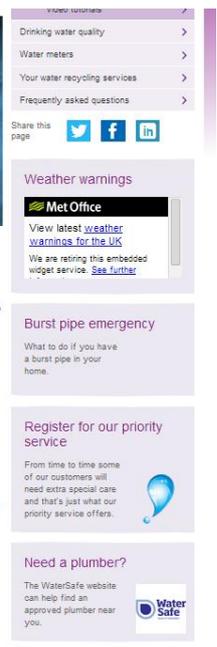
Stop the draughts. Cold air from outside freeze pipes inside, so cover those gaps in doors and windows. Wind increases the risk of freezing pipes as it penetrates air bricks, roof spaces and outbuilding.

Check outdoor taps. These can be most vulnerable to the impact of cold weather. Don't leave a hose attached to outside taps, and – if you have one – turn off the valve (which may be inside) and drain down the tap and pipes. This stops them becoming damaged and cold creeping up the pipe into your house.

If your water meter is fitted to the wall outside your house check that the pipes leading to and from it are adequately insulated and there are no gaps between them, that the meter cupboard is packed with insulation material, and that the door is firmly shut.

Use the frost setting on your central heating, or leave it on low when you are out or away. Insulation is priority number one, but low-level background heating can stop pipes freezing, particularly if the property is empty. Check with your energy company to ensure you are on the most appropriate tariff.

Let the warm air flow. Consider opening the loft door occasionally if it's very cold and you have tanks or pipes in the loft. This allows warm air to circulate around them in your roof cavity. The insulation that keeps heat in your house stops warmth reaching tanks and pipes in your loft.



Detailed advice is published on our website, including links to weather warnings, emergency contacts, priority service support, Watersafe accredited plumbers, and how-to videos.

The twin objectives of the campaign are to attract customer attention in the context of what else they may be hearing and seeing in relation to cold weather, and to inform them about how to prepare. How-to videos and creative animations are at its heart.

Engagement with traditional media

Ahead of the freeze which swept the UK in late February, we reactivated this campaign. We issued our Keep Pipes Cosy press release to regional media, radio and TV, offering advice to customers about what action to take ahead of the cold snap to protect homes from burst pipes and flooding.

While initial release on the 26 Feb had a limited amount of pick up, our advice had been lodged with newsrooms, stakeholders and opinion formers. Once the snow began to fall and freeze the following week (and customer contact volumes increased) we reissued the release, with additional guidance for customers should they find their pipes had already frozen.

We proactively contacted all major local radio stations, (BBC and commercial) offering live interviews or pre-recorded advice for their broadcasts. Every local BBC radio station, and all major local commercial stations, booked interview slots in with us between the 1 and 2 March. While some carried interviews as a feature in daytime programming, others ran it as content in news bulletins.

Channels which ran the story were:

- BBC Radio Cambridgeshire, Lincolnshire, Norfolk, Northampton, Suffolk
- Lincs FM
- Eastern Daily Press
- BBC Look East
- Grimsby Telegraph
- Heart Radio

All of this messaging was consistent with information published to our “In Your Area” website.

The thaw of the following week (and operational challenges in other water companies) created a further wave of interest from the media. With such limited customer impact in the Anglian region, our contribution to media debate was largely around:

- explaining why a rapid thaw can cause pipes to burst, and the difference between our infrastructure and domestic plumbing
- offering reassurance to customers that our network was coping well with the conditions and was being monitored closely by our engineers
- encouraging them to report any leaks to our Leakline
- Encouraging the use of Watersafe accredited plumbers

'Beast from the East II'

Despite the forecast for the second cold snap being less ferocious than the first, we proactively contacted all regional radio stations again, ahead of the 17 March forecast for further snow and ice. BBC Radio Northampton, BBC Radio Lincolnshire and BBC Radio Norfolk ran the piece again.

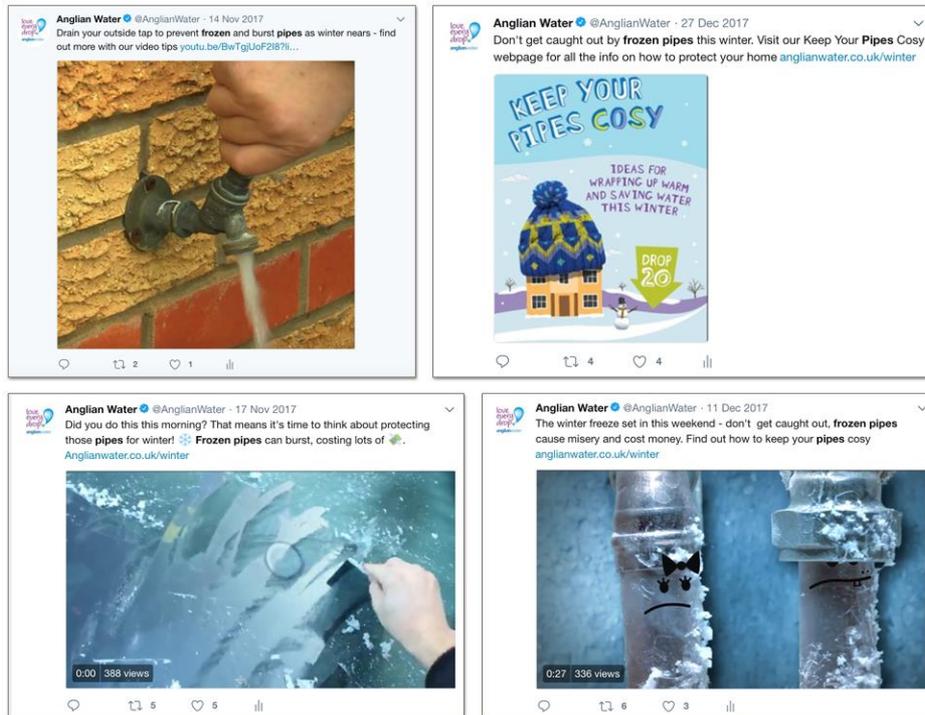
We also reissued the advice as part of our fortnightly supplement in the East Anglian Daily Times, one of the most widely-read regional newspapers in our area, covering Suffolk along with parts of Norfolk and Essex.

Customer engagement on social media

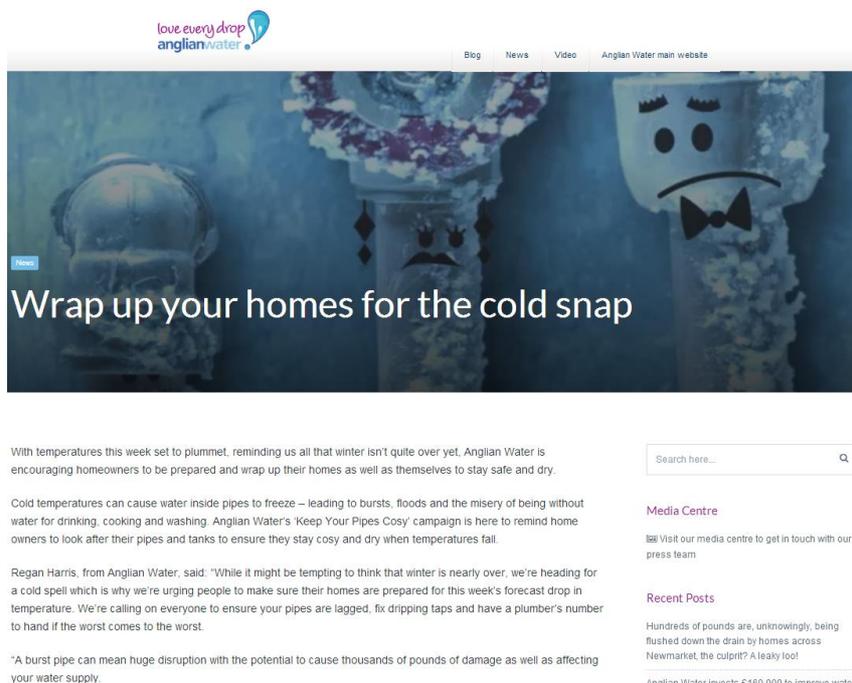
Anglian Water's social media channels are consistently the most 'followed' or 'liked' in the industry, with correspondingly leading levels of engagement. Using campaign collateral, we are able to target customers directly, using our well-established social media channels.

		Reactions, Comments & Shares				
Page		Total Page Likes	From Last Week	Posts This Week	Engagement This Week	
YOU 1	 Anglian Water - Love Ev...	20K 	▲0.8%	7	2K 	
2	 Scottish Water	17.9K 	▲0.6%	87	551 	
3	 Yorkshire Water	16.5K 	▲0.8%	9	230 	
4	 Dwr Cymru Welsh Water	15.9K 	▲0.5%	11	381 	
5	 Severn Trent	9.8K 	▲0.1%	9	203 	
6	 Thames Water	9K 	▲1.4%	40	441 	
7	 United Utilities	7.6K 	▲1.6%	28	677 	
8	 Wessex Water	5.2K 	▲2.4%	10	688 	
9	 Southern Water	3.6K 	▲0.7%	21	199 	
10	 South East Water UK	2K 	▲0.1%	27	87 	
11	 Affinity Water	1.5K 	▲0.3%	3	68 	
12	 Northumbrian Water	767 	0%	0	0 	
13	 Essex and Suffolk Water	151 	0%	0	0 	

With the cold weather predicted in late February and early March, we again pushed the message out, echoing the messaging of our media release. This was published to our media site on 26 Feb.



Examples of previous cold weather engagement using Twitter, December 2017



The Anglian Water media site provides a central location for all published content, such as press releases, blogs and videos. This story can be found here: <https://media.anglianwater.co.uk/wrap-up-your-homes-for-the-cold-snap/>

Social media traffic began to steadily rise from the start of the week commencing Feb 26. As the temperature thawed and customers started to report leaks and water issues in their properties, contact peaked

on late Sunday March 3 and throughout Monday March 4, before returning to normal levels on Wednesday.

During this period we received 2,668 messages and comments on Twitter and Facebook from 1,134 accounts. Of these 553 were customers requiring assistance, information or advice and they all received an individual response from our digital customer services team.

This was the highest level of traffic we have ever received on our social media channels. To ensure we were able to cope with demand we moved shifts to extend our hours of coverage, increased the number of available seats on our customer service platform by 20, and made preparations to bring in extra staff from other areas of the company to help respond individually to customers online. Ultimately, we were able to deal with demand from within the dedicated team.

Our proactive messages on social media were given over to updates and advice for customers as well as images of our staff out working to keep customers informed and reassured.

We posted 11 Facebook updates during this period: a mixture of general posts for all affected customers, and targeted posts on specific localised issues only visible to those in the affected geographic areas.

Our total combined reach on these posts was around 250,000, with 40,000 people engaging (eg liking, commenting, sharing, clicking on links or watching videos).

The post with the highest reach was posted on March 1, reaching almost 150,000 people, receiving 2,600 likes, comments and shares and was clicked on 23,000 times.

The image shows a Facebook post from 'Anglian Water - Love Every Drop' published by Jane Anglian on March 1 at 10:06am. The post text discusses water supply issues due to frozen pipes and provides advice on how to defrost pipes. The post has reached 147,393 people and has 2,676 reactions, comments, and shares. A 'Performance for Your Post' sidebar on the right provides a detailed breakdown of engagement metrics.

147,393 People Reached		
2,676 Reactions, Comments & Shares		
777 Like	527 On Post	250 On Shares
11 Love	9 On Post	2 On Shares
10 Haha	3 On Post	7 On Shares
11 Wow	11 On Post	0 On Shares
3 Sad	2 On Post	1 On Shares
461 Comments	339 On Post	122 On Shares
1,403 Shares	1,385 On Post	18 On Shares
23,106 Post Clicks		
0 Photo Views	53 Link Clicks	23,053 Other Clicks
NEGATIVE FEEDBACK		
23 Hide Post	9 Hide All Posts	
0 Report as Spam	0 Unlike Page	

To contextualise the situation we shared images of work being carried out on the front line. This follows our tried and tested strategy of lifting the lid on the work we do, turning front line colleagues into advocates and ambassadors, showing that the whole business is working in service the customer. Customer responses were typically very supportive.

Anglian Water - Love Every Drop added 4 new photos. 2 March at 15:37

Services around our region have had a very busy week. Our teams have been out and about helping customers and we'd just like to say a huge thanks for the many cups of tea they've received and for bearing with us while we have dealt with a huge number of calls. We have had several hundred calls from people with no water due to frozen pipes, and given out advice on how to thaw them out. Some people were still off water and we're visiting around 400 homes, prioritising vulnerable and elderly customers. Ground movement caused by freezing temperatures has caused burst pipes in some areas. We are currently investigating and fixing more than 60 bursts across the region. On the sewer side of our business we are having difficulty getting about on the roads, accessing remote treatment works and also finding and accessing manhole covers so please bear with us if you are waiting for assistance with a sewer issue. We are preparing for a busy weekend and have called in staff from leave and others are working overtime as we prepare for the snow thaw and forecast rain which could cause localised flooding. These pictures show some of the conditions staff are working in. Lee and Hannah, network technicians were out unblocking sewers in the snow in Colchester. Apprentices Dillon and Josh stopped to help a stranded lorry near Bourne in Lincs. And it wasn't just customers – this redshank was found struggling in the snow in a depot in Essex and taken inside a van to warm up. And finally here is the scene that met technician Sam Batey when he arrived to check on Houghton St Giles Water Treatment Works in Norfolk. Please stay warm and stay safe – and make sure to look in on any vulnerable or elderly neighbours. If you are having problems with frozen pipes then there's advice here – www.anglianwater.co.uk/winter. If you are still having problems then please do comment below, or send us a private message and we'll do our best to help.

Like Comment Share

You, Emma Staples, Ellie Henderson and 233 others

77 shares

Jody Brister A big Thankyou I will say for the lads who sorted the frozen pipes in rackheath & getting it up & running again 🙌🙌

Neal Wells It's certainly been a challenging 48 hours!

Louise Baldry Thank you so much for sorting out the water supply in Salhouse. You were so polite and helpful on the phone and a special big thanks to the people who worked outside in this awful weather to make sure we have running water. Well done!

Lorraine Parr Just wanted to say a big thank you to your team in my area about 9.30 last night we found that quite alot of neighbours had blocked drains and raw sewage was coming over the top. You sent your Very busy team out and it was fixed by 11 oclock. Just recieved a phone call by a fantastic gentleman to see if it had been fixed which it had and if we have the same trouble again to phone and they would be out straight away. I told him it was blocked with nappies and wet wipes he even said sorry it wasnt his fault. Excellent job guys 🙌🙌

Anglian Water - Love Every Drop Hi Lorraine, I'm so glad you're so happy with the service you had from us. I'm pleased our team were able to sort your issue so quickly and we really appreciate you taking the time to come back to us with your feedback. Thank you again and have a wonderful day.

Lorraine Quigley Thank you for fixing my water supply! A huge thank you to the guys out working hard to fix the leaks, their effort is much appreciated 😊

Anglian Water - Love Every Drop Hi Lorraine, I'm so glad we were able to sort your issue and that you're happy with the service we provide. Thanks for getting in touch with your feedback and I hope you have a lovely day 😊

Similar content was posted on Twitter. Our tweets over this period received more than 240,000 impressions.

Anglian Water @AnglianWater · Mar 5

Please help us get this message out @EDP24 @EADT24 @linsechoneus @LincsFM @GrimbyTel @Bedford_Citizen @BBCNorfolk @BBCEssex @BBCSuffolk @BBCRadioLincs @itvanglia @mk_citizen @BBCLookEast @BBC3CR

Show this thread

Anglian Water @AnglianWater · Mar 5

The big thaw has caused some leaks around the region. Here's our advice about what to do if you discover a leak. Don't forget you can report a leak to us 24/7 on our leakline number 0800 771 881 📞 Please share and RT



1 31 22

Show this thread

Anglian Water @AnglianWater · Mar 6

After the big thaw you might be in need of a plumber! Don't book a cowboy to fix your pipes, check out our list of approved plumbers in our area. Find out more at: anglianwater.co.uk/developers/plu...



2 4

As we have built up a large Twitter following as a result of regular and relevant updates targeted at specific communities, our message was reiterated by a large number of independent voices. For instance, on the following days, posts contained videos from staff giving advice on how to deal with burst pipes in the home, how to contact an approved plumber, and how to inform us of leaks.



As these posts were 'boosted' they reached a larger number of people than they would otherwise (organically) have done. Again, they were fronted by regular staff, emphasising the focus of the whole business being on the customer.

During this period we also posted a number of targeted messages (dark posts) to specific locations, reaching communities affected by bursts, roadworks or potential cloudy water following a repair.

D4. What processes do you have in place for managing properties that are vacant, void or difficult to access (eg businesses that are closed at weekends) in the event of a major incident?

With regard to businesses which are closed at weekends, we would attempt to contact them directly whilst also informing the retailer via our Wholesale Services Centre. We would utilise the media in large events to make people aware and keep them informed, our "In your Area" website would be regularly updated.

D5. What ongoing support after the incidents have you put in place, in particular for customers in vulnerable circumstances?

Given the minimal impacts and swift resolution we have not needed to put in place ongoing support.

SECTION E: IMPACT ON CUSTOMERS AND COMPENSATION ARRANGEMENTS

- E1. Provide details of how you will identify which customers (by customer type) are entitled to compensation.**
- E2. Provide details of the automatic GSS payments, including any payment penalties, you expect to pay (or already have paid) to customers (by customer type) as a result of the incident period and the total value associated to these payments.**
- E3. Provide details of any further compensation you will be providing to customers beyond automatic GSS payments and how the level of compensation was calculated relative to the disruption customers experienced. In doing so please provide details of the numbers of customers (by customer type) you expect to receive this and the total value associated to these payments.**
- E4. Provide details of how long you anticipate the process of compensating all affected customers will take and the methods by which the compensation will be paid (eg automatic, cheque). Will there be an application process for any elements of compensation? If so, please describe the process.**

Because we were able to minimise the impacts on customers from this event, we only needed to provide compensation to the small number of customers, in just two locations, that experienced longer periods of interruption as identified by our model.

We paid this compensation as equivalent to GSS for those who experienced interruptions of over 12 hours, as due to the weather exception, we did not have to do this as an automatic GSS payment.

We also extended this so that we didn't split a street. For example if some of the properties on the street experienced an interruption of over 12 hours and others under 12 hours we simply provided compensation to all. We made payments of £20 to those experiencing interruptions of over 12 hours, with the small number who experienced interruptions of over 24 hours receiving £40.

All the domestic customers have been paid already. For the 5 non-household customers affected the relevant credits will be released to the retailers in the next few days who will then apply to their customers accounts.

SECTION F: REFLECTIONS AND LESSONS LEARNT

F1. Provide details of what you considered to work well and what you considered to need future improvement for your company and why in relation to:

- a) Identifying and repairing supply interruptions and actions taken to prepare the supply and network system;**
- b) Communicating activities to customers/stakeholders (by customer/stakeholder type);**
- c) Identifying and supporting the needs of customers in vulnerable circumstances; and**
- d) Having the appropriate governance processes in place.**

We feel we managed this event well and minimised impacts on customers. Our approach around identifying risk and minimising supply interruptions communication, identifying and supporting customers in vulnerable circumstances, and having the appropriate governance processes in place all worked well and are described above, which provide the answers to b)-d) above.

A major reflection for us from this event is how important it is to have prepared well in advance. This is not just in terms of preparation in the immediate run-up to an event, but also in earlier preparation through investing to enhance resilience and reduce leakage. This is the most important element that responds to point a) above.

Case Study, benefits from the Norwich Resilience Scheme

Early 2010 saw the commissioning of the Norwich resilience scheme. The concept was developed in 2005 to provide resilience under average demand conditions should the full output of the Norwich Heigham WTW fail (72% of required supply for 200,000 population). The investment of £16.5M delivered a new raw water mains, a new 24 MI/d Water Treatment works plus trunk main connections from the East Hills WTW to the Norwich water ring main. The solution included a full automation configuration which enables remote control of WTW output and full pressure control. This has been designed to allow optimisation of all the available groundwater assets should Heigham output be catastrophically lost due to a resilience event such as fire or flood.

The scheme and its operation was unpinned by a regular and full maintenance and testing regime and has in the 8 years since commissioning only been required to operate in anger for a continuous period of 5 to 7 days due to the Heigham WTW suffering a water quality challenge due to raw water conditions.

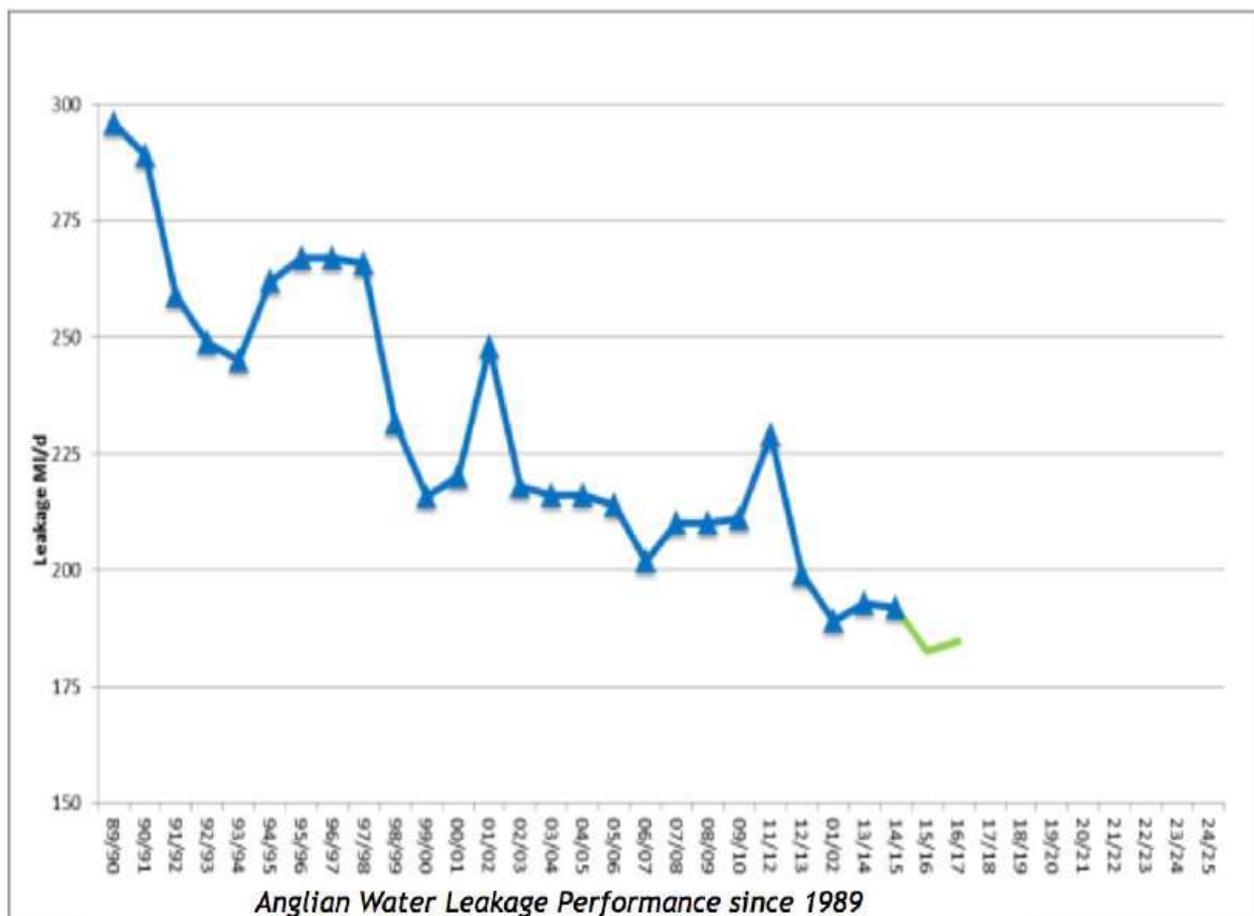
The East Hills scheme is designed to be able to ramp up instantly (unlike a more complex solution such a RO/membrane plant requiring run up time) and the East Hills WTW output can be driven remotely by our central OMC by remote control . It can meet demand by ramping up from its baseline output of 2 to 3 MI/d to the maximum output of circa 24 MI/D in short timeframes.

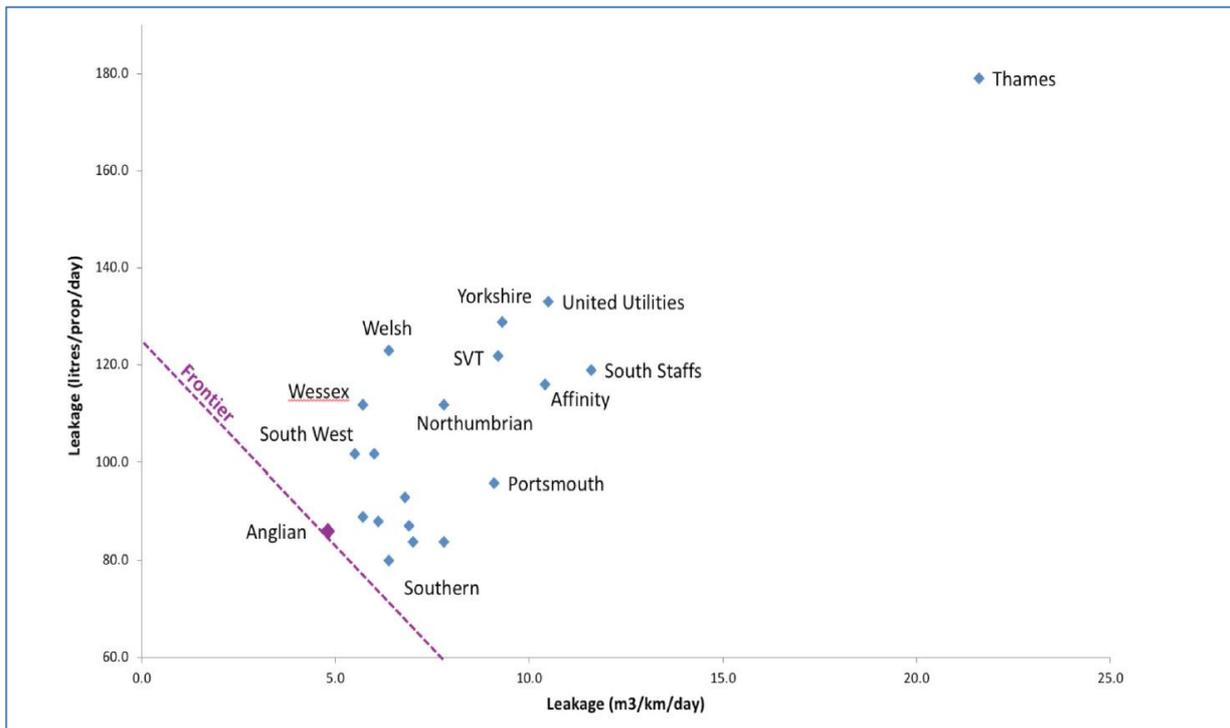
When demand rose in the Norwich Supply from 53.63MI/d to 73.65MI/d over the period of 4th to 6th March , the East Hill WTW was used to pick up the majority of this increase with its flows rising from 2.57MI/d on 3rd March to 12.26MI/d on 5th and 13.79MI/d on 6th March. Without this resilience capability, the ability of the Heigham WTW to meet this increased demand in such a short timescale would have been questionable. This event showed the value of our resilience investment.

Leakage performance

During the drought of 2011-12, which came just after the severe winter of 2010-11, we took the decision to invest more in leakage reduction to take us below our Sustainable Economic Level of Leakage (SELL) of 211 MI/d. We invested in improving our repair run times and we in-sourced our leakage detection teams to ensure stability of the work force which resulted in an 17 MI/d (8%) reduction in leakage by the last year of AMP5 compared with the AMP4 average. In AMP6 we are continuing our leakage reductions targeting 172 MI/d by 2020, which will represent a 20 MI/d reduction (10%) from the position at the start of the AMP. Anglian Water's investors made the decision to forward fund the required investment to deliver the reduction. The costs will only be recouped if we continue to hit our glide path for reward under our ODI mechanism.

The graphs below show our leakage performance since the industry was privatised in 1989, and data from Discover Water showing our industry leakage performance in 2016-17. **Critically, this strong leakage performance gives us a far stronger starting point at the beginning of an incident like this. In the 2010-11 freeze, more reservoir levels were close to critical. By March 2018, our treated reservoir levels were far higher and gave us more "in the bank" to deal with the peak in demand that resulted from the weather event.** Had our starting leakage level being higher in March 18 then the peak in DI would also have been higher.





Anglian Water Leakage Performance against other companies 2016-17

In the last 2 years we have continued reducing leakage and in 2016-17 reported a figure of 185 MI/d, representing a 7 MI/d drop since the start of the AMP. This is frontier performance. Leakage is now 26 MI/d (12%) lower than in the year before 10/11 which is one of the factors why we did not experience widespread loss of supply the March 2018 freeze/thaw event. In the last year of AMP4 16% of mains bursts were identified by our proactive leak detection teams. In the first three years of AMP6 we now find 29% of mains bursts through proactive detection.

Additional measures in development include the following:

- *Near-Live" GIS access for NTs via tablets - incorporating Valve Control* : The concept in development is a mobile solution that is updated wirelessly so that Technicians have the confidence to always use it to locate valves and to record both what had been altered and how long it was likely to stay altered (including permanently)
- *Near Real-Time Modelling* : The concept in development is a system which would have flagged all pressures downstream of a burst. After repair the system would identify if all pressures downstream had returned to normal. Together with the ability to generate an elevation map this would have pinpointed potential air locks. Also, through the extreme weather event, technicians constantly updated spread sheets for storage points across the company, trying to predict which were falling "significantly" to allow us to carry out predictive analysis and anticipate potential events. Near Real-Time modelling would significantly enhance our capability in this area.

Despite the inevitable short-term spike in leakage caused by this event, we have recovered quickly and the event has not deflected from our downward glidepath towards meeting our ambitious goals for leakage reduction, and our specific targets for the end of the AMP.

Benefitting from investment to reduce interruptions to supply

Over recent years we have made significant investments in restoration and a massive step change in moving away from our previous approach of 'repair first' towards our new order of priority of 'restore, repair, recharge'. When supplies are interrupted through a burst or other problem, our priority is to restore that supply, rather than immediately fixing the cause. This "customer first" approach has seen big reductions in the amount of time people are left without water.

This change has been achieved by working with our field teams to co-create new ways of working. Our teams are focused on customer needs: every customer counts, and every second counts, and actions are prioritised accordingly. The new restoration team was introduced in 2015. Now all 21 restoration technicians are trained to drive the water tankers in our newly expanded fleet and to use a variety of equipment and techniques, including temporary overland pipes to keep people supplied. These techniques can keep a number of homes supplied indefinitely during an incident.

The water services teams work closely with other parts of the business to tackle the causes of interruptions, and the effective management of these events when they occur, is vital. The reactive approach is led and managed by the Tactical Operations team. These efforts also complement the pressure management and other proactive work to prevent problems happening in the first place.

During the period from the 4th March to the 9th March, our Restoration team worked 1083 hours maintaining supplies to customers whilst repair teams worked on fixing leaks and bursts on our Network.

Case Study: Supporting neighbouring companies

Resilience and integration of our networks has been a long-term objective for Anglian Water. In the south-west of our region we have an integrated network that allows us to balance supplies and improves resilience in our network. Whilst we saw an increase in demand in this area we did not experience any significant issues which would have negatively affected our customers.

However we were called to support a neighbouring company (Affinity Water) by providing additional supplies to their normal demand. By utilising our integrated network we were able to move supplies from the north of the region to the south to provide this support.

We also partially commissioned our Grafham resilience scheme (a significant resilience project) on 27th February which provided additional flexibility and allowed us to prioritise supplies to Affinity water whilst still maintaining secure supplies to our customers.

In addition to this we were in the middle of planned work with one of our clarifier units out of service for cleaning and repair. This reduces our works output by 45 Ml/d. This work had been part of our routine planned work programme that had been planned 6 months previously in conjunction with Affinity.

In response to the need to support Affinity, we accelerated the completion of this work. Working with our Main Works Alliance and framework partners we completed the remaining work, scheduled to take 3 weeks, within 3 days. This involved additional resources all parties working 18 hour days.

We maintained regular liaison between our operational control rooms and Affinity's to ensure all customers were supported regardless of the providing water company.

F2. What were the biggest constraints to your company doing more, faster to respond to issues customers faced?

We believe we responded extremely well and rapidly to the relatively small number of issues our customers faced. As we mention above, enhancing our near real-time modelling capability would leave us even better placed for future events of this type.

