

Request for information – review of freeze/thaw incidents

Below is the response from Yorkshire Water to the questions posed by Ofwat in relation to the severe freeze and thaw events of February and March 2018.

Section A: Factual details of freeze/thaw events

It is important that we understand the factual details and timeline of what occurred for your network and customers.

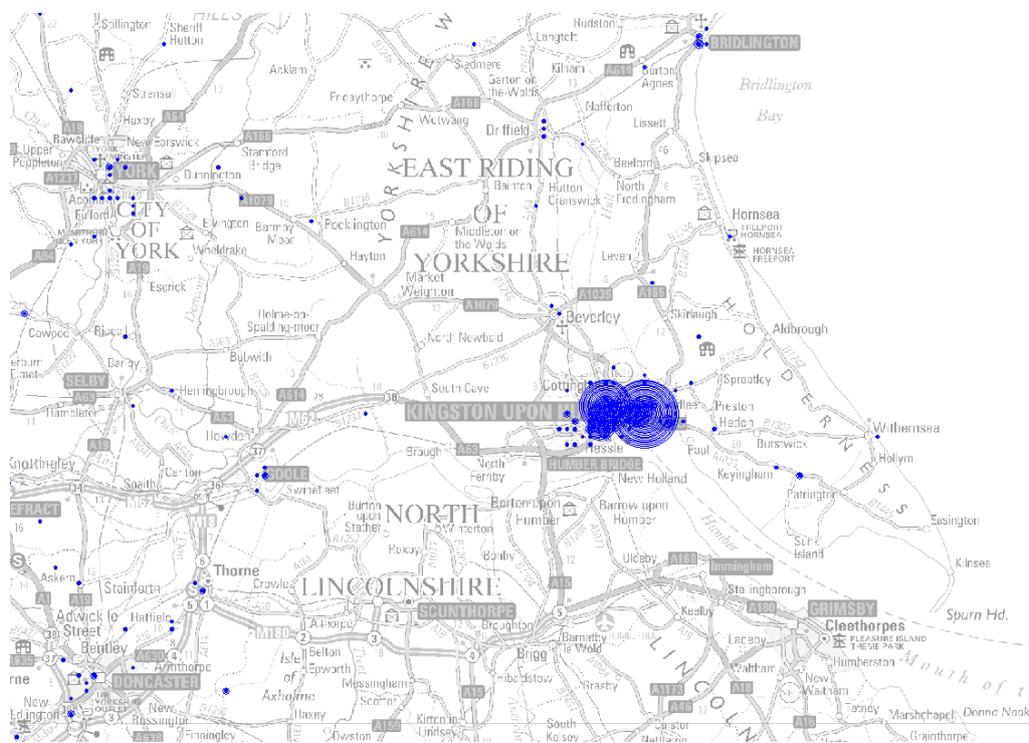
- A1. Provide details of the impacts of events on your network / customers using the **attached tables** (please complete both sheets). We are requesting information from the period 14 February 2018 to 14 March 2018. Please specify on which dates your company considered it was managing events rather than business as usual (the end date should be no earlier than all customers being back on supply). If you consider it appropriate, you may extend the date range (eg to the start of February) and explain why additional dates are relevant. You may not reduce the date range.

Yorkshire Water (YW) considers the period between the 26 February 2018 and the 11 March 2018 as managing events rather than business as usual. This period is highlighted by red text in the attached tables. No additional dates outside of those requested were deemed relevant by the Company.

A2. Beyond the issues highlighted in Tables 1 and 2, please provide details of any further impacts your network or customers (by customer type) experienced that your company had to respond to?

On 28 February 2018 customers in the Hull area suffered from frozen supplies. YW and the local authority are aware of this ongoing risk due to large volumes of customers in the area having private supply pipes externally situated on their properties. In preparation, YW moved strategic stores of bottled water to our assets in the region prior to 28 February 2018 and had 30 staff available to support with deliveries if required. YW worked in partnership with the Local Resilience Forum (LRF) and provided proactive communications from both the Company and in conjunction with external partners such as the Local Authority, Environment Agency and key stakeholders.

Customer Contacts in the Hull area on Wednesday 28 February 2018



Note: The number of circles on the map indicates the number of contacts associated with an event.

A3. Details of how responding to the incident impacted on your wider business's "business as usual" operations during the incident period. Where possible provide an indication of the scale and nature of these impacts.

Operational call volumes from customers to the Yorkshire Water contact centre were high during the period of 28 February to 2 March 2018. As a result, for a total of 8 hours, we paused our telephony services for billing collection enquiries over that period. All contact centre staff were focussed on providing support and advice to customers with operational challenges, mainly private frozen supplies.

Due to hazardous travel and working conditions (snow, ice and wind chills in excess of -15°C) the decision was taken to only conduct core operational services. Planned activity and customer appointments were postponed allowing field staff to focus solely on safely operating the network and ensuring the continuity of water supplies to customers and protection of the environment. This instruction was in place from the 28 February to 9 March 2018.

Business Continuity Plans were enacted for 'non-essential non-operational' roles at our head office in Bradford from 28 February to 4 March. Our back-office support teams operated from other locations or worked remotely, ensuring the Company could focus on making sure operational and service staff could safely access their place of work and conduct activity.

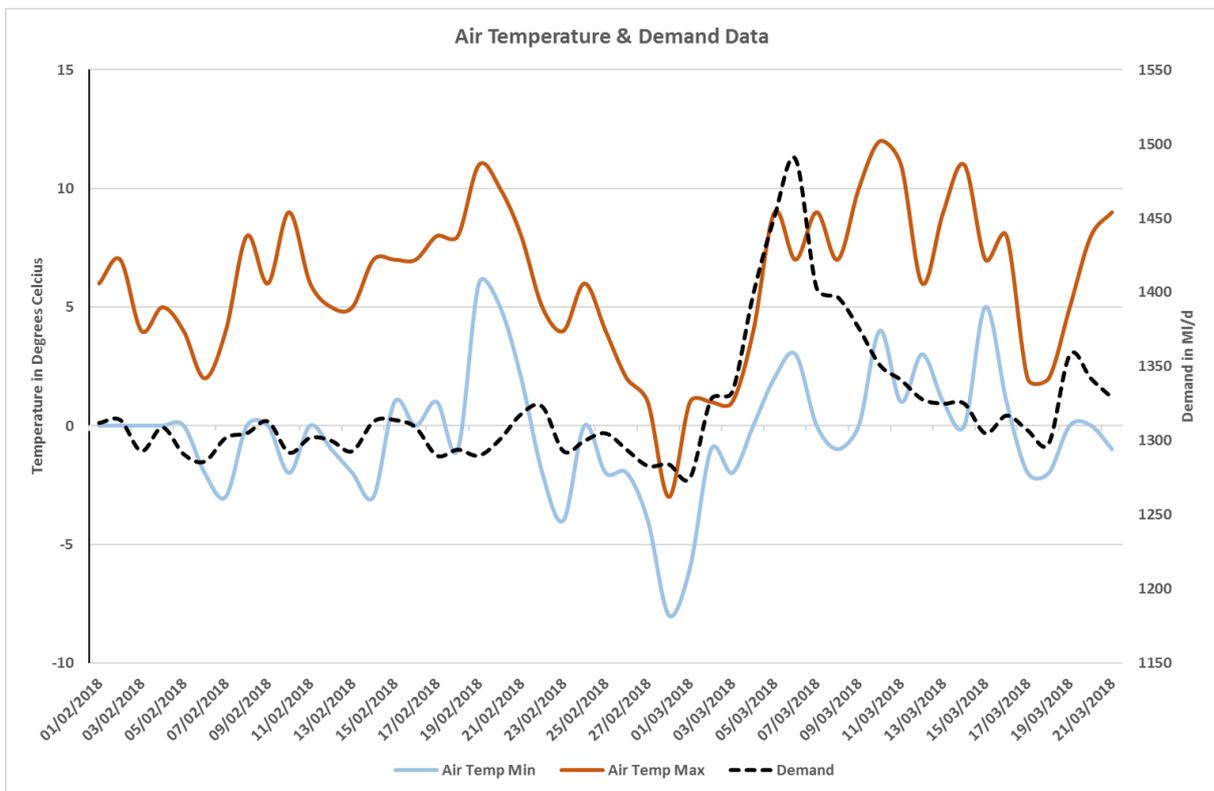
A number of our Waste Water Treatment Works were inaccessible for a number of days suffering from frozen items of plant and equipment mostly due to the significant wind chills. Seven cold weather waivers were submitted to the Environment Agency, between 26 February and 5 March 2018, all of which are in the North area of our region.

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?

The majority of customer issues experienced in the region throughout this period were due to frozen private supplies or isolated bursts on the Yorkshire Water network. As an example, this can be seen within the table provided as part of section A1, through comparing Row 28 'Total number of Customer Contacts' with Row 20 'No. of customers experiencing supply interruptions at some point during the day' for the 6 to the 8 March 2018.

Throughout the reporting period 16 February to 14 March 2018, Yorkshire Water experienced 618 interruptions to supply events, either due to burst water mains or frozen pipes. Interruptions caused by frozen pipes particularly affected areas at elevations greater than 200m along the Pennines. Of these 618 interruption events, 67 customers were impacted for greater than 12 hours due to adverse travel conditions and accessibility issues however all these customers were managed, provided with sufficient alternative water supplies and compensated accordingly.

The persistent sub-zero temperatures and wind chill, followed by a 10°C increase in temperature in the region caused a significant increase in demand as well as both network and private supply pipe leakage. Yorkshire Water balanced water production and network demand throughout the period to ensure that our transmission network and reservoirs did not deplete to levels which would impact on service to customers. At no time did the system fail to meet supply.



Section B: Planning and preparation

We want to understand what steps companies took prior to the incident period to prepare in order to minimise the impact on customers.

- 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? (eg network preparation, communications with customers, increased engineering or call centre resources) Did you share insights with other utilities/services?

To manage events or incidents the company has a Company Incident Management Plan with a three-tiered approach based upon the risks and threats at any given time, these are as follows;

- Company Risk Management Team (CRMT / Bronze)
- Company Incident Management Team (CIMT / Silver)
- Crisis Management Team (CMT / Gold)

The Company acted as far back as November 2017 when it decided to adopt a state of preparedness for a severe winter. In December 2017 the Company took steps to increase the number of work gangs available to fix leaks (the “fix resource”). Furthermore, in January and early February 2018, both the "fix resource" and colleagues engaged to locate leaks (the “find resource”) were bolstered with the additional resources commensurate with the Company’s announcement before Christmas to reduce leaks by 40% by 2025.

On 21 February 2018 Kelda Management Team (KMT), chaired by the CEO, studied the long-range weather forecast which suggested a reasonable to high possibility of severe weather at the end of February 2018. It took the decision to ramp up the Company’s resources generally as a precaution. The Company also modelled its water production capacity to ensure it could continue to supply water to the region even if there was a significant increase in demand due to the effects of a freeze/thaw event.

The result of this planning was that when the worst of the weather hit, the Company was already in a high state of preparedness.

Our Control Room monitors internal and external risks to give foresight to the business in preparation of potentially service impacting events. In this instance, enhanced weather monitoring was in place from mid-February 2018 using the following methods;

- Direct contact with the regional Met Office representatives,
- Use of our weather service provider (MeteoGroup) tools and systems,

- Use of Met Office Hazard Manager for Category 1 and 2 responders under the Civil Contingencies Act, and
- Liaison with the four LRF's in the Yorkshire region and their associated sub-weather groups.

In addition to the information above, we utilise in excess of 20 years' worth of historical data to understand water demand and service impact based on date/month of the year accompanied by the prevalent weather conditions at that time. This is conducted on a weekly basis as part of our business as usual operations. However, throughout the period of the 23 February to Sunday the 11 March 2018 we modelled the situation daily.

Our models anticipated a decrease in demand throughout the 'freeze' period, with a significant increase in customer contacts and frozen supplies, followed by a significant increase in demand throughout the 'thaw' period, commencing on the 5/6 March 2018, at which time we expected demand to increase from a 'normal' demand of 1280ml/d, to between 1400 and 1450ml/d.

In anticipation of the above scenario occurring;

- A 10-day incident team resource plan was created to cover all impacted and required functions of the organisation.
- Additional customer service roles in both our control room and contact centre were in place to advise and support customers 24 hours a day.
- Strategic storage levels across the water transmission network increased and maximised prior to the 'thaw'.
- 7 key Water Treatment Works were staffed 24 hours a day to reduce the likelihood of any loss of production.
- 300 leakage 'find' inspectors in place to identify leakage in the immediate aftermath of the thaw, and to assist with bottled water distribution throughout the freeze, should that be required.
- 200 water network repair and maintenance 'fix' teams were primed and ready to respond to the impact of the thaw and reduce demand / leakage.

From a water production perspective, the Company operates its water treatment works to maintain compliance with the Regulations. Each works has a set of operating parameters at each process stage to ensure compliance. These internal operating parameters are set safely within required standards.

In periods of escalation these internal operating parameters are reviewed, in line with the Company's risk based protocols. The Company uses Process Risk Assessments (PRA) to allow for a temporary relaxation within the internal standards, whilst maintaining the legal and

regulatory compliance. The PRA assesses the risk and details any mitigations required, and a detailed operating and monitoring plan. The PRA ensures that any relaxation will not affect treated water quality and public health.

Although alterations to WTW control parameters were made during the recent freeze/thaw, the Company did not implement changes to set points resulting in no impact on final water quality. Our additional 24/7 resourcing of key WTW's negated the need for PRA's.

Communication

Since early February 2018, we have had an ongoing campaign encouraging customers and colleagues to report leaks. This has been a multi-channel campaign to raise awareness of the work we do to fix leaks and why they need to be found as soon as possible to minimise the impact on customers and water resources. When the long-range weather forecast was studied, KMT made the decision to upscale our leakage campaign activity before the 1st March when the severe weather was due to reach the region. This decision included increasing the allocated campaign spending into the region of £300,000 to active highly effective digital advertising and region-wide radio advertising. The Google display network adverts gave us flexibility to adapt the messaging and target particular areas. Alternative templates were prepared as a precaution in case they needed to be activated and targeted to certain geographical areas if a significant interruption to supply occurred.

As part of our business escalation, a communications plan was developed to highlight the risk the cold weather could potentially have on our customers and assets. The initial phase involved encouraging customers to protect their own pipe work before the cold weather started and we utilised social media, traditional media and stakeholder emails to spread this message. As the cold weather arrived, we adapted this message to explain how to deal with frozen pipes and spot any issues with pipes, both private and on our own network, as a result of the freezing temperatures.

As a proactive measure we activated a number of customer and stakeholder communications to raise awareness and offer advice to residents in Hull who may have been impacted by frozen supply pipes on 28th February 2018. Two targeted Facebook adverts for the Hull area were activated; one raising awareness of our priority services register and the other with an advice video for frozen supply pipes. We also sent 15,633 SMS and voice messages to customers in the area providing advice for dealing with frozen pipes. We engaged the Humber Local Resilience Forum Comms Group to disseminate our messages to their audiences. Proactive advice was sent to all the local MPs in the Hull area and distributed to councillors.

When the risk of frozen supply pipes in West and South Yorkshire was identified on 1st March 2018, we replicated the Hull campaign across the whole of the region with targeted Facebook ads, refreshed content on Twitter, engagement with the Local Resilience Forums' Comms Groups and advice emails sent to MPs and Local Authorities. We also sent 7,105 text and voice messages with advice to residents in the areas where we were seeing a cluster of customer contacts about frozen pipes.

As temperatures started to rise we issued multi-channel communications to our customers and stakeholders advising of the potential for leaks or bursts on both private and public pipes. This was supported by our 'report a leak' campaign that was ramped up as the thaw started.

When individual risks were identified that may have impacted service we developed communication plans accordingly to ensure we would be able to activate any messaging as soon as possible across all our channels, including our Google display adverts in line with our incident management communications procedures. All communications were coordinated through the CIMT and CMT process with representatives from the Communications Team on each group. This activity was then supported by the wider Communications Team both in hours and out of hours.

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?

The Company adopted a state of preparedness for a severe winter in November 2017. As part of the Company's announcement before Christmas to reduce leaks by 40% by 2025, we took steps to increase the number of colleagues engaged to locate leaks (the "find resource") and the work gangs available to fix leaks (the "fix resource). The increase in resource enabled Yorkshire Water to manage an estimated 40% increase in mains repair activity and maintain a normal level of service to customers during the event.

On 21 February 2018, Kelda Management Team (KMT), studied the long-range weather forecast which suggested a reasonable to high possibility of severe weather at the end of February. The decision was taken to ramp up the Company's resources generally as a precaution. Twice daily briefs and a situation report were provided to KMT as of 28 February 2018 regarding the event's impact upon operations and service to customers. Enabling planning, preparation and decisions to be taken which ensured;

- Water Treatment Works maintained production and could meet the demand of customers across the region.
- Our supply chain partners were on notice for an enhanced level of response for services, supplies, equipment and resource.
- Contingency and emergency plans were readied for use in case of unplanned interruption or asset failure.
- We had customer support staff available 24 hours a day throughout the event and specific 'freeze/thaw' advice available across all our communication channels.

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?

To manage events or incidents the company has a Company Incident Management Plan with a three-tiered approach based upon the risks and threats at any given time, these are as follows;

- Company Risk Management Team (CRMT / Bronze) – Chaired by Senior Manager.
- Company Incident Management Team (CIMT / Silver) – Chaired by Head of Department.
- Crisis Management Team (CMT / Gold) – Chaired by CEO or Director of Service Delivery throughout this event.

The underpinning approach to our event/incident management is one of prudent over reaction. Over and above business as usual, the following teams were in place to management the event on the following dates.

26/02/2018	Company Risk Management Team
27/02/2018	Company Risk Management Team
28/02/2018	Company Risk Management Team escalated to Company Incident Management Team
01/03/2018	Company Incident Management Team
02/03/2018	Company Incident Management Team
03/03/2018	Company Incident Management Team
04/03/2018	Company Incident Management Team
05/03/2018	Company Incident Management Team
06/03/2018	Company Incident Management Team escalated to Crisis Management Team
07/03/2018	Crisis Management Team
08/03/2018	Crisis Management Team
09/03/2018	Crisis Management Team de-escalate to Company Risk Management Team
10/03/2018	Company Risk Management Team
11/03/2018	Company Risk Management Team
12/03/2018	Company Risk Management Team

The Bronze and Silver teams operate at an operational and tactical level and were responsible for enacting the following plans and procedures during the event;

- Communication incident management protocol.
- Enacting and mobilising the temporary alternative water supply (TAWs) plans.
- Severe cold weather scripts and enhanced resourcing at our customer Contact Centre.
- Creation of incident management team and operational resource plans for the duration of the event.
- Activation of additional supply chain agreements and contingencies.

- Management of emerging risks and ensuring the relevant operational contingency plans were enacted to prevent impact on service or customers.

The gold Crisis Management Team operate at a strategic level and were responsible for enacting the following plans and procedures during the event;

- Early foresight of approving additional operational resources prior to the event.
- Business Continuity Plans at head office in Bradford.
- Mobilising the 'Major TAWS' plan.

See table below (P12) for situations, actions and results of enacting the plans on specific dates throughout the event.

On the whole, the plans within the Company ensured continuity of service to customers throughout the event. To those customers who were impacted, a swift response and recovery plan was utilised to meet the needs of the public.

During the freeze/thaw event the Company experienced the outage of a key WTW which provides 180ml/d in to our strategic transmission network. This resulted in the reduction of strategic storage reservoirs supplying a number of towns and cities in the central Yorkshire area. This had the potential to impact approximately 110,000 customers within 24 hours and as such, the 'Major Event temporary alternative water supply (TAWS)' plan was enacted. Our executive enacted this on the 8 March 2018.

The Company permanently stocks alternative supplies for up to 50,000 customers (500,000 litres). If a risk is on the horizon for greater than that population, we have the 'Major Event' plan to fall back on to ensure we are able to provide an alternative supply. This plan utilises support from other water companies through mutual aid, or via additional supply chain services, equipment and resources. It was the latter which was utilised to enhance our TAWS ability to provide up to 1,000,000 litres in the next twenty-four hours. The detail of this is included within section C2.

Date	Situation	Action	Result
21/02/2018	Anticipated severe winter weather across region	Approval of additional operational resources by executive for predicted water network escalation	Continuity of supplies and service to customer in challenging circumstances.
23/02/2018	Anticipated severe winter weather across region	Approval of additional communications and media campaigns by executive for predicted water network escalation	Continuity of supplies and service to customer in challenging circumstances.
26/02/2018	Anticipated severe winter weather across region & weather warnings	Company Risk Management Team (CRMT) formed.	Relevant functions across the organisation assessed risks of forecasted situation and ensured they were prepared to respond.
26/02/2018		Winter plans enacted for YW colleagues - additional 4x4 fleet, 2 person operations.	Ability to maintain and operate the asset base throughout the event period and prevent impact to customers.
27/02/2018	Anticipated severe winter weather - Freeze	Utilise period of reduced demand throughout the 'freeze' to fill service reservoirs and strategic storage.	Entering the 'thaw' period and anticipated demand/leakage increase with full strategic stock.
27/02/2018	Anticipated severe winter weather - Thaw	Resource plans created for the next 10 days.	Ability to maintain and operate the asset base throughout the event period and prevent impact to customers.
28/02/2018	Severe winter weather event	Situation escalated to Company Incident Management Team (CIMT).	Agreed objectives and aims for management of the event (1. Maintain safety of colleagues, partners and public, 2. Maintain safe water supplies to customers, 3. Protect the environment).
28/02/2018	Severe winter weather event - Frozen pipes	Communication Incident Management Protocol Enacted.	Advice and support to customers provided across multiple channels.
28/02/2018		Temporary Alternative Water Supplies (TAWS) Plan Enacted.	Deployment of TAWS to strategic locations and providing ability to deploy in hours if required.
28/02/2018	Severe winter weather event - High Call Volumes	Severe Cold Weather Scripts Plan Enacted.	Advice and support to customers provided across multiple channels.
28/02/2018		Enhanced 24/7 Customer Service Plan Enacted.	Advice and support to customers provided across multiple channels 24 hours a day.
28/02/2018	Severe winter weather event - Denial of access	Business Continuity Plan enacted for denial of premises at our Head Office for non-essential non-operational staff.	Critical 24/7 and Control Room staff could safely access and egress our sites to continue operations.
06/03/2018	Severe winter weather - Demand increase	Activation and mobilisation of the Major TAWS Plan	Ability to provide alternative water supplies to up to 120,000 customers if required.

- Yellow lines denote decisions taken by Kelda Management Team / Crisis Management Team (Gold) – Chaired by CEO or Director of Service Delivery throughout this event.
- Grey lines denote decision taken by Company Incident Management Team (CIMT / Silver) – Chaired by Head of Department.
- Dark orange lines denote decision/action taken by Company Risk Management Team (CRMT / Bronze) – Chaired by Senior Manager.

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

Yorkshire Water has an annual training and exercising schedule which is validated through the Security and Emergency Measures Direction 1998 (SEMD) annual certification governed by DEFRA.

This ensures that Gold, Silver, Bronze and operational staff are deemed trained and competent to respond to incidents, including those experienced during severe weather events.

Local Resilience Forum sub-groups for severe weather exist across the region at which the Company is represented and actively participates to ensure we are adequately prepared alongside other Category 1 and 2 responders for such events.

Staff participate in both internal and external exercises for operational, tactical and strategic incident management. A full list of trained staff is provided as part of the annual certification. There are in excess of 250 colleagues from across the organisation included within this certification. There are 90 Yorkshire Water staff trained in the deployment of TAWS equipment, with employee volunteers and utilisation of the British Red Cross for deliveries of bottled water to vulnerable customers should they be required. In addition to this our contract partner, Morrison Utility Services, has 200 resources which can be called upon for support.

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?

In the winter of 2010/11 Yorkshire Water experienced a very similar freeze/thaw event, although far more prolonged than the recent event. As such, the Company understood the pertinent risks associated with such events e.g. Hull supply pipes freezing as previously mentioned. We anticipated and modelled the predicted impact of this event through the previous experience of others. Our documented plans and procedures which were utilised are tested within the organisation, with LRF partners and based upon best proactive guidance within the Civil Contingencies Act, SEMD or WaterUK working groups.

Yorkshire Water has first-hand experience of understanding the need to provide early notification of risks to LRF's - ensuring risk, impact and support required is understood prior to any event coming to fruition. This is documented in our 'Multi-Agency Response Plan' which details all relevant personnel to contact at partner agencies along with the information to provide.

Utilising key links with partners and service providers is essential to understand our risk and resilience. The Company has a documented list of key contacts for events which may impact ourselves or our customers. As examples;

- Our agreed communication and close dialogue with Northern PowerGrid throughout the event helped us to manage risk and plan for any disruption to our assets.
- Our links and partnerships with colleagues at Local Authorities was utilised to arrange plough and grit services for public highways accessing to WTW's requiring chemical deliveries.
- The partnership between the Company and British Red Cross was put on notice. They provide support to our vulnerable customers in major events.

Section C: Incident response

We want to understand how companies responded to the incident, including how it prioritised action and how the Board and Executive were involved in the process.

- 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.

Throughout severe weather events the Company Incident Management Plan is the established process utilised. The escalation channels and decision making within this process is well embedded within the organisation since its introduction in 2011. The process allowed for all relevant functions of the organisation to convene and focus on the following aims and objectives;

Aims

- Recognise the escalation of a risk to the point where it is likely to materialise and take appropriate steps to mitigate its impact.
- Effectively manage all operational incidents and facilitate a controlled return to normal operations as soon possible.
- Ensure compliance with legal and statutory requirements despite difficult circumstances
- Ensure a process of continual improvement.

Objectives

- Protect human life and relieve suffering (internal and external)
- Maintain a safe and acceptable level of service to our customers.
- Safeguard the environment for all.
- Protect property in appropriate cases.
- Provide our customers, stakeholders and partners with timely information and guidance as necessary.
- Protect the reputation of the company.

Our Company Incident Management Policy and Plan sets out the operational guidelines for CRMT/CIMT/CMT and what event results in the formation of which level of escalation and resource requirements. The process allows the company to step up the level of resources, skills and equipment required to meet the above aims and objectives. There is supporting governance around the process with Technical Secretaries, agendas and duty cards. Our processes also stipulate de-escalations, incident reviews, recovery and briefing templates.

Having this process embedded within the culture of the organisation enables the Company to effectively manage an incident and meet the aims and objectives above. This was evidenced in our response to this event, previous significant incidents and through the annual DEFRA SEMD certification process.

The role of our executive within this process is to:

- Set the wider strategic approach (Review risks, review approach, consider reputation, value and stakeholder management)
- Provide leadership (Approve resource, support the strategy)
- Provide reassurance (Direct and lead stakeholder communications)

Since 2016, we have had a Communications Incident Management procedure created which encompasses our communications approach to emergency incidents and periods of operational escalation. This focuses on our customer facing channels, stakeholder engagement, media, internal communications and ensures consistency amongst the communications team.

After every incident, we evaluate our communications response taking on any learnings and feedback to ensure this is reflected in our Incident Management procedure for future incidents.

- 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.

Although Yorkshire Water did not have any single or significant incident which impacted service to customers throughout the event, the following strategic stock of emergency planning equipment and supply chain contracts was utilised and mobilised as per the below;

- 6 no. YW clean water tankers (YW Emergency Planning).
- 4 no. Wincanton clean water tankers (YW Emergency Planning).
- 30 no. Additional clean water tankers (Supply Chain - Regional).
- 220,000 litres of bottled water distributed to 5 local satellite stores for speed of response. (YW Emergency Planning)
- 200,000 litres of bottled water held in central strategic stock, pre-loaded on to HGV's with drivers for immediate deployment. (YW Emergency Planning)
- 300,000 litres of bottled water held in strategic storage. (YW Emergency Planning)
- 20 Arlington tanks (bowser alternative) distributed to West Yorkshire (YW Emergency Planning)
- 70 Arlington tanks pre-loaded on to HGV (YW Emergency Planning)
- 10 curtain sided HGV's with moffatt (Supply Chain - Regional).

This gave Yorkshire Water the ability to rapidly deploy 1,000,000 litres of temporary alternative water supplies should the need have arisen. Our strategy is to provide bottled water to all customers in the first twenty-four hours, followed by deploying Arlington tanks and the tanker fleet on the following day(s). All vulnerable customers are hand delivered bottled water by Yorkshire Water staff, partners or supply chain.

As part of the escalation, we enlisted the help of non-operational staff to deliver bottled water if needed. This allowed us to utilise our key operational resource in the most effective way.

The information above relates to additional equipment and resources required to respond to the event and in anticipation of any potential disruption of service to our customers. In addition to this, a comprehensive 10-day resource plan for internal Yorkshire Water colleagues was in place with the intention of preventing the need to utilise and deploy the additional resources. This plan included Technicians and Engineers within both our Control Room and the field, monitoring and operating our asset base 24hours a day for the most severe duration of the event.

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

Throughout the rhythm of the event the CIMT monitored a range of measures on the end to end performance of our operational services to understand the potential impact to customers and in turn enable prioritisation of resources, response and deployment, if required. CIMT focussed on lead measures of asset failure and work volumes to ensure resource levels were adequate for the situation. It focussed on lag measures to ensure customer needs were being serviced by our operational response. Examples of these measures include;

- Work volumes priority
- Severity of any asset failures.
- Customer sensitivities (Vulnerability, Non-Household).
- Reservoir levels.
- WTW Production vs Demand.
- Leakage (including find and fix completion)
- Resource availability.
- Customer contacts.
- Local distribution systems with demand outstripping supply.
- Logistical movements for tankers and TAWS.
- Stakeholder updates and requests (media, LRF's, regulators)

The Company did not need to prioritise resource, equipment or response based on a criterion of greater need during the impact of the event. Where there was an impact to service, our preparation and planning resulted in the ability to respond with the relevant resources and equipment.

As previously described, some services such as billing collections at our contact centre and planned operational activity / appointments were temporarily paused to allow a greater focus on the event and pressing matters.

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

The main challenge the Company experienced was the freezing of private supplies and managing customer expectations throughout the event. To support we provided advice through specific messaging on the call centre telephony lines, promoted our advice with stakeholders and on social media channels. It was also promoted through Local Resilience Forum's. We supported vulnerable customers through delivering bottled to any of those who were impacted by this issue.

In February we actively promoted changes to our private supply pipe repair policy. This means that household customers are no longer limited to one free supply pipe repair every two years to ease previous misunderstandings about pipework responsibility and enhance our customer service on this issue.

As operational clean water customer contact volumes were particularly high, the resource levels at the Company contact centre were required 24 hours a day, with associated travel and access arrangements made. The location of the contact centre was in one of the most impacted areas for snow and freezing temperatures. Additional 4x4 and accommodation arrangements were made for the relevant staff to ensure continuity of service to customers.

Snow drifts hampered movements of our staff, repair teams and deliveries throughout the region. This was a challenge at higher elevations along the Pennines, however our increased use of supply chain 4x4 equipment and work alongside Local Authorities enabled us to effectively manage the situation.

- 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?

Prior to the event, the Company understood the risk to Hull specifically and proactively contacted customers, the LRF and stakeholders with advice. The east coast of the region was forecasted to bear the brunt of the most severe sub weather temperatures. Bottled water was moved in to this area and made available for deliveries to vulnerable customers who required it. The Humber LRF supported with this and our procedure for deliveries shared with all partners. The British Red Cross were on notice to provide support to vulnerable communities and customers; however, this was not required.

The same preparation and approach were taken for a water supply system in both West Yorkshire and South Yorkshire during the event, although a mass deployment of Temporary Alternative Water Supply, and associated support, was not required.

As the Company Incident Management Team (CIMT) managed and monitored the event, extracts of the 'Priority Services Register' were taken for areas with a higher likelihood of potential service impact. This enabled the Company to understand the volume and customer types in that area, which in turn facilitated the formation of response plans for resource and equipment.

Section D: Communication and support

Regular and informative communications are especially important during major incidents. We want to understand how water companies communicated with customers and wider stakeholders during the incident.

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. We used a multi-channel communications approach to advice and support customers during the incident. Where we had specific risks, for example in Hull, we used customer segmentation data to understand the best way to communicate our messages to this demographic of customers. By utilising targeted Facebook advertising, we were able to reach 394,693 customers with our messages, alongside our traditional communication methods such as media releases, website updates, contacts with stakeholders and Twitter. We also identified through our customer segmentation data that this cohort of customers preferred being contacted by SMS message, so we issued 15,633 SMS and voice messages to customers in the Hull area with details of our frozen pipe advice and how they could request a free call back with us if they needed to talk to us.

Alongside our incident response communications which were targeted at specific risks, we had our leakage campaign running across the region. Through digital advertising, leaflet drops and outdoor and radio adverts we gave over 17 million opportunities for our customers to see our messages around reporting leaks.

- b. We utilised Facebook advertising to raise awareness and encourage sign up to our priority services register for vulnerable customers. This was shared through the Local Resilience Forums and on Twitter. We also emailed all the local schools on our database to ask them to check their pipework for leaks and prepare for the freezing temperatures on 27th February 2018. Vulnerable customers were managed by a dedicated YW Customer Case Manager and provided with doorstep bottled water deliveries and support.
- c. We issued communications to retailers for business customers in the Huddersfield area whilst we were seeing an exceptional increase in demand for water. We asked these retailers to contact businesses to check for leaks and get these fixed as soon as possible.
- d. We called on our Local Resilience Forum Comms Networks for support in sharing our messages and this was largely successful particularly on social media. We provided similar advice emails to MPs and local authorities signposting them to us if they had any

constituents with issues. Daily situation reports were provided to the DEFRA incident team via teleconference. Our Chief Executive led on communication with the Minister, senior representatives at Ofwat and Water UK. We contacted the Northern Chair of CCWater, Robert Light, on 8th March with an update on our situation.

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.

We utilised a multi-channel campaign to ensure customers in Yorkshire were aware of our activities and given the best possible advice to help minimise the impact of the cold weather.

Media – We proactively issued seven media releases offering advice to customers and we engaged with local media outlets to secure radio interviews. We responded to any reactive media enquiries accordingly.

Stakeholders – We wrote to all MPs and local authorities on three occasions during the incident with advice for customers to report leaks, protect their pipes and fix frozen pipes. We also engaged our Local Resilience Forums who helped to disseminate our messages in their networks.

Social media – Our social media channels were key during the incident as we provided regular refreshed content to engage our various audiences and respond to customer queries in a timely manner. We secured extra resources to respond to customers who were contacting us using our digital service channels 24/7.

SMS - We text and voice messaged 22,738 customers in areas where we saw high customer contacts about frozen supplies with our advice and a link to request a free call back from our website if they needed further support from us.

Hard copy letter - We distributed 942,368 leaflets promoting our leakage campaign with our annual billing update and correspondence about our capital programme.

Website - Our website is an important port of call for our customers and we regularly updated it with advice and information during the incident. Between 26th February and 11th March 2018, we had around 213,000 visits to our website. This number was higher than average due to the ongoing advertising on social media and our online leakage campaign activities encouraging visits to our relevant web pages.

Digital campaign – Our ongoing leakage campaign using digital advertising has given sixteen million opportunities for our customers to see our messaging about reporting leaks. This utilises banner advertising, pre-roll video adverts and Gmail adverts. This was activated before the severe weather hit the region on 1st March and helped boost awareness amongst customers. This also dramatically increased traffic to our website creating more opportunities for customers to read our dedicated advice pages.

Attached is supporting evidence detailing examples of our communications activity.

Key messages

Our key messages during the incident were developed on feedback from our CIMT process as risks were identified when the weather and resulting situation changed.

- We issued advice to customers asking them to protect their pipework when we saw the forecasted bad weather was on its way.
- As the weather hit the region, we provided advice to customers to fix frozen supply pipes as we saw an influx in customer contacts about this.
- When the temperatures started to thaw, we asked customers to check their own pipework for leaks or damage and to report any leaks in the road to us.
- This was supported by our ongoing leakage campaign targeted at encouraging customers to report leaks to us using our online reporting tools.

As risks were identified by the CIMT or CMT process, we developed communications plans for these as a precaution ahead of situations developing. This meant that if we did have a significant incident that resulted in customers without water, we had plans ready to activate this message as soon as we needed to. This included creating assets, dedicated incident webpages and contact lists.

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

Due to our messages being proactive advice, we used a multi-channel campaign approach to ensure we gave enough of our customer base an opportunity to see our messages.

When we had particular issues in Hull with frozen pipes, we consulted customer segmentation data which showed us that using SMS messaging and social media would be the best option for communicating with customers in that area. As such, we sent text and voice messages as well as targeted Facebook adverts to encourage sign up and awareness of our priority services register and our frozen pipe advice.

As communication plans were developed for identified potential water outages, we again utilised our customer segmentation data to make sure our messaging would reach that particular demographic of customers who would have been affected.

Our Facebook advertising targeted the specific areas where we saw customer contacts about no water, and we highlighted potential incoming risks based on weather forecasting and advised those customers accordingly.

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

We emailed all the local schools in our region to ask them to check their pipework for leaks and prepare for the freezing temperatures on 27th February as a precautionary measure. During previous cold weather events we have had issues with closed schools having burst pipes so this was a learning from previous incidents.

Email correspondence was sent to retailers regarding advice to non-household customers to check for leakage and asset issues which may have occurred throughout the event.

The Company has established processes once a property is validated as vacant, with two outcomes;

1. If a burst or leak on a private vacant property supply is impacting on service to other customers, or causing a hazard, the Company instigates a repair.
2. For bursts or leaks only impacting the vacant property, the Company isolates the supply and records this in our corporate systems to allow our customer management and billing teams to have awareness for future occupants.

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

As part of our incident review, we will evaluate our current level of promotion for our priority services register and work with our Safeguarding Officer to develop a campaign to encourage sign up. This will involve working with other agencies and stakeholders to showcase our offering and work in partnership to protect vulnerable customers. Occasionally during incidents, vulnerable customers who are not already registered on our 'priority services register' are identified. This work is intended to support improved planning for future incidents.

The Company did not experience any difficulties with providing to support to vulnerable customers throughout the event and therefore is not proposing additional support post-incident.

Section E: Impact on customers and compensation arrangements

We want to understand how water companies expect to provide customers with appropriate compensation for the disruption that they experienced.

- E1. Provide details of how you will identify which customers (by customer type) are entitled to compensation.

There will be customers who are identified by our “priority service” reports which are utilised during any incident which may impact on Customers who fall within this category. We proactively manage customers who are on our priority service register and impacted by any event so we can tailor our service to their individual needs accordingly.

Any other customers are dealt with on a case by case basis in line with our Customer Charter. We tailor our approach to our customers by considering individual claims based on the customer’s degree of inconvenience or financial losses and respond accordingly. Each customer going through this process will have an individual customer manager to ensure that their personal needs are understood fully and they receive a full resolution to the matter.

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.

GSS Payment Reason	<i>Paid</i>	<i>Under Final Review</i>	Total Volume	Total Value
Emergency Unplanned Work	<i>31</i>	<i>122</i>	153	£3060.00

Please note, we have not incurred any penalty payments across the period to date.

- 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.

As a business we are still in the process of validating and collating any specific claims linked to general inconvenience that customers experienced within the period. The extent of this will be 125 customer claims, totalling £9390.00, but we anticipate this to reduce as not all the claims link directly to the weather conditions. This includes reimbursement of bottled water purchases made by customers as a gesture of goodwill. All claims have been calculated on a case by case basis accounting for any costs incurred by the customers and levels of inconvenience experienced.

Specifically, we have considered claims in line with our Customer Charter where customers experienced interruptions due to frozen pipework within open excavations and where we were unable to gain access to backfill and reinstate.

These have been considered on a case by case basis to account for the level of disruption experienced and any additional expense incurred by the customer. This is a minimal number of customers (<5) and the total value is included in the figure referenced above.

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.

All claims beyond automatic GSS have been processed and customers are in receipt of the compensation agreed.

GSS payments are paid to customers who have (during an impacting burst or event) exceeded the 12-hour timescale (this would be validated by on/off times e.g. first customer contact to restoration of water.) We always aim to resolve these claims as soon as possible to provide a resolution to impacted customers, and we guarantee to compensate all customers within 20 days otherwise we would pay an additional penalty payment.

Section F: Reflection and lessons learnt

We want to understand what lessons water companies will take on board from the events in terms of delivering greater resilience in the round for customers.

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.

A full company incident review is due to take place within April, however through our hot-debrief process, these are the current reflections and lessons learnt in the requested areas;

A) Our modelling and monitoring of the supply/demand situation throughout the event worked well and allowed the Company to balance reservoir levels across the region. The contingency plans we hold for supply interruptions held our response rate and timescales for resolution in good stead.

It should be noted that the demand experienced in Yorkshire was the highest March demand for 21 years. Despite the Company's resilience during this event, it remains very focused on ensuring that its assets and systems can cope with a more prolonged or severe event. The Company has been undertaking a study of its water supply system resilience as part of its approach to PR19. Having observed this particular event the Company will need to test its resilience against a range of extreme scenarios.

B) We have engaged our customer insights agency to undertake a telephone survey of 400 customers who were impacted by this event. These customers will have experienced no water from either bursts on our public network or private frozen supplies. This insight will help to shape our response to future incidents.

We will also evaluate our current promotion levels of our priority services register to increase sign up and enhance the awareness of our offering amongst other agencies.

C) We are engaging with the relevant local authority in Hull and the Humberside Local Resilience Forum to mitigate the potential future impact of frozen supply pipes by promoting our advice and offering lagging to vulnerable customers in the area. This will be delivered in partnership with those agencies and help to reduce the likelihood of a similar problem occurring again.

D) The incident command and escalation structures within the Company worked well to manage the associated risk with this event. We adhered to current processes and governance, which enabled services to customers to continue through the factors which are in our gift. Lessons can always be learnt and the incident review from this event will be incorporated in to a planned revision of our Company Incident Management Policy, Plan and Procedures which will be completed in 2018/19.

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

Our planning assumptions for an interruption to supply event were contingencies and equipment to provide alternative water supplies for up to 50,000 customers, in line with the obligations of SEMD. Throughout the event the Company procured supplies and logistics to provide in excess of 1,000,000 litres of alternative supplies if required. It is the intention of Yorkshire Water to document, formalise and always have planning assumptions and the capability to provide for up to 100,000 customers (1,000,000 litres) within 24 hours from here on in.