



YorkshireWater

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By email: [REDACTED]

28 February 2023

Dear [REDACTED]

**Re: December freeze-thaw information request**

Many thanks for your letter of 16 January 2023 asking for information about the December 2022 freeze-thaw event, the preparations Yorkshire Water put in place for the cold weather, and our response to the event and how it impacted water supplies for customers.

We are pleased that Ofwat wants to understand how well companies and their assets performed during the freeze-thaw event, and how they demonstrate resilience. Many aspects of Yorkshire Water's operations are already resilient; however we are using the learning from harsh winters and the dry summer in 2022 to build on these foundations. We know we can always improve, and we are finding ways to minimise, and where we can, eradicate the effects of extreme weather impacting on the services we provide our customers.

During the cold weather period in question, Yorkshire Water was able to maintain a good service to our customers and respond effectively to those impacted directly by the freeze-thaw event. We believe we were especially resilient to this event due to preparations we had made in advance of the cold weather and in the years following the significant freeze-thaw event in 2018, known as the Beast from the East. It was noted by the DWI that we reported no notifiable drinking water quality or sufficiency events to it in relation to weather impacts over this period.

Over the following pages we provide specific information about the event and our response as requested in your letter.

## **1. December freeze-thaw impacts**

- 1. Details of the impact of the freeze thaw in your company area, including: underlying causes of any impacts; numbers of properties and customers experiencing problems; length of time to resolve outages; etc.*

To help Ofwat understand the period in question when reviewing information from multiple water companies, we would firstly wish to clarify the period we consider represents the freeze-thaw event in the Yorkshire Water region is from 6 December to 22 December 2022. This period commences from the day we were alerted by our weather monitoring services and Met Office hazard manager to the cold weather forecasted for our region and ends when the cold weather triggers are no longer activated (i.e. demand, leakage, bursts and customer contacts are not impacted by a freeze-thaw event). Values for customer impacts detailed in this letter cover this period.

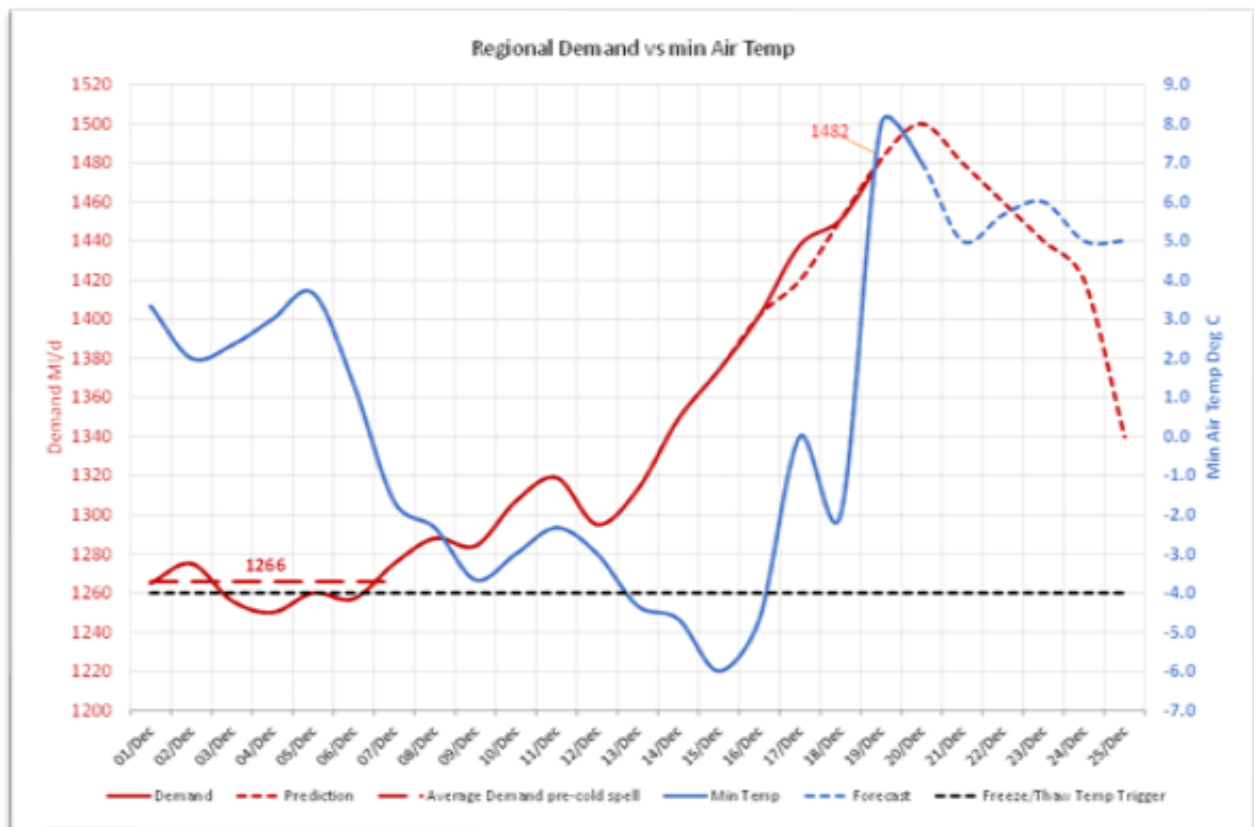
When we knew the cold weather would likely affect our region, we put in place plans to maximise asset availability and optimise both operational and customer response resources to manage any increase in water demand, incidents on our water supply systems and support mechanisms for customers. We extended our customer contact centre operating window, placed additional resources at key water treatment works (WTWs) and diverted all our distribution network resources to reactive support to bursts and customers raised incidents, to best ensure continuity of supply. We forecast the increase in water demand, leakage, and bursts to ensure we could respond accordingly when expected impacts of the freeze-thaw occurred. Figure 1 below shows the forecasting during the period of this event.

In our experience certain areas of our region can be especially susceptible to colder weather. In Hull there is a prevalence of properties with unburied/exposed customer supply pipes that can result in more bursts than elsewhere in Yorkshire. We have historically supported customers in and around Hull with campaigns promoting pipe lagging and focus additional resources both in winter cold weather preparedness and resolution accordingly.

As the December 2022 event progressed, we escalated through our Company Incident Management Plan (CIMP). Operational planning cells were in place from 5 December, and we escalated to Bronze and Silver incident management levels on 12 and 15 December respectively. Members of the YW executive team were kept informed of the preparedness and response throughout. The Silver incident management was stood down on 23 December.

Demand peaked at 1520Mld in the latter phase of the event, and we maintained a headroom in excess of 1550Mld through the event period. At the back end of the period we experienced three WTW outages in the Calder area due to power supply challenges, one of which at Holmbridge WTW was just short of 24 hours in duration. Our planning and risk mitigation allowed us to respond, manage network storage and maintain service to customers during an extremely demanding period.

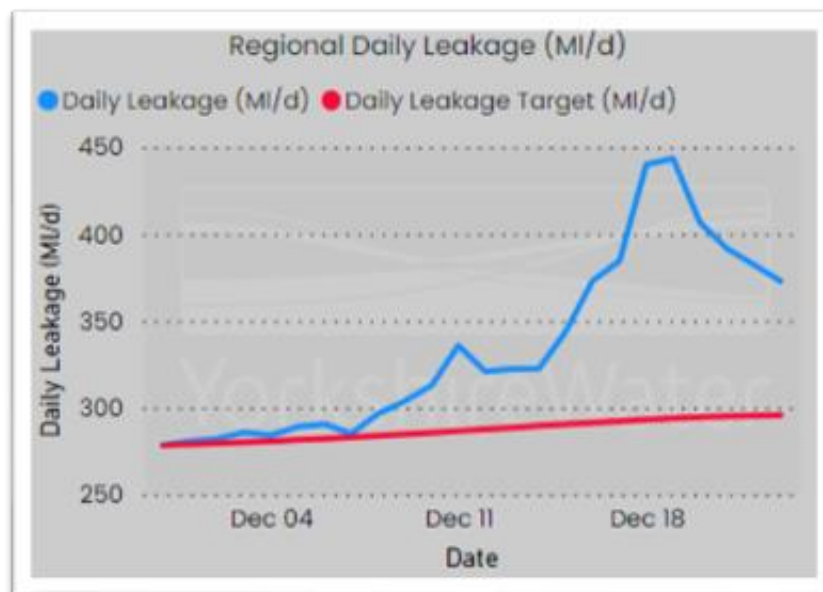
Fig 1. Water demand tracked to temperatures



Leakage increased by 150Mld between the 7 and 19 of December, resulting in over 1200 mains repairs in the month of December, the highest number of network repairs in this month for over a decade. Over 80% of the repairs were on our cast iron pipes which are more susceptible to ground movement caused by a freeze-thaw. Figure 2. shows the uplift in leakage over the period of the event.

Our distribution network is zoned into 3220 Distribution Management Areas (DMAs), 42% of which saw a leakage breakout of >0.5l/sec.

Fig 2. Leakage performance December 2022



Some areas of the Yorkshire region were seeing demand outstripping supply in the ‘thaw’ stage of the event. Over those couple of days, we implemented tanker arrangements to bolster supplies into a number of rural service reservoirs, ensuring security of customer supplies whilst we prioritised burst repairs and supported customers with isolating their own pipe leaks. By 22 December all our tanker operations had ceased, and we saw leakage reducing significantly.

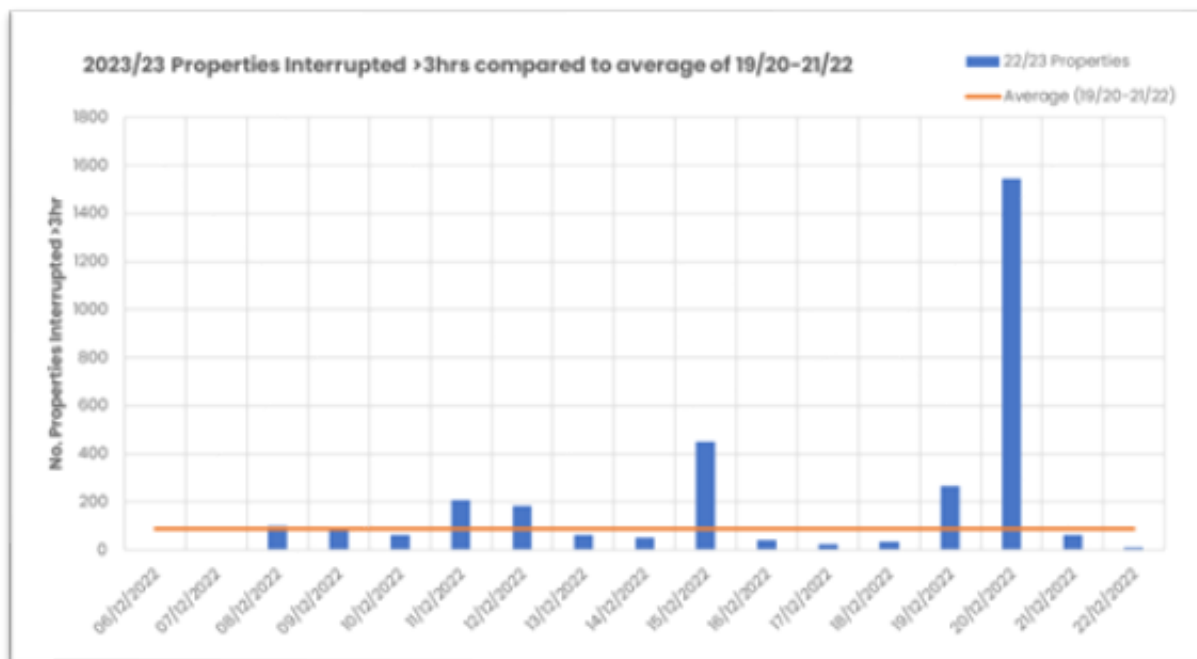
Over the period we estimate there were just under 3200 properties across our region who faced a supply interruption of 3 hours or more. These numbers are not yet finalised as we continue to follow our auditable retrospective hydraulic review process. Figure 3. below shows how the spread of these interruptions occurred across the period.

Other properties may have faced impacts however their supply will have been restored promptly within 3 hours.

There was a notable spike in customers impacted on 20 December that impacted our performance during this event. This was due to a large trunk main burst in Rotherham, South Yorkshire impacting several DMAs that required a complex re-zoning procedure. We implemented our contingency plan for this pipe which involved flow reversal in our system and close water quality monitoring to ensure no impact on aesthetics to customers when the supply was restored. This is estimated to have impacted up to 1217 properties and we forecast this one event

could contribute 12 seconds to our customer seconds lost supply interruptions metric. It may be that this event was not directly attributable to the cold weather freezing the ground and the quick thaw. We experience a low number of such material events each year.

Figure 3. Properties with supply interruptions for 6–22 Dec 2023



If we were to exclude this larger single event our overall performance would have been very similar to the average performance achieved over the last three years (2019–2021). However, it should be noted we more typically see the colder months being January and February.

Whilst broadly speaking this December freeze–thaw event did not have a detrimental impact on the service we provide to customers, it has impacted our ability to achieve our 2022/23 performance commitment levels (PCL) targets for Supply Interruptions and Leakage, and cost in excess of £2m in additional operational expenditure over our business plan.

Following a challenging year of drought, which was exacerbated by the December freeze, we are currently forecasting a Supply Interruption outturn of 9 minutes vs a PCL of 5.75 minutes, and a leakage reduction of 8%, vs a PCL reduction of 9.4% from the 2019/20 baseline.

**Appendix 1** of this letter provides additional analysis of freeze–thaw and water network impacts for Yorkshire Water

## **2. Company response**

- 2. A full and candid explanation of your company's response to any impacts, including: communication with customers; mutual aid with other companies; distributions of bottled water; and identification of vulnerable customers and the support provided for them.*

In preparation for the expected freezing weather, we re-planned our resources (field and customer support) to mitigate and quickly respond to any loss of supply, or other incident, impacting our customers. In our contact centres we updated call scripts so that customers facing issues were promptly triaged through to a resolution. We have a well utilised customer text messaging system (blaster) which we employed throughout this event to update customers on supply interruptions and restoration progress. We have received positive feedback from our customers in this period and included a couple of notable examples in **Appendix 2** of this letter. During the same period the company was also resourcing and supporting a multi-agency response in relation to an event at Stannington, Sheffield – our response to which will be detailed through a separate return.

### **Winter customer communications campaign**

Commencing on 28 November and continuing throughout December and beyond, we ran communication campaigns to alert customers to the need to prepare themselves for much colder weather and to take positive steps such as lagging their home water pipes and covering and protecting external taps and pipework. Our 2022/23 winter campaign has reached many more customers than in past years due to more concerted use of multiple channels and more focused messaging. Our investment in our winter campaign has been greater this year than in previous years.

We augmented our regional campaign with targeted messaging to Hull on paid social media channels and moved our radio campaign forward by two weeks. In December we sent over 33,000 cold weather-related emails to our customers with a +50% opening rate. We have also used posts on social media in November and December for deeper communication content using videos sharing hints and tips for dealing with cold weather with our customers.

Overall, we estimate to have created 4.9 million opportunities to see and hear our messaging across the channels. We provide additional information on our winter campaigns in **Appendix 3** of this letter.

## **Mutual aid**

During this period, we did not require or request mutual aid from other water companies. We attended and supported the National and Platinum Incident Management (NIM and PIM) group and responded to any mutual aid requests from other companies.

## **Vulnerable customers**

Although for this freeze-thaw event there was minimal impacts experienced by vulnerable customers in our region, we can take this opportunity to confirm that our existing processes and procedures have been enhanced since 2018, with greater identification and provision of alternative water supplies during incidents of this nature.

## **Business customers**

Although for this freeze-thaw event there was minimal impacts experienced by business customers in our region, we can take this opportunity to confirm that our alignment with the RWG Good Practice Guide in relation to management of unplanned events has improved since we last reviewed this with Ofwat in December 2021. Our new Retailer Information Only portal (RIO) went live in January 2023 with non-household retailers now receiving push notifications for unplanned events (the notifications are sent via blaster, so retailers are informed at the same time we send notifications to our household customers).

We do not send direct notifications to business customers as we do not hold up to date emergency contact details. For customers that are sensitive to even short breaks in their water supplies (for example hospitals and prisons) we hold public health site specific arrangements. These customers are contacted by our NHH customer managers to assist them manage through any unplanned events and mitigate the impacts. We did not need to utilise this arrangement during this event.

## **3. Customer compensation**

### *3. Arrangements for compensation to impacted customers.*

We have not faced any specific claims for compensation in relation to this event, our normal GSS payments process is in place for interruptions to supply.

#### **4. Lessons learned and post-event reviews**

4. *Lessons learned from this experience and changes you intend to implement; and whether lessons learned from the 2018 freeze-thaw and recommendations from Ofwat's Out In The Cold review [Beast from the East] have been implemented.*
5. *We also expect many companies will be commissioning their own independent reviews, and I expect the findings of these to be shared with us."*

#### **Lessons from Beast from the East and beyond**

Following our own review of the Beast from the East event and Ofwat's recommendations from its Out In The Cold report, we actioned a number of changes to how we managed unplanned events and worked more effectively for our customers. An example of some of the improvements we made and continue to have in place include the following:

- Improving preparedness. We use historical data to assess the likely impact, and this informs the actions we take. This includes activities such as ensuring that additional resources, equipment, and skills are available when and where they are required. This served us, and our customers, well during this event.
- Our advance winter planning preparations provide a central report to senior leaders by 31 October each year, ensuring we are in a state of readiness.
- Working with other utilities (electricity, gas, and telecommunications) our multi-agency, multi-utility failure plans are in place across all four LRF's (South Yorkshire, West Yorkshire, North Yorkshire and Humberside). Although for this event they were not used.
- We have one million litres of temporary alternative water supplies (bottled water, tankers, bowsers) available for our customers should it be required.
- When we have an incident, we determine identified customers facing vulnerable circumstances via our Priority Services Register and proactively contact them in response to any water outage or customer impacting event.
- We can activate hyper-local relevant promotional and advice campaigns, as we did effectively in Hull for this event.

Further to these, we have recently restructured our planning and scheduling capabilities to ensure these are more effective for our customers and that timely action can be initiated when our customers contact us for help.



## **Independent review**

We have not commissioned an independent review or customer research as a consequence of the December freeze-thaw event. We managed the service impacts from the weather well and our networks and operations were resilient which led to the numbers of customers impacted being not greatly in excess of that experienced in recent Decembers.

We continue to work hard to ensure our supply systems and operations are resilient to harsher weather and that we can support our customers with dealing with a loss of supply or other service impact. We have operational procedures that are adaptable to customers individual needs, and we use their feedback to make sure we continuously improve our service.

In order to help us get even better, Yorkshire Water continues to work on resilience and incident management both locally with partners and across the sector via the Water UK and industry groups.

I hope you find the information provided meets your needs. Should you have any questions in relation to this response or would like to set up further discussions on supporting customers and the future debt data requests, please contact me in the first instance.

Yours sincerely,



Head of Regulation  
Yorkshire Water

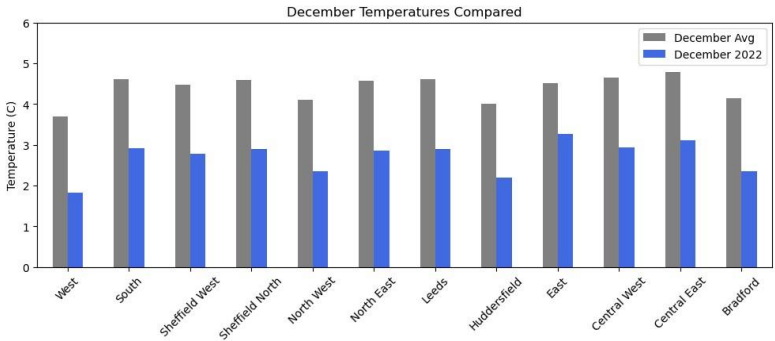
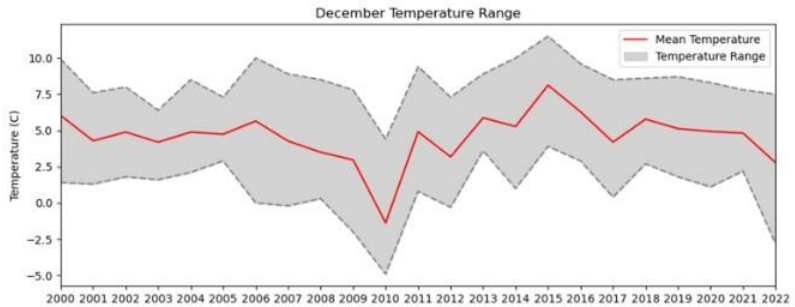


**Appendix 1 – YW analysis of freeze-thaw and water network impact**

# December 2022 Freeze-thaw Review

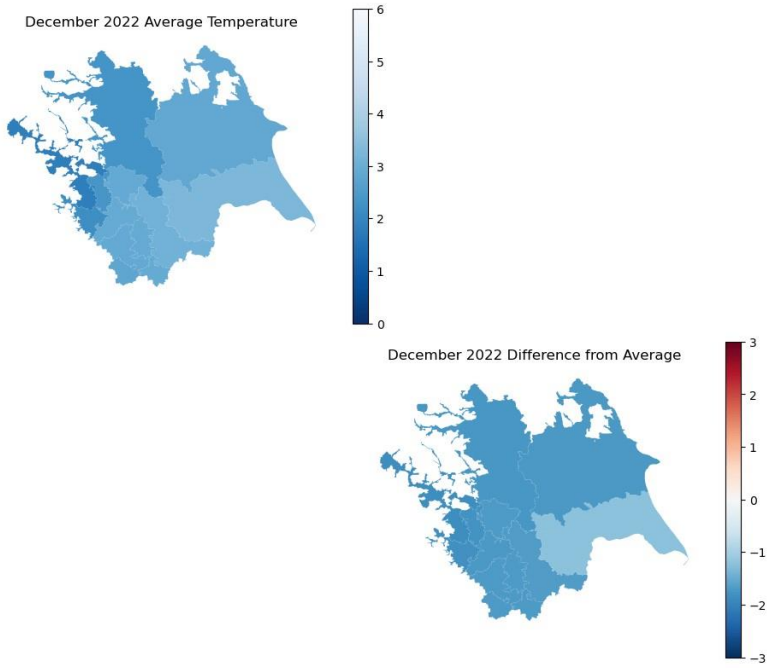
## Historic December Temperatures

- In the last 10 years December temperate the average weekly temperature fluctuates from -1 to 8°C
- The coldest average December temperature since 2000 was 2010, and the warmest being 2015.
- For most of the region this was colder than average. However the maximum temperature was higher than other cold years such as 1995 and 2010



## Historic December Temperatures

- The coldest areas of the region were the North West
- It was the West and Huddersfield regions which were significantly colder than average by approx. 1.8°C

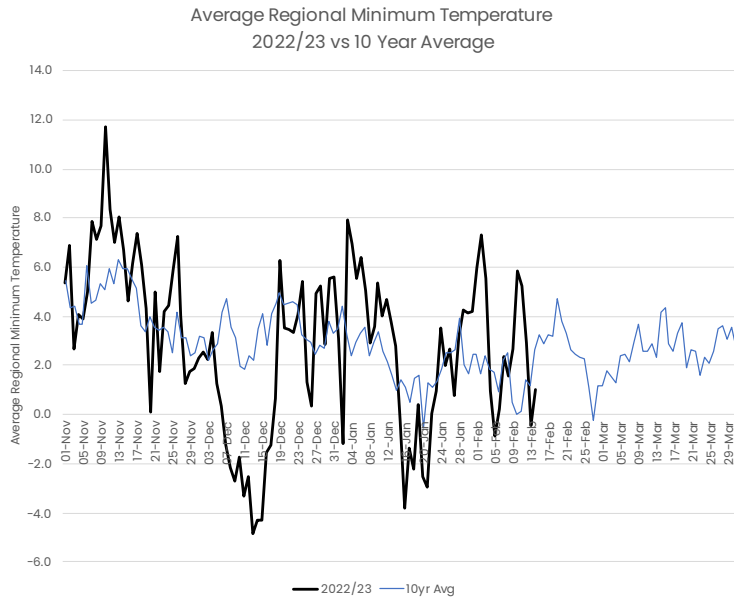


# Minimum Temperature

- Chart to the right plots the regional minimum temperature\* since November and shows 2022/23 YTD and the average over the previous 10 years

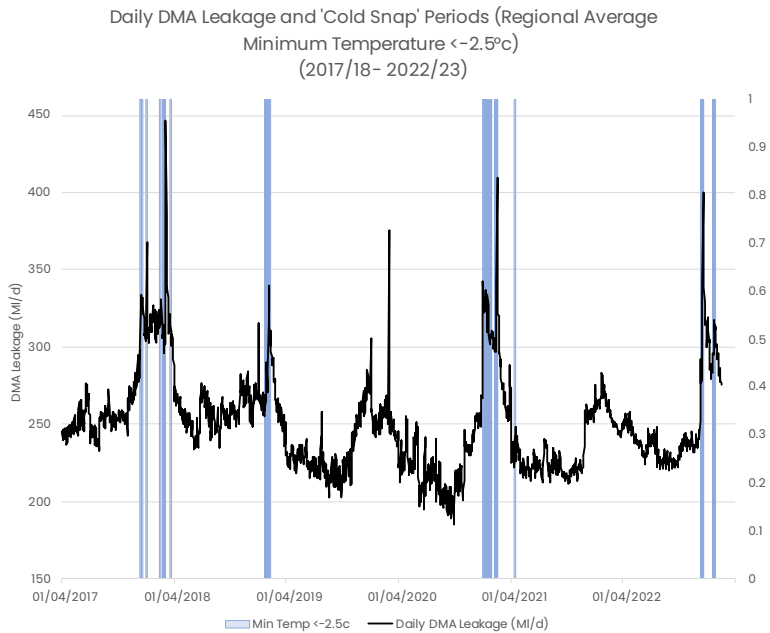
\* Averaged over multiple Yorkshire weather stations

- This chart suggests that minimum temperatures have been largely consistent with the 10 year average with the exception of two prolonged 'cold snap' periods (where regional temp drops below -2.5c)



# Minimum Temperature & Leakage Breakout

- Chart to the right shows DMA leakage and the occurrence of 'Cold Snap' periods
- This demonstrates that these periods (particularly the first of the winter) often result in an immediate and dramatic increase in the calculated leakage position
- The leakage breakout observed in December 2022 is a similar magnitude to those observed in prior years
- This also demonstrates that 'Cold Snaps' are a fairly common occurrence with 4 of the last 6 winters observing them

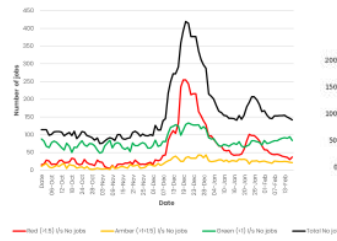


# Mains Repair Volumes

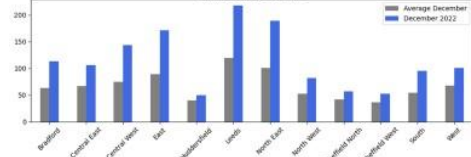
## All MR Jobs

- Mains Repairs includes both reactive and proactive activity during December.
- Across all operational areas there was an uplift in mains repairs.
- The uplift in repairs was higher in the East, Central West, and North East areas

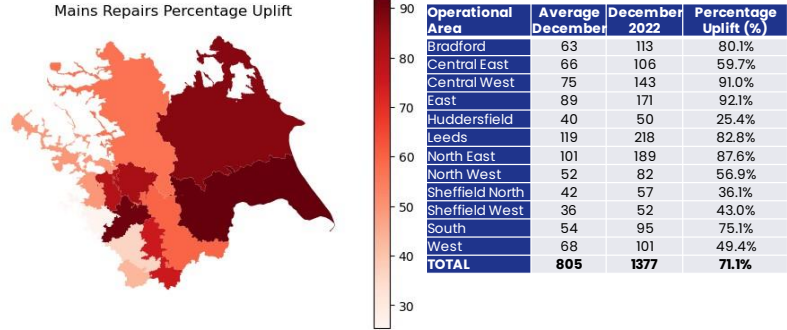
Number of Mains Repair jobs for completion



Mains Repair job volumes



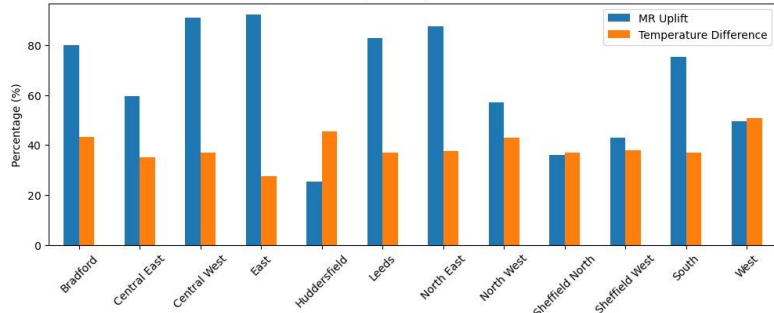
Mains Repairs Percentage Uplift



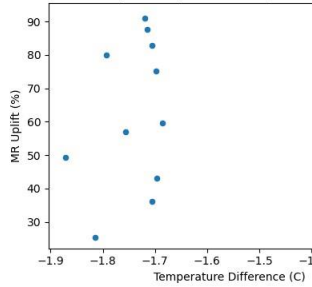
# Temperature and Soil conditions

- However the areas with the biggest temperature decrease did not see the biggest uplift in Mains Repairs.
- For Example the East saw one of the biggest uplifts in MR volumes but did not see the biggest difference in temperatures
- The East and North East were both regions which were hit hard by the extreme dry conditions in the summer
- There is a stronger relationship between this summers average SMD position than the December temperature conditions
- SMD is the soil Moisture deficit conditions – a measure for how dry the soil is.

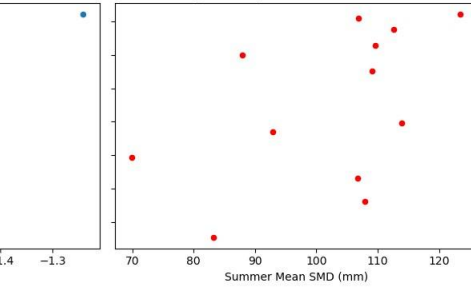
Uplift Comparison



Uplift Comparison: Temperature Diff



Uplift Comparison: Summer SMD



## Appendix 2 – Examples of our customers feedback about our support and response in the freeze-thaw period

**Yorkshire Water**  
Published by [redacted] on December 30, 2022

Hats off to Field Technician [redacted] who received this lovely feedback from a customer recently.

"We had noticed our water pressure dropping significantly over a few weeks until it was only about 30 - 40% of what it should be. We had a plumber visit who told us he could find nothing wrong internally and thought the problem was outside the house. Having contacted Yorkshire Water, an appointment was arranged for Saturday for a technician to attend. On that morning [redacted]... See more



- What a caring young man...all employees could be like this young man. I've had this year had BT engineer a stair lift engineer and Yorkshire water all a pleasure to deal with and they got the job done very quickly and professional. Thank you so much....

Love Reply Hide 7w
- Well done [redacted] always good to hear great comments from customers instead of all the doom and gloom we usually hear

Love Reply Hide 7w
- Honestly, Yorkshire Water is so much better than Severn Trent, in so many ways.

Like Reply Hide 7w
- I have found Yorkshire Water to be brilliant too. Shame other utility providers can't have the customer service training from them.

Like Reply Hide 7w
- It is the individuals who make the company. Well done [redacted]

Like Reply Hide 7w

**Yorkshire Water**  
Published by [redacted] on December 21, 2022

What a pair of heroes!

Leakage Inspectors [redacted] were working out and about around rural Sheffield when they came across an elderly lady who was stuck in a muddy field and was shouting for help. They immediately tried to help her but due to the muddy conditions they were unable to get her out alone, so they called the Fire Service to come and help rescue her. While they waited for assistance the pair gave her a jacket to stay warm and a way to keep herself steady... See more



106,508 Retweets  
32,923 Engagements  
168 comments 66 shares

- Two Yorkshire water workers once helped me when I was stuck with my motorbike near Blubberhouses. They went out of their way to get back to me and helped me bumpstart my bike so I could make it home. It was freezing that day so I'll forever be grateful

Like Reply Hide 7w
- Fantastic what community nights in shinning armed well done your such hero's that poor lady any thing could of happend you two hun son hero's x xx

Like Reply Hide 7w
- Well done lads. I have to say that I've always recieved brilliant service from Yorkshire Water customer service. They're helpful and very friendly, just like Yorkshire folk.

Like Reply Hide 7w
- good lads well done I wish there was more like you in this world x

Like Reply Hide 5w
- Well done lads it is good to know that a There are people out there who have high values on giving their all to save lives, God Bless you both

Like Reply Hide 3w

## Appendix 3 – Our customer campaigns for winter weather during the freeze-thaw period

### Winter campaign 2022/23 – Summary

- Campaign activity kicked off on 28<sup>th</sup> November and created 4.9million opportunities to see and hear and see our messaging across
- An interesting first month for the campaign, we had a significant cold snap in December in which we introduced, additional targeted messaging to Hull on paid social and moving radio airtime forward for two weeks
- We swapped from a water saving message to winter w/c 5<sup>th</sup> December have continued with this message
- We sent a winter ready on 16<sup>th</sup> December inline with the cold weather, which had an excellent open rate (52%)



### Examples of materials used in our winter campaigns



Customer recall for our winter related communication campaigns has been higher for 2022/23 than in previous years but is lower than we experience with our water saving campaign when linked to energy costs and our 'bin it, don't block it' campaign against flushing wipes.

