

AffinityWater

Freeze/Thaw December 2022

Report to Ofwat



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Document amendment history

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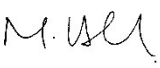
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Approver 1 (external use)	Fiona Waller		Head of Water Quality	23/02/23
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1. Executive Summary:

The freeze and thaw event in December 2022 was one of the industry's biggest challenges in recent history, with the impacts far exceeding those seen during the 'Beast from the East' event in 2018. Our robust preparations and the applications of lessons learned from previous events meant that only 1.4% of our customers experienced an interruption to their water supply for greater than 3 hours and 0.36% greater than 12 hours. These were only within isolated areas in our Central region. Our South, East and South East regions were not impacted. Where customers were impacted, we have made timely payments to compensate for the disruption, these payments exceed the minimum GSS payments required. This paper details the steps we took to prepare for the event, how we organised ourselves to respond quickly to the events that unfolded and the lessons we will take forward as we continually seek to improve for our customers.

Following 12 nights of consecutive sub-zero temperatures, a rapid thaw event occurred between the 18th and 19th December 2022 with temperatures rising from -7 to +14 degrees celsius in our Central region. The rapid thaw placed significant stress on our network and resulted in a 200,000m³/hr outbreak in leakage across customer and company pipework. This outbreak of leakage resulted in an exceptional demand for water normally only seen in peak summer events.

Our proactive weather monitoring was effective in identifying the upcoming weather pattern and our seasonal readiness plans were triggered to structure our approach to support our customers through the event and minimise any disruption. Our plans focussed on 5 key areas:

Resource planning

In preparation for the event, we significantly increased key front line roles to ensure we had sufficient teams to find and fix leaks and answer our customer contacts. We also implemented a specific incident response structure and mobilised our team of Alternative Water Ambassadors. Our supplier relationships are sufficiently dynamic to redeploy our contracting teams where they could best serve our customers. This response allowed us to repair more than 600 burst mains during the period.

Strategic Supply

We maximised output from our sites and requested imports from our neighbouring Companies to build storage ahead of the event. Our efforts were hampered with unplanned reactive maintenance at our two largest treatment works and the reduced availability of our strategic bulk water imports.

Health & Safety

We tailored our ways of working to the hazards associated with the cold weather to prioritise the safety of our people, partners and customers. We had no lost time injuries or customer safety incidents throughout the event.

Customer, colleague, and stakeholder communications

Our weather specific communications began during November with advice to customers on how they can prepare for the cold weather. We tailored our communications ahead of the thawing temperatures and followed our existing incident communication strategy to keep customers informed.

Alternative water supplies

Building on the lessons learned from the Out in the Cold report we significantly increased our provision of bottled water both internally and with our supply chain, mobilised our Alternative Water Ambassadors and redeployed our supply partners working on non-critical workstreams to the provision of alternative water supplies. This meant we were able to deliver 306,000 litres of water to our customers of which 25,000 were hand delivered to our most vulnerable customers and a further 1000 to a NAV site. In addition to this we deployed water tankers in advance of the thaw who were able to maintain supplies to a hospital and other key customers.

Our readiness has been continually improved by delivering on the lessons we have learned from our own experiences and from those across the industry in previous weather events. Some of the most notable include:

- We have increased our Priority Services Register (PSR) from 27,227 customers to 110,903 customers since 2018 to allow us to better identify and support our most vulnerable customers.
- We have created an additional hydraulic modelling team who work 24/7/365 within our Control Operations team to support our front-line teams with issue identification and resolution.
- We have increased our alternative water stocks to reduce our reliance on the supply chain.
- We have updated key contingency plans to improve our asset operation during periods of supply/demand deficit to minimise interruptions e.g. we replicated the pressure reduction programme deployed in our Rye Hill area in the summer to maintain customer supplies during this winter period.
- We have restructured our Emergency Planning team to give improved command and control centrally within our Control Operations team.
- We have implemented several capital solutions that meant no customers were impacted during this event that were in the 2018 freeze/thaw event.

We communicated effectively with our customers in the lead up to and throughout the event. Our winter readiness campaign commenced on 28th November advising customers how they can protect their home during the cold weather, the importance of lagging pipework and how to isolate their water supply if there is a leak.

Our campaigns used various forms of communication channels to connect with customers and we used targeted comms for different user groups to maximise penetration and impact. We gave focus to promoting our winter messaging to a wide variety of stakeholders including Councillors, MPs and Local Authorities.

Ahead of the thaw we strengthened these communications with a joint press release in collaboration with Anglian Water, with follow up interviews with BBC Radio 3 Counties and BBC Radio Essex. We proactively replicated these key messages with our Retailers in the lead up to the event to help Retailers and non-household customers understand their responsibilities and prepare their properties. This included providing material for Retailers to share with their customers in the absence of their own resources. Where required, we liaised directly with the non-household customers that were impacted by the event or who could support the wider supply/demand balance by altering their consumption behaviours. These included Stansted and Heathrow Airports and the Ministry of Defence in Northwood.

As the event unfolded, we introduced incident specific communications to keep customers informed of the supply impact and the provision for alternative water. These included:

- 80 web alerts across 3 main incident web pages
- 30 unique SMS updates to circa. 150,000 customers (9.6% of population)
- 13 social media posts across all channels and 3 targeted, paid social advertisements
- 8,915 calls from customers about their water supply (883% above plan at our busiest period)

We used our 'Voice of the Customer' listening platform to highlight customer feedback in real time. This allowed us to adapt and improve our communications and processes. For example, we moved to refreshing our web alerts every 4 hours to provide more regular updates.

We maintained our heightened communications with enhanced GSS messaging (letters, email and SMS) keeping customers informed about compensation payments and timescales. These detailed the issue, impact, our resolution and a full apology.

This was our largest campaign in terms of the volume, frequency and range of channels used.

We are committed to improving our customer's experience during extreme weather events. We have already completed extensive wash-up events with our teams to evaluate our preparedness and the effectiveness of our response. We have established a Programme Board with Executive sponsorship to ensure we deliver on the improvements identified. In addition, we have arranged meetings with our neighbouring water companies to discuss specific issues and general areas for improvement. We have also commissioned an independent report from Atkins and will embrace their findings alongside our own.

2. How the freeze/thaw materialised in our supply area

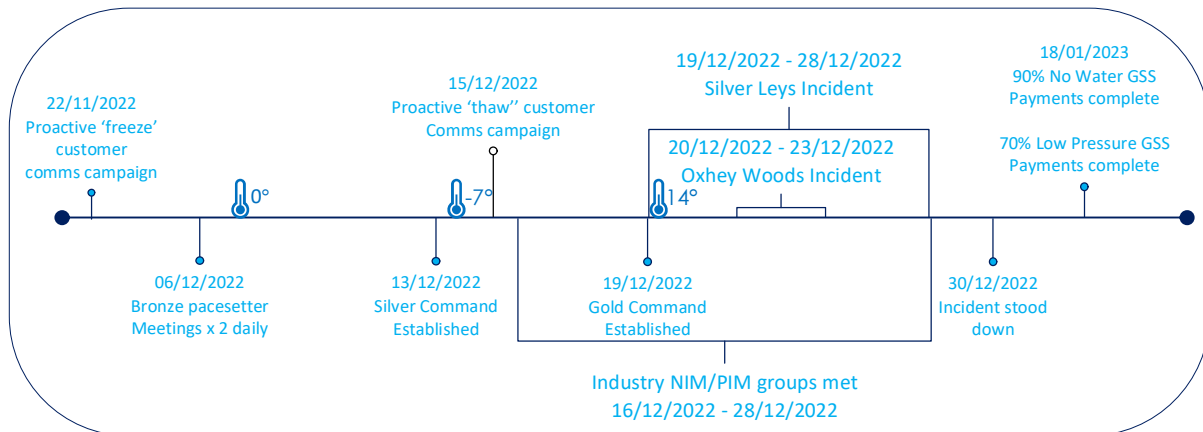
Affinity Water supplies 3.7 million customers across three geographical regions; our Central region, which supplies parts of Surrey, Hertfordshire and Essex; our Eastern region, which supplies Clacton and Harwich in Essex; and our South East region which supplies Folkestone and Dover in Kent.

Figure 1 – Affinity Water supply area map



From 7th December our Central supply area night-time temperatures fell rapidly below freezing. Night-time temperatures remained at or below freezing for 12 consecutive nights reaching a low of -7 degrees on 15th December (as seen in figure 3).

Figure 2 – Timeline of significant events



The nature of this event with the prolonged freeze prior to the rapid thaw had 604 burst mains which was an increase of 196.1% in burst mains compared to last December, the highest we have recorded. The key impacts of the sustained freezing temperatures include:

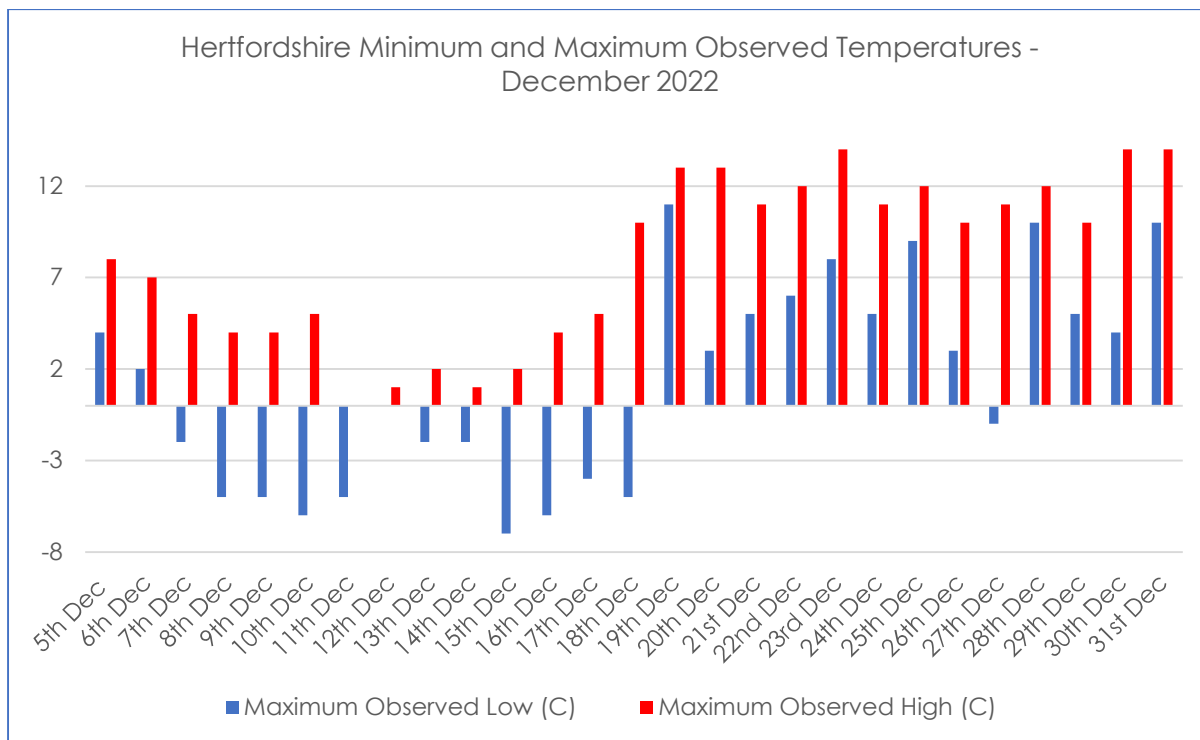
- An increase in leakage nightlines from 300,000 m³/day to 340,000 m³/day due to company and customer side leakage
- 240 mains bursts
- A small number of frozen Pressure Reducing Valves (PRVs) resulting in short durations of localised supply impacts for some customers.
- Failures due to frozen pipework at two Production sites temporarily modified for High Speed 2 (HS2).

Between the 18th and the 19th of December temperatures increased significantly and resulted in a rapid thaw across the supply area. The key impacts of the thaw were:

- A further increase in leakage nightlines to 507,000 m³/day due to company and customer side leakage
- A further increase in mains bursts of 364 across the month of December, totalling 604 which is an increase of 196.1% from last year's monthly total of 204.

The full impact is set out in section 5.

Figure 3 – Min and Max temperatures in Hertfordshire during December 2022 (www.timeanddate.com/weather)



3. How we prepared for the freeze/thaw event

Using long range weather forecasting tools, we were able to predict and proactively prepare for the upcoming freeze/thaw. The response was informed by our Seasonal Readiness plan which we have evolved to include industry best practice from previous seasonal events. The plan is reviewed twice yearly by our Seasonal Readiness steering group and was last reviewed in October 2022 in preparation for upcoming inclement weather.

The plan outlines our weather monitoring protocols and contains a series of checklists to review when key weather triggers are met. These checklists ensure we put the right mitigations in place to deliver the best outcomes for our customers during periods of adverse weather. The lists include:

- Resource planning
- Strategic Supply
- Health & Safety
- Customer, colleague, and stakeholder communications
- Alternative water supplies

We actively monitor weather patterns using a combination of MET office and MeteoGroup data. This was effective in predicting the adverse weather period, providing sufficient notice, on 5th December 2022, that we would experience more than 3 consecutive nights of ground temperatures below 0 degrees Celsius, which is

our trigger for an escalated response. This response included a move to twice daily cold weather 'pacesetter' calls on the 6th December. These are tactical meetings with attendance from teams across the business to discuss our current status and progress against our readiness plans.

The overall operation and governance of the incident is overseen through a 'Gold, Silver and Bronze' command structure, further details of which are included in section 4 below. The Seasonal Readiness plan sets out 5 areas of focus:

Resource Planning

Our resource plans identify the key roles that are needed to provide the right outcomes for our customers. They fall into 4 groups:

- Front line operational teams
- Customer contact teams
- Alternative water deployment
- Incident management

Resources are drawn from across the business into temporary roles for large scale events. These include our Alternative Water Ambassadors, Incident Loggists and Customer Contact Agents.

For the freeze/thaw event, we increased our network repair teams working on standby from 13 to 28 two-man teams, bolstered our Network Technician resource with support from our Leakage teams; and strengthened our operational contact centre with agents that would normally work in the billing team.

Our plans also include an increase in supplier resource levels and a number of planned activities were postponed creating capacity within our supply chain to support the resolution of issues for our customers. We actively seek support for widescale events from various teams to promote business involvement. We used internal communication channels and campaigns to recruit Alternative Water Ambassadors to help deliver bottled water. In this instance it included the mobilisation of our emergency contact centre (Waterforce), redeploying metering teams to complete leakage repairs and diverting our reservoir cleaning teams to alternative water distribution.

Strategic Supply

In preparation of the forecasted increase in demand we focused on increasing the output from our production sites to build storage in advance of the event.

To facilitate this, all non-critical planned maintenance work was postponed, ensuring maximum site output.

We appointed a role within our Senior Leadership Team (SLT) to review opportunities with our Water Quality team to minimise site losses from routine treatment processes taking a risk-based approach.

Two of our largest production sites were experiencing operational challenges, as detailed in section 5, which reduced our ability to build storage in advance of the thaw.

We experienced issues with frozen pipework at two production sites that had been temporarily modified to enable the HS2 project. HS2 contractors failed to meet the design specifications that required the sites to be resilient in sub-freezing temperatures. A root cause review has identified a number of defects because of the events in December, these have been raised formally with the supply chain and a defect rectification plan has been put in place to resolve.

In addition to our own water production, we are reliant on bulk supply imports to meet our normal customer demand due to the nature of our supply area and availability of water resources. On average, bulk imports make up 7% of our available resource and exports 2%. At maximum, this increases to 14% import and 4% export. Our bulk import supplies provided by Anglian Water and Thames Water are governed by Bulk Supply Agreements. Our import from Anglian at Grafham Water Treatment Works (up to 109MLD) and from Thames Water at Fortis Green Pumping Station (up to 27MLD) are statute-based obligations.

In preparation for the predicted temperature changes, we increased our formal weekly calls to daily calls with Thames Water and Anglian Water to discuss our bulk water import requirements, within the allowed limits of the agreements. On the 10th December we asked Thames Water for imports at Stonebridge Park and Fortis Green but they stated that they were unable to assist. This remained until the 20th of December.

Under the Metropolitan Water Board Act 1927, Thames are legally obliged to supply Affinity at Fortis Green, up to a limit of 6 million gallons (27 mega litres) per day. There is a further bulk supply arrangement at Stonebridge Park for emergency imports. However, Thames Water stated that they were unable to assist with either requirement and withdrew all exports until 20th and 21st of December respectively. As a result, our efforts to build storage were significantly hampered both in advance of and throughout the event.

Health & Safety and equipment

Our safety plans focus on the safety and wellbeing of our people, our supply chain, our customers and the general public.

Our readiness plans include heightened safety briefs, cold weather PPE for our colleagues and the mobilisation of our gritting process to keep our fixed sites and street works sites protected from freezing. These plans proved effective and we had no Lost Time Injuries during this event.

Part of our seasonal readiness is to ensure we have all equipment necessary to prevent or respond quickly to asset failures. Key equipment such as standby power generators, trace heating, site gritting and 4 x 4 vehicles are all proactively reviewed. We also review and where necessary increase our inventory of repair fittings to cope with increased demand for mains repairs. During this event particular focus was given to

ensuring we had sufficient signing, lighting and guarding which was a key learning from previous events.

Customer & Stakeholder Communications

Ensuring that our customers and stakeholders are kept informed during any operational event is a top priority and particularly in the case of freeze/thaw events where they may experience increased activity on the network, changes to their supply and heightened media coverage. There are also many things that customers can proactively do to help reduce the impact of the freeze/thaw events on their own properties or help reduce the demand on the network.

We plan for winter disruption using a three-pillar strategy:

- Be Prepared
- Be Aware
- Take Action

Our 'Be Prepared' winter readiness campaign commenced online on 28th November, with a customer message of 'protecting your home this winter'. Our 'Be Aware' campaign on social media and direct customer emails followed from 2 December, with press releases from 6 December. This campaign used various forms of communication channels to connect with customers, offering advice around locating stop taps, lagging pipes and general winter preparedness. We successfully utilised targeted comms for different user groups, for example we recognise the efforts of low water users and thank them for their ongoing support and ask them to share their water saving tips with friends and family, which differs from higher users to whom we can provide more specific advice. We use social media channels, such as Facebook and Instagram, along with emails and texts and we regularly update our website with relevant messages in respect of ongoing or anticipated events. Under our 'Be Prepared' pillar we also promoted our winter messaging to a wide variety of stakeholders such as councillors, MPs, local authority communications teams, Local Resilience Forums (LRFs) and environmental groups across our supply area and encouraged them to help spread our message to the communities they represent to help get homes ready for winter.

We published joint press release in collaboration with Anglian Water which led to significant regional media pickup ahead of the thaw event and interviews with BBC Radio 3 Counties and BBC Radio Essex.

Our Wholesale Operational Service Desk (WOSD) proactively contacted Retailers via email with similar advice and messaging in the lead up to the event (13th and 15th December) to help Retailers and non-household customers understand their responsibilities and prepare their properties. We shared a leaflet with advice for Retailers to use and share with their customers in the absence of their own material. We also discussed winter preparedness as part of any virtual account management meetings throughout November and December. During the freeze/thaw event updates were provided to Retailers in line with the Retailer Wholesaler Group (RWG) unplanned events guidance.

Our 'Take Action' customer communication messages commenced from 15th December with specific advice on the action customers need to take to protect their home from the impending thaw. From 17th December, customer emails were targeted to those who were or could have been impacted by supply interruptions or low pressure. From 19th December, we utilised web-alerts, targeted social media and SMS to communicate issues and how customers could obtain more information, including water collection points. All registered vulnerable customers on our Priority Services Register (PSR) were notified that bottled water would be delivered to their home. We also kept local stakeholders such as MPs and councillors up to date in areas where we experienced significant problems, such as Bishop Stortford (Julie Marson MP), Watford (Dean Russell MP) and Northwood and Pinner (David Simmons MP).

We kept local and regional print and broadcast media updated as the situation progressed with AW taking part in three live interviews with BBC Radio three counties as well interviews with BBC Look East and BBC Radio Essex.

We also managed multiple media inquiries from:

- BBC local radio stations, national online team, Online East, Essex, Look East
- Bucks Free Press
- Clacton, Frinton & Walton Gazette
- Daily Mirror
- The Independent
- Bishop's Stortford Independent
- Watford Observer
- Deadline News
- Daily Express

We prioritised our resource towards our vulnerable customers and those impacted by the incident, encouraging other customers not impacted to only make contact if completely necessary. This ensured that the majority of customers requiring help and support were assisted efficiently.

Finally, close-out communications were issued to customers, explaining how we managed the incident and thanking them for their cooperation.

Alternative Water

Historically there have been industry challenges sourcing alternative water from the supply chain during national events as all companies compete for limited resources. We anticipated the potential need for alternative supplies and engaged with our supplier, well ahead of the upcoming event to ensure sufficient availability of bottled water stocks, water tankers and associated logistics resources. For the first time, we proactively deployed water tankers across our supply area ready to respond.

We ensured our internally held bottled water stocks were full, circa 90 pallets, in addition to our contracted 116 pallets per day held with our supply chain. This was in addition to our various Arlington Tanks (boxes that hold 1000 litre bags that can be filled with potable water) and restoration resources, such as overland pipes. To aid with the potential delivery of alternative water we called for volunteers from across

the business from our Alternative Water Ambassadors. Our alternative water station locations within each District Meter Area (DMA) are already identified and visible on our GIS mapping system.

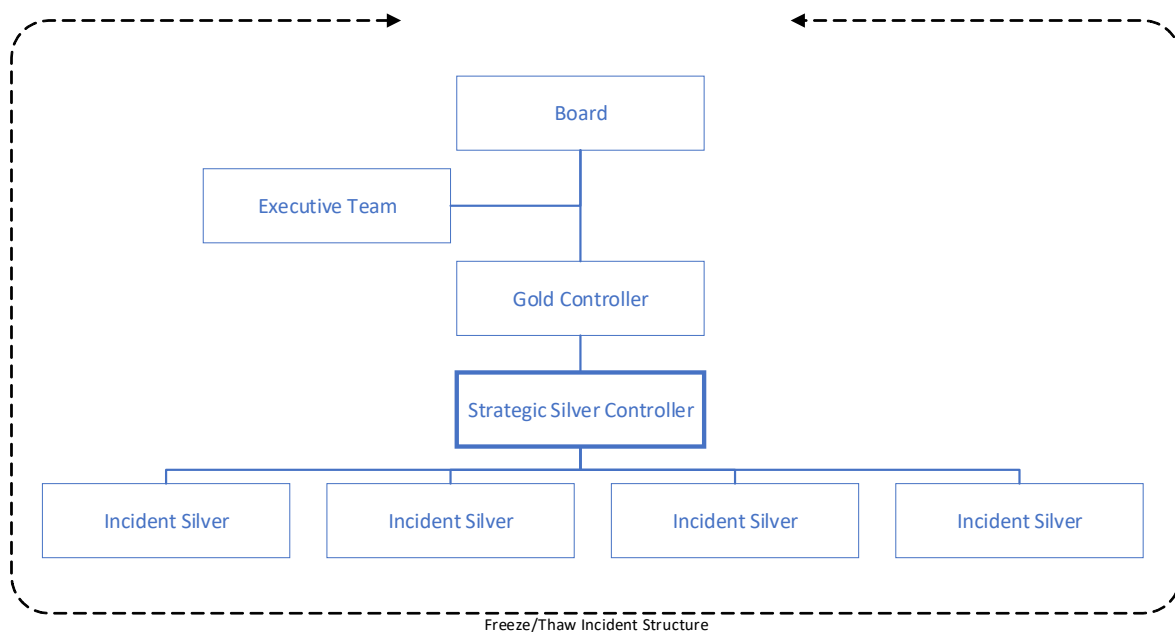
4. How we managed the freeze/thaw incident

Our Emergency Plan details our incident response structure and the triggers for a Bronze, Silver, and Gold event.

We mobilised our Emergency Response Team (ERT) led by a Silver Controller on the 13th December in preparation for the forecast thaw to ensure we had an established rhythm of command to further strengthen how we monitor the weather, the status of our assets and assess our dynamic risk profile. This involved building a robust communication plan to keep different customer groups informed about supply impact and ways we could support them.

Due to the number of ongoing incidents and the widespread effect across the Central supply area, our usual strategic movement of water was not always possible. As a result, we implemented a Strategic Silver Command. This role provided strategic oversight to all ongoing incidents and emerging risks across the region and ensured our resources were deployed as effectively as possible. An additional Gold Control was also established and actively deployed to provide executive oversight and governance. The Gold Commander ensured the Executive and Board were kept fully informed.

Figure 4 – Our Incident Structure to respond to the Dec 2022 freeze/thaw event



Incidents that resulted in Silver command ERTs being established included:

- Bishops Stortford (Silver Leys reservoir and The Causeway pumping station)
- Hertford (Amwell reservoir)
- Grafham import reduction
- Southall (Allenby Road Reservoir and tower)
- Oxhey (Oxhey Woods Reservoir)
- Harlow (Rye Hill Reservoirs)
- Hemel Hempstead (Boxted Reservoir)
- Takeley (Broxted Booster and Takeley Tower)

Our Gold controller was based in our Control Room for immediate access and visibility. They were briefed twice daily and specifically notified of the following issues:

- Thames Water imports
- Request from Anglian Water for us to reduce our import from Grafham, to which we agreed
- Requests to increase South East Water exports, which were met
- Mutual Aid request from South East Water
- Authorisation of additional customer care costs
- Media requests

The Gold Controller was also the Company lead on the industry's Platinum Incident Management group (PIM). PIM, comprising mainly Company Operations Directors, met on the 16th, 17th, 19th, 20th, 21st, 22nd, 23rd and 28th December to discuss company impact, mutual aid and real time learning from the national event. The National Incident Management group (NIM) also met regularly throughout the event.

5. How the freeze/thaw impacted our strategic water supplies

5.1 Impact on water supply

Coming into December we had several supply challenges across our strategic treatment works that limited our water production, these meant that we came into the freeze/thaw period with storage circa 100MI, lower than targeted.

The key issues we faced were:

- Iver Water Treatment works reduced from 227MI/d to 180MI/d due to failed inter-ozone pipework. A planned inspection revealed extensive remedial works that resulted in an unplanned extension into December.
- Clay Lane Water Treatment works reduced from 154MI/d to 90MI/d on the 16th December due to a faulty bearing on one of the raw water source pumps that supplies the treatment works.

- Sundon reservoir (owned by Anglian Water at the time) was out of supply following a reservoir inspection that found a water quality risk. Anglian water also experienced issues during the week before the thaw and asked us to reduce our import. These issues limited the amount of water we were able to import and our ability to strategically move water from our Southern region, where we have a surplus, to the Northern region where we faced a supply/demand deficit.
- As a result of increased levels of leakage, we had supply challenges at Allenby Road reservoir and agreed with South East Water to reduce our bulk export to them to preserve water in our Allenby Road reservoir. This was mutually agreed as acceptable as their Surrey Hills Reservoir was not at risk.
- Our preparations were further constrained by several bulk imports from Thames Water being denied.
- Output from The Causeway Pumping Station that supplies the Bishops Stortford area were reduced due to an Ultra Violet (UV) strainer that became blocked.
- Two key pumping stations that have been temporarily modified as part of our commitment to support the HS2 project failed due to frozen pipework.

5.2 Impact on water demand

The ground movement caused by the rapid thaw resulted in an unprecedented number of leaks on our network and on customers' pipework. During December, we repaired 604 mains bursts compared to a forecast of 250, the largest number of mains repairs we have completed in a single month.

Figure 5 – 2022/23 Mains repair performance

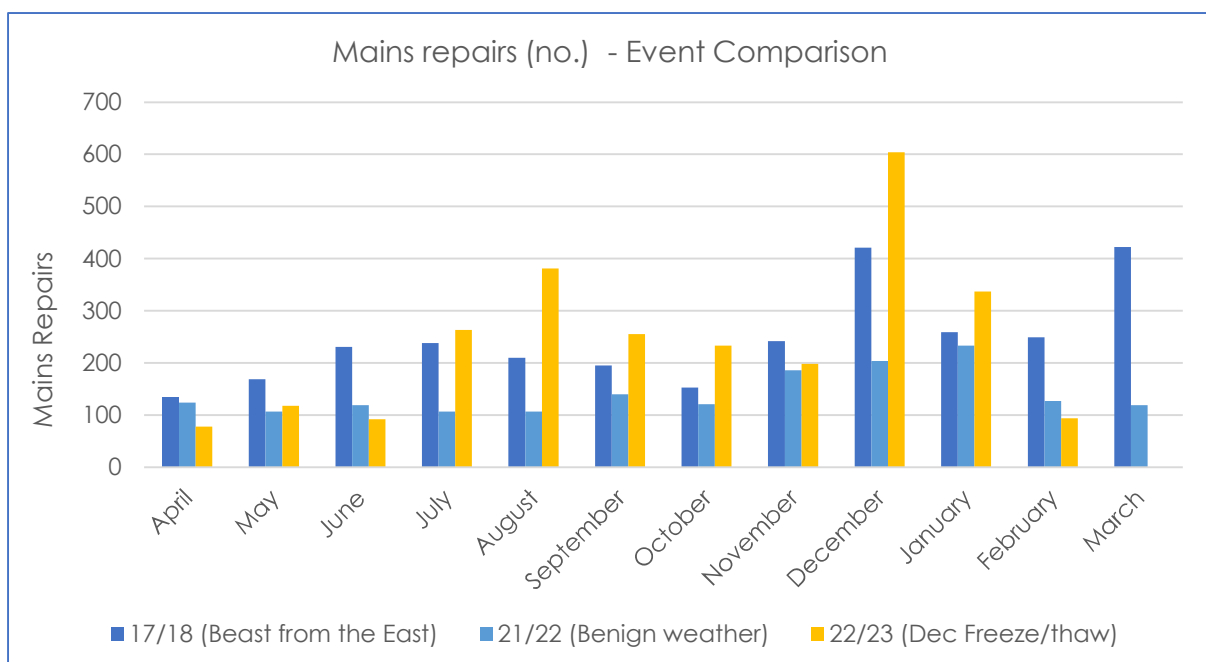
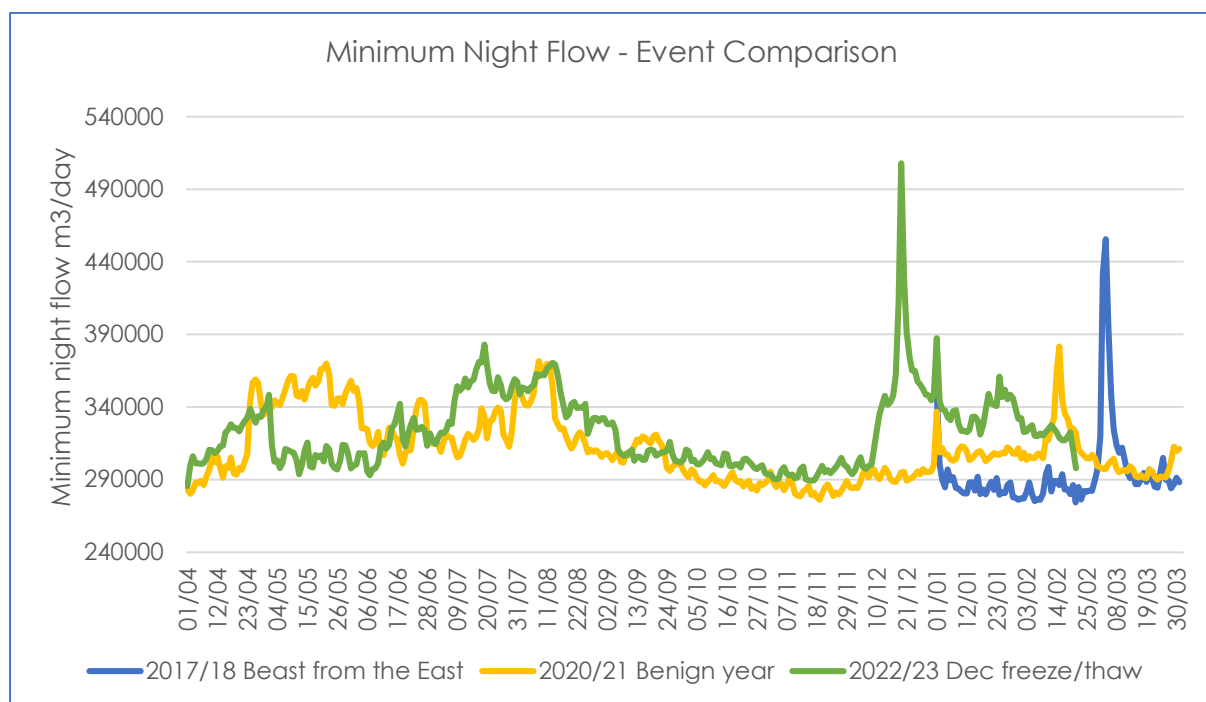


Figure 5 shows the numbers of completed burst main repairs, comparing Beast from the East in March 2018, against a benign weather year (2021-2022) and this latest freeze thaw in December 2022, which is the highest number of bursts repaired in one month we have on record.

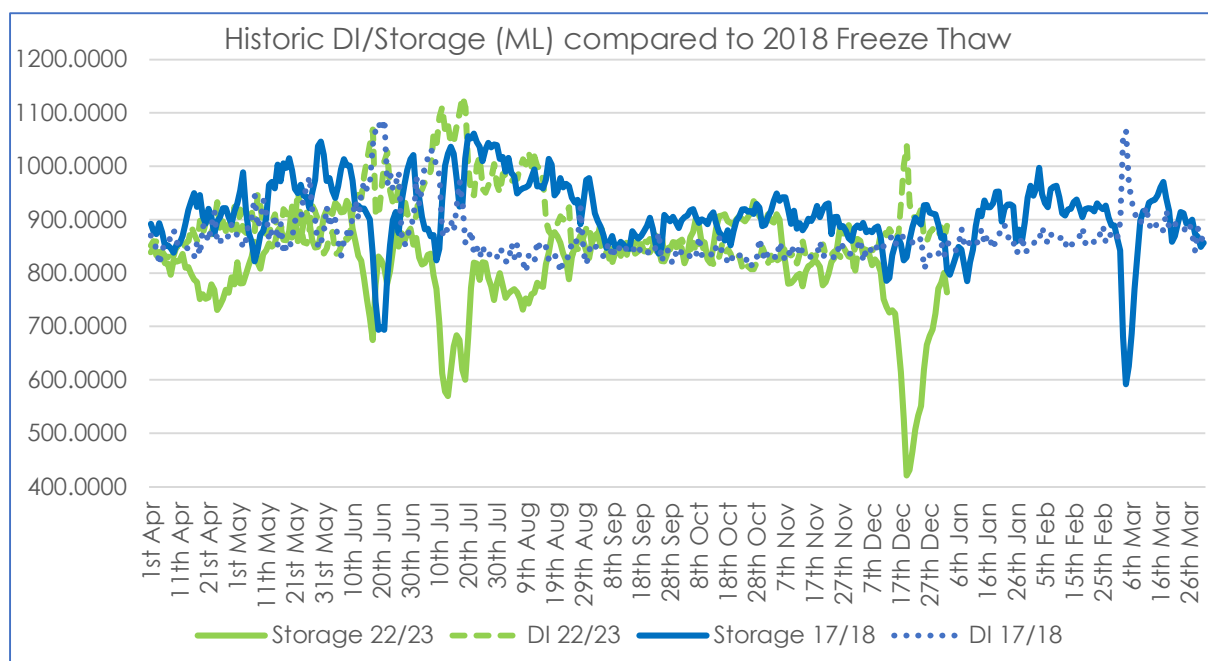
The rate of asset failure also increased our monthly average leakage from November to December by 7.4 MI/d. This equates to an 18-20 MI/d impact on the full month. Figure 6 below shows how this materialised as a 200,000 m³/d increase in Minimum Night Flows. The graph also shows that the impact of this freeze thaw was significantly worse than the previous Beast from the East event.

Figure 6 – 2022/3 Minimum Night Flow (MNF) compared to previous freeze/thaw events.



The combined result of company and customer side leakage increased distribution input (DI) to a peak of 1114MLD on the 19th December from 903MLD on the 1st December. This was similar to peak summer demands and caused storage to drop to 421ML on the 19th December, the lowest we have ever seen.

Figure 7 – 2022/23 DI and Storage compared to 2018 freeze/thaw.



6. How our customers were impacted during the event

As a result of our extensive preparations, and despite the unprecedented operational challenges resulting from the extreme weather conditions, the number of customers who experienced a supply interruption of greater than 3 hours was 1.40% (21,714) of our customer base and only 0.37% (5,623) experienced an interruption greater than 12 hours. All figures used in this report remain subject to end of year verification and audit.

During Beast from the East in 2018, we had four areas of impact. As a result of our learning from that event, and subsequent early interventions, none of these areas were affected during this event.

We did though experience some incidents that resulted in significant impact to our customers.

Bishops Stortford

- Total number of properties: 13,203
- Duration: Intermittent supplies over 6 days (See figure 8 for detail)
- Cause: Supply/demand deficit caused by reduced output from the Causeway Pumping Station and increased leakage in the upstream area resulting in a reduction in storage and a subsequent trunk main airlock.
- Resolution: We completed work on site to maximise output from the Causeway pumping station, as well as fixing leakage in the area which in addition to overall area recovery enabling strategic transfer to resume, increased storage back to normal operating levels.

Oxhey Woods

- Total number of properties: 2,289
- Duration: Intermittent supplies over a 24 hour period
- Cause: Supply/demand deficit caused by leakage, resulting in a reduction in storage and a subsequent airlock.
- Resolution: We de-aired the main in strategic locations, in addition to Thames Import at Fortis being made available on the 20th December to increase associated storage levels which enabled us to break the hydraulic restriction and fill the reservoir.

Boxted

- Total number of properties: 3,577
- Duration: Intermittent supplies over an 18 hour period
- Cause: Low reservoir levels stemming from leakage across our strategic supply system and a reduction in bulk imports, leading to the boosters being turned off to protect them from air locking
- Resolution: Leakage repairs leading to recovering storage and the boosters being returned to service.

Broxted

- Total number of properties: 1,981
- Duration: Intermittent supplies over a 3-day period
- Cause: Burst water main and wider area leakage
- Resolution: Leakage repairs leading to recovering storage

Amwell

- Total number of properties: 119
- Duration: 12 hours
- Cause: High area and customer side leakage resulting in the reservoir and tower level dropping very low, causing insufficient pressure to supply the area.
- Resolution: Leakage repairs leading to recovering storage

Bengeo

- Total number of properties: 545
- Duration: Off for 6 hours
- Cause: Frozen PRV
- Resolution: Defrosted the PRV restoring supplies

Figure 8 below shows the number of properties impacted by these events and for how long.

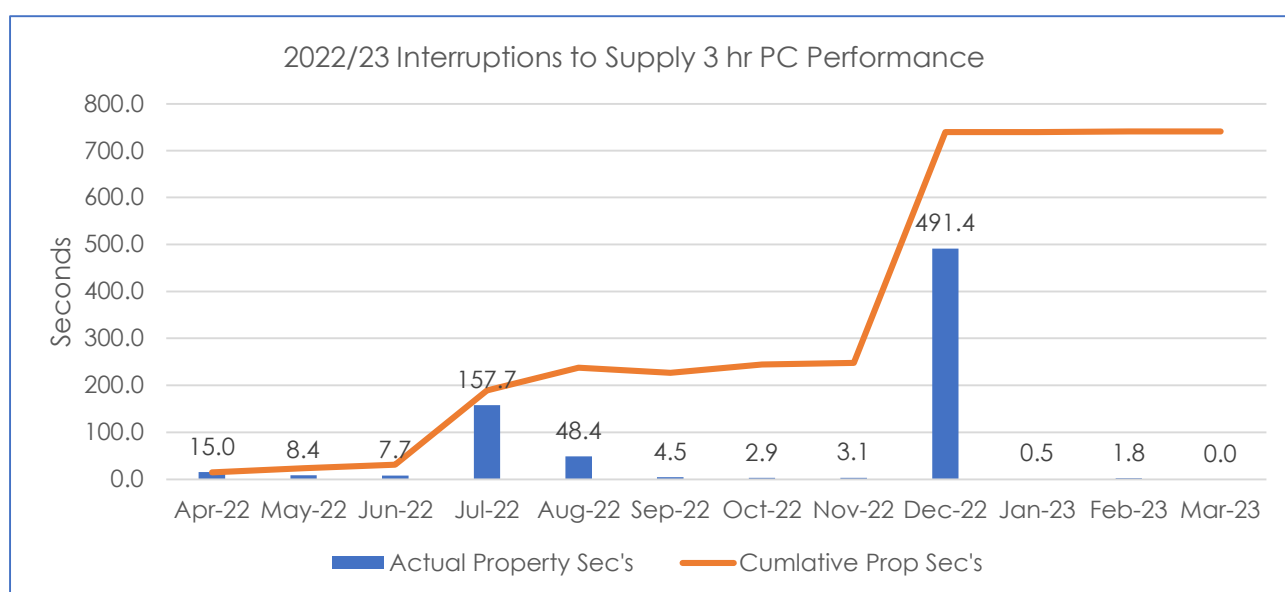
Figure 8 – Prop numbers and durations impacted with no water.

Area affected	Duration (hours) and No. of Properties									Grand Total
	>3-6	>6-9	>9-12	>12-15	>15-18	>18-21	>21-24	>24-36	>36	
Bishops Stortford	3200	2755	2218	1504	1627	464	150	1195	90	13203
Broxted	1016	654	284	15	0	1	8	3	0	1981
Boxted	2834	229	447		67					3577
Oxhey	1648	70	72	178	157	153	11	0	0	2289
Amwell	0	0	119	0	0	0	0	0	0	119
Bengeo	545									545
Total	9243	3708	3140	1697	1851	618	169	1198	90	21714
Total of % of population	0.59%	0.24%	0.20%	0.11%	0.12%	0.04%	0.01%	0.08%	0.01%	1.40%

These events have had a large impact on our 3 hour interruptions to supply performance commitment such that we will not achieve the Performance Commitment this year. This is disappointing as we have worked hard to outperform the target in the first two years of the AMP and were on track to do so again this year.

Our average monthly Interruptions to Supply (I2S) performance, excluding the two unprecedented weather events, was 6 seconds. During the peak summer months this increased to 103 seconds and in December we added 486 seconds. This will result in a potential penalty of over £3.5m.

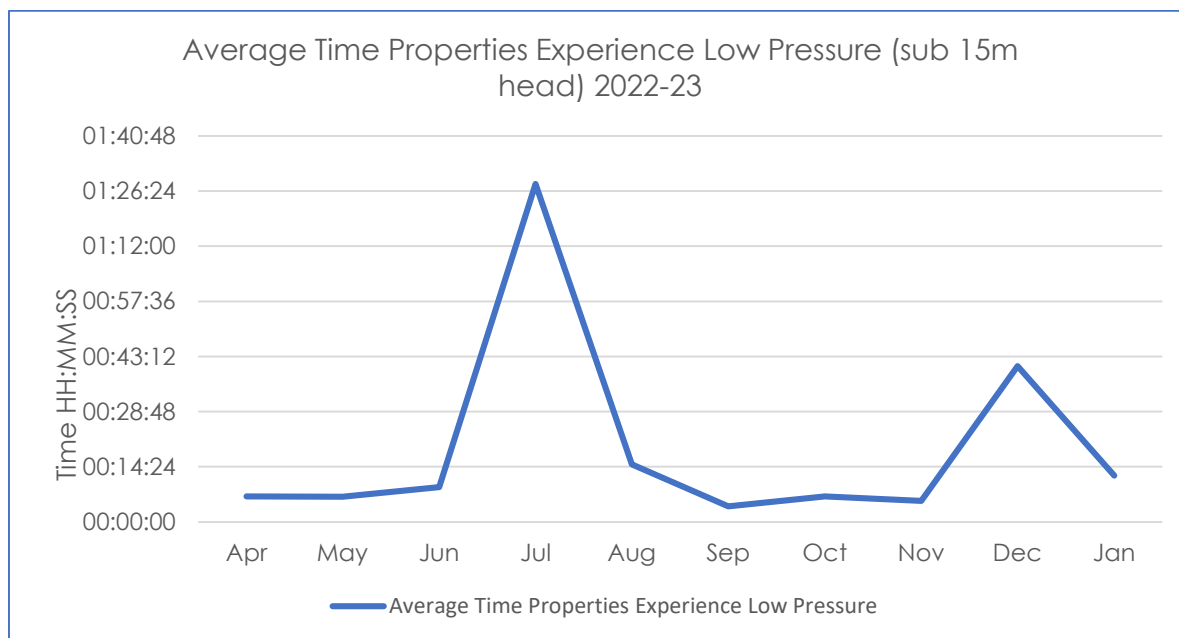
Figure 9 – 2022/23 Interruptions to Supply Performance -3-hour measure)



We also saw a significant impact on the Low Pressure performance commitment due to leakage and low storage. As we have outlined previously to Ofwat, we are

concerned that there is insufficient clarity and comparability about how companies across the industry report low pressure. Under our current interpretation of the performance commitment definition for PR19, the freeze/thaw event resulted in 4,067 households and 108 non household receiving pressure below the GSS level.

Figure 10 – 2022/23 Average time of low pressure



7. How we communicated with our customers before, during and after the event

7.1 Communications with Household customers

In line with our customer communication strategy, we proactively engaged with as many customers as possible in the lead up to, during and after the event. To achieve this, we used a multi-channel approach including Web, SMS, email, social media, press, radio and stakeholder engagement. This was our largest campaign in terms of the volume, frequency and range of channels used.

Prior and during the incident, we used both TV and radio media to communicate with customers. This included interviews on BBC Three Counties prior to the incident, and with BBC Look East news, BBC Radio Essex, and BBC Radio 3 during the week of the thaw.

During the event we posted approximately 80 web alerts across 3 main incident web pages and sent 28 emails to customers in affected areas. We used SMS text messages for more urgent updates, and to direct customers to visit the website for updates. We

sent over 30 unique SMS updates to circa. 150,000 customers which is 9.6% of our population. We posted 13 social posts across all channels and 3 targeted, paid social advertisements.

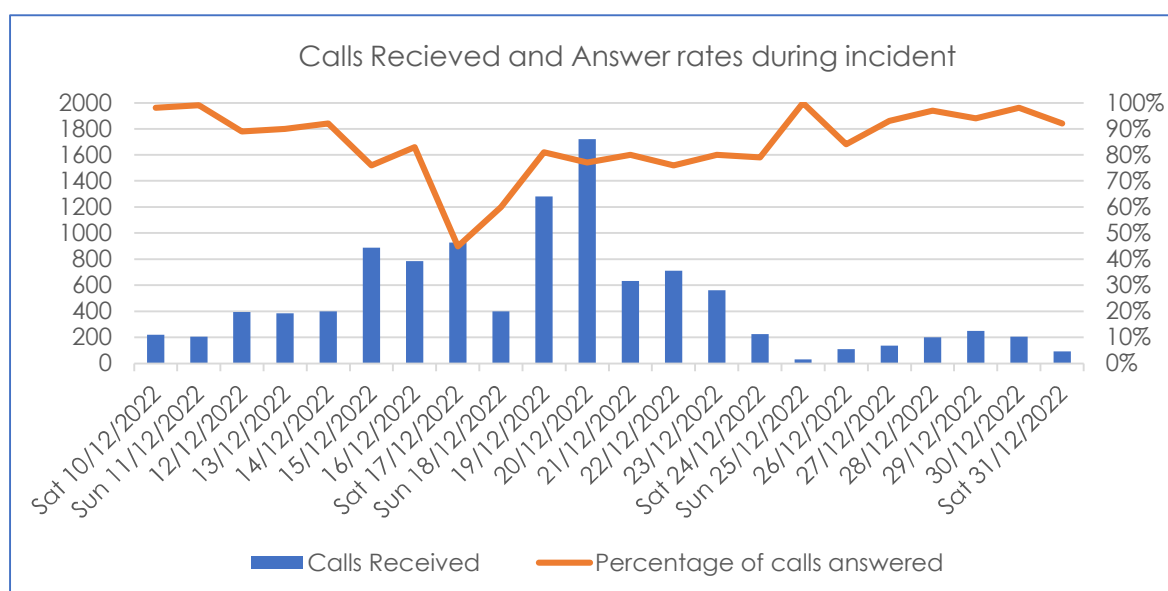
Whilst our customer communication strategy is designed to proactively keep customers informed to negate the need for customers to call into us, we still planned for an increase in contact from customers.

We developed our 'Voice of the Customer' listening platform to highlight customer feedback specific to this incident. This included what customers were feeding back on calls, field visits, webforms and social media. This allowed us to adjust and improve our communications and processes.

In total, our contact centre took 8,915 operational calls from customers during the period 13th to 24th December, which was 272% (5,640) more than our predicted call flow volume. This peaked on 17th December where demand from customers was 883% above plan. Our communication plan, particularly SMS and social media messages, helped keep customers informed of the incident impact and negated the need to call for information, allowing our teams to focus on the most vulnerable or impacted customers who needed assistance, such as bottled water or technical help with their water supply.

Of the total 8,915 calls received, 75.4% (6,747) were answered. This was achieved by building on learning from previous high impact incidents, moving additional resource to support customer phone lines, this included emergency trained call handlers from non-frontline areas of the business being stood-up and use of additional external support from third parties (such as the Water Force team).

Figure 11 – Customer contact information



By the 23rd of December 2022 we had received 737 unique contacts on Facebook and Twitter, and 1,654 unique contacts on WhatsApp. We maintained good media coverage, both local and national briefings of 4 radio interviews. We posted updates

every 4 hours on our website incident pages (we increased this frequency following customer feedback received via our social listening platform), therefore ensuring customers were informed as to the time of the update and time of the next update due. The website incident pages included operational information on ongoing issues, updates on the repairs taking place and bottled water locations.

We sent emails to impacted customer groups on 'open' and 'close' of incidents alongside updates i.e. bottled water collection point opening times and targeted essential-use messaging. We also sent proactive emails to non-impacted customers highlighting that we were prioritising calls from customers in the impacted areas.

We visited all our most vulnerable customers (tier 1 on our priority services register) in person during bottled water drop offs to inform them of the event and provide advice and support. We have significantly increased our understanding of our customers in vulnerable circumstances, detailed below.

We have sent enhanced GSS communications (letters, email and SMS) keeping customers informed about compensation payments. These detailed the issue, impact, our resolution and a full apology.

7.2 Communications with non-household customers and NAV sites

Prior to the freeze/thaw we sent communications to all Retailers advising them of our Winter Readiness plans and asking them to ask their customers to help with lagging pipes, fixing leaks and locating their stop taps. The communications included a 'Be Prepared' leaflet to be shared with non-household customers and a link to our website showing any ongoing incidents or alerts where non-household customers could sign up for alerts.

During the event we identified high users within the worst affected areas and communicated directly with them about usage. This included daily calls with Stansted Airport and calls to customers such as the Ministry of Defence in Northwood who were in the affected areas of Bishops Stortford and Oxhey. We also maintained direct contact with care homes to confirm if they were on supply, re-confirm alternative water requirements, organise deliveries of water and provide contact details should water supply cease.

We spoke directly to Essex and Herts Hospital in Bishops Stortford in relation to their supply and kept them in constant supply using the water tankers we had proactively mobilised.

We sent notifications to Retailers during the events to notify them of the impacts on their customers with full Supply Point Identification (SPID) listings, links to our alert webpages, information on our customer messaging and information regarding

actions taken and planned. We asked Retailers to either push out messaging on our behalf and/or direct customers to our webpages for further information.

Following the event, we have been seeking retailer feedback regarding the impact on their customers, our approach to managing the event and how our communications can be further improved. We have arranged for GSS payments to be made to Retailers where appropriate.

We are in the process of updating and refreshing guidance and templates for teams involved in incidents regarding communication with Retailers to ensure consistency and timeliness of the updates we provide. We will ensure this takes into consideration any feedback we receive from Retailers.

We advised Independent Water Networks Ltd (IWNL) of supply issues in the area using our routine briefing note system and followed this up with a phone discussion. We have identified opportunities to improve how we communicate with NAV sites following the initial notification so that there is a routine operational update and improve communications regarding availability of alternative supplies.

We mobilised a Senior Operations Manager to site to assist in communication locally to ensure supplies were maintained and supported with bottled water as a precaution. Since then, we have had Director level contact and no concerns were raised.

8. Alternative water supplies

8.1 Support to vulnerable customers

After the Beast from the East, we committed to increase the number of customers held on our Priority Services Register. As a result, we have increased our PSR customers from 27,227 in September 2018 to 110,903 in December 2022 (307.3% increase). By April 2023 we will also be sharing this data with other utilities such as gas and electricity suppliers and retailers and we anticipate our numbers to increase by a further 1,000 per month. We contact our PSR customers every two years to confirm their needs and our internal systems check for deceased and home movers.

During an incident, we use our Geographical Information System (GIS) to create polygons of areas affected. GIS has a function that identifies customers on our PSR register so that we can identify names, addresses and classification of customers to enable us to quickly identify which customers need additional support.

Across the Freeze/thaw event we prioritised our Tier 1 customers (medically dependant). We also set up a mechanism to identify and manage transient customers with vulnerabilities who were not on our PSR list and who were calling in requesting water.

We provided a pallet of water to the NAV site within the affected area and the site manager was able to distribute the water to their vulnerable customers.

Our teams identified vulnerable sites, such as care homes and further Tier 1&2 non-household customers such as veterinary practices to offer them an alternative water supply.

8.2 Mutual Aid and Local Resilience Forums (LRFs)

We made no requests for Mutual aid during this period. South East Water requested Mutual Aid on the 21st December but we were not in a position to assist at that time. By the morning of the 23rd December we were able to offer some of our bottled water stocks.

We contacted Harlow District Council on 20th December to inform them of the incident at Bishops Stortford, should their support have been required. We also informed the Essex Resilience Forum (LRF) at the same time so that they were aware of the incident.

On 24th December we made calls to Uttlesford and Harlow District Council's emergency teams for support delivering bottled water but due to holidays, they were uncontactable. We proceeded to contact 26 organisations and Essex LRF to source volunteers, but all calls were unsuccessful. As part of our learning from the incident, we are exploring opportunities to improve our collaboration with these groups.

8.3 Alternative Water

We provided 282,240 litres to our customers across four separate bottled water stations, two in Bishops Stortford and two in Oxhey. These stations were staffed by Affinity Water employees between the hours of 9am and 10pm with staff helping customers load the water into their cars during these periods.

In addition to the water stations, we hand-delivered bottled water to 2,059 vulnerable customers, each receiving a minimum of 12 litres.

This, along with the bottles supplied at the bottled water stations, totalled 153,474 bottles (306,948 litres), significantly above our SEMD requirement to supply 20,000 population in the first 24 hours with 10 litres of water per person.

Figure 12 –Litres of water delivered

Date of Delivery	Area		
	Bishops Stortford	Oxhey Woods	Boxted
19/12/2022	2,940		
20/12/2022		192	1,536
21/12/2022	1,644	7,116	
22/12/2022	672	7,308	
23/12/2022	2,328	N/A	
24/12/2022	132	N/A	
Adhoc requests	840	0	0
Total	8,556	14,616	1,536

9. Customer Compensation

We have used the GSS guidance to inform our compensation to customers but significantly uplifted the worst affected customers in recognition of the disruption the event caused, particularly given the timing of the incident in the run up to Christmas. Our compensation payments include:

Total customers given a GSS payment - 14,982

- Household volume – 14,604
- Non-household volume – 378
- Total Ex gratia payments - 45 x £200 each
- Household payments value (GSS) - £597,820
- Non household payments value (GSS) - £23,575
- Total value of GSS compensation - £621,545

The total value of the GSS compensation paid is £ £621,545 and of those, 90% of payments were made on time. The remaining 10% were identified through our extensive validation process.

10. Lessons learned

Following any incident, we conduct a post incident review to ensure we recognise the successful outcomes of the event but also challenge ourselves to consider what more we could have done to deliver the best outcomes for our customers. The key learnings so far include:

Preparedness and asset availability:

Overall, we were well prepared for this event with effective early notification of the weather event and early mobilisation of our cold weather planning. Our planned outages were necessary to facilitate critical maintenance and the reduction of output from key sites was unavoidable. We are challenging ourselves to consider what planned works could have been reconsidered and what more could have been done to expedite outages to allow us to increase site output and build storage in the lead-up to the event.

The event demonstrated how much we rely on our key sites being fully operational at all times. Our PR24 planning includes business cases to ensure we are as resilient as possible when our sites need maintenance.

As a result of the events that took place during the summer and now in the winter we have reviewed our asset plans for PR24 and are seeking to expedite the construction of a new 20Ml reservoir cell, two trunk mains and two pumping stations to support the Bishops Stortford areas during periods of peak demand. This represents a £58m investment.

Bulk Water

We are currently in the process of discussing the requirements and suitability of our current Bulk Water Import and Export arrangements with our neighbouring water companies. We are also reviewing our shared protocols for assessing the risk and measurement of customer supply impact at a regional level. The nature of our current water resource position and the challenges we will face in the future means we will rely more than ever on these agreements. Accordingly, work is needed to ensure the terms of these arrangements are both suitable and commonly understood by our neighbouring companies to allow us to meet our obligations to supply our customers.

GSS Payments

We paid enhanced GSS payments to 90% of customers who experienced an interruption to their supply greater than 12 hours within the specified timeframes. The complexity of the concurrent events and our extensive validation process meant that the remaining fell outside of the timeframes, for which we paid further compensation. The validation work also meant that we were unable to give Retailers enough notice to pay non household customers within the specified time. Work is underway to review the process and improve it for future events.

Alternative Water

We have demonstrated that early communications with our supply chain put us in a good position with securing alternative water provisions. Our readiness and execution were demonstrably better than during previous events but we are always looking at improvements in our ability to deliver alternative water supplies to our customers.

During this event we prioritised tier 1 and transient customers specifically calling in to ask for alternative water to be delivered. In the future, we will increase the number of volunteers we have available to hand-deliver alternative supplies to our tier 2 customers, which was not always possible this time due to internal and external resource constraints.

Specific focus will be given in this area to:

- Our internal capability to move alternative water across our sites
- How we engage and drive value from our LRFs
- How we ensure the safety of our people and customers
- How we can maximise value from a water tanker fleet
- How we test our readiness through regular testing and exercising of deployments

Identification of NAV and Vulnerable sites

We meet annually with NAVs and have procedures that are updated twice a year to align with the Ofwat licence site. NAV site locations are recorded on our GIS and we have contact details for each within our supply system. Our notification processes are appropriate however we recognise that on some occasions there needs to be greater focus on ensuring they are notified in a timely manner.

Customer Communications

We communicated with consumers in the area using a variety of channels. Customers could also choose to sign up to our message alert system to receive text updates from us which included useful information on the status of the event and information regarding the location of alternative supplies of water.

As the incident progressed, we listened to feedback from our customers and they said that at times, they felt more information was needed on incident updates. We used this insight to ensure the incident messaging on our website was regularly updated and included more data around the incident so customers felt more informed.

We are looking to make the information we provide customers easy to understand with separate alert pages for each event.

Following the event, we have engaged with various stakeholders and MPs. During these sessions we were reminded they can offer good support in reaching our customers (their constituents) during these types of events using their own networks. We will work with them alongside the LRFs to ensure effective community outreach.

Record Keeping

Since the pandemic we have continued to use a hybrid approach to incident management with a mix of Microsoft Teams and on site local incident meetings. We

believe this is the most efficient way of conducting meetings and allows us to take advantage of the live messaging and document filing system within Microsoft Teams for supporting our incident logs. This approach negates the need for multiple members of staff having to drive to a central location at night and we have seen a benefit in wellbeing as a result. Creating Microsoft Teams pages for running events works well, as everyone involved has access to relevant documentation. We are looking to review and improve the way we use templates and documents during incidents and create an easy to refer to centralised storage location for easy access for other teams if required. This work is already underway being led by the Emergency Planning team.

Our Situation Report (SitRep) is used by the Silver commanders to capture information and handover to other teams. We have found this beneficial and will look to roll out to our Bronze roles.

Weather Monitoring

We have been trialling a long-range sub seasonal demand forecasting tool with the MET office. On this occasion this did not indicate an upturn in demand any further ahead than normal weather forecasts did – this has been fed back to the MET office who are looking at the demand thresholds the tool uses to understand why it was not helpful in this event.

Independent External Report

To provide assurance on our review we have commissioned our external auditors, Atkins to conduct an independent external review of the freeze/thaw and our response. They have read our report and they support our findings. Their report is being finalised and will be submitted in due course. We will incorporate the lessons learned from the Atkins report.

11. Conclusion

The December 2022 freeze thaw event caused widespread impact across the UK and for the communities we proudly serve.

Our proactive weather monitoring was effective in identifying the upcoming weather pattern and our seasonal readiness planning meant we were well prepared for the impacts of the extreme weather. We deployed a highly tailored customer and stakeholder communication strategy which was our largest campaign in terms of the volume, frequency and range of channels used.

Our Incident response structure provided good strategic oversight and facilitated a controlled recovery to business-as-usual levels of performance. This included the repair of over 600 mains repairs in a short period. As a result, only a minority of our customers experienced a loss of their water supply. Where customers were impacted, we have made timely payments to compensate for the disruption and these payments exceed the minimum GSS payments required.

We have successfully implemented the learning that arose from previous extreme weather events and remain committed to improving our customer's experience during future similar incidents. We have already completed extensive wash-up events with our teams and we have established a Programme Board with Executive sponsorship to ensure we deliver on the improvements identified.

Our findings have been reviewed and are supported by an independent review from our external auditors Atkins.