



DRINKING WATER INSPECTORATE  
Area 1A, Nobel House  
17 Smith Square  
London  
SW1P 3JR  
Enquiries: 030 0068 6400  
E-mail: [milo.purcell@defra.gsi.gov.uk](mailto:milo.purcell@defra.gsi.gov.uk)  
DWI Website: <http://www.dwi.gov.uk>

19 June 2018

## **TO ALL WATER COMPANIES IN ENGLAND AND WALES**

### **WATER QUALITY EVENT**

**Location: England and Wales**

**Nature: Consolidated review of the widespread loss of supplies arising from the freeze/thaw event affecting England and Wales in March 2018**

**Date: 1 March 2018 to 22 March 2018**

#### **1. Executive Summary**

- 1.1 Nine water companies in England and Wales (including one inset appointment) reported ten events to the Inspectorate relating to the extreme winter weather experienced in England and Wales during early March 2018. An additional event was reported by one of these companies on 19 March 2018 associated with flooding after heavy snowfall.
- 1.2 Seventeen water companies, including five of the larger water and sewerage undertakers, did not formally notify the Inspectorate of an event. This also included six companies operating inset appointments in England and Wales.
- 1.3 The Inspectorate's assessment of these events has focussed on companies' compliance with the duties of water undertakers under the Water Industry Act 1991 as amended (the Act), to provide a continuous supply of water to their consumers, and companies' compliance with the requirements of the Water Supply (Water Quality) Regulations 2016, which apply to companies operating wholly or mainly in England, and the Water Supply (Water Quality) Regulations 2010, as amended, which apply to companies operating wholly or mainly in

Wales. These two sets of regulations are referred to collectively as ‘the Regulations’.

- 1.4 The Inspectorate’s investigation included an assessment of companies’ compliance with guidance published to accompany the Security and Emergency Measures Directions (SEMD) of 1998 and 2017, whether unwholesome water was supplied to consumers, companies’ immediate response and actions taken to restore normal operations, advice and liaison with consumers, risk assessment, event notification and reporting, emergency planning and resilience.
- 1.5 Companies who reported events to the Inspectorate predominantly concluded that the extremely cold weather and heavy snowfall, followed by a rapid change in air temperature during the thaw, caused increased demand on their networks due to burst mains and consumer-side leakage, resulting in significant areas of supply going without water for prolonged periods. Three companies reported water quality issues relating to consumer acceptability.
- 1.6 Most companies had made preparations for the cold weather beyond their normal operational readiness to manage supply interruptions, but were surprised by the rapid thaw, which led to steep increases in demand for water because of burst pipes in companies’ distribution networks and on consumers’ private systems. In some areas large numbers of consumers lost their supply because the company was unable to find and fix leaks quickly enough to maintain continuous supplies to all consumers.
- 1.7 Companies provided alternative supplies of water, principally bottled water, but some companies also deployed static tanks and bowsers, and used mobile tankers to support distribution networks. Companies liaised with Local Authorities as required under the Act and the Regulations throughout their events, which enabled the Local Authorities to decide whether to exercise their powers under Section 77 of the Act; none chose to invoke these powers.
- 1.8 In the majority of cases the companies fulfilled the requirements of the Regulations associated with notification and reporting although the level of detail provided by companies varied considerably. There were certain areas of the country that experienced discoloured water or an unusual taste to their tap water when supplies were restored, and the Inspectorate is investigating these issues separately with the individual companies concerned.
- 1.9 This severe weather event has highlighted the challenges faced by the water industry in England and Wales when dealing with a water supply emergency that is affecting all, or a majority of, water companies. The capacity of companies to support others through existing mutual aid arrangements was severely hampered because every company was fully committed to managing its own

response. Some companies also failed to meet contractual bulk supply agreements with neighbouring companies.

- 1.10 The Inspectorate has noted shortcomings in the readiness of some companies to cope with the event, and to disseminate learning has made a number of recommendations for all water companies to consider and action where necessary. The Inspectorate suggests that water companies work together with the Inspectorate and other stakeholders, through Water UK, to consider how the industry might best respond to these recommendations.

## **2. Introduction**

- 2.1 The purpose of this letter is to disseminate some generic outcomes from the Inspectorate's assessment of the extreme weather events reported in early March 2018, and to seek a response from companies on specific recommendations that are intended to mitigate the impact of similar events in the future.
- 2.2 The Inspectorate's investigation of this weather-related event considered the information provided by the water companies affected in accordance with the requirements of paragraph 9 of the Water Industry (Suppliers' Information) Direction 2017 (the Information Direction), together with additional information gathered during the event and the investigation. Our investigation has focussed on whether statutory requirements for drinking water quality and sufficiency were met; the steps taken to restore supplies and to maintain consumers' confidence; whether current good practice in water supply matters was demonstrated; any lessons to be learned; and whether supply resilience was a consideration.
- 2.3 When assessing an event notifiable under the provisions of the Information Direction, the Inspectorate has a duty to establish whether the company breached any requirement of the Regulations or their duties under the Act to maintain a continuous supply of wholesome water, in particular, whether the company supplied water that was unwholesome, as defined by regulation 4, and whether any other regulatory requirements were contravened.
- 2.4 Nine water companies notified events affecting their areas of supply to the Inspectorate because of the potential for the event to disrupt or contaminate water supplies, either directly or indirectly; to cause significant concern to consumers, and possibly other third parties; and because of the potential for significant media interest.
- 2.5 Three of the companies that notified the Inspectorate of widespread insufficiency also reported issues with unacceptable drinking water quality, mainly discolouration caused by disturbance of mains deposits, and, in one company's area, consumers' experience of an unusual taste to their water supply. These

specific regulatory matters are being assessed separately by the Inspectorate, and the companies concerned will be informed of the outcome of our assessment by individual letter, in accordance with our normal process.

- 2.6 The following water companies, including five water and sewerage undertakers, did not formally notify the Inspectorate of an event: Anglian Water (including Hartlepool Water), Northumbrian Water (including Essex and Suffolk Water), United Utilities, Yorkshire Water, Wessex Water; and the following water-only companies: Bournemouth Water; Bristol Water, Portsmouth Water, Dee Valley Water, SES Water (formerly Sutton and East Surrey Water) and Cholderton Water. The Cambridge region of South Staffordshire Water was reported to be unaffected, and all inset appointments with the exception of IWN's Crawley inset were unaffected.
- 2.7 During the week leading up to the notification of these events, there was a nationwide period of severe winter weather. This period of cold weather was reported widely in national media and "Red", "Amber" & "Yellow" weather warnings were issued intermittently by the Met Office from the 26 February to the 3 March. This period of cold weather was then followed by a rapid increase in temperature which began around 3 March 2018.
- 2.8 Figure 1 below shows the maximum temperature on 2 March 2018 as a difference from 1981-2010 average temperatures for 1 - 3 March. This indicates the duration and spatial extent of the cold. The majority of companies have attributed the reasons for their reportable events to the rapid increase in air temperature after this spell of cold weather over the period of 3 - 6 March.

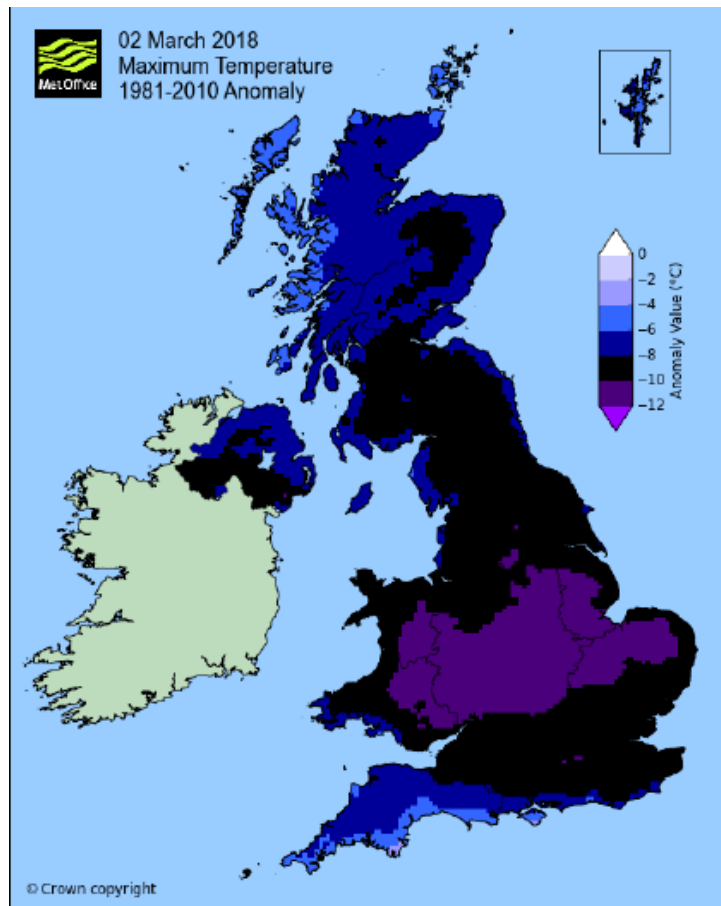


Figure 1. Source: Met Office, <https://www.metoffice.gov.uk/climate/uk/interesting/february2018-snow>

However the rapid increase in temperature was not as great as in 2010/11 when the country experienced its last period of extreme weather. This is demonstrated in Figure 2, which takes Met Office data for the Midlands from 16 December 2010 to 14 January 2011 and compares it with a 30 day period from 14 February to 15 March 2018.

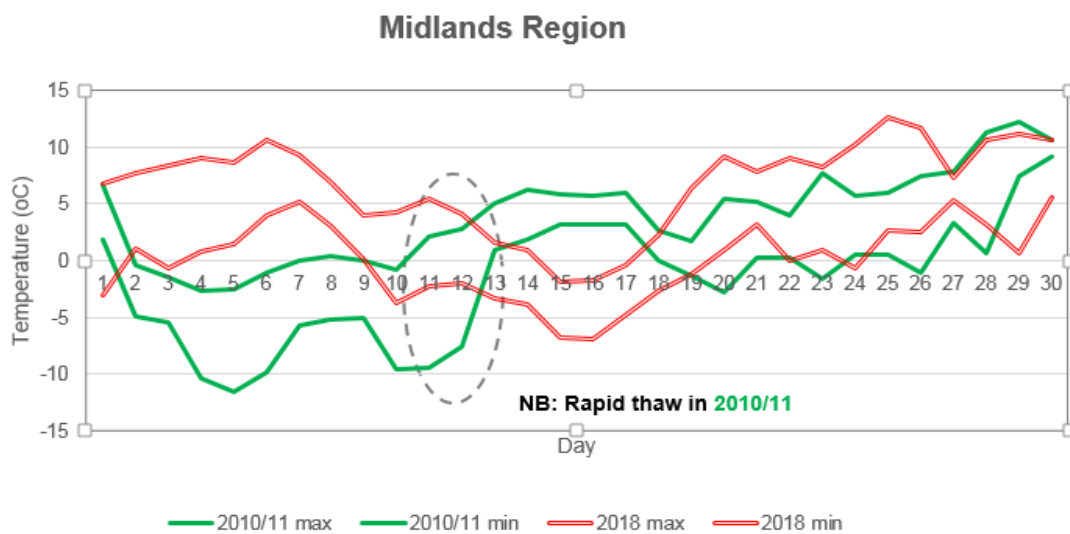


Figure 2. Source – Data provided by Met Office

### 3. Actions taken by the companies

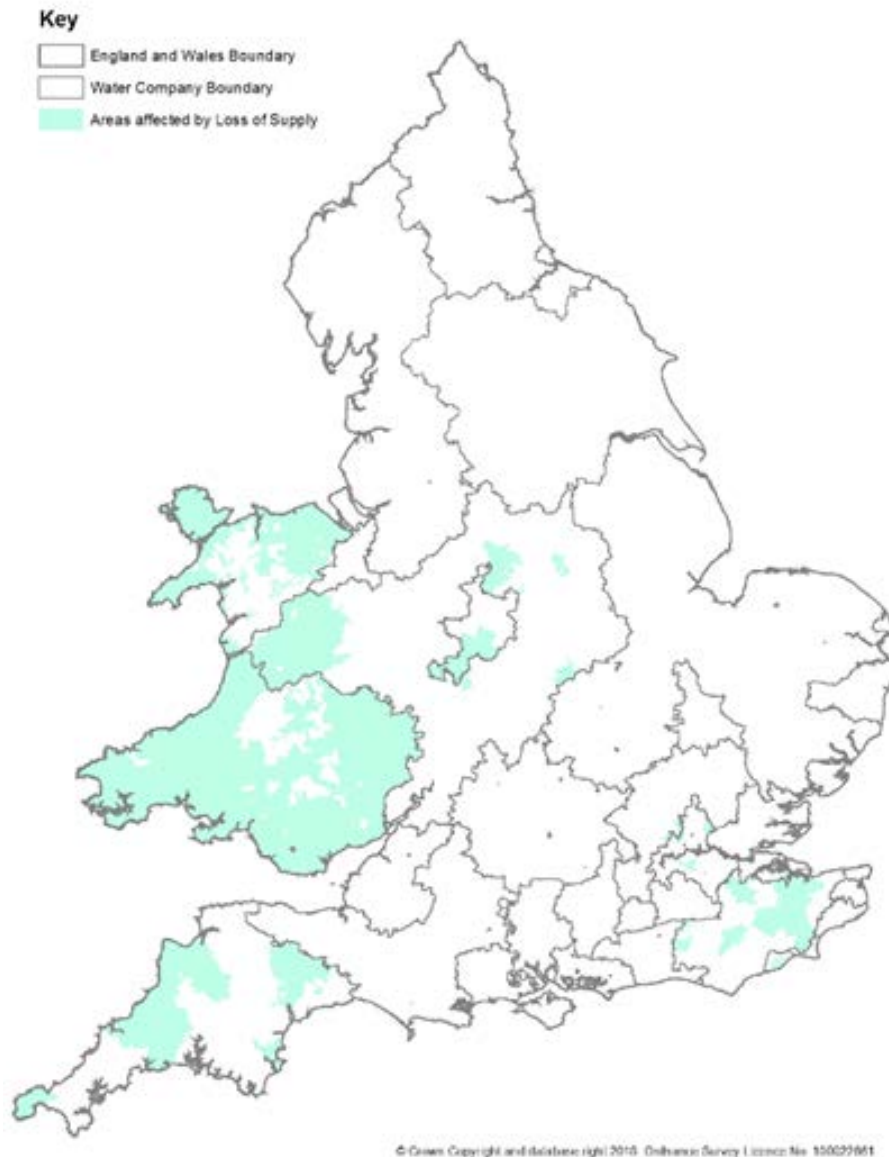
#### 3.1 Overview

As required by the Information Direction, the majority of the nine companies who notified the Inspectorate provided final reports on 4 April 2018. The companies also provided details of contacts from consumers. The companies' final reports to the Inspectorate are separate from the reports submitted to Ofwat on 6 April 2018. Table 1 below summarises which companies notified events to the Inspectorate, the areas of the country affected, the duration and the population they reported were at risk of being affected by these events. In some cases where a company's internal loss of supply notification trigger was not met in an area then they have not included this population in their total population number.

**Table 1 – Loss of supply events reported** (<sup>1</sup>Note: The durations and populations affected, or at risk of being affected, were provided by companies in accordance with the requirements of the Information Direction. The duration is the total duration of the event for that the company, and the population is the total number of consumers who were without water or at risk of loss of supply for any period during the course of the event).

Company	Date & time of notification	Duration <sup>1</sup>	Areas affected	Population affected over the period <sup>1</sup>
Affinity Water	19:30 on Sunday 4 March	4 days	East Barnet, Colindale and Kingsbury in North West London	16,535
DWR Cymru / Welsh Water	10:00 Monday 5 March	5 days	Whole area but in particular 4 rural areas (Blaenau Ffestiniog, Mid Ceredigion, St Davids and Llanddona, Anglesey)	14,400 in these rural areas. The overall total peaked at around 24,500
Independent Water Networks	21:45 on Monday 5 March	14 hours	Crawley	900
Severn Trent Water (2 events)	1) 10:35 on Saturday 3 March 2) 23:00 on Sunday 4 March	6 days	1) Solihull 2) 4 Areas of Severn Trent's region (SW Birmingham, Rural Derbyshire, Rugby and Rural Leicestershire)	1) 8970 2) 225,000
South East Water	15:41 Saturday 3 March	7 days	Three main areas affected: Crowborough/Rotherfield and Lenham in Sussex, and Cuckfield in Kent	26,705
South Staffs Water	11:21 Monday 5 March	6 days	South Staffs Water area	35,117
South West Water (2 events)	1) 11:07 Friday 2 March 2) Monday 19 March	7 days	Whole region but significant disruption in rural areas of West Cornwall, SW Devon, North Cornwall and Exe Valley.	15,675
Southern Water	16:08 Saturday 3 March	7 days	Crawley, Sittingbourne and Hastings	9,853
Thames Water	10:53 Sunday 4 March	7 days	5 Areas of London, specifically: Chigwell; Hampstead; Mill Hill; Crystal Palace; Norwood & Streatham	130,635

Figure 3 shows the consumers on public supplies who were at risk of being affected by these events.



**Figure 3 – Map of areas affected based on company reports.**

### **3.2 Stakeholder Communications**

During the events all companies provided information to consumers via their websites and through local media. Before the cold weather some companies also provided advice to consumers on protecting pipes from cold weather with short videos and information posted on their websites.

All water companies maintained regular liaison with their relevant local authorities, as required by regulation 35(6) for notifiable events and more generally to keep authorities informed of local situations.

Due to the widespread nature of the event Defra held daily conference calls with water companies to appraise the situation in areas where water supplies were either lost or at risk. Welsh Government participated in these calls. The Defra team provided daily updates to ministers and other stakeholders until all companies declared their local incidents to be over and their emergency response teams had been stood down.

### **3.3 Alternative supplies and protecting public health**

The majority of companies made bottled water available at local collection points, and also delivered bottled water to consumers, prioritising vulnerable consumers and affected premises such as hospitals, prisons, schools and care homes. Vulnerable consumers were provided with additional advice. Some companies also provided water in static tanks and bowsers, and used mobile tankers to reinforce supplies within distribution systems (by topping up service reservoirs and injecting water into distribution mains).

All water companies collected water samples following restoration of supplies to confirm that water quality was unaffected. The majority of these samples complied with the water quality requirements specified in the Regulations, and for the small number that did not, companies took further investigational samples and re-samples to confirm that any issues identified had been resolved satisfactorily. All samples collected for microbiological analysis were satisfactory throughout the event.

A summary of each company's event(s) is below:

### **3.4 Affinity Water (AFW)**

Affinity Water reported significant loss of supplies on 4 March following severe winter weather. The rapid thaw caused an increase in burst mains on AFW's network and leaks on consumer supply pipes and internal plumbing, with a consequential increase in demand. In particular, there were two significant loss of supply events in Barnet and Colindale. The former was due to low reservoir levels caused by air locks in the network supply system and the latter was caused by a loss of power to some strategic booster pumping stations. However, the company received only three water quality contacts during the event, and all supplies to properties were restored within four days.

### **3.5 Dwr Cymru Welsh Water (DWR)**

Wales was covered by the Met Office's red weather warning. Significant snowfall, high winds and freezing temperatures followed by the rapid thaw led to an increase in bursts in the distribution network and on consumers' supply pipes resulting in losses of supplies and some subsequent discolouration of supplies as the network recharged. Four rural communities suffered prolonged supply interruptions: Blaenau Ffestiniog, Mid Ceredigion, St. Davids and Llanddona in Anglesey. The company experienced an increase of 105% in demand for water over a four-hour period, and received 923 consumer contacts about water quality, with the majority (721) being related to



discoloured water. Restricted access to treatment works sites and to the locations of burst mains due to the snowfall were caused delays with restoring supplies.

Other factors that contributed to losses of water supplies included loss of mains power caused by the severe weather. There were issues with raw water flows at Garregllwyd treatment works in North Wales. The situation in St Davids was made worse because of a burst on an inlet to Felinwynt service reservoir in Pembrokeshire, which was out of service for maintenance at the time. Frozen chemical dosing lines at Cefni treatment works on Anglesey prolonged the supply outages in that area. Strata Florida works in mid Ceredigion shut down because of a power failure, and although the on-site generator operated, subsequent control issues caused the works to shut down again. Freezing of dosing lines then prevented the works from being returned to supply.

Cantref works in Brecon and Rhiwgoch treatment works in North Wales, both normally used only during peak demand periods in the summer months, were returned to supply.

The company made bottled water available to affected consumers, deployed static tanks and bowsers in some areas and used mobile tankers to support distribution network. The company was unable to confirm with certainty that it met the SEMD guidance to provide 10 litres per head per day of alternative water supplies for every 24 hours consumers were without water (its own target is 25 litres/head/day).

Blaenau Gwent Council declared an emergency from 3 to 5 March because of the threat to human welfare from the severe weather.

### **3.6 Independent Water Networks (IWN)**

The IWN inset area in Crawley is supplied by Southern Water and extreme weather caused burst mains in the Southern Water area, which subsequently caused a drop in the level of storage within the Southern Water distribution network. This resulted in the wider Crawley area being without water supplies overnight on 5 March. IWN reported the potential for loss of supplies to the Inspectorate on 5 March and kept their consumers informed throughout the event by email. They had no consumer contacts relating to this event.

### **3.7 Severn Trent Water (SVT)**

Exceptional weather conditions caused an unprecedented level of demand for water on SVT's network, which led to a rapid decline in available levels of stored water, and caused supply interruptions for some consumers. This was predominantly in four areas: south-west Birmingham, rural Derbyshire, Rugby and rural Leicestershire. SVT reported a 70% increase in leakage with 30% of this increase being attributed to bursts in the network and the other 70% attributable to burst consumers' pipes. The company received a large number of consumer calls during this event, 186 of which were contacts about water quality. These calls (167) were mostly regarding brown or white discolouration received as supplies were restored.

A separate loss of supply event was reported on 3 March when a burst on a 30 inch water main occurred west of Solihull. This caused an interruption to the supply to approximately 9,000 consumers in Solihull. The area was rezoned to restore supplies within seven hours of notification of the burst. When the main was isolated the following day, to commence the repair, further interruptions to supply occurred and a small number of loss of supply and low pressure contacts were received until the repair was completed during the morning of 5 March. There were no water quality contacts associated with this event.

### **3.8 South East Water (SEW)**

SEW had widespread loss of supply issues in Kent and Sussex due to the rapid thaw causing a large increase in demand following the period of cold weather. Maidstone hospital was affected due to low storage and the unavailability of a bulk supply from Southern Water. A total of 118 consumer contacts about water quality were received. 62 were related to air entrapment, and 38 related to brown discolouration caused by the mobilisation of iron deposits in distribution mains, whilst supplies were being restored.

SEW provided bottled water to its consumers and was one of two companies reporting difficulties with meeting the minimum requirement of 10 litres per person per day as required in SEMD guidance (based on worse-case estimates).

### **3.9 South Staffordshire Water (SST)**

SST received a significant number of consumer contacts following the cold weather, which were associated with frozen pipes and increased demand on the SST network. This increased demand saw a reduction in strategic storage and following analysis the majority (80%) was thought to be associated with consumer-side problems. The company did not receive any consumer contacts about water quality.

### **3.10 South West Water (SWT)**

Following freezing temperatures and the rapid thaw there was a significant increase in demand across the whole SWT region and 15,600 consumers experienced temporary loss of supplies. Most severely affected were rural areas in the far west of Cornwall, on the North Cornwall/Devon border (near Bude and Clovelly), south-west Devon near Slapton and the Exe Valley between Exeter and Tiverton. As supplies were restored some consumers in these areas received brown discoloured water due to disturbance of mains deposits and a total of 241 consumer contacts were received. Devon and Cornwall county councils declared major incidents because of the severe weather (but not under their water sufficiency powers).

Consumers in the South-West also noticed a change to the taste and smell of their supplies in the Torbay area and in areas around Bodmin Moor. This affected up to 215,000 consumers supplied from these sources, and the company received calls from 241 consumers to reporting a change in taste of their supply. In Torbay this was

caused by a change in the supplying works as water from Venford water treatment works (WTW) was used to support areas normally supplied by Littlehempston. This resulted in an increase in background levels of chlorine which was noticeable to consumers. In the Bodmin area the change in taste was due to a change in raw water quality thought to be caused by significant snow melt on Bodmin moor.

In a separate event, on 19 March the company was again affected by severe weather which resulted in flooding of pumps used to distribute water to consumers from Allers WTW. This resulted in a temporary loss of supplies to 2,000 consumers in Tiverton, Devon and followed heavy snowfall which caused blockages in drains on site. Approximately 80 consumer contacts about brown coloured water were received by the company when supplies were restored.

### **3.11 Southern Water (SRN)**

The cold weather event followed by the rapid increase in temperature caused an increase in demand in SRN's distribution network. This was due mostly to operational issues (accounting for 18.75% increase in demand) and consumer-side leakage. Maintenance was underway at some strategic WTWs, which limited the availability of additional supplies. In particular, three supply areas (Sittingbourne, Crawley and Hastings) were affected due to power loss, low water levels in treated water service reservoirs and operational issues at two strategic WTWs feeding Hastings. The company received three consumer contacts about brown discoloured water.

Southern Water reported difficulties with obtaining sufficient supplies of bottled water to meet the requirements of the SEMD guidance, and its main supplier ran out of stocks four days into the event. Accurate records were not maintained, but the company made approximately 430,000 litres of bottled water available (for a population of around 45,000 consumers) at collection points and delivered to consumers, and was one of two water companies reporting an inability to meet the minimum level of 10 litres per person per day, as required in SEMD guidance.

### **3.12 Thames Water (TMS)**

Extremely cold weather conditions followed by the rapid thaw caused a significant increase in burst mains resulting in increased demand. This was exacerbated by increased consumer-side leaks and refilling of consumers' water tanks upon thawing of frozen pipes. Principally, five areas of London were affected: Chigwell, Hampstead, Mill Hill, Crystal Palace and Norwood, mainly due to booster pumping stations failing following increased demand and burst mains. In preparing for the freeze-thaw the company used modelling to try and predict areas that would be worst affected, and acknowledged that, in hindsight, these models did not give wholly accurate predictions. The root cause of the company's issues in these areas were well understood, although some people were without water for prolonged periods. Seven water quality consumer contacts were received by the company.

### **3.13 Other areas**

The extreme weather affected the whole of England and Wales but some companies, although they experienced an increase in demand, were able to manage the situation without it significantly affecting supplies to consumers. Notably, some larger companies (Anglian Water, Northumbrian Water, Essex and Suffolk Water, United Utilities, Yorkshire Water and Wessex Water) did not notify an event to the Inspectorate and when consulted by the Inspectorate explained that they were able to manage the impact, and the numbers of properties affected did not reach their internal notification triggers for loss of supplies.

From the information provided by companies there was a variety of reasons cited why not all water companies' areas were affected by widespread losses of supplies. These reasons included improved preparedness, interconnectivity and good information about their supply networks, less impact from the severe weather and being proactive in giving advice to their consumers.

## **4. The Role of the Drinking Water Inspectorate**

- 4.1 The Drinking Water Inspectorate (DWI) was established by Parliament in 1990 to provide independent assurance that the privatised water industry in England and Wales delivers safe, clean drinking water to consumers. The two main strategic objectives of the Inspectorate are: that water suppliers deliver water that is safe and clean; and that consumers have confidence in their drinking water.
- 4.2 The primary legislation setting out our functions and duties is contained in the Water Industry Act 1991 (the Act) (as amended by the Water Act 2003 and the Water Act 2014). Water supply matters are devolved to the Welsh Government by means of the Government of Wales Act 1998. Under section 86 of the Act, the Chief Inspector of Drinking Water is appointed to act on behalf of the Secretary of State (SoS) and Welsh Ministers in matters relating to the quality and sufficiency of public drinking water supplies in England and Wales.
- 4.3 Separately from the Inspectorate, local authorities have a duty under section 77 of the Act to keep themselves informed about the wholesomeness and sufficiency of public water supplies in their area, and the SoS and Welsh Ministers have the power to direct local authorities on how to exercise their powers and duties, if deemed necessary. Local authorities also have powers to enforce water companies to provide alternative supplies when piped water supplies are unavailable, but no local authority exercised these powers during these events.
- 4.4 The Water Supply (Water Quality) Regulations 2016 (the English Regulations), and the Water Supply (Water Quality) Regulations 2010, as amended (the Welsh Regulations) both made under the Act, set out the regulatory requirements for the quality of public drinking water supplies in England and Wales.

- 4.5 Companies are required under the provisions of Regulation 35(6) to notify the Inspectorate of any event which, because of its effect or likely effect on the quality or sufficiency of water supplied by the supplier, gives rise, or is likely to give rise, to a significant risk to the health of persons to whom the water is supplied. In accordance with the Inspectorate's duties conferred by section 86(2) of the Water Industry Act 1991 (as amended), the DWI commenced an investigation into these events.
- 4.6 When notified of an event, the Inspectorate gathers information considered relevant and assesses this in conjunction with information provided by the company about the circumstances and actions taken. The Inspectorate then considers the way in which the event was handled, whether any breaches of the Regulations occurred, and whether potential offences under either the Regulations or the Act, may have been committed.

## **5. Actions taken by the Inspectorate**

- 5.1 The Inspectorate was in contact with companies from the onset of these events, and asked affected companies to provide regular updates on the situations in their areas. The majority of large companies proactively contacted the Inspectorate in the first instance, because of the national media coverage of the severe weather and its effect on water supplies in some areas, and the potential for consumer concern. Initially, the Inspectorate was in contact with all companies, and where companies were managing the situation and there were no immediate sufficiency or quality issues, or where the numbers of consumers affected were small and did not breach the company's triggers for formal notification, these companies were asked to provide updates by exception.
- 5.2 Defra, as the lead Government department in large scale water supply emergencies, facilitated and led regular industry conference calls in order to establish an overall position across the sector. These calls, held daily in the mornings and the afternoons during the week following the onset of the severe weather, included all water companies, bottled water suppliers, other regulators and the Inspectorate. Because of the rapid nature of the freeze/thaw, and therefore the need to establish this position early to provide information to ministers, the Inspectorate assisted Defra in obtaining the necessary information by contacting companies with requests for specific information around the event.
- 5.3 These conference calls continued over the course of the week until it was decided that the situation was improving and demand was returning to normal. Over the same period, affected companies provided daily updates to the Inspectorate.
- 5.4 In accordance with the requirements of the Information Direction, companies who notified events were asked to provide final reports to the Inspectorate 20 working days after the date of notification. The Inspectorate's investigation of these

events involved scrutinising companies' final reports, water quality data and other information provided, and also obtaining information from consumers and other organisations involved.

- 5.5 Following receipt of companies' final reports, the Inspectorate requested further information from these companies to establish and confirm certain facts. Companies who did not formally notify were also contacted for further information.
- 5.6 The Inspectorate consulted with Ofwat during the course of its investigation and shared certain data and information and liaised with Defra and Welsh Government in the preparation of this report.

## **6. The Inspectorate's Conclusions and Recommendations**

### **6.1 Notification and Reporting**

- 6.1.1 Companies that made notifications generally satisfied the statutory notification requirements of the Information Direction. In addition, those companies co-operated with the Inspectorate and communicated with the Inspectorate on a daily basis throughout the period of the event. Local and/or national media interest was cited as a reason for notification to the Inspectorate by some companies.
- 6.1.2 A number of companies failed to submit their final report by the date requested, which was, for all companies, within 20 working days of the date of notification. The reports provided by the companies to the Inspectorate varied considerably in their content and quality, and it was necessary for the Inspectorate to request a considerable amount of further data and information from most companies which was missing from the final reports.
- 6.1.3 The Inspectorate reminds companies of the information requirements for final event reports as outlined in the Inspectorate's published guidance<sup>1</sup>. We **recommend**, therefore, that all water companies review their arrangements for reporting of sufficiency of supply events, particularly in relation to providing the actual area and population affected and including location maps of investigatory samples collected following the restoration of supplies. Also, establishing the root cause for the loss of supplies and demonstrating the steps taken to mitigate against a reoccurrence should be part of the investigation and included in final reports.

### **6.2 The cause(s) of the events**

- 6.2.1 From companies' reports, it was clear that some companies understood the specific root cause for the loss of supplies their customers experienced which triggered their reporting to the Inspectorate, and appropriate measures are in

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<sup>1</sup> Guidance on the notification of events 2009, Annex 6

hand or completed by those companies to mitigate the potential for a recurrence of the event.

- 6.2.2 However, some companies were unable to be so specific and simply reported that they had widespread issues associated with mains bursts and consumer-side issues. It remains unclear as to what steps will be taken to minimise the impact on consumers of similar weather related events in the future.
- 6.2.3 The Inspectorate considers this response to be inadequate, and an unsustainable position for those individual companies. We **recommend**, therefore, that all water companies review their levels of preparedness to cope with severe, but not unforeseeable, weather events.

### 6.3 Adequacy of response

- 6.3.1 For the majority of consumers experiencing a loss of water supply, supplies were restored as quickly as practicable, given the severity of the weather, the resources available to companies at the time, and the difficult circumstances under which companies were working. However, the Inspectorate noted the following points.
- 6.3.2 Most companies demonstrated that they complied with their duties under the Security and Emergency Measures Direction guidance, to supply 10 litres per person per day to all consumers who were without a piped water supply for 24 hours or more, but some companies did not have adequate records to demonstrate this with certainty. Southern Water reported that its contract supplier ran out of supplies of bottled water around four days into the event. This widespread event demonstrates the challenges faced by water companies when responding to a water supply emergency affecting most, if not all, companies. The procurement of sufficient emergency supplies of drinking water was clearly a challenge for some companies, and had the severe weather lasted for longer than it did, the abilities of some companies to provide sufficient alternative supplies to consumers could have been severely compromised. The Inspectorate **recommends**, therefore, that water companies review the adequacy of current arrangements for meeting their statutory requirements for provision of alternative supplies, including procurement of bottled water stocks, during widespread insufficiency events such as this.
- 6.3.3 With regard to mutual aid arrangements within the industry, which are designed to provide mutual support during events, we further note the challenge this event exposed to the existing capacity of the industry to provide and share appropriately skilled staff to assist during management of the event, which affected all companies to some degree. This includes the sharing of supply chain capacity, particularly to find and repair burst mains. We **recommend** that all water companies review their own capacity, and that available within mutual aid requirements, for dealing with events of this type.

## **6.4 Drinking Water Quality**

- 6.4.1 In most areas affected by losses of supply, there were no adverse effects on drinking water quality when supplies were restored, and most companies received few consumer contacts concerning water quality.
- 6.4.2 There were three companies with significant water quality issues and one with some consumer contacts associated with water quality. These were Welsh Water, South West Water and South East Water respectively. In the majority of cases the contacts were related to discoloured water following restoration of supplies that caused sediment to be disturbed in the companies' supply networks. Each of these companies has in place legal Notices<sup>2</sup> issued by the Inspectorate, requiring these companies to address the causes of discolouration in their networks, and these events demonstrate the need for this work to be completed. The Inspectorate noted the significant difference in impact on consumers across companies, and is currently investigating the need for enforcement action at other companies to mitigate the consequences of hydraulic instability in networks.
- 6.4.3 In three supply areas in Devon and Cornwall supplied by South West Water, consumers noticed a change to the taste of their water supply. A further assessment of these acceptability issues is being made by the Inspectorate to ensure that the requirements of Regulation 4 of the Water Supply (Water Quality) Regulations 2016 will be maintained during events.
- 6.4.4 All except a small number of samples collected by the companies associated with the events complied with the standards specified in Schedules 1 and 2 of the Regulations and therefore met the requirements of Regulation 4, and confirmed that water supplies to consumers, once restored, remained wholesome. Where samples failed for one or more parameters, further investigational samples collected by companies confirmed that actions taken were appropriate and generally timely, and that there was no ongoing risk to public health or wholesomeness.
- 6.4.5 A small number of regulatory compliance samples were not collected due to the extreme weather. In these situations, we are satisfied that the companies affected followed the Inspectorate's established guidelines for this situation.

## **6.5 Risk Assessment and Emergency Planning**

- 6.5.1 All companies stated in their reports that they were aware in advance of the severe weather warnings and likelihood of freezing weather, and consequently prepared their staff and obtained resources to enable them to handle any issues arising. This included setting up emergency response and incident teams in the week preceding the thaw. However, some companies appear to have been

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<sup>2</sup> Regulation 28(4) Notices in respect of SWT and SEW, and Regulation 29(4) Notices in respect of DWR. These [notices](#) are published on the Inspectorate's website.



surprised by the impact and consequences of the rapid increase in temperature, and did not have the capacity to meet demand, or to find and repair bursts in sufficient time to maintain storage in their networks.

- 6.5.2 It is clear that the severe weather affected the whole of England and Wales (see Figure 1), but not all companies notified the Inspectorate of events under the requirements of the Information Direction. From the information provided by companies, there was a variety of reasons why some companies were able to manage their operations without any significant impacts on consumers. Companies in the north and east of England were less affected by the severe weather, which was most marked in the Midlands, southern England, the south-west and Wales. The last two of these areas were covered by red weather warnings. Wessex Water, however, managed its operations without any loss of supplies to consumers despite part of the company's area being covered by the red weather warning issued for the south-west. The company attributes this to robust preparations made in the period leading up to the start of the freeze, and its strategic supply network which allows water to be transferred across different parts of the company's area.
- 6.5.3 The Inspectorate **recommends** that all companies review their preparedness and ability to respond to forecasts of severe weather that may present a risk to sufficiency of water supplies, to limit the scope and duration of potential consequences for consumers.
- 6.5.4 All water companies published advice to consumers about the need to protect their pipework and fittings from freezing temperatures. Some companies operating in the north of England indicated that they were very proactive with the advice issued to consumers, and that consumers in the north may be more accustomed to following such advice. From the analysis that companies have carried out, there was a significant demand created from consumer-side leakage, which could not be fixed in the timescales of the event, and for which some companies had not planned for sufficiently. It appears that recent lessons from Northern Ireland have not been considered adequately in risk assessments and contingency planning arrangements, and in proactively advising domestic and commercial consumers to protect their private plumbing systems from the effects of freezing temperatures. The Inspectorate **recommends** that all water companies review their capacity to meet the recommendations of the report '*Utility Regulator's report of the investigation into the Freeze/Thaw incident 2010/11*' published following a similar event in Northern Ireland<sup>3</sup>.
- 6.5.5 The Inspectorate noted that some companies had assets out of supply due to winter maintenance or because they are summer holiday demand sources, which meant they were not available during the event. The Inspectorate

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<sup>3</sup> Utility Regulator's report of the investigation into the Freeze/Thaw incident 2010/11, Utility Regulator for Northern Ireland, March 2011

**recommends** that those companies review whether these sites might be made available for contingency purposes.

## **6.6 Resilience**

- 6.6.1 Most of the companies in the south-east of England rely on bulk supplies from neighbouring water companies to supply large parts of their areas, and the Inspectorate has noted that some of these supplies were unavailable when requested due to the supplying companies own supply needs. Regulation 27 in England and Regulation 28 in Wales of the Regulations requires companies to have in place risk assessments for all their supply systems to establish whether there is a significant risk of supplying water that could constitute a potential danger to human health or is likely to be unwholesome. We therefore **recommend** that all water companies review both their contingency planning arrangements and bulk supply contract arrangements to ensure that sources they may need to rely on to maintain supplies to consumers will be available when needed.
- 6.6.2 A small number of treatment works suffered from frozen assets, flooding or raw water deterioration due to snow melt. Also, access to some sites was difficult prolonging the length of time that customers were without water. We **recommend** that all companies review their contingency plans to ensure their treatment assets and sites are resilient and that critical failure points are identified and feed into their risk assessments for extreme cold weather events.
- 6.6.3 Most companies have undertaken a lessons-learned exercise to minimise the likelihood of a recurrence of an event of this nature. In a few cases the Inspectorate has noted that companies feel that the extreme weather was unprecedented and therefore events were out of their control, particularly in respect of network resilience. The Inspectorate considers this position to be unacceptable, and a failure by those companies to ensure they deliver their licence conditions. We **recommend**, therefore, that all companies review the resilience of their water supply networks to withstand significant weather related challenges.

## **7. Next steps**

Separate event assessment letters will be sent to a small number of water companies when the Inspectorate has completed its assessment of localised water quality issues associated with this event. The Inspectorate suggests that water companies work together with the Inspectorate and other stakeholders, through Water UK, to consider how the industry should respond to these recommendations. For further information about this letter please contact [dwi.enquiries@defra.gsi.gov.uk](mailto:dwi.enquiries@defra.gsi.gov.uk).

Yours sincerely,

*Milo Purcell.*

**Milo Purcell**  
**Deputy Chief Inspector**