

Freeze/ Thaw Event 2010

December 2010 was the coldest month that Northern Ireland had experienced for over 100 years. The subsequent rapid thaw resulted in significant supply interruptions. Around 80% of the additional water demand leaked from customer's water pipes, the remaining from NI Water's network. As a result NI Water is implementing a program of actions to mitigate the potential impact of future such events.

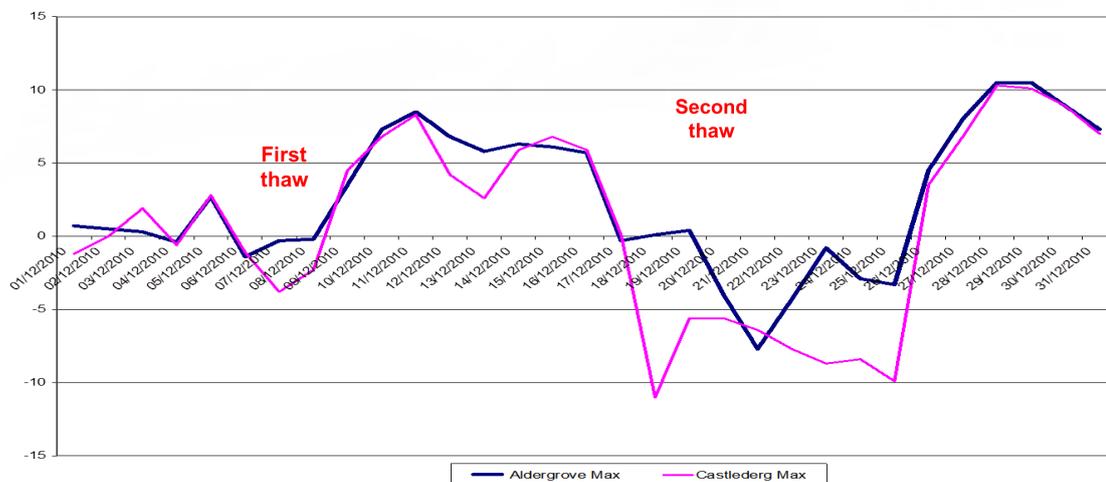


Northern Ireland December 2010

Key Points

- The November prior to the freeze/thaw in December 2010, had already been the coldest in NI since 1985.
- This prolonged cold period intensified resulting in an initial low of -14.58 C on 7th December, followed by a further low of -18.78 C on the 24th December.
- Some areas experienced sub-zero temperatures for 7 days .
- This was immediately followed by a rapid thaw. Thousands of NI Water customers experienced water supply problems.

Maximum Daytime Temperatures in December



Event 1

Between 9-14 December NI Water's water supply network experienced 3 times the normal level of bursts resulting in demand for water increasing by 18% to 680 ml/d. During this period approximately 2,000 properties experienced disruptions to their supply, however all were restored by 13 December.

Event 2

The second more intense cold period started on 16 December and lasted a 10 days. This resulted in additional bursts and further strain being put on NI Water's water supply network, with demand peaking (estimated at 1050ml/d) on 30 December, a level significantly higher than NI Water was able to supply (860ml/d). Approximately 17,000 properties experienced water supply problems during this period, however these were all resolved and the major incident ended on 6 January 2011.

Background The water supply issues experienced by customers were primarily caused by ice melting rapidly following the prolonged period of sub-zero temperatures. This had the effect of a large number of bursts in homes and businesses starting to run freely at the same time. A large number of these bursts were in vacant business premises, resulting in delays before they could be identified and isolated. The freeze / thaw effect also caused the ground to move, putting unusual stresses on pipes, resulting in leaks and bursts within NI Water's supply network.

Project Aim

As a result of the freeze thaw event of 2010/11 Northern Ireland Water undertook a major review. This resulted in the development and implementation of a range of actions, that once delivered will mitigate against future problems and help protect service delivery during future freeze thaw events.

Project Objectives

- Determine actions needed to prepare for potential further freeze thaw weather conditions.
- Determine any patterns in failures of equipment such as pumps, pipes and fittings.
- Identify failings in manpower availability over the holiday period.
- Develop emergency planning and major incident strategies to ensure resilience and service delivery in extreme weather events.
- Assess the impacts of these events, and where possible, their associated costs.

NI Water delivering bottled water, Dec 2010



Methodology

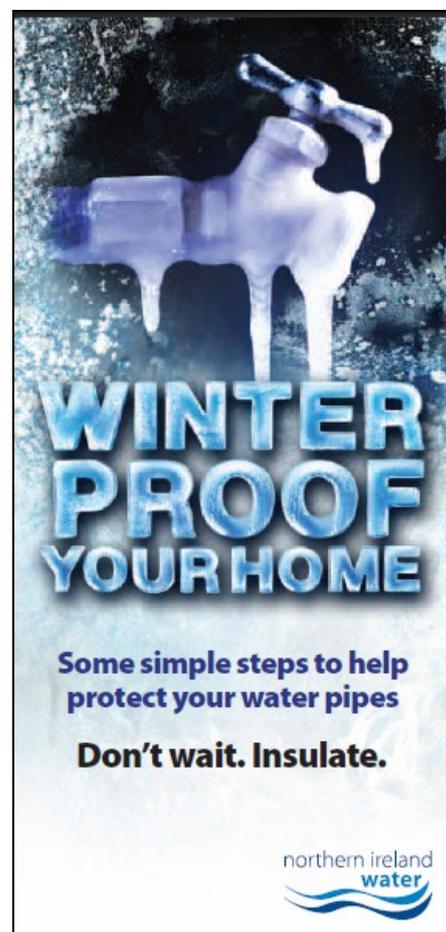
The review of the Freeze Thaw event of 2010/11 has resulted in the development and implementation of 53 actions (43 short-term and 10 long-term) aimed at enabling NI Water to mitigate against the impact of future freeze thaw events. The implementation of these actions has involved engagement with key stakeholders, to ensure the continued service delivery expected by NI Water customers should a similar event happen again. Specifics include;

- All-inclusive approach to creating contingency plans
- Conducting a lessons-learnt review from freeze thaw Staff
- Address Staff leave arrangements over holiday periods
- Mock major incidents were implemented to plan for all conceivable events.
- Develop proactive responses to incidents
- Access to and use of live information from the field during an incident
- Revision of the Corporate Risk register

Review Outcomes

The main problems encountered by NI Water during the freeze thaw event of winter 2010/11 Included the following:

- Communication both internally and externally was slow and did not accurately reflect the rapidly developing situation.
- Mobilising staff and other agencies during the Christmas period was difficult due to staff holidays and up-to-date contact details not being available.
- The company website could not cope with customer demand. Site design, bandwidth and information flow needed to be addressed.
- NI Water's call centre was unable to deal with the volume of enquiries from the customers.
- Failure of assets under prolonged sub-zero temperatures were highlighted.
- A need for adequate awareness via the media to ensure customers are proactive in maintaining pipes within their property.
- The weather during the winter of 2010/11 was exceptional (1 in 100 year event in established records). However, due to the changing climate future repeat events are more likely.
- Around 80% of the additional water demand caused by the freeze thaw came from leaks on the customer side, via domestic and business water pipes within customer's properties.
- The water mains in Northern Ireland are relatively new compared with other parts of the UK, and performed as well as could be expected.



Key Challenges

- Managing public perception and negative media reports.
- Mobilising staff during a holiday period.
- Unique difficulties presented by the freeze thaw event occurring during a holiday period.
- Large scale contingency planning.
- Putting mitigation factors in place within a limited budget.
- Operating in treacherous freezing weather conditions.

Key Successes

This project highlighted how best NI Water should focus its available resources to proactively manage the impact extreme weather conditions on its delivery of service.

The company has become more customer focused and is now more engaged with its customer and raises awareness of potential issue via the media. It has also created clearer lines of communication both internally and externally should a similar major incident of any kind occur again, it will be managed more effectively.

Front line operational teams worked to their full capacity in very challenging weather conditions. The commitment from NI Water's staff was evident in the review, and showed how passionate Staff are in delivering this essential service and the lengths to which they were prepared to go to do so.

Recommendations

- Plan for the most extreme conditions in every conceivable scenario.
- Have staff briefed and mobilised as quickly as possible.
- Be customer focused.
- Make better use of social media.
- Use lessons learnt to inform future response to extreme weather events and where possible assess the future impact.
- Identify all the vulnerable groups and areas potentially at risk during freeze thaw events.
- Procure and maintain a supply of collapsible water containers.
- Obtain daily weather forecasts from Met Office.
- Make better provision for supply to vulnerable customers, nursing homes and livestock.
- Have clear lines of communication. Customers will be better informed with timely, accurate information from ground teams in their area being fed directly to the call centre and company website.
- A major incident resilience review has recommended £12m to be spent to reinforce and enhance the water mains network (2013-15).

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