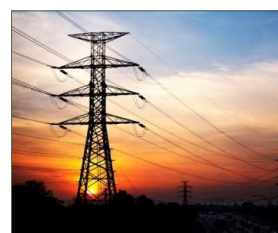


Review of the Impact of Industrial Action on Water Supply in December 2014 and January 2015

Review Report
May 2015



About the Utility Regulator

The Utility Regulator is the independent non-ministerial government department responsible for regulating Northern Ireland's electricity, gas, water and sewerage industries, to promote the short and long-term interests of consumers.

We are not a policy-making department of government, but we make sure that the energy and water utility industries in Northern Ireland are regulated and developed within ministerial policy as set out in our statutory duties.

We are governed by a Board of Directors and are accountable to the Northern Ireland Assembly through financial and annual reporting obligations.

We are based at Queens House in the centre of Belfast. The Chief Executive leads a management team of directors representing each of the key functional areas in the organisation: Corporate Affairs; Electricity; Gas; Retail and Social; and Water. The staff team includes economists, engineers, accountants, utility specialists, legal advisors and administration professionals.

Our Mission

Value and sustainability in energy and water.

Our Vision

We will make a difference for consumers by listening, innovating and leading.

Our Values

Be a best practice regulator: transparent, consistent, proportional, accountable, and targeted.

Be a united team.

Be collaborative and co-operative.

Be professional.

Listen and explain.

Make a difference.

Act with integrity.

Abstract

During a period of industrial action in late December 2014 and early January 2015 by employees of Northern Ireland Water (NI Water), there was significant disruption to the water supply in parts of Northern Ireland. The Department for Regional Development commissioned the Utility Regulator to carry out a review into the impact on consumers of the water supply disruption. This document is a report of the review.

The report presents findings and recommendations in respect of five areas: the impact and cause of the water supply disruptions, contingency planning and implementation arrangements, internal and external communications during the incident, leadership and management and the financial impact of the dispute.

Audience

Those affected by the water supply failure in January 2015, the Minister for Regional Development, the Committee for Regional Development, other elected representatives, domestic and industrial consumers and their representative bodies, NI Water, regulated industries, and statutory bodies.

Consumer impact

The key impact for consumers relates to the report recommendations. These set out a series of measures which, if implemented by NI Water, are intended to assist in mitigating the impact on consumers of any future adverse water supply incidents.

Review of the Impact of Industrial Action on Water Supply in December 2014 and January 2015

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Executive Summary

INTRODUCTION

In early January 2015, there was significant disruption to water supply in parts of Northern Ireland. This occurred during a period of industrial action by employees of Northern Ireland Water (NI Water) which began on the 22 December 2014. The industrial action was suspended on 21 January 2015 and normal levels of service to consumers were restored shortly afterwards.

The Department for Regional Development (DRD) subsequently asked the Utility Regulator to review NI Water's performance focusing on the actions taken by NI Water, in respect of the impact on consumers, in planning for and reacting to the event. The terms of reference for the review are included at Annex A. The Utility Regulator Board will also consider the review from a regulatory perspective.

We commenced our review in February 2015. As part of our review we: interviewed staff from NI Water, considered a range of documentary evidence including an internal incident report produced by the company, conducted site visits, and worked with CCNI to engage with consumers whose water supply failed during the incident. We have now concluded our review and present our report.

FINDINGS AND RECOMMENDATIONS

Our report is presented in five sections. These relate to: impact and cause, contingency planning, communication, leadership and management, and the financial impact of the incident. Our findings suggest that NI Water has made significant progress arising from our review of the 2010-11 Freeze/Thaw incident. However, we have identified areas where further improvements should be made.

The actions identified by NI Water following its internal review of the incident are reproduced in Annex B for ease of reference. We welcome and acknowledge these actions and have further enhanced a number of them as a consequence of this review. Our summary findings and a number of actions which we require the company to address in respect of each of these areas are outlined below.

IMPACT AND CAUSE OF THE INCIDENT

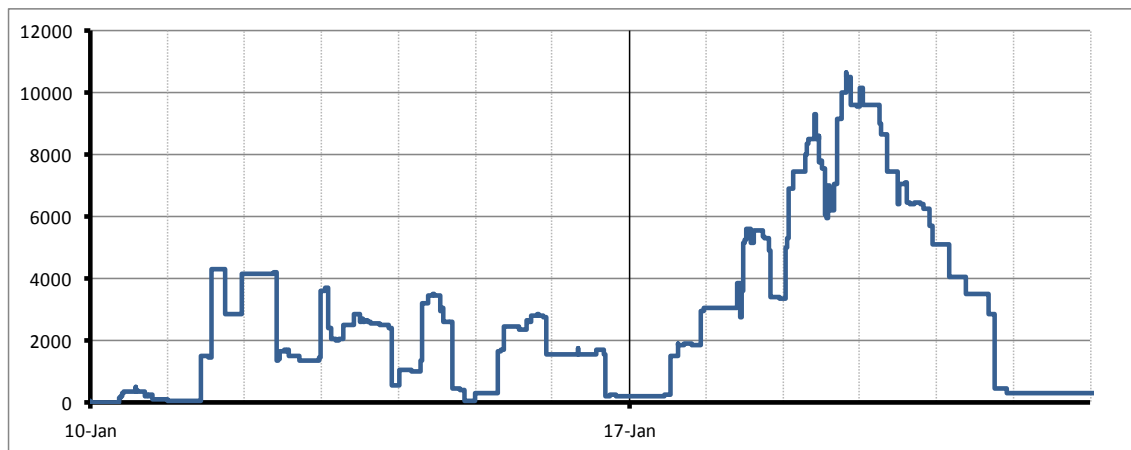
Loss of water supply occurred for some consumers in an area from Derrygonnelly to Dungiven and from Killeter to Cookstown at intervals from 10 January 2015 to 23 January 2015.

Industrial action by NI Water staff was the root cause of the incident. The withdrawal of out of hours working meant that faults, which would be repaired quickly in normal circumstances, resulted in failure or shutdown of some plant. Shutdowns at water treatment works in these circumstances resulted in consumers losing their water supply.

At first, the impact of the industrial action was mitigated by a protocol between NI Water and trade unions aimed at protecting public health and vulnerable consumers. On 5 January 2015 the trade unions withdrew their support for the protocol and the situation deteriorated quickly.

Water supplies to just over 33,000 properties were disrupted for more than six hours. At the peak of the disruption on 19 January 10,600 properties were without water, as shown on the graph below. A total of 13,780 properties went without water for more than twenty-four hours.

Number of properties off-supply



Consumers told us that the loss of water supply came as a shock. They described the significant impact it had on daily life and the inconvenience of having to collect water from alternative supplies in difficult conditions.

From our review, we have concluded that there is more that NI Water could do in respect of key resources and asset resilience to reduce the impact to consumers if a similar event were to reoccur. We have therefore set out required actions focusing on:

- **Review the resilience of key resources and reinforce where necessary.**
- **Review and address critical plant failures and near miss events which occurred during the incident.**
- **Accelerate the development of a plan for asset maintenance.**
- **Investment in water supply resilience.**

CONTINGENCY PLANNING AND IMPLEMENTATION

NI Water began making preparations for managing the consequences of possible industrial action from early October 2014. This work built on normal winter preparedness actions. The company also began reviewing its existing contingency plans and developing more detailed plans for industrial action. These preparations accelerated in early December, particularly after the results of the ballot on industrial action were communicated on the 12 December 2014.

When industrial action began the company established a Category 1 major incident response regime in view of the risk to service over the Christmas holiday period and managed its response within its established Major Incident Plan (MIP). NI Water's MIP was benchmarked against other water utility plans in a previous review, the Freeze/Thaw of 2010-11, and found to be broadly equivalent. The company has implemented recommendations from that review including procuring additional alternative water supply equipment. This did improve the response during this incident.

Our review also finds that NI Water proactively initiated multi-agency procedures. Stakeholder feedback indicates that the process for co-ordination with agencies was managed well and operated effectively. We did however note some stakeholder concerns that NI Water could have given more active consideration to establishing local multi-agency response teams earlier.

A key part of the company's response is to provide alternative water supplies when water supplies are disrupted. From our review and from our engagement with consumers we have concluded that the company could and should have provided alternative water supplies earlier when faced with a treatment works shutdown over a weekend with no certainty of when supplies would be restored. We also concluded that more could be done to share information to improve protection for vulnerable consumers.

Because of the ongoing industrial action, the company was operating without the resources normally available to it to manage a major incident and this constrained its response. Despite this, many elements of its contingency plans worked well. Lessons from the Freeze/Thaw were learned and implemented. However, we have concluded that further improvements should be made and we have set out requirements focusing on the need to:

- **Review the Major Incident Plan in light of lessons learnt.**
- **Review multi-agency response arrangements.**
- **Ensure the provision of alternative water supplies as soon as possible.**
- **Engage with stakeholders and communities on the location of alternative water supplies.**
- **Share information on vulnerable consumers.**

INTERNAL AND EXTERNAL COMMUNICATION

Communications failures by NI Water were one of the key findings identified in our review of the 2010-11 Freeze/Thaw. Since then, NI Water has improved its communications systems, including improvements in call centre provision, website capacity and functionality and media handling.

A range of metrics show that communication was, on the whole, effective during the incident. The company was able to provide information through a range of channels

and none of these channels of communication were overwhelmed. The website was able to deal with the additional traffic during the event and the postcode lookup facility was well used. The average queue time for the call centre was only four seconds and NI Water responded to 87% of media requests.

However, every incident presents opportunities for improvement. Some stakeholders identified areas for improvement around a lack of detail in information provided and the estimated time of restoration of supply. NI Water has also identified specific actions regarding its communications systems. Therefore we recommend that NI Water:

- **Review and further improve communication systems.**

LEADERSHIP AND MANAGEMENT

The Board's role is to provide leadership of the company within a framework of prudent and effective controls which enables risk to be assessed and managed. The Executive Team are responsible for managing the company and delivering its strategy.

In the period leading up to the incident, the potential for industrial action was considered within the corporate risk register. This was also raised with the Board in October 2014 and was escalated as a key risk in December 2014. Prior to this NI Water staff surveys had pointed to morale issues and the trade union perspective regarding pension changes was discussed by the NI Water Board.

Scenario planning took place and consideration was given to the consequences, control and further actions that NI Water identified before industrial action commenced. However we consider that further work on 'worst case scenarios' and earlier consideration of these issues could have added value. During October 2014, a medium level risk was reflected in the Board assessment which tended to militate against more pro-active interventions being explored or being undertaken prior to December 2014. It seems that NI Water may have initially under-estimated the extent and potential impact of industrial action. We therefore require NI Water to:

- **Review the risk management and scenario planning processes to ensure risks are fully addressed.**

FINANCIAL IMPACT OF THE DISPUTE ON NI WATER

Overall the total estimated costs of the incident are estimated at £1.7 million. This compares with the costs of £3.1 million in respect of the Freeze/Thaw incident of 2010-11 (which was much greater in scale and impact).

DELIVERING A PLAN OF ACTION

As a result of our review, we require the company to prepare an action plan and a programme by the end of June 2015 for delivery of both our required actions and the actions included within its own review. We will then monitor the delivery of these actions which should be completed by the end of March 2016.

1.0 Introduction

1.1. Background to the review

- 1.1.1 This report describes the Utility Regulator's review of the consumer facing aspects of NI Water's performance during a period of industrial action which began on the 22 December 2014. This includes the action taken by NI Water in advance of industrial action to mitigate the impact on consumers.
- 1.1.2 On the 22 December 2014, a significant number of NI Water employees began industrial action in response to proposed changes in pension contributions which the company planned to introduce from the 1 April 2015. This industrial action included:
- A ban on on-call and standby working.
 - A ban on overtime.
 - Non-participation in any activities considered voluntary including participation in the response to major incidents.
 - A general withdrawal of goodwill.
- 1.1.3 Industrial action was suspended on the 21 January 2015 following an offer by the company aimed at resolving the dispute. NI Water has been informed that the Department for Finance and Personnel (DFP) has approved the Business Case in respect of the payments. This formed the majority part of this offer. This has been communicated to the trade unions to ballot their members.
- 1.1.4 During the action, staff involved did not work during the evenings, weekends or public holidays, withdrawing support necessary to keep critical plant in operation and respond to other breakdowns and emergencies over these periods. The main impact of the action for consumers was a **sustained loss of water supply** caused by the shutdown of five water treatment works. This affected some consumers in an area from Derrygonnelly to Dungiven and from Killeter to Cookstown at intervals during the period 10 January to 23 January 2015.
- 1.1.5 Some 14,000 properties were without supply for more than 24 hours. This affected 33,000 people as well as industry, agriculture, commercial activities and social and health services. Although the number of properties affected was less than in the 2010-11 Freeze/Thaw, the loss of water supply was a significant event which disrupted the lives of those impacted by it.
- 1.1.6 Other impacts of the industrial action (which received less attention than the sustained loss of water supply because they were of shorter duration, had less immediate impact on consumers or were more widely distributed) included:
- **More localised and short term loss of water supply** caused by water treatment works shutdowns, for example the failure of supply in the area

served by Camlough WTW which occurred on Boxing Day lasting 12 hours.

- **Delays to water mains repairs**, which extended the time consumers were off supply when water mains burst and increased leakage.
- **Delayed response to faults** at wastewater treatment works and wastewater pumping stations reducing the quality of final effluent discharged to rivers estuaries and coastal waters.
- **Delays to the capital works delivery** while key staff were not available to isolate works and mains and reconnect them on completion.

- 1.1.7 To manage the impact of the industrial action, NI Water implemented its Major Incident Plan from the 22 December 2014. It established a senior level “Major Emergency Group”, Silver (tactical) and Bronze (operational) commands. This command structure mobilised and prioritised resources and managed internal and external communication through the incident. However, its effectiveness was impacted by the industrial action. Many of the workforce the company relies on to respond to a major incident were participating in industrial action. Managing the incident over four weeks as well as continuing normal operation, placed a significant demand on those staff who were not taking industrial action.
- 1.1.8 It is NI Water’s responsibility to develop and maintain a system of water supply within its area, making supplies available to those who demand them. A modern society expects that safe and wholesome water will be available on demand to meet its needs. This expectation came across in consumer engagement carried out in conjunction with stakeholders in 2014. Consumers told us that they simply expect the service to work and they expect water and sewerage services to be resilient. It is an expectation that was not met in January 2015. NI Water has recognised this. At the Committee for Regional Development and subsequently in the press its Chief Executive Officer offered an apology to all consumers in Northern Ireland who had experienced supply interruptions and noted that service to consumers was far from what NI Water aspires to.
- 1.1.9 Loss of supply can have an immediate and significant impact for those involved. However, although 14,000 properties lost supply for more than 24 hours, the vast majority of NI Water consumers were unaffected by industrial action.

Relationship between NI Water and DRD

- 1.1.10 NI Water is a government owned company with DRD as the sole shareholder. The Minister for Regional Development is responsible for making appointments to the Board of NI Water. The Department oversees the governance arrangements under which the company operate. However, responsibility for the day to day running of the company rests with the Chief Executive and the management team.
- 1.1.11 In the event of a major incident the Department invokes its own Major Emergency Response Plan.

- 1.1.12 DRD has advised us that in the case of NI Water industrial action, this was done on the 23 December 2014. The Department's Emergency Management Group undertook a daily review of the stakeholder briefs issued by the company. Members participated in the multi-agency conference calls chaired by NI Water during the period of the industrial action. During the public holidays and weekend periods the Permanent Secretary had daily phone briefings with the NI Water Chief Executive and senior staff to discuss the situation as well as to consider the potential need for escalation. Throughout the incident the Minister was kept informed of developments through update reports.

1.2. Approach to the review

- 1.2.1 The Utility Regulator has a responsibility under Article 60 of the Water and Sewerage Services (Northern Ireland) Order 2006 to keep under review the performance of NI Water in the discharge of its functions. This report, which has been considered by the Utility Regulator's Board, has allowed us to discharge this responsibility. In view of the severity of this incident and its impact on consumers we have set out a series of required actions which the company is required to address through an action plan.
- 1.2.2 Under the same Article, the Department for Regional Development can ask the Utility Regulator to give information, advice and assistance to the Department on how NI Water has carried out its functions. At the Committee for Regional Development meeting on the 21 January 2015, the Minister for Regional Development stated that he would ask the Utility Regulator to undertake a review of the response of NI Water to the consumer facing aspects of the dispute. The Department issued a brief for this review which was also provided to the Committee. This brief is reproduced in Annex A.
- 1.2.3 Our review focuses on the consumer facing aspects of NI Water's performance. We have not reviewed the on-going issues relating to pay and pension arrangements which triggered the industrial action. Neither have we considered NI Water's on-call arrangements and remuneration for out of hours working. These are matters for the company to consider and are outside our remit and the brief for this review.
- 1.2.4 The review was undertaken by an operational team comprised of Utility Regulator staff. An Oversight Committee was established to oversee the work of the operational team and challenge the conclusions and recommendations reached. The Oversight Committee consisted of members of the Utility Regulator's Senior Management Team, a Board member of the Utility Regulator and an external expert with experience of water company management at executive level.
- 1.2.5 Our assessment is based on a critical appraisal of information provided by NI Water and meetings with NI Water staff involved in the incident. We also met external stakeholders, consumers and public representatives to understand how the loss of water supply had impacted on their lives and their experience of alternative water supplies and communication during the incident.

- 1.2.6 We undertook our review after the company had completed its own internal investigation of the incident. This allowed the company space to carry out its investigation. It also allowed us to benefit from information the company had collated for its own purposes. The detailed actions the company identified as a result of its review are reproduced in Appendix B for easy reference. We welcome and acknowledge NI Water's actions but have concluded that, at times, they do not go far enough in addressing the issues.
- 1.2.7 Although the root cause and extent of this incident are different, it does have some similarities to the major Freeze/Thaw event of 2010-11. Following that event, the Utility Regulator prepared a critical report on NI Water's performance and made wide ranging recommendations for improvements to reduce the impact on consumers of future incidents. NI Water implemented these actions and closure reports were provided to the Utility Regulator and other stakeholders. It is clear from this review that the implementation of those actions has made a significant contribution to the handling of this incident.
- 1.2.8 Throughout this review we have gone back to those recommendations to assess whether their implementation proved successful and whether further work is required in light of this event.

1.3. Report structure

- 1.3.1 Our review is described in 5 main sections, which address the main headings of the Department's brief, as follows:

- | | |
|-----------|--|
| Section 2 | Describes the background to the incident and summarises the cause and extent of the event and its impact on consumers. As part of our review, we met groups of domestic and non-domestic consumers affected by the incident to listen to their experience and their recommendations of how NI Water could improve the consumer facing aspects of its performance in future events. |
| Section 3 | Reviews the development and implementation of NI Water's contingency plans during the incident. This includes the management of sustained loss of water supply and the provision of alternative water supplies (AWS). |
| Section 4 | Reviews the performance of internal and external communication during the incident. |
| Section 5 | Reviews the performance of NI Water's management and leadership as the possibility of industrial action emerged and as it managed the impact of the incident. |
| Section 6 | Assesses the financial impact of the dispute. |

- 1.3.2 In Section 7, the last section of the main report, we summarise our required actions.

- 1.3.3 The annexes to the report consist of the terms of reference issued by DRD, a list of NI Water internal actions, a glossary of terms and the abbreviations used.

1.4. Acknowledgements

- 1.4.1 Before describing our review of the consumer facing aspects, we wish to acknowledge the impact that the loss of water supply had on those affected. We recognise that accessing alternative water supplies distributed through static tanks is inconvenient and burdensome. It can only provide minimal cover until full supplies are restored.
- 1.4.2 We wish to acknowledge the work of the wide range of community groups, voluntary organisations, individuals and statutory agencies who helped those affected by the loss of water supply during the incident.
- 1.4.3 We also wish to acknowledge the work and co-operation of NI Water staff in providing the information necessary to conduct this review.
- 1.4.4 Finally, we wish to acknowledge the support of CCNI which helped develop and organise engagement with consumers and public representatives to inform this review.

2.0 Impact and Cause of the Incident

2.1. Introduction and scope

2.1.1 This section of the report reviews the impact and cause of the incident. We have focused most of our attention on the loss of water supply which was the key impact on consumers. This section includes:

- A timeline which summarises the sequence of key events during the incident. This provides an overall context for this review.
- An estimate of the number of people and properties who lost their water supply and an assessment of the impact based on information provided by a small number of the consumers affected.
- An assessment of the cause of water supply loss including required actions relating to asset resilience.
- A brief assessment of the impact on other service areas.

2.2. Timeline for the incident

2.2.1 Our review concluded that the incident can best be understood in four distinct phases:

- A. The **period prior to the industrial action** from June 2014 to December 2014, when NI Water assessed how it should respond as the risk of industrial action escalated. This includes the steps it took to develop its major incident, contingency and business continuity plans.
- B. The **early stages of the industrial action** from the 22 December 2014 when the company implemented its Major Incident Plan but an agreement with the trade unions relating to the protection of public health and mitigation of risk to vulnerable consumers (the TU Protocol) was in place.
- C. The period from the 5 January 2015 when **the TU Protocol was withdrawn**. This was followed by **the shutdown of water treatment works when faults occurred** over two consecutive weekends which resulted in a sustained loss of supply.
- D. Finally, the **management of the sustained loss of water supply** including the distribution of alternative water supplies and the restoration of supplies.

2.2.2 Key milestones in the development of the incident through these four phases are shown in Table 2.1, recognising that there is overlap between the shutdown of the water treatment works and the provision of alternative supplies.

Table 2.1 - Key milestones through the incident.

A - Lead up to industrial action

Mon	30 Jun 2014	NI Water formally notifies its staff and TU representatives of proposed changes to pensions beginning a consultation.
Sat	27 Sept 2014	Pension consultation closes.
Thu	09 Oct 2014	Draft industrial action contingency plan and activity worksheets disseminated to CSDD management for review.
Fri	24 Oct 2014	The TUs advised NI Water's Board of the potential for industrial action.
Mon	17 Nov 2014	TU representatives inform NI Water management that, in parallel with the proposed pension scheme changes, they have wider concerns over pay policy.
Mon	24 Nov 2014	NI Water's Executive begin weekly Industrial Action planning meetings (through to 16 December).
Wed	26 Nov 2014	NI Water Board meeting is briefed on proposed steps being taken to mitigate the impact to consumers of industrial action.
Wed	10 Dec 2014	Ballot of TU members closes.
Fri	12 Dec 2014	The TUs inform NI Water that the outcome of the ballot is in favour of industrial action and the extent of the industrial action planned. Notice is given that industrial action would commence on the 22 December 2014.
Fri	12 Dec 2014	Customer Services Delivery Directorate contingency planning steering group meetings begin.
Tue	16 Dec 2014	NI Water Board is briefed on proposed steps being taken to mitigate the impact to consumers.
Fri	19 Dec 2014	NI Water's Executive Industrial Action Planning meetings held three times in this week.
Mon	22 Dec 2014	Industrial action begins at 08:00.

B - Initial stages of the industrial action

Mon	22 Dec 2014	NI Water declares a Category 1 incident. The MEG meets and an incident management structure is established.
Mon	22 Dec 2014	Labour Relations Agency becomes involved in facilitating negotiations between TUs and NI Water management.
Tue	23 Dec 2014	An agreement between NI Water and the Water Group of Trade Unions (the TU Protocol) is reached regarding the protection of public health and mitigation of risk to vulnerable consumers.
Wed	24 Dec 2014	A first critical period begins with most operational staff on holidays over a five day Christmas period from the 24 to the

		29 December.
	24 Dec 2014 5 Jan 2015	Staff involved in industrial action restore water treatment works out of hours under the TU Protocol. The Protocol was invoked 25 times during this period.
Mon	5 Jan 2015	The Water Group of Trade Unions withdraws from the TU Protocol, increasing the risk of critical service failure.

C - Main shutdown of water treatment works.

Fri	9 Jan 2015	NI Water's Board meets to discuss the impact of the incident, the strategy to address the on-going situation and proposals put to the WGTU.
Sat Mon	10 Jan 2015 12 Jan 2015	Killyhevlin WTW (Enniskillen) shuts down at 13:30. Works back in production by 07:20. 6,100 properties out of supply for more than 12 hours.
Mon Tue Wed Thu	12 Jan 2015 13 Jan 2015 14 Jan 2015 15 Jan 2015	Lough Fea WTW (Cookstown) shuts down at 20:00. Works back in production by 14:00. Lough Fea WTW shuts down again 02:00. Works back in production by 18:30. 5,700 properties out of supply for more than 12 hours.
Sat Mon	17 Jan 2015 19 Jan 2015	Caugh Hill WTW (Dungiven) shuts down at 08:30. Works back in production by 11:00. 2,700 properties out of supply for more than 12 hours.
Sat Mon	17 Jan 2015 19 Jan 2015	Lough Macrory WTW (east of Omagh) shuts down 08:00. Works back in production by 09:00. 2,500 properties out of supply for more than 12 hours.
Sat Mon Mon Tue	17 Jan 2015 19 Jan 2015 19 Jan 2015 20 Jan 2015	Lough Bradan WTW shuts down at 04:50. Works restarted at 08:00 but struggles to maintain production. Works shutdown 16:00. Works restarted at 08:00. 7,100 properties out of supply for more than 12 hours.

D - Management of the loss of supply and restoration of supplies

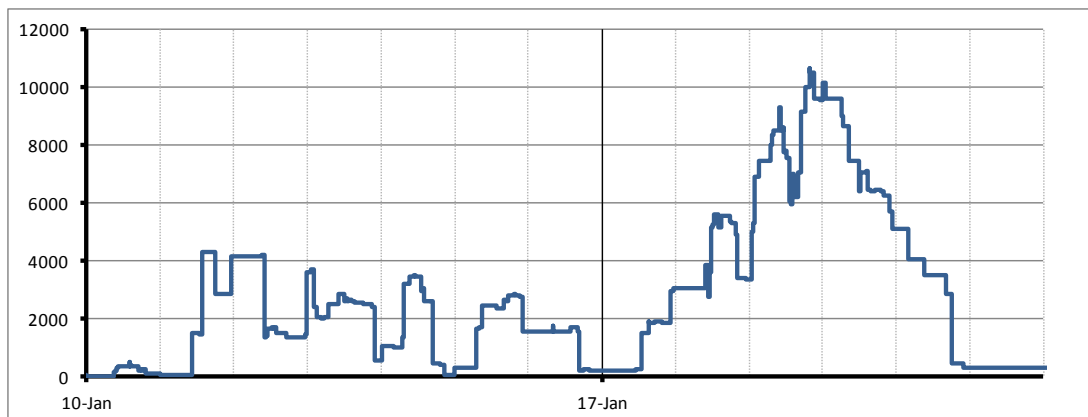
Sun	18 Jan 2015	AWS deployment to Lough Macrory WTW area begins.
Mon	19 Jan 2015	AWS deployment to Caugh Hill WTW area begins.
Tue	20 Jan 2015	AWS deployment to Lough Bradan WTW begins.
Wed	21 Jan 2015	The WGTU suspends industrial action on the basis of the revised offer from NI Water.
Thu	22 Jan 2015	NI Water stands down its incident teams and returns to normal operating regimes.
Thu	22 Jan 2015	NI Water's Board meets to discuss the impact of the incident, the strategy to address the on-going situation and proposals put to the WGTU.

2.3. The impact on consumers

Numbers of consumers without water supply

- 2.3.1 It is NI Water's responsibility to develop and maintain a system of water supply within its area, making supplies available to those who demand them. A modern society expects that safe and wholesome water will be available on demand to meet its needs. This expectation came across in consumer engagement we undertook in conjunction with stakeholders in 2014. Consumers told us that they simply expect the service to work and they expect water and sewerage service to be resilient.
- 2.3.2 It is an expectation that was not met in January 2015. Major interruptions to supply occurred in the west, affecting some consumers in areas from Derrygonnelly to Dungiven and from Killeter to Cookstown. They were caused by the failure of five water treatment works and occurred over a two week period from the 10 January to the 22 January 2015.
- 2.3.3 The number of properties off supply at any one time during this period is shown in Figure 2.1. The maximum number of properties off supply peaked at 10,600 on the night of the 19/20 January 2015 when properties served by Lough Bradan, Lough Macrory and Caugh Hill water treatment works were affected.

Figure 2.1 - Number of properties off supply at any one time



- 2.3.4 The numbers reported are based on the time a service reservoir drains to the time it begins to refill. Some consumers will lose water later than others - due to topography - as the water mains drain. Modern houses tend not to have water storage tanks in lofts and the impact is immediate, older properties with storage tanks can cope for a short period of time. As the system refills, some properties will return to supply sooner than others and supplies to some properties will be affected by airlocks in the mains system which prolong the loss of supply. As a result, the figures are not precise, but they provide a reasonable indication of the overall impact.
- 2.3.5 Based on figures provided by NI Water just over 33,000 supplies were interrupted for more than 6 hours. This is equivalent to about 80,000 people. For significant numbers of people however, interruptions to supplies extended through 12 hours, 24 hours and longer as shown in Table 2.2.

Table 2.2 - Properties and population affected by interrupted water supplies

Duration of interruption	Properties affected	Population affected
Greater than 6 hours up to 12 hours	8,500	20,000
Greater than 12 hours up to 24 hours	11,000	26,000
Greater than 24 hours up to 48 hours	9,700	23,000
Greater than 48 hours up to 72 hours	3,700	9,000
Greater than 72 hours	360	1,000

Impact of loss of water supply on consumers

2.3.6 We were asked by the Minister to assess the consumer facing impact of this event. To do so, it was necessary to hear from consumers how they were affected by the loss of water supply; to understand their experience of communication with NI Water; and, understand their experience of the alternative water supplies which were made available. Hearing the voice of consumers takes us beyond the bare statistics presented above and focuses on the tangible personal impacts including:

- The inability to flush toilets, to wash clothes or dishes, or to bathe or shower.
- The closure of some schools and business.
- The impact on farmers attempting to maintain animal welfare through winter conditions.

2.3.7 We undertook some work to understand consumers' views including:

- Feedback from MLAs and other representatives.
- Meeting consumers to discuss the impact with them.
- A postal survey on impact and experience.

2.3.8 This work built on the experience and feelings the public communicated through the media during the incident and reinforced by members of the Committee for Regional Development during their public proceedings in January 2015.

2.3.9 We worked with CCNI to develop the surveys. CCNI undertook much of the work of contacting MLAs, arranging the face-to-face meetings, organising the surveys and drawing conclusions. NI Water assisted us by contacting consumers who have been off-supply and asking them if they were willing to take part. We are grateful for the support provided by CCNI and NI Water in undertaking this work.

2.3.10 The work provided some insight into the issues consumers faced and what they expect from NI Water. It is not statistically representative but it does emphasise

- the need for NI Water to look hard at these areas when reviewing its performance and how this can be improved for future events. The issues identified can come as no surprise.
- 2.3.11 It is clear that consumers were shocked by the loss of water supply. Some people commented on how quickly normal life deteriorates when there is no piped supply. While this might be an inconvenience over a short period, it becomes difficult after any sustained period, particularly when it is uncertain when it will end.
 - 2.3.12 The impact on normal daily life is immediate and significant. All the more so for consumers who are vulnerable in some way including the young, the elderly and anyone who is ill or caring for someone who is ill. The need to collect water from emergency locations only serves to emphasise the reliance on a piped supply to meet daily needs. Consumers do not expect this to happen and some expressed the view that it would only happen in the west.
 - 2.3.13 Past events had exposed weaknesses in NI Water's communication systems and much work has been done to address these issues. It was clear that people were able to contact NI Water throughout the incident using a range of communication channels. Some complimented the quality of the call centre in terms of availability, speed of response and the quality of the information provided. However, some were dissatisfied with the information provided, particularly the accuracy of information on when supplies would be restored.
 - 2.3.14 A common theme was insufficient warning that supplies were at risk which would have allowed people time to prepare. Radio and television reports and local community and family networks were an important source of initial information before people turned to the phone and the internet (where available) to find out more information.
 - 2.3.15 When normal supplies were interrupted, NI Water provided alternative water supplies. This included bottled water delivered to vulnerable consumers on its Customer Care Register and water bowzers for the wider community in villages or other centres of population located in the areas affected. There was some concern that NI Water could have done more, more quickly.
 - 2.3.16 Some consumers were not able to find information on the location of alternative water supplies and some concerns were raised about information on the quality of the water in bowzers. A common theme was concern that vulnerable consumers who were not on NI Water's Customer Care Register were not as well supported through the incident. For some, distance of travel to collect water was an issue, particularly if they did not own a car and taking account of the weather conditions, emphasising the fact that vulnerability changes with circumstances.
 - 2.3.17 Finally, some consumers highlighted concerns about discoloured water when supplies were restored. It was not clear that NI Water's assurances that this water was safe to drink was trusted by all.
 - 2.3.18 We are aware that any situation which requires alternative water supplies to be contemplated is unsatisfactory. It results in compromises when determining the

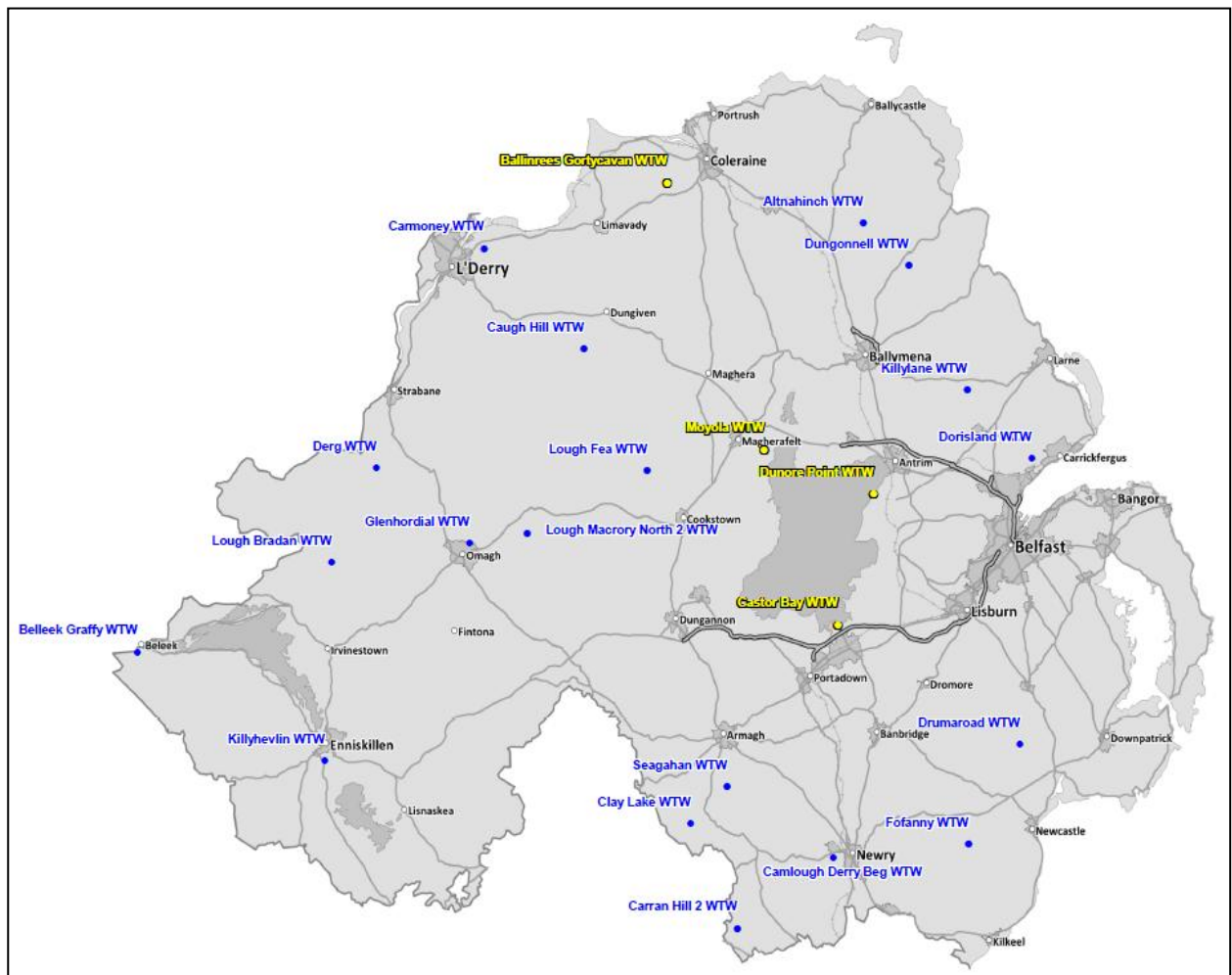
timing and choice of locations and NI Water may not be able to address all the issues raised by consumers. For example, issuing warnings in advance of the loss of water supply can accelerate the loss of supply and expand the area affected. In subsequent sections of this review we have considered these and other issues raised by consumers.

2.4. Cause of the loss of water supply

Overview of water production

- 2.4.1 The major impact on consumers during this incident was the loss of water supply. This happened after water treatment works shutdown when faults occurred during evenings and weekends. NI Water operates nineteen water treatment works directly. A further four water treatment works are operated by a private company under a Public Private Partnership (PPP) contract which was implemented from 2005 onwards to fund the upgrade of works to meet European Union drinking water standards. The location of the water treatment works are shown at Figure 2.2.

Figure 2.2 – Location of water treatment works



- 2.4.2 The major loss of water supply was caused by shutdowns of five water treatment works at different times:
- A. Killyhevlin WTW which serves the area around Enniskillen which shutdown on the weekend of the 10 January 2015.
 - B. Lough Fea WTW which serves the area around Cookstown which shutdown periodically from the 12 January 2015.
 - C. Caugh Hill WTW, which serves the area around Dungiven, Claudy and Feeney.
 - D. Lough Macrory WTW which serves the area to the east of Omagh.
 - E. Lough Bradan WTW which serves the area between Killeter and Ederney. These last three works shutdown on the morning of the 17 January 2015 causing widespread disruption.
- 2.4.3 Water treatment works are complex combinations of chemical and physical processes using mechanical and electrical plant with complex control sequences for chemical batching and process control. While the works can be similar in principle, differences in water chemistry and different times of development can result in plant with unique designs and operating characteristics. As a result, even experienced plant operators can find it difficult to operate plant they are not familiar with at short notice.
- 2.4.4 In principle, treatment works are designed to run unattended under normal circumstances. Stand-by plant with automatic switchover is provided for critical processes. Power supply protection and stand-by generation is provided to reduce the risk of service failure. Most operational duties and non-critical maintenance work is carried out during normal working hours.
- 2.4.5 Important parts of the plant (such as chemical storage) are sized to ensure operation over a critical period such as weekends or holiday periods. Critical alarms, transmitted back to a central control centre, identify plant failures which put service at risk. During normal working, arrangements are in place to have staff on-call ready to respond if problems occur.
- 2.4.6 Water treatment works are designed to treat water to certain quality standards. Meeting these standards for wholesome water, particularly bacteriological standards, is essential to maintain public health. Performance is monitored continuously and plant are designed to fail safe by shutting down automatically before water quality parameters are exceeded.
- 2.4.7 While the works are designed to run automatically, changes in raw water quality or the failure of an individual item of plant can result in the process shutting down. This can happen at any time and the intervention of a skilled operator is required to restore the plant following clear established protocols. These circumstances are not unique to NI Water. Those with experience of the water industry in England, Wales and Scotland who advised us, confirmed that similar circumstances exist there.

Industrial action

- 2.4.8 The root cause of the incident was the industrial action undertaken by NI Water staff in response to changes in pension arrangements proposed by the company management to be implemented from 1 April 2015.
- 2.4.9 The industrial action, which began on the 22 December 2014 and was suspended on the 21 January 2015, consisted of:
- A ban on on-call and standby working.
 - A ban on overtime.
 - Non-participation in any activities considered voluntary including participation in the response to major incidents.
 - A general withdrawal of good will.
- 2.4.10 Staff taking part in the industrial action did not work during the evenings, at weekends or during public holidays, withdrawing support necessary to keep some critical plant in operation and respond to other breakdowns and emergencies over these periods.
- 2.4.11 NI Water employs over 1,200 people. The majority of these people work in the Customer Service Delivery Directorate. This directorate is responsible for the operation and maintenance of water and wastewater treatment works, pumping stations, sewers, water mains and other assets. It is also responsible for managing the call centre and billing activities and is the first point of contact for consumers.
- 2.4.12 Staff in other directorates undertake management, administrative, planning and procurement functions. This includes asset planning, capital programme procurement and delivery, finance and regulation, information technology and other support and corporate functions.
- 2.4.13 Table 2.3 shows the numbers of staff and the proportion available to work through the industrial action. Table 2.4 provides more detailed information on the numbers of staff within the Customer Service Delivery Directorate. Numbers available following the withdrawal of the TU protocol on the 5 January were lower and only 4 senior managers from the water supply function were available to cover water treatment works out of hours.

Table 2.3 - Staff available to work during industrial action

Directorate	Head count	Available to work	Available to work (%)
Customer Service Delivery Directorate	842	126	15%
Other directorates	407	157	39%
Total	1,249	283	23%

Table 2.4 - Staff available to work in Customer Service Delivery Directorate during industrial action

Function	Head count	Available to work	Available to work (%)
Customer Field Services	55	14	25%
Customer Services	46	13	28%
Developer Services	31	4	13%
Leakage Services	74	4	5%
M&E	100	11	11%
Networks Water	149	22	15%
Operations Contract Management Centre	11	4	36%
Operations	75	19	25%
Waste Water Services	215	23	11%
Water Supply	86	12	14%
Total	842	126	15%

- 2.4.14 Support for industrial action was strongest within the industrial workforce. We have concluded that the proportion of staff involved in the industrial action, including staff who are not members of the relevant trade unions, came as a surprise to the company. We will return to this issue in our assessment of contingency planning in Section 3.0.
- 2.4.15 The almost total support for the industrial action of the water supply operational teams became critical when the trade unions withdrew from the TU Protocol. The individual experience and local knowledge required to operate each plant could not be replaced when staff were not available. Without these staff the water treatment works could not be restored quickly resulting in supply failure.
- 2.4.16 The industrial action did not affect the PPP works where the industrial workforce was not in dispute with their employer. These works serve around 43% of the Northern Ireland population in eastern areas from Newry through Belfast to Antrim and Ballymena. However, other works operated by NI Water in both the east and the west also had critical alarms during the incident leading to automatic shutdown. It was fortunate for those served by these works that these events occurred during the week or at times when NI Water staff familiar with the works were available to restart the plant quickly thus avoiding supply failure.

Impact of terms and conditions and working practices on the incident

- 2.4.17 The company relies on staff working 'on-call' on evenings, over public holidays and weekends. This arrangement is common in the utility services sector.

- 2.4.18 NI Water has on-call rotas and makes overtime payments and on-call payments to staff called out to repair and restore plant out of hours. It has not made these out of hour working arrangements part of the core hours of its staff. There are alternative terms and conditions the company could consider in respect of out of hours working. However, these issues fall outside our remit. It is for the company to consider the advantages and disadvantages of alternative arrangements, assess whether they are appropriate and consult their staff if they decide to implement changes.
- 2.4.19 No arrangements or agreements can guarantee that staff who are dissatisfied with their terms and conditions will not take industrial action. The company cannot plan on the assumption that staff will not take industrial action in the future. In view of this and in light of the reliance on individual experience and local knowledge which could not be easily replaced to operate water treatment works, the company should consider how it could provide cover when key resources are not available.
- 2.4.20 **NI Water's Actions 1, 15 and 29** cover options to reinforce resilience in respect of company staff. We believe that the company should take a wider view. This would include, for example, the operation of PPP plant should they be impacted by industrial action or the disruption of contract services including the supply of critical materials such as treatment chemicals.

Required Action No. 1 – Review the resilience of key resources and reinforce where necessary.

The company is required to review the resilience of resources which are critical to service delivery. The company should take reasonable steps to secure the continuity of service when the resources it normally relies on are not available.

Review of specific plant failure occurring during the incident.

- 2.4.21 While the root cause of the loss of water supply was industrial action, each shutdown of a water treatment works was triggered by the failure of specific services or items of plant. In this incident examples included:
- Power outages or voltage fluctuations which affected performance of works.
 - Failure of equipment installed to protect the works against voltage fluctuations and secure operation while standby generators came on.
 - Interdependencies between the plant and the network, or within the distribution network itself, extended the time it took to fully restore supplies. For example where a service reservoir must reach a particular level before water can be pumped to restore supplies in an area.
 - Delayed commissioning of 4MI/d of additional treatment capacity at Lough Bradan which, if available, could have reduced the impact of the outage.

- Failures of On-Site Electrolytic Chlorination (OSEC) plant which resulted in a loss of chlorination.
- The ability or inability to control water transfers remotely.

2.4.22 There is an opportunity for the company to review power failures, critical plant failure, control issues and other issues affecting plant availability when staff were not available to respond and ensure that these issues have been addressed. This might include reinforcing back up arrangements as well as identifying and fixing common faults. This work should extend to an investigation of water treatment works which did not shutdown during the event to confirm that they are adequately protected against similar issues, including sharing lessons learnt with the PPP works operators.

2.4.23 The work should not be limited to water treatment works but should take account of asset failures and near misses during the incident in other areas of service as outlined in Section 2.6 below. The company should consider how industrial action might have impacted on other areas of service had circumstances been different and plan accordingly.

Required Action No. 2 – Review and address critical plant failures and near miss events which occurred during the incident.

The company is required to review the causes of plant failure and near miss events which occurred during the incident across all areas of service and to improve service resilience by repairing or reinforcing critical items of plant or services such as power supplies.

Pro-active asset management

2.4.24 Following a major incident such as this, there is a risk of the company reacting by addressing weaknesses in plant exposed in this incident only. In our final determination for PC15 which covers the six year period 2015-21, we highlighted the need for the company to develop a clear plan for asset maintenance. This should identify gaps in its current processes and develop an appropriate range of asset maintenance techniques to deliver a planned level of service.

2.4.25 This would ensure that plant design, asset maintenance interventions and operational practice are developed to target a level of service taking account of good information on the performance of the plant and the risks and consequences of plant failure.

2.4.26 As part of business as usual and in the run-up to the industrial action, the company identified frequent out of hours calls which risked water treatment works shutdown and undertook work to reduce the frequency of these events. The company should continue this work as business as usual. A more critical review of plant performance in advance of the incident might have identified other issues including those outlined above, reducing their impact during the incident.

- 2.4.27 In its developing plans for asset maintenance, NI Water has already identified the need for some form of structured assessment of critical plant which considers failure modes and their impact on service. This incident reinforces the need to bring forward and complete these assessments giving priority to water treatment works.

Required Action No. 3 – Accelerate the development of a plan for asset maintenance.

The company is required to accelerate the development of a plan for asset maintenance and develop a prioritised plan to reduce the risk of critical asset failures. Priority should be given to a structured assessment of water treatment works against a defined level of service to ensure weaknesses in existing plant are identified and addressed in a cost effective way.

Improving asset resilience

- 2.4.28 The required actions above focus on both reactive and proactive asset management to minimise the risk of water supply failure. However, it is not possible to eliminate all risks of water supply failure by attention to the treatment plant alone. It is also necessary to consider steps to ensure that a loss of treatment does not immediately result in a loss of supply. This resilience usually takes the form of local treated water storage and transfers of water from other areas.

- 2.4.29 For example in the PC15 final determination, provision was made for:

- Additional treated water storage at Lough Fea and Killyhevlin which would have reduced the impact of this event.
- Trunk mains from Dungannon to Cookstown and from Carmoney to Strabane which might have reduced the impact of this event.
- Further work is planned for PC21 on a trunk main from Killyhevlin to Lough Bradan and on additional water storage.

- 2.4.30 In our final determination for PC15, we made two further points:

- NI Water could make further investment efficiently during PC15 if additional funding was available.
- That further work should be carried out on the water resilience schemes included in PC15 to ensure that they will deliver against a defined level of service.

- 2.4.31 **NI Water's actions 16, 17 and 18** cover the need to secure funding for these resilience schemes in the PC15 period. Actions focus on the completion of the Water Resource and Supply Resilience Plan (WRSRP) which will include a full assessment of the need for water storage and transfer mains.

- 2.4.32 Work on the draft WRSRP will be complete in early 2016. This will allow the company to address the issues raised in our final determination. It will further ensure that the investment made delivers the level of service required and give a clear understanding of the circumstances, if any, under which a supply failure would occur once this investment is made.

Required Action No.4 – Investment in water supply resilience.

NI Water is required to complete an assessment of water supply resilience as envisaged in its Water Resource and Supply Resilience Plan and promote the necessary investment to deliver a defined level of service and resilience.

Restoration of supplies

- 2.4.33 After a failure of water supply, it takes time to recharge the system and restore supplies in all areas. The company must make operational decisions on how and in what order supplies are restored. Providing good information to consumers on the time it will take to restore supplies and having systems in place to check that supplies have been restored would help consumers. The length of time it takes to restore supplies can increase when airlocks occur. This should be minimised and, if possible, taken into account when estimating or revising restoration times.
- 2.4.34 **NI Water's Action 11** addresses these issues and will allow the company to consider what steps it can take to reduce the risk of airlocks occurring and minimise their duration.

Weather conditions

- 2.4.35 Weather conditions were poor during the event with high winds, freezing conditions and lying snow. This caused or contributed to:
- The difficulty consumers experienced in travelling to and collecting alternative water supplies.
 - Interruption to power supplies at water treatment works due to high winds.
 - Difficulty with access; including access to water treatment works, when laying out alternative water supplies, when tankering water, when isolating service reservoirs and when restoring supplies and clearing airlocks.
- 2.4.36 However, it does not appear that low temperatures resulted in any increase in pipe bursts and the associated increase in demand which was the cause of loss of supply during past Freeze/Thaw events.

2.5. Impact on water quality compliance

- 2.5.1 This report does not address issues of water quality compliance where the competent regulator is the Drinking Water Inspectorate. The Drinking Water Inspectorate (DWI) has a responsibility for monitoring NI Water's performance in respect of water quality, including alternative water supplies provided during the incident. The DWI is undertaking an assessment of NI Water's performance as part of its normal response to an event and will communicate its findings to NI Water.

2.6. Impact on other service areas

- 2.6.1 The industrial action also impacted on other areas of NI Water's performance. In this section we provide a brief summary of the impact of industrial action in these service areas. Because these issues did not have a significant impact on consumers we have not reviewed their cause and extent in any detail.
- 2.6.2 There was some delay in making repairs to water mains because network staff were not available to isolate water mains out of hours. This will have delayed restoration of supplies to some consumers following mains bursts. The impact will have been localised.
- 2.6.3 There was some increase in leakage because network staff were not available to facilitate repairs out of hours. The impact was minor and it should be possible to reduce leakage again as any backlog of repairs is addressed.
- 2.6.4 There was no significant consumer impact associated with the sewerage system. Key consumer facing activities of blockage clearance and clean up is undertaken by contractors and this work continued. There were no major flooding incidents during the period of industrial action.
- 2.6.5 The company identified 32 wastewater treatment works (>250 population equivalent) where process performance was deemed to be comprised during the incident. NIEA was kept informed of issues and continued to apply regulation and enforcement in line with its Enforcement Policy and continued sampling as scheduled. Seven wastewater treatment works sample failures which occurred during the industrial action were discounted by NIEA for the purpose of consent compliance under its policies covering such events.
- 2.6.6 Fifteen pollution incidents occurred during the incident. The company has linked nine of these to the action. This is no higher than might be expected for the period.
- 2.6.7 The need to prioritise tanker drivers to transport alternative water supplies limited the resource available for other duties including sewage sludge transfer. This resulted in an increase in the quantity of sludge stored at works, contributing to the risk of works failure. Delays in sludge transfer may have created difficulties at the PPP sludge incinerators resulting in a claim for additional costs which is reviewed in Section 5.4.9.

2.6.8 In some respects, the limited impact in other areas of service was due to circumstances at the time. Had circumstances been different, it is possible that the impact on other areas of service would have been more severe. For example:

- While poor weather conditions hampered the company's response during the incident there were no extreme storm events resulting in widespread flooding;
- Nor was there an extreme Freeze/Thaw resulting in a loss of supply because of increasing demand; and
- There were no major wastewater treatment works failures resulting in uncontrolled pollution.

2.6.9 **NI Water's Actions 19, 20 and 21** cover the need for the company to review its contingency arrangements and plans for key sites and key skills dependency to help mitigate against the impact of future events within the wastewater function. In our required actions above we have highlighted the need to consider asset failures and near misses during the incident across all areas of the service.

3.0 Contingency Planning and Implementation

3.1. Introduction

- 3.1.1 Contingency planning and implementation covers the full range of activities which the company undertakes to mitigate the impact of incidents on the service it provides to consumers. This includes how the company's leadership prepares for and manages an incident. It also includes how internal and external communications are managed during an incident.
- 3.1.2 Our review of communications and management and leadership are reported separately in Sections 4 and 5 of this report. This section covers contingency planning and implementation of the operational response during the incident.
- 3.1.3 We have reviewed the company's incident planning including:
- The company's Major Incident Planning procedure which sets a framework within which incidents are managed.
 - The pre-planning work undertaken by the company as the possibility of industrial action emerged.
 - How the contingency plans were implemented as industrial action came into effect.
 - How the company engaged within the wider civil contingency framework during the incident.
- 3.1.4 We have also reviewed how the company responded to the loss of water supply including:
- The steps it took to maintain supplies and restore supplies as quickly as possible.
 - The provision of alternative water supplies once the normal supply had been lost.
 - The measures taken to protect vulnerable consumers.
- 3.1.5 In carrying out this review, we are aware that the plans the company has in place for managing major incidents depend on having resources available. Throughout this incident, the company's response has been limited by the fact that many of the staff it relies on in normal circumstances were taking industrial action. This required the company to flex and amend its plans throughout the incident and limited what could be done to mitigate the impact on consumers and the speed at which this could be done.

3.2. Contingency planning arrangements

NI Water's Major Incident Plan (MIP)

- 3.2.1 NI Water's MIP provides the framework for the management of incidents. It gives guidance on the mobilisation of staff into incident teams and the command, control and coordination of the incident response. The MIP is supported by a broader set of contingency plans and business continuity plans that can be implemented either pre-emptively or reactively for specific types of events.
- 3.2.2 NI Water's MIP was benchmarked against other water utility plans by the Utility Regulator in the 2010-11 Freeze/Thaw review and found to be broadly equivalent. A second independent expert evaluation undertaken for the DRD Minister at that time came to a similar conclusion.
- 3.2.3 Since the 2010-11 Freeze/Thaw, improvements have been made to the procedures and facilities covered by the plans including communication, information processes and the provision of plant and equipment. The MIP has been regularly tested through a range of exercises, including large scale annual exercises, and is used to manage all live incidents. Regular training is provided with around 30 training courses undertaken over the last four years on specific aspects of incident management and response.
- 3.2.4 NI Water's planning for provision and preservation of services in a civil emergency has also been audited independently for DRD annually since 2011-12. DRD confirmed that these audits have not identified any significant shortcomings and that all actions from last year were addressed in advance of this event.
- 3.2.5 However, it is clear that the planning for this incident and the management of incident response has tested the Major Incident Plan and processes in a challenging and unusual combination of conditions. The Major Incident Plan should be reviewed to incorporate lessons learnt.

Required Action No. 5 – Review the Major Incident Plan in light of lessons learnt.

The company is required to incorporate its response to our review and its own actions in its Major Incident Plan and processes. We suggest that DRD includes a review of the company's response to lessons learnt from this incident in the next audit of the Major Incident Plan.

Pre-planning in advance of the incident

- 3.2.6 The company began planning for industrial action in early October 2014. Preparations were co-ordinated by the Customer Service Delivery Directorate (CSDD) senior management team. In view of the potential severity of the event, the Executive Team began weekly Industrial Action meetings from late November. On the 12 December 2014, a CSDD contingency planning steering group was convened which led operational planning for the event.

- 3.2.7 Event-specific contingency planning was undertaken in parallel with normal winter contingency preparations. Many of the actions normally taken by the company in preparing for the winter were also relevant to this incident. The company updated its industrial action contingency plan and produced detailed plans specific to each function.
- 3.2.8 NI Water did not however anticipate the level of support for industrial action particularly from non-trade union staff. This only became evident to the company during week beginning 12 December 2014, after the decision to take industrial action was made by the trade unions and the company began to poll staff to determine who would be available to work out of hours. An internal document issued by NI Water for discussion on the 12 December identified loss of water production as an amber risk, based on a planning assumption that at least 18 non-TU staff would be available.
- 3.2.9 As late as the 18 and 19 December 2014, the company was addressing key actions to mitigate the impact of industrial action. These included, contacting certain “Mutual Aid” providers, exploring the procurement of tankers and drivers and reviewing water treatment works alarms and shutdowns from the 2013-14 Christmas period. For example, the company explored three primary options available for sourcing mutual aid when an incident reaches a level that the company can no longer manage within its own resources:

- The Water UK Mutual Aid Scheme.
- The Critical National Infrastructure Providers (CNIPs) Mutual Aid Protocol.
- NI Civil Emergency Arrangements.

At this point it found that participating organisations were not willing to provide staff because the incident involved industrial action. They may have provided plant, equipment, bowzers or bottled water at a later stage to support alternative water supplies if required.

- 3.2.10 Had the company considered planning scenarios which assumed almost universal industrial support, this may have led to a wider range of interventions being explored earlier and improved the company’s ability to deal with the events which transpired. We have concluded that NI Water should use the knowledge gained in this event to ensure that it considers a wider range of possible scenarios as key risks escalate. We have considered this further in Section 5.0 on leadership and management before making recommendations.

Incident management regime

- 3.2.11 NI Water instigated a Category 1 incident management regime from the start of the industrial action on 22 December 2014, in recognition of the potential for disruption of services. This is the highest level in its incident management regime. The company maintained this regime throughout the event. It was finally stood down on 22 January 2015, the day after the trade union action was suspended.

- 3.2.12 In line with procedures introduced following the 2010-11 Freeze/Thaw, the Major Emergency Group (MEG) was convened to oversee the incident. The MEG is chaired by the company CEO and includes the Executive Directors of the company in defined incident roles.
- 3.2.13 The MEG met frequently during the period of industrial action, to ensure that the Executive Team directed the company's response. A key role of the MEG was to set and refresh the strategy for managing the incident which is then implemented by the tactical and operational response teams.
- 3.2.14 NI Water's incident management structure is based on established emergency planning practice. At an early stage, the company identified that it would have too few staff to implement the planned incident management structure. In response, it streamlined and relocated the incident management team, introduced additional management roles to meet specific needs and introduced a shift system during critical periods.
- 3.2.15 The company however was simply unable to resource the local operational teams which would typically be in place. In normal circumstances, these teams provide a critical link to local areas and local knowledge. Because of the industrial action, this critical link was missing over holiday periods, at weekends and in the evenings.
- 3.2.16 We have concluded that the company adopted a sensible and practical adaptation of its incident management structure, allowing it to manage the response within the limits of the resources available to it. These streamline structures are something the company should consider as it reviews its Major Incident Planning procedures.
- 3.2.17 We acknowledge the efforts of those NI Water staff that remained at work and undoubtedly minimised the extent and duration of loss of supply. However, it is unlikely that the company could have sustained this indefinitely. In such circumstances it may have been necessary to escalate the incident through the civil emergency framework. This decision would rest with the DRD Permanent Secretary.
- 3.2.18 **NI Water's Actions 28 and 30** cover the need for the company to review its resource planning and management arrangements based on its experience in this event.

Multi-agency engagement

- 3.2.19 NI Water's major incident plans are based on it managing events where up to 20,000 properties are off supply for up to 72 hours within its own resources. While this threshold was not exceeded in this event, the company was operating without the support of the resources normally available to it and was mobilising contract resource to undertake operational activities and provide alternative water supplies. We note that while the thresholds are in place for planning purposes, they should not become a barrier to broader action as circumstances change.

- 3.2.20 Above this threshold, a local multi-agency response can be initiated, drawing on the resources of a range of agencies and services and co-ordinating their response. Under the Department's Major Emergency Response Plan, the management of the incident can also move to the lead Department (DRD). The Department has informed us that this was kept under review throughout the incident.
- 3.2.21 NI Water initiated multi-agency procedures at the start of the incident. It hosted regular multi-agency audio-conferences allowing the Multi-Agency Group structure, which would come into effect in the event of a civil emergency, to operate in shadow mode. This ensured that other agencies were kept informed about the incident and emerging risks. It also provided the mechanism by which NI Water requested assistance and through which the response could have been escalated if required. Stakeholder feedback indicates this process was managed well and operated effectively.
- 3.2.22 This incident did not meet the pre-defined thresholds for the declaration of a civil emergency, which would have led to establishment of full NI Central Crisis Management Arrangements. However, as the situation in the west deteriorated on Sunday 18 January the local Council Emergency Planning Officer convened a local multi-agency working group at Omagh to help co-ordinate the response.
- 3.2.23 Some other agencies felt that a decision should have been made to set up a full multi-agency response at that time and there may have been a case for this. Certainly there was the potential for the situation to have deteriorated further and rapidly. At this point a formal multi-agency response, including assistance in laying out alternative water supplies, would have become necessary.
- 3.2.24 These decisions are judgement calls at the time. However, it is important that a clear line of command is maintained through an incident and that, if there is to be a handover of command, that this is clear and managed. It is also appropriate that all agencies are kept informed and work together out with the formal structures and process, as happened in this incident. Given the shadow structures in place, it is not clear that the consumer experience would have been materially different if a civil emergency had been declared.
- 3.2.25 The outcome of this incident provides an opportunity for NI Water and other local civil contingency bodies to reflect on the current arrangements and the processes in place for moving from a first responder command to a multi-agency response. This should consider the following:
- What else, if anything, could have been done to improve the situation for consumers in advance of escalation of the incident and initiation of civil emergency procedures?
 - Are the threshold levels in place for initiating a multi-agency response appropriate?
 - How would a multi-agency response have developed if the situation had deteriorated?

- Are adequate preparations in place for the layout of alternative water supplies through a multi-agency response once the capacity of NI Water's own resources have been exceeded?

3.2.26 **NI Water's Actions 2, 3, 5, 6 and 7** cover the need for the company to review and potentially reinforce certain aspects of local civil contingency and multi-agency response arrangements based on its experience of this event. Clarity in relation to the ability to escalate incidents when the company's ability to respond is compromised by resource limitations should form part of this process.

Required Action No. 6 – Review multi-agency response arrangements.

NI Water is required to engage with local civil contingency bodies in order to review current arrangements and processes in place for moving from a first responder command to a multi-agency response in light of recent experience and determine whether current contingency arrangements can be strengthened to improve future responses.

3.3. Operational response to treatment works shutdowns and supply loss

Introduction

3.3.1 The extent and impact of loss of water supply on consumers is outlined in Section 2.3 of this report. This section reviews the company's operational response which focuses on:

- Restoration of water production as quickly of possible.
- Management of the network to distribute water in storage.
- Tankering to service reservoirs to sustain supplies for as long as possible.
- Distribution of alternative water supplies as normal supply is lost.

Action to restore water production

3.3.2 The company had identified the risk of water treatment works shutdowns and the impact this could have on consumers in advance of the incident.

3.3.3 During the incident, telemetry systems communicated information on works shutdown to the telemetry centre where the incident command team was located. These systems worked well and response was immediate. However, only a small number of water supply management staff were available for deployment to re-establish production with some specialist contractor support.

3.3.4 While these staff could take some action to restore the works, they did not have the detailed operational experience of individual works which would allow production to be restored quickly. Faced with coincident works shutdowns there

was not sufficient resource to restore production over the weekend of the 17 and 18 of January 2015. In Section 2.4 we have recommended that NI Water should review the resilience of key resources and reinforce them where necessary.

Management of water distribution

- 3.3.5 The company was aware that water supplies would be at risk in the event of water treatment works shutdowns, particularly at the weekend. Contingency plans included maximising storage in the distribution system during normal working hours.
- 3.3.6 Following the 2010-11 Freeze/Thaw, the company developed contingency plans for loss of water supply. These identify opportunities to mitigate against loss of supply in the distribution systems by: balancing service reservoir levels; rezoning to prioritise closed communities such as hospitals; maximising production elsewhere where possible and introducing asset to asset tankering. These plans were put into effect. Again, the key limitation was the availability of NI Water staff out of hours to carry out the work identified in the plans. NI Water mobilised contractor resources to assist with access and valve operation where possible.
- 3.3.7 Closed community contingency plans were activated in conjunction with NI Water contingency plans. This ensured that piped supplies to South West Acute and Tyrone & Fermanagh hospitals were maintained despite the shutdowns at Killyhevlin and Lough Bradan WTWs.
- 3.3.8 **NI Water Action 14** covers the need for the company to review its water treatment work contingency plans following the incident and to consider including downstream network information to aid restoration of supplies in the event of prolonged shutdowns.

Asset to asset tankering

- 3.3.9 The company used asset to asset tankering to delay the loss of supply following water treatment works shutdown. The company has reported it tankered 26 million litres during the event and at the height of the incident was using 20 tankers (16 NI Water tankers and 4 hired-in). Contract drivers were used out of hours and at weekends when operational staff were not available.
- 3.3.10 NI Water has advised that during the incident operations were impacted by:
- Inaccessibility of some sites particularly during adverse weather conditions.
 - Ability to source and procure additional commercial tankers of an appropriate size.
 - Need to source replacement drivers and train replacement staff on sampling operations.
 - Need to source suitable hoses, pumps and fittings for hired in tankers.

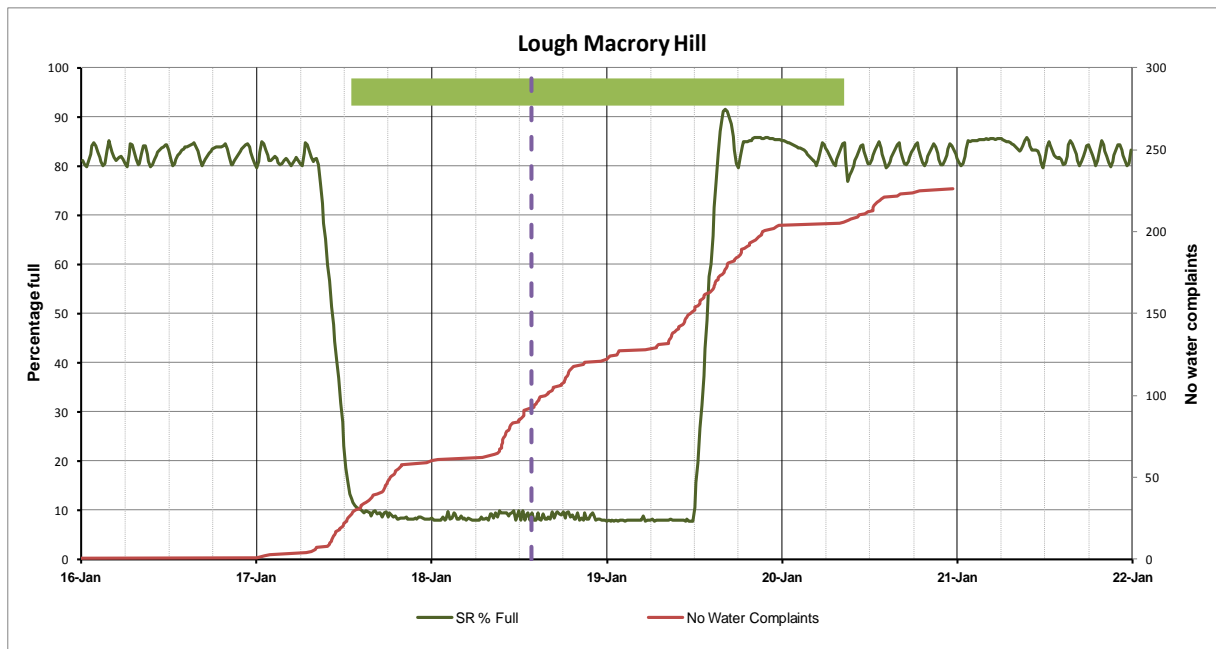
- Unfamiliarity of staff deployed with the fast fill point locations and associated valving arrangements.
- 3.3.11 If additional tankering had been possible it may have further helped mitigate the impact of the event for some consumers. The difficulties experienced in maximising tankering operations during the event will have provided valuable information for the company. We would expect it to use this information to identify opportunities to address any shortcomings.
- 3.3.12 **NI Water's Actions 22, 23, 24, 25 and 26** cover the need for the company to critically review the tankering operations during this event to allow it to identify areas of improvement and reinforcement, both in terms of plant and equipment and the information available to those involved in operations. This is necessary so that the effectiveness of both NI Water and hired in tanker operations can be improved in future events and the impact on consumers can be mitigated as far as possible.
- 3.3.13 However, we are aware that asset to asset tankering can only provide some assistance. It cannot be seen as a solution to widespread supply failure. During this incident, the volume of water the company was able to tanker was less than 5% of the capacity of the works out of service. It would have to have increased tenfold to prevent a loss of supply.

Alternative Water Supplies - General

- 3.3.14 The requirements for the provision of alternative supplies are specified in guidance which was issued to NI Water by DRD in September 2011 under the Preservation of Services and Civil Emergency Measures Direction 2010 (PSCMD). The requirements state that:
- Distribution should commence as soon as possible after the failure has occurred.
 - The amount provided should be at least 10 litres of water per person, per day initially.
 - Alternative supplies should be provided to all those affected within the first 24 hours of the company becoming aware of an incident.
 - Alternative supplies can be provided 'by any suitable means', including bowsers, tankers and/or bottled water.
- 3.3.15 NI Water's policy is to provide bottled water to consumers on its Customer Care Register and strategically locate bowsers of water to serve other consumers.
- 3.3.16 We have reviewed the deployment of additional water supplies during the incident. We note that improvements made in the company's plans and additional alternative water supply equipment procured since the 2010-11 Freeze/Thaw were utilised. The company prepared for the deployment of alternative supplies from the start of the incident. Once it became aware piped supplies were likely to fail it implemented these plans following a decision matrix developed after the Freeze/Thaw to ensure deployment occurs within 24 hours.

- 3.3.17 In most cases bowzers were in position and supplied within 24 hours. To facilitate this, a local alternative water supply team was set up in Omagh and contract staff were used to help distribute equipment, drive tankers and man the distribution sites. The company offered water containers to consumers free of charge if they arrived without appropriate containers.
- 3.3.18 **NI Water's Actions 3, 10, 24, 25 and 27** cover the need for the company to review its alternative water supply equipment, plans and processes following this event to identify whether they can be reinforced to further mitigate against similar events in the future.
- 3.3.19 An example of the relationship between service reservoir drain down, escalation of no water calls and the period NI Water estimates that people were off supply is shown on Figure 3.1. The figure also indicates the time alternative water supplies were laid out.

Figure 3.1 - Service reservoir (SR) drain down



- 3.3.20 The graph above shows how water levels in the service reservoir fell following the shutdown of Lough Macrory WTW on the 17 January. The number of “no water complaints” began almost immediately and escalated as the water level fell in the service reservoir. Alternative water supplies were laid out on the afternoon of the following day, some 24 hours after the loss of supply occurred.
- 3.3.21 In these circumstances, falling levels in the service reservoir provided an indication of when supply might be lost. With knowledge of the industrial action and its potential consequences, the company could have decided to deploy alternative water supplies sooner to ensure that they were available as soon as the water supply failed. In these circumstances, the company should not have waited 24 hours before laying out supplies

Required Action No. 7 – Ensure the provision of alternative water supplies as soon as possible.

In the circumstance of a failing water treatment works or falling service reservoir, NI Water should prepare to lay out alternative water supplies in advance of the failure and distribute alternative supplies at or about the time supply fails, unless the company has good reason to believe that supply will be restored quickly.

3.3.22 NI Water deployed alternative water supply bowzers at pre-planned locations. In the rural community these were located at population centres. We recognise that consumers still faced significant inconvenience accessing alternative water supplies during the event because of:

- Greater travel distances in rural areas, exacerbated by difficult weather conditions.
- Deployment sometimes occurring late at night which proved inconvenient for consumers, particularly in periods of adverse weather.
- Some confusion in relation to pre-planned deployment locations with stakeholders and communities having alternative views on the most appropriate distribution centres.
- Access to tanks being difficult at some sites due to ice and snow.
- Some consumers not expecting or noticing boil water notices on the bowzers.
- Alternative supplies being deployed some time after supplies were lost on some occasions.
- No access to maps showing where deployment was carried out to allow them to identify the nearest alternative supply location.

3.3.23 **NI Water's Action 7** identifies the need for NI Water to update civil contingency partners on its alternative water supply methodology and pre-planned sites. We believe that this engagement should also extend to local communities so that the company can benefit from local knowledge and experience.

Required Action No. 8 – Engage with stakeholders and communities on location of alternative water supplies.

NI Water is required to engage with stakeholders and communities on the deployment locations, to ensure that they are the most suitable sites and to ensure that other lessons from this incident are learnt.

Alternative water supplies - vulnerable consumers

- 3.3.24 The Preservation of Services and Civil Emergency Measures Direction 2010 states that plans for the provision of essential water supply should prioritise the domestic needs of the sick, the elderly, the disabled, hospitals, schools, and other vulnerable sectors of the population. Alternative supplies to these types of consumers are typically made through the provision of bottled water due to potential mobility issues.
- 3.3.25 NI Water encourages vulnerable consumers to register on its Customer Care Register and offers them a range of additional services, such as:
- Provision of information about events that may affect them to allow them to make an informed decision about any action they may need to take.
 - Priority given when situations require the provision of alternative water supplies.
- 3.3.26 At the start of the event there were 3,422 on NI Water's Customer Care Register. We have reviewed NI Water's interaction with these consumers prior to and during the event and identified that the company:
- Proactively delivered 16 litres of bottled water to its Customer Care Register consumers in early December as a precautionary measure under its established winter contingency plan arrangements;
 - Proactively contacted closed communities on the Customer Care Register under its winter contingency plan to prompt them to review their winter readiness arrangements;
 - Proactively contacted consumers within areas affected by supply interruptions during the event to provide them with information about what was happening in their area; and,
 - Escalated and prioritised requirements of Customer Care Register consumers for alternative supplies.
- 3.3.27 We recognise that there are others in society who might be deemed vulnerable by merit of recent illness, age or mobility issues, but are not on NI Water's Customer Care Register. Information on these consumers, and how they may be affected by particular events as circumstances change, may be held by other agencies or known at local community level only.
- 3.3.28 As in the 2010-11 Freeze/Thaw event, the inability of different agencies to share consumer information due to data protection issues, proved a barrier to the company identifying and dealing with such consumers itself. As a result, the provision of alternative supplies was undertaken by others (e.g. Red Cross) and co-ordinated through multi-agency conference calls. The ability to share information and ensure a co-ordinated response to all those who become vulnerable as circumstance change continues to be a potential issue.

- 3.3.29 We are aware local civil contingency bodies reviewed the potential for sharing information on vulnerable consumers following the 2010-11 Freeze/Thaw and defined arrangements for sharing information when a civil emergency is declared. We see merit in these bodies continuing to explore this opportunity in other circumstances, particularly in light of [guidance](#) issued by the Cabinet Office in March 2012 on formal information sharing under the Civil Contingencies Act 2004.

Required Action No. 9 – Share information on vulnerable consumers.

NI Water is required to engage with other agencies to review extending the circumstances in which it can share information on vulnerable people where public health might be at risk.

4.0 Internal and External Communication

4.1. Introduction and scope

- 4.1.1 Good communication is a key element of the effectiveness of any business. This is true for NI Water in either normal or 'exceptional' working conditions.
- 4.1.2 NI Water's ability to communicate with its consumers during the 2010-11 Freeze/Thaw was poor. Since then the company has improved its internal processes.
- 4.1.3 Systems have been introduced to address the weaknesses identified. This includes new internal reporting methods and external systems e.g. HVCA phone system. These systems worked well for the most part during this event.
- 4.1.4 The scope of this section of the review covers internal and external communications during a major incident through the variety of mediums used. It is structured as follows;

Internal communications

- The strategy that was in place.
- How the internal structure was set up.
- Processes that were followed.

Consumer communications

- Performance of telephones / website / social media.
- Television and radio interviews, newspaper articles, statements issued.

Other stakeholders

- Information provided to key stakeholders in affected areas e.g. large businesses, hospitals, care homes, schools etc.
- Timeliness and accuracy of messages.
- Engaging with MLA's, local councillors, emergency planners, councils and community groups.

Vulnerable consumers

- Special arrangements for vulnerable consumers.

4.2. Internal communications

Strategy

4.2.1 NI Water's strategy for crisis communications is detailed in its MIP. Practical response guidance is also included in the *NI Water Communications Team Emergency Response Handbook*. These cover a variety of actions including:

- External relations policy.
- Media strategy.
- Key roles and responsibilities.
- Standard lines to take.
- Relevant contacts.
- Guidelines for interviews etc.

4.2.2 Implementation of the communication strategy was not limited by resource constraints to any significant extent. The strategy was implemented and generally worked well. For example:

- Key roles were undertaken as planned – e.g. Head of Communications sat on the MEG, press officer on Silver Command etc.
- Key spokespersons agreed – CEO and Director of Asset Management did the vast majority of public interviews.
- Broadcast and media requests were answered unless compelling reason not to do so – 87% (162 out of 187) of media enquiries were accepted and answered over the course of the event.
- Crisis communications were established – Major incident page went live on the company website.

4.2.3 NI Water continued to tailor its approach during the incident. The company moved away from the prescribed daily press conference approach to answering media queries as they arose.

4.2.4 **NI Water's Action 12** covers the need for the company to ensure that suitable resourcing arrangements are retained under the call centre contract.

Internal communications

4.2.5 During the incident staff were updated and contacted on various subjects. These might include general updates, pension messages and requests for volunteers etc. This was done via all staff emails, intranet or the In-Touch telephone system.

- 4.2.6 The company kept in direct contact with staff through the incident where possible to ensure it was aware of who was willing and available to work. Contact also ensured that staff who were willing and available for work were aware of the roles they could undertake.
- 4.2.7 This review is more concerned with operational data flow and how this detail was shared. Such information will impact on the consumer and was identified as a problem area in the Freeze/Thaw report of 2010-11.
- 4.2.8 At present, the company has various data reporting mechanisms. These are summarised in the table below.

Table 4.1 – Internal communication methods

Mechanism	Function
CIMS	The Central Information Management System (CIMS) is the primary vehicle for 'live' field information. It reports supply loss times, properties affected, restoration times, alternative supplies etc. This detail is checked by Silver Command and uploaded to the web and phones for real time updates.
CRIP	The Commonly Recognised Information Picture (CRIP) is an upward report used to inform strategic decision making. It details a standard set of information that is useful to both management and stakeholders.
AIMS	AIMS is a log of key decisions / messages which can be viewed by different incident teams within the command structure.
GIS Mapping	GIS is a geographic location map plot of consumer calls. It can be used as an early warning system and to prioritise company response.
Telemweb	Telemetry information on critical assets, service reservoir levels, WTWs etc.
Corvu Dashboard	The Dashboard is a matrix of real-time call statistics. It can allow more specific analysis of individual contacts.

- 4.2.9 The systems have resulted in undoubted improvement from Freeze/Thaw. CIMS synchronises and updates live data on a 15 minute cycle. This compares with twice daily Gold Team updates which call handlers had to rely upon in 2010-11.
- 4.2.10 When conducting this review, it was evident that information we requested was readily available from corporate systems. During site visits, it was clear that up to date information is accessible to field staff.
- 4.2.11 **NI Water's Actions 8, 9 and 13** have however identified a number of issues which require action. These include:
- Certain CIMS deficiencies shown in the mock incident 'Exercise Rio' have yet to be addressed.

- A postcode search facility in CIMS would have been useful for call handlers.
- AIMS software is no longer supported by the vendor.

4.3. Consumer communications

4.3.1 The primary methods which consumers can use to contact NI Water are telephone, internet, email and social media channels (Twitter and Facebook). When there was a loss of water supply, there was a rapid rise in contacts through these channels. However, capacity was not exceeded and consumers could contact NI water throughout the incident. The total number of contacts / views received during the incident was:

Table 4.2 – Consumer contacts / views¹

Communication Channel		Nr. of Contacts / Page Views	% of Contacts / Page Views
Website page views	Total	183,867	88.12%
	Major incident page	50,785	
	Post code search	40,956	
Social media contacts	Total	216	0.10%
	Facebook	91	
	Twitter	125	
Telephone contacts	Total	24,502	11.74%
	No water calls	8,139	
Written contacts	Total	77	0.04%
Total contacts / views		208,662	100%

4.3.2 During the incident the majority of contact / views was through the web. The major incident web page and post code search facility were well used. However it is important to recognise the continuing importance of other forms of communication now and into the future. In particular:

- The number of no water complaints received by telephone is a significant proportion of the number of properties out of supply. Consumer engagement in the past has confirmed that people will still use the phone when they need a response to a problem affecting them. Indeed, not all consumers have access to the internet or are comfortable using it.

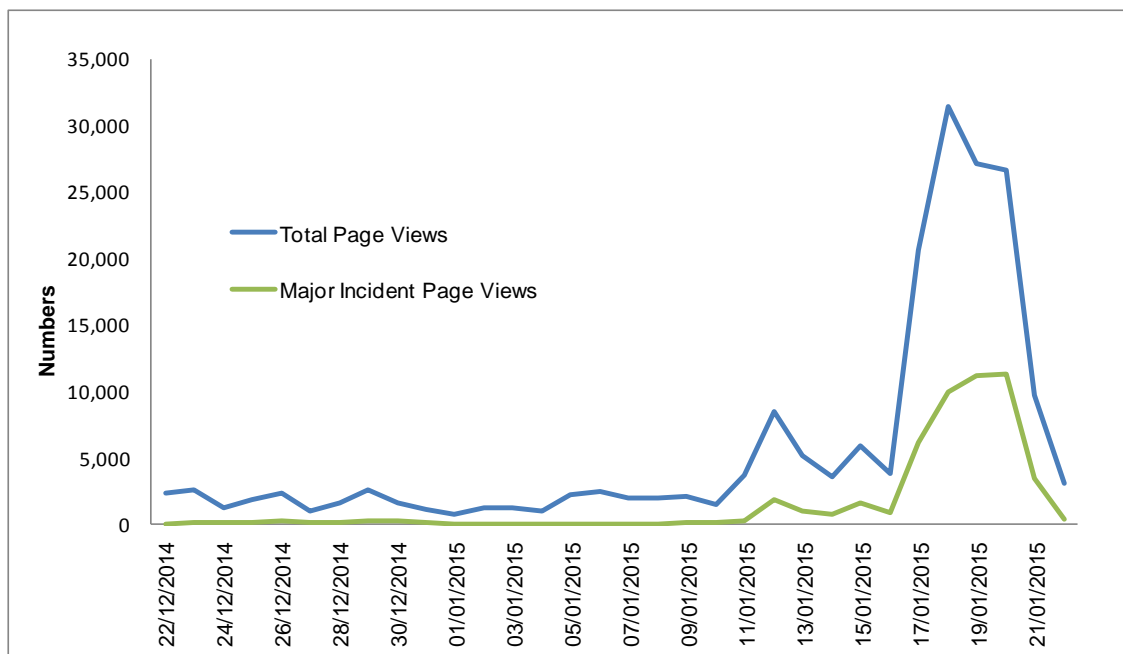
¹ The table undervalues the impact of social media. The data only includes social media contacts which required a response. Figures for Facebook Post Reach and Twitter Impressions are much larger but have not been included here. Unlike website page views, you cannot tell from these statistics how many people actually accessed or viewed data. Consumers may be 'followers' on social media but may not be active users.

- Consumers told us that broadcast media, particularly local radio was an important source of information as the loss of supply developed.
- Consumers also told us that local networks and word of mouth are important, emphasising the opportunity to use local community groups and representatives to cascade information.

Website and social media

4.3.3 The primary channel for accessing information during this incident was the website. Around 90% of all contacts consisted of web page views.

Figure 4.1 – Website usage



- 4.3.4 The website was previously limited to 20,000 daily hits at the early stage of Freeze/Thaw problems in 2010. Additional capacity added since then ensured that no such problems were encountered on this occasion. The postcode search can now handle in excess of 100,000 look-ups per hour.
- 4.3.5 Typically the NI Water web page can expect around 560 hits per day. During this incident the daily average was closer to 5,700 with a peak of over 31,000 on the 18 January.
- 4.3.6 Around 28% of hits were on the major incident page. Whilst seemingly low, it is not considered unusual as updates can be found on both the *News* and *What's happening in your area* sections of the site. Of the major incident page views, over 80% used the postcode search facility.
- 4.3.7 Currently NI Water has around 4,000 followers on Twitter. During the incident company tweets resulted in over 5,500 engagements and 225,500 impressions.

- 4.3.8 The ability of Twitter to cascade communication is a growing medium. The ability to maximise communication through retweets from local representatives and community groups should be considered.
- 4.3.9 The number of people following the company on Facebook increased from 880 to 1,754 during the incident. Facebook Post Reach was almost 19,000 on the 18 January alone, demonstrating the potential for social media to inform a large number of people about a specific issue.
- 4.3.10 Both Twitter and Facebook can be used as a vehicle to respond to individual contacts as well as a broadcast medium. However, only 91 and 126 queries which required a response were raised on Facebook and Twitter respectively. This is equivalent to seven daily contacts.
- 4.3.11 The key findings from the online section include the following:
- A. Website had the required capacity and did not suffer from issues experienced during the Freeze/Thaw.
 - B. Postcode search was well utilised and has since been developed for business as usual (BAU) purposes.
 - C. A separate Customer Care Register tab or link on the major incident page might prove useful.
 - D. The company should consider the resource allocation to social media given its increasing popularity.
 - E. The use of location names which are meaningful to the local community should be considered.
 - F. A GIS map for affected properties may be of use to consumers.
 - G. NI Water could benefit from enhanced social media listening activities. Pro-active work to identify key commentators / bloggers would help focus this effort.
- 4.3.12 **NI Water's Actions 4, 13 and 34** cover the need for the company to consider the provision of a GIS viewer, the inclusion of a post code search in CIMS and the resource constraints for handling a large number of social media contacts.

Telephone contacts

- 4.3.13 Besides the website, phone calls accounted for +10% of the remaining contacts. From the outset NI Water took the decision to mobilise staff to ensure a 'warm voice' response. As a result, almost all calls were answered quickly, even at peak times.
- 4.3.14 Typically the contact centre would deal with around 620 calls² per day at a normal staff compliment of 35. During the incident the company maintained a

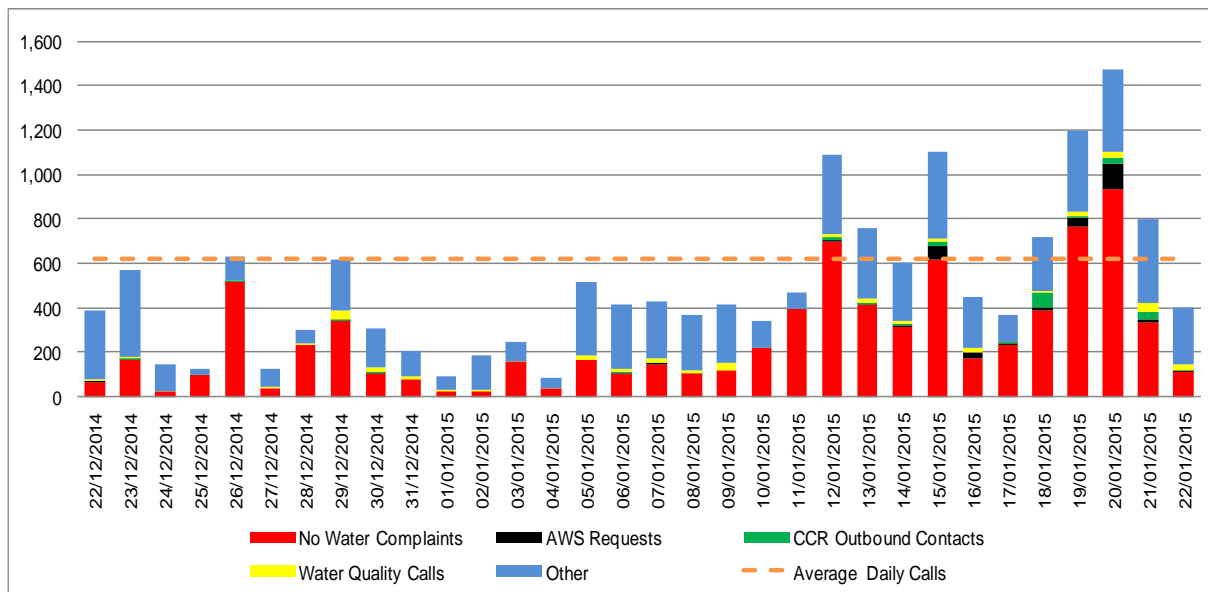
² Average call volume generated from Annual Information Return data for the last 3 years.

two shift system. This ensured that between the hours of 08:00-23:00 average staffing levels were around 60 at all times (120 per day).

4.3.15 In total NI Water received 24,500 calls to all lines (Water Line, Leak Line, Billing Line, Debt Line etc). This equates to 766 daily contacts, a 24% increase from the typical volume.

4.3.16 Operational calls to the Water Line totalled 15,944. A breakdown of call categories is provided below.

Figure 4.2 – Phone call analysis



4.3.17 Key findings from the call centre analysis indicate the following:

- NI Water was well prepared for a significant call volume increase, even though it never really materialised. As a result, the telephony problems which occurred during the Freeze/Thaw were not repeated.
- Percentage of calls abandoned was less than 1% with an average queue time of four seconds.
- Positive feedback was received from consumers in relation to both call handlers and the consumer experience.
- Some issues were raised in relation to the accuracy of information provided by the call centre.

4.3.18 The High Volume Call Answering (HVCA) system was installed after the 2010-11 Freeze/Thaw. HVCA allows automated messages to be provided to consumers based on their location. The system activates when the number of calls exceeds the number of call handlers available.

- 4.3.19 While it is available at all times, it was not used to any extent in this event³. NI Water should consider some form of formal test for this system in the next mock incident.

Media handling

- 4.3.20 From the evidence provided it is clear that a media strategy was in place and largely followed. The outcome of this work is summarised below:
- Media and political interest in the event was significant.
 - NI Water issued 41 statements throughout the event. These cover a variety of topics including pro-active warnings, regret about supply loss, trade union discussion updates etc.
 - The vast majority (87%) of media requests were responded to. Sensible reasons were also provided as to why media bids were rejected.
 - The company made efforts to tailor messages for specific areas. This was done through work with local radio, regional newspaper updates etc.
 - Feedback from consumers showed that many still rely on TV and radio media for updates. Across the incident NI Water did reject 23 of the 43 interview requests received. It is highly likely that good reason existed for these rejections. However the company may wish to consider this further given the number of consumers that can be reached through these interviews.
- 4.3.21 **NI Water's Actions 31 and 33** cover the company's intention to review its media plan and its mechanisms for managing localised minor events with significant media interest, based on lessons learned from this event.

Communication on water quality

- 4.3.22 Feedback from a limited number of consumers raised a concern that the "Boil Notice" signs placed on alternative water supply static tanks were not always heeded. These boil notices provide protection for consumers against the risk of contamination when the water is put in individual containers. Some people assumed that water distributed by NI Water would always be safe to drink irrespective of the means of distribution.
- 4.3.23 NI Water takes reasonable steps placing visible boil notices on the static tanks and ensuring that boil warnings are included in any communication on alternative water supplies. While it is unclear what further steps the company could take, it is an issue to consider.
- 4.3.24 As supplies are restored, there is a possibility of discolouration. Examples of this occurred during this incident. NI Water issued statements confirming that this

³ Only 29 operational calls were actually responded to by the HVCA system throughout the incident.

water was safe to drink. It is not clear that NI Water's assurance was trusted by all.

- 4.3.25 There may be circumstances where NI Water should delay removing alternative water supplies until water delivered to peoples' homes and businesses has returned to a reasonable aesthetic quality.

4.4. Other stakeholders

- 4.4.1 In this context other stakeholders refers to a variety a groups. This includes DRD, CCNI, MLAs, councillors, large businesses, key contacts (e.g. hospitals, schools) and civil contingency groups.
- 4.4.2 A summary of key findings is provided below:
- A. The stakeholder engagement team (SET) were tasked with briefing key personnel. This was done via situation reports and provision of dedicated phone lines manned by the SET.
 - B. Fifteen multi-agency calls were held during the event. Meetings were generally thought to be well chaired and structured.
 - C. A question was raised about the timeliness of some information provided. NI Water should consider if information could have be given to Education Boards or schools earlier to make decisions on closures.
 - D. Dedicated numbers were provided to key contacts, including closed communities and emergency services, to ensure they can reach the company if a problem arises.
 - E. Pro-active contact was made with MLAs and councillors about potential problems. Some criticism was received about a lack of warning provided in the run up to the Killyhevlin shutdown. This issue was addressed in the following weekend.
 - F. A dedicated elected representative (ER) line received calls from politicians. 363 calls were made during the incident. 98% were answered, though a fire alarm did prevent some being responded to.
 - G. An issue was raised by MLAs, stakeholders and consumers alike concerning the accuracy of data provided. In particular, concern arose around timings of supply restoration. This did prove a source of frustration for a number of consumers.
 - H. Provided links to DARD Helpline to triage and prioritise animal welfare.

4.5. Vulnerable consumers

- 4.5.1 Vulnerable consumer details are captured on the Customer Care Register (CCR). If on this register, the communications response is tailored to recognise priority status.
- 4.5.2 In terms of special arrangements the call centre can:
- Transfer CCR incoming calls to operators (rather than HVCA).
 - Provide call backs if the call was unanswered.
 - Undertake pro-active calls to vulnerable consumers in affected areas.
 - Contact nominated persons if an individual cannot respond by themselves.
 - Advise operational staff to provide alternative supplies etc.
- 4.5.3 Phone records and logs indicate that this work was being undertaken. The difficult issue is reaching those who are vulnerable but not on the register.
- 4.5.4 The best way to tackle this is to ensure that as many as possible are captured by the CCR. Obviously this is a dynamic target as the situation is constantly changing. NI Water has in the past made good strides in this area.

Table 4.3 – Customer Care Register numbers

2010-11	2011-12	2012-13	2013-14	Feb 2015
1,112	1,990	2,675	2,903	3,643

- 4.5.5 This focus should be maintained. The company may also wish to consider:
- If CCR registration details are provided on the major incident webpage.
 - If the register should have its own tab on the website.
 - Whether pro-active leaflet drops or promotional ads are run in the future.
 - How it could promote the CCR through local representatives and community groups.

Required Action No. 10 – Review and further improve communication systems.

NI Water is required to make the improvements in communication systems and processes identified in its internal review, taking account of the points highlighted by this review.

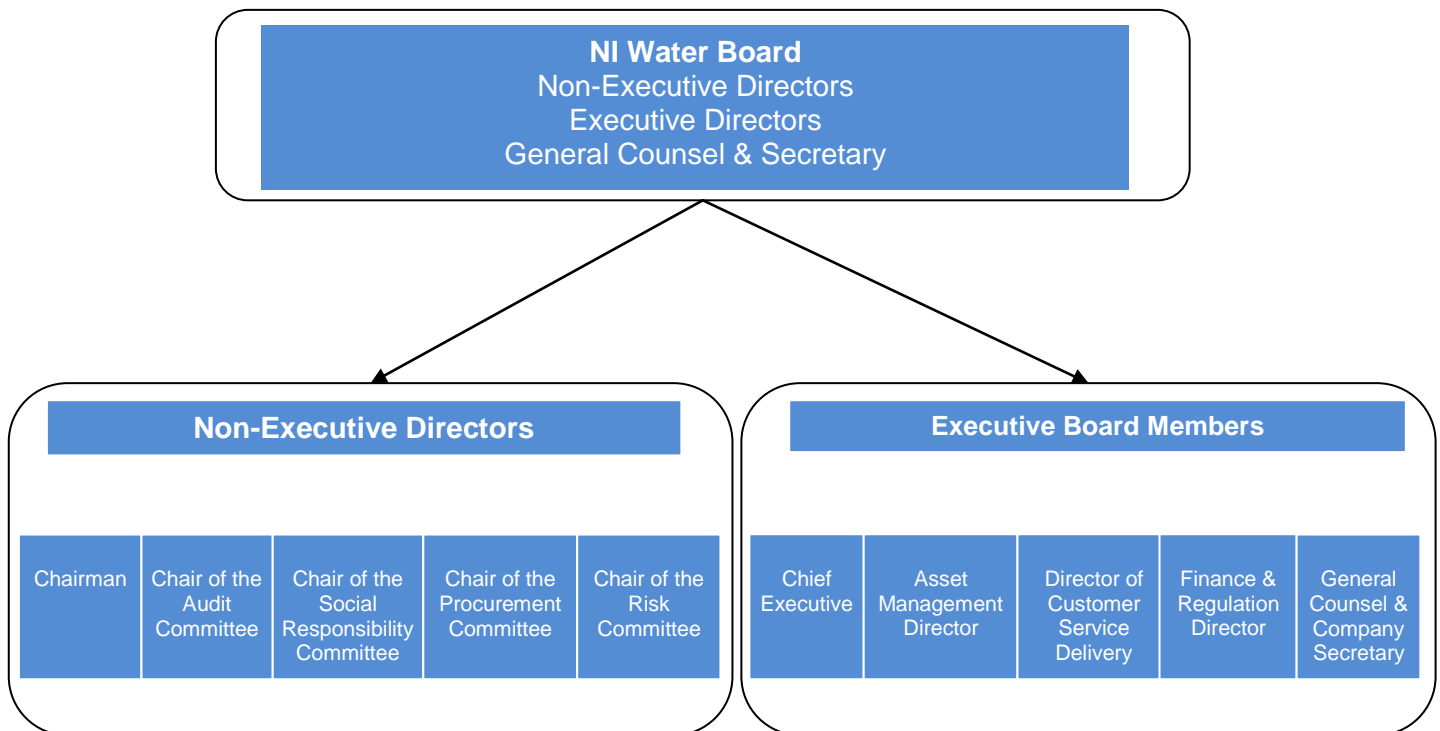
5.0 Management and Leadership

5.1. Introduction

- 5.1.1 In this section of our review we consider the management and leadership provided by NI Water's Board and Executive. We have considered the structure and role of NI Water's Board and Executive Team along with their roles and responsibilities during the incident.
- 5.1.2 We have analysed the management and leadership during the incident in two distinct phases:
- In the lead up to the industrial action which began on the 22 December 2014.
 - Through the industrial action and the management of the major incident from 22 December 2014 into January 2015.
- 5.1.3 Within Chapter 3.0 we have addressed the work of the Silver and Bronze command teams which undertook the tactical and operational management of the incident and their role is not considered further here.
- 5.1.4 The Board's role is to:
- Provide leadership of the company within a framework of prudent and effective controls which enables risk to be assessed and managed.
 - Set the company's strategic aims, ensure that the necessary financial and human resources are in place for the company to meet its objectives and review management performance.
 - Set the company's values and standards and ensure that its obligations to its shareholders and others are understood and met.

5.2. Structure and role of NI Water Board

- 5.2.1 NI Water's Board comprises a Chair, 4 Non-Executive Directors, the Chief Executive Officer and 3 other Executive Directors. General Counsel also attends. This structure is illustrated in the following diagram.

Figure 5.1 – Board membership at the time of the incident

5.2.2 The structure and role of the NI Water Board is set out in the company's Management Statement and Financial Memorandum (MSFM). It describes the role of the NI Water Board as a whole and of individual members including the chair.

5.2.3 The role of the Board is defined as setting the overall strategy and governance for the company but there are clear distinctions between:

- The role of the Chair in running the Board; and, the role of the Chief Executive Officer in running the company.
- The role of the Non-Executive Directors in supporting, advising and challenging the Executive Team; and, the Executive Team in managing the company and delivering its strategy.

In terms of leadership the Chair of NI Water has particular responsibilities which includes for example;

- Promoting the efficient, economic and effective use of staff and other resources.
- Formulating the Board's strategy.
- Encouraging and delivering high standards of regularity and propriety.

5.2.4 The requirements of the MSFM are broadly reflective of other good practice guidance such as the UK Combined Code on Corporate Governance. It is not the role of the Non-Executive Directors, including the Chair, to step in to run the

company during any major incident. Rather it is the role of the whole Board to challenge the Executive Team to ensure that they have put in place adequate mitigation measures to deal with any risks associated with the activities carried out by the company.

5.3. Leadership and management in the run up to the incident

5.3.1 In this section we review management and leadership from the initial discussion on staff morale in 2013 when the Board was updated on work the Executive Team were actioning to improve staff morale to the 22 December 2014 when industrial action began.

5.3.2 We have assessed the work undertaken by the Board and the Executive Team through a review of papers and minutes of the Board, the Risk Committee and discussions with Board members.

Key management and governance processes

5.3.3 NI Water carries out regular staff surveys. On 27 November 2013 a presentation was given to the Board updating them on progress being made on improvement to staff morale. This followed earlier discussions indicating that morale was an issue. Three members of the Executive Team had been tasked as corporate sponsors to address the three areas of leadership, career development and motivation. The presentation indicated a plan was in place to address these issues during 2014 with a further survey to be actioned at a later stage.

5.3.4 The NI Water Risk Committee met on the 25 July 2014 and received a Risk Management Status Report including an update on corporate risks. The Risk Committee also reviewed a paper on 'Risk Horizon Scanning and Forward Risks'. While there are actions in reference to the risk of not having motivated and skilled staff resource there is no mention of the potential for industrial action.

5.3.5 Proposed changes to the NI Water pension scheme were reflected in NI Water board minutes of 30 July 2014 where the approach of the trade union side (TUS) to proposed pension changes was discussed. There was no mention within the minutes of potential industrial action under the Risk agenda item.

5.3.6 The Board meeting of 24 September 2014 noted the ongoing engagement with the TUS in relation to pensions. The minutes indicate that the executive should give consideration to escalating the risk associated with the pension reform project.

5.3.7 Key Corporate Risks are reported to the NI Water Board on a monthly basis and in the lead up to the incident the Risk Committee met in July and November 2014.

5.3.8 An update on pay remits for 2013 and 2014 was noted at the 23 October 2014 Board meeting. It was noted that an area of risk to be highlighted at the Quarterly Shareholder Meeting that afternoon in relation to plans for winter preparedness. The issue was discussed in detail at the Board meeting and management was asked to provide a plan to ensure that appropriate levels of

- cover were in place in the event of a major emergency or major incident over the Christmas period. It was also noted that the Board gave consideration to the risk evolving in relation to the engagement with the TUS on Pensions and the action being taken to mitigate these risks.
- 5.3.9 We understand from NI Water that although the Executive Team had been in discussions with the TUS on the pensions issue for a number of years, formal consultation started on 30 June 2014. It was not until the 24 October 2014 when the TUS met the NI Water Board and informed them of the potential for industrial action that the Board became aware of a risk in that regard.
- 5.3.10 The Executive Committee meeting of 10 November 2014 reviewed papers that were to be provided to the Risk Committee for the 17 November 2014. Within the papers it is stated that '*there is an apparent risk of industrial action*'. This was identified against Corporate Risk CR9, i.e. 'not having motivated and skilled staff resource'.
- 5.3.11 The paper notes that, in mitigation, the Director of Customer Service Delivery was reviewing business continuity plans and assessing how services can be maintained. It also notes that staff issues could have a detrimental effect on morale and employee engagement across all staff groups. This could impact upon winter preparedness and would be assessed when staff are asked to confirm their retention on the 'volunteer list' for planning for potential category 1 major incidents. The comments in this paper reflect similar comments made in a corporate risk document dated 29 October 2014.
- 5.3.12 The Risk Committee met on the 17 November 2014 and agreed that Corporate Risk CR9 should be presented at the next Board meeting on the 26 November 2014.
- 5.3.13 At the Board meeting of 26 November 2014, under pension update, the Board discussed correspondence from the TUS in relation to proposed industrial action. This included the steps being taken by management to mitigate the effect of such action.
- 5.3.14 For winter readiness it was agreed that there remained a risk to the organisation in the event of industrial action at the same time as a major emergency or a major incident. The Chief Executive agreed to consider a suggestion to write to all members of staff in relation to the current ballot. There was also an action to be prepared for stakeholders and the media in the event that industrial action does take place covering the scenario where such action takes place during a major emergency event.
- 5.3.15 A note of the Business Continuity Steering Committee meeting of 1 December 2014 indicates that in relation to potential industrial action, meetings would take place every Tuesday until Christmas or until the risk was resolved. It was noted that business resilience as a result of industrial action would be managed under MIP. It was noted that NI Water would normally be provided with notice from the TUS about when and for how long action will take place and this may dictate MIP and Silver or Bronze team management. It was noted that 7 days notice of action must be given by the TUS.

- 5.3.16 The corporate risk in relation to potential major incidents was updated on the 5 December 2014. The CEO decided to upgrade the residual risk for a potential major incident from a score of 12 (medium) to 16 (high). This was based on the threat of industrial action and the impact that this would have on business continuity within NI Water particularly in the lead up to Christmas.
- 5.3.17 The action point arising from this upgrading of the residual risk was to develop a response. The deadline for this was 31 December 2014. This upgrade of the risk is in the context of a ballot which would be complete on the 10 December 2014 and the subsequent risk of industrial or strike action.
- 5.3.18 Within the structure of the corporate risk documentation there are controls, control owner and action points. We have not been provided clear evidence to show if any new controls or actions were created to deal with the risk escalated on the 5 December 2014 and how the consequences link to controls and actions identified within the risk documentation. Again, the risk of industrial action was considered as part of a more general resourcing risk leading to no clear linkage between actions relating to this particular escalation such as whether the policy on the provision and stocks of alternative water supplies were significantly stepped up.
- 5.3.19 In the early stages of its planning, the worst case scenario considered by the company assumed that 50% of industrial staff would continue to work through the industrial action. By the 18 December 2014, the papers of the Industrial Action Contingency Plan risk assessment possible scenarios show that this worst case planning scenario still assumed that 40% of the industrial staff would continue to work through the industrial action.
- 5.3.20 Had this level of key industrial staff been available to provide out of hours cover through the industrial action, it is likely that the most severe impacts could have been avoided. Using these planning scenarios would have given some confidence that the incident could have been managed effectively and may have conditioned the Board accordingly.
- 5.3.21 Formal notice of industrial action was given by the TUS to NI Water on 12 December 2014. NI Water subsequently issued a note on the 17 December 2014 on Annual Leave over the Christmas and New Year period, NI Water Manager's Guide to Dealing with Industrial Action and on the 19 December 2014 a message from the Chief Executive on Industrial action highlighting NI Water's position on the on-going discussions with the TUS.
- 5.3.22 At the 17 December 2014 meeting the Board received an update presentation on pensions and industrial action. This covered recent engagements with the TUS and the Minister and mitigating steps proposed by the company in order to avoid industrial action. The risks to the organisation from the proposed action were explained in detail particularly on the water supply side.
- 5.3.23 The minutes state that the matter was discussed in detail, particularly on the water supply side. This included proposed mitigation measures that had been shared with the Minister. The presentation given stated that the ballot closed with almost unanimous support from the poll for industrial action short of a strike (92.2%). There was also majority support for all out strike action. The Board

agreed managements approach to the issue as detailed in the presentation and asked to be kept updated on the situation as it progressed.

Assessment

- 5.3.24 Discussions had been ongoing with the TUS in relation to pension changes for a significant length of time. Evidence exists that management were aware of the discontent within the workforce in relation to both the terms and conditions in place and proposed.
- 5.3.25 The risk of industrial action was recognised on the Risk Register. The risk level associated with failure to respond to catastrophic or major events was escalated on the 5 December 2014. However documents have not been provided to indicate whether worsening stages of industrial action through to an all out strike were considered and what, if any, new actions or mitigation measures were put in place in relation to this increased risk. Detailed consideration of scenario planning in relation to the worst case scenario associated with either possible industrial action or the industrial action of the magnitude experienced has not been evidenced.
- 5.3.26 The company's considerations appeared to be conditioned by an assumption that at least 40% of its industrial workforce was likely to continue to work through any industrial action. When staff were polled on their availability to work after industrial action was called, it became apparent that few if any key industrial staff would be available to provide emergency cover out of hours.
- 5.3.27 We would acknowledge that NI Water's systems and processes have improved considerably since 2007. There is clear evidence within the Annual Cost and Performance report of increased efficiency and improved services as well as in the documentation we have reviewed recently. However we consider that there is still further scope to develop improved process and management practices within the current governance framework. It is important that the Executive Team recognises the opportunities open to them and aspires to significant improvements within the existing arrangements.

Required Action No. 11 – Review the risk management scenario planning processes to ensure risks are fully addressed.

NI Water is required to review its risk assessment processes to ensure the 'worst case scenarios' are adequately considered. It also needs to ensure that timely mitigating actions are implemented and effectively consulted with the Board and Board Committees.

5.4. Management and leadership during the incident

- 5.4.1 As the company moved to incident management a Category 1 incident was called and the Major Emergency Group (MEG) met to provide the strategic leadership for the incident. The MEG is chaired by the company CEO and includes the Executive Directors of the company in defined incident roles. The MEG met frequently during the period of industrial action, ensuring that the

- Executive directed the company's response. A key role of the MEG was to set and refresh the strategy for managing the incident. This strategy is then implemented by the tactical and operational response teams.
- 5.4.2 The MEG met either together or through conference calls. Detailed notes and actions from these meetings are recorded. It reviewed strategic issues and updated the strategic direction to the incident management team as and when significant changes in circumstances occurred. It has the full Executive Authority of the company to make decisions on approach and resourcing, including financial resources as necessary.
 - 5.4.3 The Chair and the Non-Executive Directors were kept informed of developments through the daily situation reports, briefings and more detailed information provided as the need arose. NI Water has stated that the Chair was in regular telephone contact with the CEO throughout the incident.
 - 5.4.4 Looking outwards, two Executive Directors of the company led liaison with other responders through the civil emergency structures. They convened meetings of the Multi-Agency Group in shadow mode to ensure that others were kept informed of the developing situation and NI Water was kept aware of what support might be available.
 - 5.4.5 On the 23 December 2014 an agreement was put in place between NI Water and the TUS regarding the protection of public health and mitigation of risk to vulnerable consumers. This was referred to as the '*the TU Protocol*'. This action was effective in reducing the impact of the industrial action to consumers.
 - 5.4.6 The incident began to escalate when the TUS withdrew from the protocol on the 5 January 2015. The NI Water Board met on the 9, 15 and 22 January 2015 to review the impact of the withdrawal of the protocol, the live situation and re-consider the strategic direction of negotiations with the trade unions.
 - 5.4.7 In our discussions with the CEO and Board we considered how the Board had been informed of the escalation of incident as water supplies failed on the 17 and 18 January 2015. There was a clear change of circumstance and the potential of a further and rapid deterioration of the situation with strategic decisions to be made on whether the incident should be further escalated. The Board continued to be informed through the daily update reports and daily contact between the Chair and the CEO.
 - 5.4.8 In Section 4.0 on communication, we noted that the company's MIP provides a framework for development of a communication strategy. This was done and its implementation was broadly successful. However there is always additional learning to be gained from any incident.
 - 5.4.9 One lesson learnt from the 2010-11 Freeze/Thaw was the need for a clear and consistent communication of leadership by the company. In view of this, the company decided that its public communication through the media during the incident should be led by the Chief Executive Officer, the person ultimately responsible for resolving the situation, supported by one other Executive Director. We have concluded that this approach was reasonable and generally provided a single face for NI Water and clear communication.

6.0 Financial Impact of the Incident

6.1. Introduction

6.1.1 This chapter focuses on the financial impact of this incident. The review examined:

- The additional costs that arose during the period of this incident.
- The cost savings during the period of this incident.
- Any one off specific costs occurring due to this incident.

6.2. Information provided by NI Water

6.2.1 NI Water provided us with the following information for the review into the financial impact of this incident.

- Project codes used to record costs during the incident.
- Estimated breakdown of costs for this major incident as well as comparative final costs for the Freeze/Thaw incident.
- Details of savings in this incident e.g. wages and overtime versus the corresponding time period in 2013-14.
- Details of availability payments made for this major incident.
- Details for any specific costs for this incident.

6.3. The financial costs of the major incident

6.3.1 The total estimated costs of this major incident are estimated at circa £1.7m. The main categories of costs of this incident are shown in table 6.1. For the avoidance of doubt it is not the role of the Utility Regulator to approve the costs NI Water incurs in managing a major incident.

6.3.2 The costs incurred by NI Water in dealing with this incident of £1,702k are lower than the costs incurred in dealing with the Freeze/Thaw incident of £3,155k in 2010-11.

6.3.3 There were some key differences between these two incidents which impact upon their associated costs. For example, the Freeze/Thaw incident affected 450,000 consumers and the incident occurred over an 11 day period. In contrast this incident affected 80,000 consumers and the incident occurred over a 31 day period. For this incident approximately 21% of the total costs of the incident are estimated to be in relation to specific costs around sludge disposal.

Table 6.1 - Summary of costs of major incident (estimated)

Cost category	Cost (£k)
Salaries overtime and expenses (including allowances) (est.)	498.4
Tankering Costs (est.)	270.2
Call Centre costs	255.5
Contractor costs	287.5
PPP plus Engineering and Procurement costs (est.)	563.1
Other costs e.g. bottled water	47.6
Less: savings of reduced wages and overtime versus 2013-14 costs for corresponding period.	(220)
Total Costs (estimated)	1,702.3

- 6.3.4 NI Water has estimated a decrease of £220k in reduced wages and overtime costs versus the expenditure incurred for the corresponding period in 2013-14. NI Water confirmed that the corresponding period in 2013-14 reflects a more normal phase of expenditure on wages and overtime costs. The savings are a result of NI Water not incurring costs normally accruing at holiday periods, when staff would be required to respond to emergency incidents.
- 6.3.5 One of the impacts of the industrial action was that NI Water lost 'after hours' manning at the Belfast WwTW. This meant that no desludging took place over the period of 24-28 December 2014. This resulted in the closure of the incinerator due to a lack of liquid sludge.
- 6.3.6 NI Water explained that one of the knock on impacts of the incident was the non-availability in the western region of a number of the in house wastewater articulated tanker drivers during normal working hours. This was due to their involvement in bulk water asset to asset tankering to try and maintain water supplies to consumers. This limited the ability of the wastewater function to maximise sludge movements during the incident.
- 6.3.7 In addition to the liquid sludge transfer problems experienced at Belfast WwTW, there was a very noticeable reduction in the quality of caked sludge produced at the sludge dewatering centres. NI Water provided an example where during January 2015, 40% of the caked sludge's delivered to the PPP incinerator was deemed to be outside the acceptable sludge quality envelope.

6.4. Conclusions

- 6.4.1 The estimated costs of this major incident was circa £1.7m. Compared to the corresponding period in 2013-14, NI Water incurred lower wages and overtime costs during this major incident of £220k. While all major incidents will include some similar cost categories e.g. salaries, each incident can have its own specific costs. For this event NI Water is likely to incur specific costs in relation to the Belfast WwTW.

7.0 Recommendations

- 7.1.1 The required actions arising from the Utility Regulator's review are collated in Table 7.1. These actions should be read in conjunction with this report which provides further explanation and highlights detailed issues the company should consider as they are implemented.
- 7.1.2 The detailed actions which the company identified in its internal review of the incident are reproduced in Annex B for ease of reference. We acknowledge these actions but have concluded that, at times they do not go far enough. In some cases they require further review by the company before they are developed into a set of specific actions.
- 7.1.3 In line with our general duties under Article 60 of the Water and Sewerage Services (Northern Ireland) Order 2006, we will ask the company to prepare a plan and programme for delivery of these required actions and the actions included in its own report. We will monitor the delivery of these actions.
- 7.1.4 We require the company to develop a detailed programme of work by the end of June 2015. This will include a plan to deliver all actions by the end of March 2016. The company should highlight any actions which have particular reference to winter preparedness and ensure that these actions are complete by the end of November 2015. The Utility Regulator will monitor the delivery of the plan.

Table 7.1 – Required action.

Required action		Page
1	Review the resilience of key resources and reinforce where necessary. The company is required to review the resilience of resources which are critical to service delivery. The company should take reasonable steps to secure the continuity of service when the resources it normally relies on are not available.	20
2	Review and address critical plant failures and near miss events which occurred during the incident. The company is required to review the causes of plant failure and near miss events which occurred during the incident across all areas of service and improve service resilience by repairing or reinforcing critical items of plant or services such as power supplies.	21
3	Accelerate the development of a plan for asset maintenance. The company is required to accelerate the development of a plan for asset maintenance and develop a prioritised plan to reduce the risk of critical asset failures. Priority should be given to a structured assessment of water treatment works against a defined level of service to ensure weaknesses in existing plant are identified and addressed in a cost effective way.	22

Required action		Page
4	Investment in water supply resilience. NI Water is required to complete an assessment of water supply resilience as envisaged in its Water Resource and Supply Resilience Plan and promote the necessary investment to deliver a defined level of service and resilience.	23
5	Review the Major Incident Plan in light of lessons learnt. The company is required to incorporate its response to our required actions and its own actions in its Major Incident Plan and processes. We suggest that DRD includes a review of the company's response to lessons learnt from this incident in the next audit of the Major Incident Plan.	27
6	Review multi-agency response arrangements. NI Water is required to engage with local civil contingency bodies in order to review current arrangements and processes in place for moving from a first responder command to a multi-agency response in light of recent experience and determine whether current contingency arrangements can be strengthened to improve future responses.	31
7	Ensure the provision of alternative water supplies as soon as possible. In the circumstance of a failing water treatment works or failing service reservoir, NI Water should prepare to lay out alternative water supplies in advance of the failure and distribute alternative supplies at or about the time supply fails, unless the company has good reason to believe that supply will be restored quickly.	35
8	Engage with stakeholders and communities on location of alternative water supplies. NI Water is required to engage with stakeholders and communities on the deployment locations, to ensure that they are the most suitable sites and to ensure that other lessons from this incident are learnt.	35
9	Share information on vulnerable consumers. NI Water is required to engage with other agencies to review extending the circumstances in which it can share information on vulnerable people where public health might be at risk.	37
10	Review and further improve communication systems. NI Water is required to make the improvements in communication systems and processes identified in its internal review, taking account of the points highlighted by this review.	47
11	Review the risk management scenario planning processes to ensure risks are fully addressed. NI Water is required to review its risk assessment processes to ensure the 'worst case scenarios' are adequately considered. It also needs to ensure that timely mitigating actions are implemented and effectively consulted with the Board and Board Committees.	53

Annex A – DRD Terms of Reference

The Utility Regulator’s Review of NI Water’s performance during the period of industrial action 2014/15 – Terms of Reference

Introduction

During late December 2014 and early January 2015, water supply was lost to a significant number of premises in Northern Ireland during industrial action carried out by employees of Northern Ireland Water. The Utility Regulator has been requested by the Department for Regional Development to carry out a review into the actions taken by Northern Ireland Water, focusing on their impact on customers, in planning for and reacting to this event. The review will also make recommendations on lessons learned

The full terms of reference of the review are set out below.

The Review

The purpose of the investigation is to -

- examine the performance of Northern Ireland Water in planning for and reacting to this event.

The report will also be submitted to the Department of Regional Development for its consideration.

Scope of the Review

The Review will take account of NIW’s report on the cause and its management of the disruption to water supplies and will include consideration of the following aspects of the case:-

1 Contingency planning and Implementation

- Was the risk of such an event identified and what were the contingency plans for such a major incident? Did the plan envisage the scale and duration of this loss of supply?
- What pre-emptive measures were taken to mitigate the severity of the incident on customers?
- Did contingency planning highlight areas of the network most vulnerable in this type of situation?
- What particular considerations were given to vulnerable customers?
- How were these plans implemented in this case and were they sufficient?

- Were the plans sufficient and did they incorporate lessons from previous such incidents?

2 Internal and External Communications

- Was there a communications plan in place for dealing with a major incident?
- How was the plan implemented and what measures were identified to increase communication channels in light of demand?
- What were the means of communication between NI Water and consumers, agencies, departments, other bodies and how effective were they?
- What were the shortfalls in communications from consumers and other stakeholders perspective?
- How effective were internal communications during the event. Was the information communicated timely and accurate?
- What shorter and longer term measures can be taken to improve the effectiveness of communications?

3 Leadership, Management and Staffing

- How effective was the leadership immediately before and during the incident?
- Was the management of the operational response adequate?
- Were the roles and responsibilities clearly defined?
- Were available staff and other resources prioritised optimally to minimise the risk of loss of supply and to ensure that supplies were restored on a timely basis?

4 Financial Impact of Dispute on NI Water

- What were the financial implications for the NI Water Budget?

Approach to the Review

The Utility Regulator will establish an experienced and expert operational team and an Oversight Committee. The oversight committee will oversee the Review and

consider the analysis and findings of the operational team. The Oversight Committee will be made up of members of the Senior Management Team with support from an external expert. The review will involve engagement with NIW and other key stakeholders.

The Report

The report will make recommendations and identify those to be addressed in the short and longer term. The Utility Regulator will issue its report to DRD. The Utility Regulator acknowledges that further work may be required after completion of the report to consider whether any regulatory action is required and this would be a matter for separate consideration by the UR board.

During the review and where feasible any short term recommendations will be identified for the company to consider and progress to improve performance, should a similar event occur in the future.

Timing

The Utility Regulator intends to complete its report within 6-8 weeks of the submission of the NI Water Report.

Annex B – NI Water's Internal Recommendations

NI Water Reference	Action
Action 1	NI Water should consider what additional options exist to reinforce the Company's resilience for manpower shortfalls when mutual aid arrangements are ineffective or inadequate in response to industrial action.
Action 2	NI Water should review with its lead Department, DRD (Water Policy Division), the trigger values for obtaining multi-agency support in advance of any future foreseeable incidents that could potentially exceed the Company's response capacity.
Action 3	Review, in liaison with the Northern Ireland 'Civil Contingencies Multi-agency Preparedness Groups if there is merit in developing a Northern Ireland civil emergency responders 'Water Distribution Plan'.
Action 4	Consider provision of a GIS viewer tool on the NI Water website for communicating detailed information on affected water supply interruption areas; alternative water distribution sites, areas affected by planned and unplanned supply cuts, and timings for start and end of planned water supply cuts.
Action 5	Continue to liaise with Land and Property Services to develop mechanisms for sharing appropriate NI Water assets data with other civil contingency responder agencies.
Action 6	<p>Consider the need for formal protocol arrangements with key organisations that provided help or were implicated during this event:</p> <ul style="list-style-type: none"> • The DARD Veterinary Service Protocol for the agriculture helpline / hotline link to NIW. • Red Cross / Health Trust cooperation in bottled water delivery to Customer Care Registered and Vulnerable Customers. • Education and Library Boards information on supply interruptions to schools. • NIFRS alerting on areas affected by supply outages. • NI Transport on mutual aid vehicles and equipment.
Action 7	Update civil contingency partners on NI Water's current AWS methodology and explain the rationale behind the pre-planned siting of static tanks.

NI Water Reference	Action
Action 8	Continue to review and improve the performance of the CIMS system for major incident metrics' information provision and tracking through the planned future iterations of development.
Action 9	Investigate a new IT 'event logging' system and consider the need for procurement.
Action 10	Recommend that the AWS team consider improvement in the arrangements for recording, tracking and communicating in relation to individual Alternative Water Supply Requests that have been prioritised and escalated.
Action 11	Recommend that Networks Water consider the development of 'restoration plans' which could include identification of distribution areas susceptible to airlocks and estimates for supply restoration following complete depletion of the distribution system.
Action 12	Ensure that a suitable range of resource options are maintained under the new CBC contract from 1 April 2015.
Action 13	Consider the development of a post code search within CIMS or permanent availability of post code search facility on the website.
Action 14	All WTW Contingency Plans should be reviewed following the incident and consideration given to including some information on the downstream networks eg watermain configuration and valving arrangements to enable restoration of supplies in the event of a prolonged plant shutdown.
Action 15	Consideration should be given to establish a fast-tracked WTWs Resilience Project, aimed at providing an additional pool of skilled resource which, in the event of a diminution in the availability of the in-house staff and plant breakdown and/or failure, may be deployed to try and mitigate some of these effects. It would be important to review the outcomes of the project to determine the level of success.
Action 16	Aim to secure funding in PC15 for the outstanding strategic link main from Carmoney to Strabane which is a PC15 nominated output. Also seek to agree with key stakeholders that Lough Bradan to Enniskillen be nominated as an additional output for PC15 to allow it to be brought forward from PC21 into PC15. Seek to ensure funding for the additional output in PC15.
Action 17	Seek to secure funding in PC15 for the CWB storage at Killyhevlin and Lough Fea WTWs which are PC15 nominated outputs.

NI Water Reference	Action
Action 18	Complete NI Water's Water Resource and Supply Resilience Plan, which is due for publication on 1 April 2017. This will further consider the investment needs of the water supply system to ensure that customers have an appropriate level of security of supply and appropriate levels of service. This work includes a full assessment of the trunk mains requirements and available storage in the western region. (Note the previous WRMP only considered security of supply whereas the WR & SR Plan will consider serviceability and operational issues.)
Action 19	Consideration should be given to the M&E Services function taking proactive steps in broadening the knowledge of their contract staff working within wastewater, with a particular focus on ICA teams.
Action 20	The ongoing work to develop contingency plans for some of the key WWTWs and WWPSs should be actively progressed.
Action 21	Following a review of the outcomes of the WTWs Resilience project, consideration should be given to the potential for read-across (i.e. extending key skills training) to some of the large WWTWs.
Action 22	An inventory of all NI Water equipment used during the event should be critically reviewed for areas of improvement and reinforcement, to see what additional ancillary equipment should be procured to improve the effectiveness of tankering operations.
Action 23	An inventory of all ancillary fittings required for operating hired-in equipment during the event should be critically reviewed for areas of improvement, reinforcement, and compatibility for improved effectiveness of hired-tanker operations. It is also important that contractors' staff are reminded of the importance of compliance with the drinking water regulations and retaining full records on sterilisation and discharge of water at the static tanks.
Action 24	Consider if additional alternative water equipment should be purchased, and review the need to upgrade and refresh the existing stock of tankers, flat-bed lorries, static tanks, and 10 litre containers, etc.
Action 25	Ensure the provision of chlorine test kits at each fill point for daily chlorine residual testing.
Action 26	Review fast-fill point locations for rapid draw-off tanker fills and provide a narrative description within GIS of the pipework detail and associated local valving arrangements to aid the locating and use of the fill hydrants.

NI Water Reference	Action
Action 27	Alternative water supply plans, processes and procedures should have resources available to support their implementation in an incident of this type (industrial action). NI Water should review the risk of similar events occurring in future and consider if a 'Water Supply Management Company' should be held on a retainer to provide the necessary support for any future alternative water supply deployments required.
Action 28	Explore better resource tracking and utilisation systems (i.e. a daily roll call system) to maintain awareness of staff and contractor resource availability, task assignment, deployment and attendance during events. Consider if better commercial methods and systems are available and can be obtained for this purpose.
Action 29	Consider revising business continuity plans to identify critical key-skill resources and identify contingencies for key-skill deficiencies.
Action 30	Add a Resource Coordinator role to the Silver Command Team with a check list outlining what the task entails.
Action 31	Review the Company's Media Plan to reflect lessons learned from this event.
Action 32	The Company needs to take appropriate steps to re-assure customers and their public representatives in the areas most affected by the supply interruptions, that steps are in hand to improve resilience in the operation of the water supply and distribution systems and to address any known infrastructure deficiencies. This should be done through communications with the local public representatives.
Action 33	<p>Identify mechanisms for managing localised minor events with significant media interest by improving one-to-one contact with customers.</p> <p>In recognising that situations can arise during incidents where a small number of customers, in a particular area, may be experiencing exceptional problems, NI Water should seek to establish clear and regular communication with such customers and may need to implement special measures to address their concerns.</p>
Action 34	Review the resource constraints for handling social media for major incidents and develop team strategies for handling large numbers of contacts through this medium.

Glossary of Terms

Term	Description
Alternative Water Supply	Alternatives to piped water supply. This can include bottled water, provision of bowzers or tanks.
Appointed Water Company	The term used to describe the regulated water only and water and sewerage companies who supply water and sewerage services to consumers. Also known as a 'regulated company' or 'undertaker'.
Capital Maintenance	Planned work by appointed water companies to replace and renovate water and sewerage assets to provide continuing services.
Civil Contingency Groups	Groups and agencies involved in emergency planning and response arrangements. This includes government departments, emergency services, local councils, relevant agencies etc.
Closed Communities	Closed communities refer to large prioritised sites. This might include hospitals, prisons, care homes, large business, schools etc. In certain conditions these communities will have their own contingency plans.
Consumers	Refers to individuals or households that purchase and use goods and services generated within the economy. In this case we are referring to those who use water and sewerage services.
Customer Care Register	A register containing details of consumers who are considered vulnerable in some capacity i.e. older consumers, those with a disability or serious medical condition. Being on the register entitles consumers to a range of additional prioritised services.
Executive Director	Directors who sit on the Board. They are also paid employees of the company (usually in senior management positions).
Facebook Post Reach	Post Reach refers to the number of people who could potentially see the company message.
Freeze/Thaw	Adverse weather conditions in the winter of 2010-11 which prompted a major incident for NI Water. The event resulted in around 450,000 consumers in Northern Ireland having their water supplies interrupted.
Major Incident Classification	<p>Response to incidents of all types will depend on the actual or potential impact on NI Water. These have been divided into four different categories:</p> <p>Category 4 = A routine, non serious daily matter.</p> <p>Category 3 = A daily matter, not greatly disruptive to normal service conditions, but may require some reorganisation of priorities at local level.</p> <p>Category 2 = A serious disruption to services requiring special mobilisation of personnel beyond the normal routine, but unlikely to involve Head Office staff. It will give rise to public and media interest at local level.</p> <p>Category 1 = An exceptional disruption to services requiring wide spread</p>

	mobilisation of staff including the Silver Command Incident Team. It will give rise to public and media interest at national level.																																																
Management Statement and Financial Memorandum	A document between DRD and NI Water defining roles, responsibilities and operational arrangements. In the context of this report it defines governance activities, roles and requirements of the NI Water Board.																																																
Mutual Aid	A scheme whereby other utilities or water companies can provide staff, resources or equipment as necessary in support during a major incident.																																																
Non-Executive Director	A non-executive director (or NED) is an independent member of the Board. He/she does not form part of the management team and are not employees of the company.																																																
On-Site Electrolytic Chlorination	A system for producing sodium hypochlorite (an agent commonly used in water treatment) at the works. It reduces the dependence on commercial chemical supplies.																																																
PPP Works	A Public Private Partnership contract. This allows for private sector providers to undertake water treatment at various works throughout Northern Ireland.																																																
Preservation of Services and Civil Emergency Measures Direction	Guidance issued by DRD to NI Water in relation to planning for and responding to major incidents. This includes a framework for multi-agency response in the event of severe service disruptions beyond the capabilities of NI Water.																																																
Quality Regulators	A collective term for the Drinking Water Inspectorate and the Northern Ireland Environment Agency.																																																
Risk Register	<p>Register where risks are recorded and assessed. NI Water scores risk on the basis of a 5*5 matrix. This includes a score for the probability of the risk occurring and a score for the impact. The scoring matrix is illustrated below:</p> <table><tr><th></th><th colspan="5"><u>CONSEQUENCE / IMPACT</u></th></tr><tr><th><u>LIKELIHOOD</u></th><th>1 Insignificant</th><th>2 Minor</th><th>3 Moderate</th><th>4 Major</th><th>5 Catastrophic</th></tr><tr><td>5 – Very Likely</td><td>5</td><td>10</td><td>15</td><td>20</td><td>25</td></tr><tr><td>4 – Likely</td><td>4</td><td>8</td><td>12</td><td>16</td><td>20</td></tr><tr><td>3 – Possible</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td></tr><tr><td>2 – Unlikely</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td></tr><tr><td>1 – Rare</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>Very Low (1-3)</td><td colspan="2">Low (4-9)</td><td colspan="2">Medium (10-15)</td><td>High (16-25)</td></tr></table>		<u>CONSEQUENCE / IMPACT</u>					<u>LIKELIHOOD</u>	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic	5 – Very Likely	5	10	15	20	25	4 – Likely	4	8	12	16	20	3 – Possible	3	6	9	12	15	2 – Unlikely	2	4	6	8	10	1 – Rare	1	2	3	4	5	Very Low (1-3)	Low (4-9)		Medium (10-15)		High (16-25)
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Service Reservoir	Reservoir which contains a store of fully treated potable (drinking) water.
Stand-By Generation	Emergency power supply in the event of electricity failures.
Twitter Engagements	Engagements refer to the number of times people interact with a tweet. This includes link clicks, retweets, replies, mentions and favourites.
Twitter Impressions	<p>Impressions account for the number of times NI Water tweets appear on users' Twitter feeds. This is not to be confused with <i>Reach</i>. By way of a simple example:</p> <p>If NI Water sends 3 tweets (which no-one interacts with) and has 4,000 followers then;</p> <ul style="list-style-type: none"> • Potential Reach = 4,000; • Potential Impressions = 12,000 (4,000 x 3).
Water Resource Management Plan	A WRMP outlines how a company will maintain a sustainable balance between water supply and demand. These plans are typically over a long period of time (25 years).
Water Resource Zone	The largest possible zone in which all water resources, excluding external transfers, can be shared. Hence, it is the zone in which all consumers experience the same risk of supply failure from a resource shortfall.

Abbreviations

Abbreviation	Description
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AWS	Alternative Water Supply
CCNI	Consumer Council Northern Ireland
CCR	Customer Care Register
CE	Consumer Engagement
CEO	Chief Executive Officer
CIMS	Central Information Management System
CNIP	Critical National Infrastructure Providers
CRC	Customer Relations Centre
CRD	Committee for Regional Development
CRIP	Commonly Recognised Information Picture
CSDD	Customer Service Delivery Directorate
CWB	Clear Water Basin
CWT	Clear Water Tank
DARD	Department for Agriculture and Rural Development
DFP	Department of Finance and Personnel
DRD	Department for Regional Development
DSCT	Developer Services Co-ordination Team
DWI	Drinking Water Inspectorate
ER	Elected Representatives (phone line)
GIS	Geographic Information System
HVCA	High Volume Call Answering
IA	Industrial Action
ICA	Instrument Control and Automation
LRA	Labour Relations Agency
MEG	Major Emergency Group
MIP	Major Incident Plan
MLA	Member of the Local Assembly
MSFM	Management Statement and Financial Memorandum
NDPB	Non Departmental Public Body
NIA	Northern Ireland Assembly

NIEA	Northern Ireland Environment Agency
NIFRS	Northern Ireland Fire and Rescue Service
NIW	Northern Ireland Water
OCMC	Operations Contract Management Centre
OSC	Oversight Steering Committee
OSEC	On-Site Electrolytic Chlorination
PC10	Price Control 2010 – 2013
PC13	Price Control 2013 – 2015
PC15	Price Control 2015 – 2021
PE	Public Expenditure
PPP	Public Private Partnership
PSCEMD	Preservation of Services and Civil Emergency Measures Directive
SET	Stakeholder Engagement Team
STW	Sewage Treatment Works
SR	Service Reservoir
TUs	Trade Unions
TUS	Trade Union Side
UR	Utility Regulator
WGTU	Water Group of Trade Unions
WRSRP	Water Resources and Supply Resilience Plan
WRZ	Water Resource Zone
WTW	Water Treatment Works
WwTW	Wastewater Treatment Works