

# Guidance to Northern Ireland Water on implementing Regulation 30 of the Water Supply (Water Quality) Regulations (Northern Ireland) 2017 [Risk Assessment]

## Document Control

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## Introduction

This guidance is issued by the Drinking Water Inspectorate (DWI) to assist NI Water in meeting the requirements of regulation 30 of the Water Supply (Water Quality) Regulations (Northern Ireland) 2017. NI Water must also ensure that its methodology and risk assessments meet the requirements of the reference standard, [EN 15975-2 concerning “security of drinking water supply, guidelines for risk and crisis management”<sup>1</sup>](#) which should be consulted separately to this guidance.

The Water Industry Specification (WIS), ‘*Specification for the audit of water industry risk assessments and risk management processes*’ [[WIS 4-01-04](#)], should also be used by NI Water as a guide in the development of its risk assessment methodology. DWI acknowledge, and have referenced, the WIS in the production of this guidance.

Details on the format of the reporting requirements under regulation 31 (Procedure following risk assessment) are not included within this guidance. A reporting template will be provided outlining the summary information to be reported to the Drinking Water Inspectorate within separate guidance. It is important that NI Water also take account of the reporting requirements contained within regulation 31 when developing their methodology under this guidance.

The Regulations referred to in this guidance are those contained in the Water Supply (Water Quality) Regulations (Northern Ireland) 2017, unless otherwise stated.

In reference to this guidance the Drinking Water Inspectorate is a unit within the Northern Ireland Environment Agency (NIEA), which acts on behalf of the Department of Agriculture, Environment, and Rural Affairs (DAERA) in relation to drinking water quality.

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<sup>1</sup> This standard was approved by the European Committee for Standardization (CEN) on 5 July 2013. Under reference BS EN 15975-2:2013, it is published as a UK standard by the British Standards Institution (ISBN 978 0 580 84737 0)

## **Contents**

- 1. Overview**
- 2. Methodology – General Requirements**
- 3. Methodology – Validation and Verification**
- 4. Methodology – Ongoing and Periodic Review**
- 5. Annual Information Returns on NI Water Assets**
- 6. References**

## 1 Overview

- 1.1 Regulation 30 sets out the steps NI Water must take in the completion of a risk assessment to ensure the ongoing integrity of its water supply systems, and in the provision of a safe, clean, wholesome water supply. A risk assessment should cover all stages of the water cycle from catchment, abstraction, treatment, storage and distribution through to consumers' taps and include all infrastructure and process steps.
- 1.2 The methodology to be used by NI Water must be assessed and approved by the Drinking Water Inspectorate (DWI) as meeting the regulatory requirements before use [regulation 30(3)(a)].
- 1.3 A report on each risk assessment is required to be submitted to DWI. Details on the reporting format for this information will be provided in separate guidance. However, it should be noted that NI Water's methodology should ensure that such reports are kept under review in line with changes to the risk assessment, and updates provided to DWI, where required.
- 1.4 An annual information return will be required providing relevant details on NI Water's assets, which should include, for example: schematics of drinking water systems; process flow diagrams of water treatment processes; and disinfection statements. The information to be provided will be detailed in a separate annual information return request.
- 1.5 The regulations allow for deviation from standard parameters and frequencies [regulation 19]. NI Water may, with the Department's consent, reduce or suspend monitoring, provided that specific conditions are met. These include the completion of a risk assessment which must confirm and support the request to deviate from the monitoring frequencies.
- 1.6 NI Water is required to have in place a risk assessment methodology, and have completed risk assessments in line with this guidance **on or before 31 March 2019**. Until that date the risk assessments currently in place under the 2009 regulations remain valid.
- 1.7 It is recommended that NI Water's risk assessment methodology outlined in this guidance supports the production of **Drinking Water Safety Plans** as advocated by the World Health Organisation (WHO) within the [WHO Water Safety Plan Manual: Step by Step risk management for drinking water suppliers](#).
- 1.8 The risk assessment approach should ensure good practice is demonstrated in the supply of drinking water through; minimisation of contamination of source waters; removal or reduction of contamination through appropriate and effective treatment processes; and prevention of contamination in the distribution network and within building plumbing systems up to the consumers' tap, for all water supply systems irrespective of size or complexity.

## 2 Methodology – General Requirements

- 2.1 Regulation 30 requires a risk assessment be undertaken for every water treatment works, and the connected supply system, and should also include catchment and abstraction points. The connected supply system includes individual service reservoirs and other subsidiary sites within the system and at these points individual site specific risk assessments must be completed as part of the overall assessment. Consumer's pipework and fittings within buildings, as regulated by NI Water under **The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009** must also be considered as part of the connected supply system. A risk assessment must identify all factors which may present a risk of supplying water that would cause a potential risk to human health or be unwholesome [as defined by regulation 5].
- 2.2 DWI endorses the World Health Organisation (WHO) Water Safety Planning approach to the management of drinking water supplies. It advocates that the methodology used should be based on a thorough understanding of the water safety plan approach published by the WHO in Chapter 4 of [Guidelines for Drinking Water Quality \(4<sup>th</sup> Edition\)](#).
- 2.3 The methodology by which NI Water undertakes a risk assessment should follow the general approach outlined within '[Water Safety Plan Manual – Step-by-Step risk management for drinking-water supplies](#)', and comply with the principles outlined in '[Security of drinking water supply – Guidelines for risk and crisis management – Part 2: Risk management](#)' published by BSI Standards Publication BS EN 15975-2:2013.
- 2.4 There is also further guidance available within the Water Industry Specification '*Specification for the audit of water industry risk assessments and risk management processes*' [[WIS 4-01-04](#)]. DWI advise that NI Water consult this specification in the drafting of its methodology. The WIS also contains a comprehensive glossary of terms and definitions used within the risk assessment process which provides a useful reference table.
- 2.5 Regulation 30(3)(a) requires that a risk assessment must be carried out in accordance with a method which is approved by the Department. A methodology which has been produced in line with this guidance will be deemed to have met the requirements of regulation 30(3)(a). A copy of the methodology, and any subsequent revision should be provided to DWI, as soon as it becomes available.
- 2.6 NI Water should quantify risks throughout the water supply system, in relation to protecting human health, as well as, the risks of supplying water likely to be unwholesome [regulation 5].

- 2.7 A means of identifying hazards that potentially could arise in: the catchment area for the source; at the abstraction point; during treatment; within the distribution system; and within building plumbing systems (up to the consumer's cold water tap), should be considered.
- 2.8 All parameters, elements, substances, micro-organisms including parasites, algae and viruses and all variants, and events that are indicative of a risk to drinking water quality should be considered. All available information should be used when assessing the likelihood of a hazard being present or a hazardous event taking place.
- 2.9 How risks will be characterised should be outlined for each factor using a scoring system based on likelihood and consequence criteria. Risks should be characterised before (uncontrolled) and after (controlled) taking into account permanent control measures in place. The scoring method should be capable of identifying residual risks that require further mitigation (additional control measures) to be put in place. It is recommended that an appropriate risk matrix is used, examples are given within the [WHO Water Safety Plan manual](#), [the standard EN 15975-2](#), and the [Water Industry Specification WIS 4-01-04](#).
- 2.10 All residual risks should be mitigated, and have control measures in place to ensure there is no ongoing risk to human health. It is important that risks in relation to unwholesomeness are prioritised to protect public health and in ensuring consumers concerns are met. Where permanent mitigation involves the implementation of medium or long term solutions, interim operational measures should be put in place to ensure the risks of supplying consumers with unwholesome water are appropriately managed.
- 2.11 Risks to raw water quality should use information obtained from internal and external monitoring programmes. The findings of catchment risk assessments should be used to identify water treatment needs. The Northern Ireland Environment Agency (NIEA) should be consulted in line with the guidance outlined in the [Contribution of Drinking Water Quality Regulations to the implementation of the Water Framework Directive in Northern Ireland](#), issued in July 2013.
- 2.12 Raw water risks and the ongoing development of monitoring programmes should take account of the results from:
- 2.12.1 monitoring programmes (regulatory and operational) undertaken by NI Water;
  - 2.12.2 monitoring programmes under Regulation 11 (monitoring) of the Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017 in respect of bodies of water used for the abstraction of drinking water;

- 2.12.3 catchment surveys and information on pesticide usage to identify chemicals which may be detected in the raw water through their usage or properties; and
- 2.12.4 any other relevant monitoring programmes, or information which would assist NI Water in evaluating risks to drinking water quality within catchments.
- 2.13 It is important that in developing its methodology under this guidance, that NI Water should also take account of the reporting requirements contained within regulation 31 to ensure these will be adequately met.
- 2.14 The internal multi-disciplinary team within NI Water with responsibility for the preparation of the risk assessments and Drinking Water Safety Plans should be detailed within the methodology, and respective roles and responsibilities within that team outlined.
- 2.15 Engagement with relevant third parties in identifying and mitigating risks should be adequately documented and recorded throughout the process (e.g. engagement with NIEA and other stakeholders) and form part of the methodology.
- 2.16 It is recommended that where possible the methodology is drafted to allow for comparison with the [‘Security of drinking water supply – Guidelines for risk and crisis management - Part 2: Risk management’](#) to assist in assessment against this standard.
- 2.17 NI Water must report to DWI any factors which the risk assessment identifies would establish a specific risk of supplying water which would constitute a potential risk to human health or be unwholesome. DWI further considers that the risk of consumers rejecting water because of unacceptable appearance, taste or odour, or other factors constitutes the water being unfit for human consumption, and these risks should also be assessed and documented.
- 2.18 The methodology should detail the documentation (e.g. procedures and records) which form the basis for completing and recording a risk assessment, as well as the constituent documentation for producing a Drinking Water Safety Plan.
- 2.19 The methodology should be approved and signed off at senior management level within NI Water.
- 2.20 The methodology should have a suitable system of document control to ensure that only the current version remain in use and circulation at all times.

### **3 Methodology – (A) Validation and (B) Verification**

#### **(A) Validation**

- 3.1 NI Water should detail the evidence to be used in the validation of control measures within the methodology. In the implementation of the risk assessment process NI Water must be assured that its individual control measures are robust and suitable for mitigating the identified risk. The evidence used can be direct or indirect, examples can be found in [Water Industry Specification WIS 4-01-04](#).
- 3.2 Direct validation data should be representative and take into consideration the range of conditions which may be experienced, including where a risk requires a combination of control measures. It should be reviewed periodically to ensure that assumptions on the efficacy of control measures remain valid. Records of the evidence demonstrating the validation of a control measure should be retained as part of the risk assessment.
- 3.3 Re-validation of a control measure may be required where there is; a system failure; a change in the process; new scientific information; or regulatory changes.

#### **(B) Verification**

- 3.4 The methodology should describe the internal processes in place to ensure verification of the risk management approach. Verification is required to ensure that the overall risk assessment process is operating effectively to assure the integrity of the water supply system and the ongoing provision of safe and wholesome water. In addition to the methodology it is expected that operating procedures will be in place to support the verification process, which should include internal audit processes.

### **4 Methodology - Ongoing & Periodic Review**

- 4.1 The methodology should provide for an ongoing review of the risks based on a continual assessment of specific risk factors. There should also be documented processes in place to ensure risk assessments are kept up to date, and control measures for residual risks are prioritised based on the level of risk to human health.
- 4.2 It should include the necessary triggers to initiate a review where a risk score is not reducing to an acceptable level, within a reasonable time, under the current controls. NI Water should inform DWI when they become aware of any change to a residual risk that requires new or additional mitigation measures.



- 4.3 All water quality events, even those deemed to be localised in nature, should prompt a review against the respective risk assessment. Also, where appropriate, water quality events should also be looked at generically against all risk assessments.
- 4.4 Where NI Water become aware of a risk or potential risk it should consider whether a review would be required to ensure risk assessments cover both current and potential risk scenarios. NI Water should actively engage with relevant 3<sup>rd</sup> party stakeholders, and other UK water companies in assessing current and future risks. These engagements should be recorded within the risk assessment process.
- 4.5 Where there has been a change to the risk score previously reported then NI Water must as soon as reasonably practicable provide an updated risk score and summary to DWI.
- 4.6 Any substantive change (e.g. introduction of a new source or rezoning) should initiate a review of the relevant risk assessments, or provision of a new risk assessment as required under regulations 17(5) and 17(6).
- 4.7 The list of review criteria within this guidance is not exhaustive and NI Water should use due diligence when determining when a review of a risk assessment would be necessary. The methodology should include the criteria by which a review would be undertaken, in order to ensure the risk assessments are current and reflect the ongoing levels of risks within a water supply system.
- 4.8 The requirement for NI Water to provide an annual return for all its risk assessments is not affected by this guidance. However, given that the deadline for the return of the new risk assessments in 2019 is 31 March 2019, this will act as a revised return date and not the 31 January 2019, for that year only.

## 5 Annual Information Returns on NI Water Assets

- 5.1 DWI will be revising its annual Information Letter 'Drinking Water Inspectorate's Information Requirements and Technical Audit Programme'. The revision will cover the static data on NI Water assets which had formed part of the previous requirements in relation to risk assessments under Annex A of DWI Information Letter I/L 03/10<sup>2</sup>.

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<sup>2</sup> DWI Information Letter I/L 03/10 Arrangements for Compliance with the Requirements of Regulation 27 and 28 of the Water Supply (Water Quality) (Amendment) Regulations (Northern Ireland) 2009 [Drinking Water Safety Plans] Annex A

## 6 References

1. [Water Supply \(Water Quality\) Regulations \(Northern Ireland\) 2017](#)
2. [Security of drinking water supply – Guidelines for risk and crisis management - Part 2: Risk management – EN 15975-2'](#)
3. [Water Safety Plan Manual – Step-by-Step risk management for drinking-water supplies'](#) Issued by the World Health Organisation 2009.
4. [WHO Guidelines for Drinking Water Quality 4<sup>th</sup> Edition \(Chapter 4\). Issued by the World Health Organisation 2017.](#)
5. [Specification for the audit of water industry risk assessments and risk management processes \[WIS 4-01-04\]. Issued by Water UK \(March 2018\).](#)
6. [Contribution of Drinking Water Quality Regulations to the implementation of the Water Framework Directive in Northern Ireland. Issued by NIEA \(July 2013\).](#)