



Guidance on Alternative Supply Operations

DRINKING WATER INSPECTORATE

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Executive Summary

This guidance document communicates the Drinking Water Inspectorate's expectations on alternative supply operations and the actions water companies must take when providing supplies from tankers, bowsers or Arlington tanks for human consumption.

The Drinking Water Inspectorate recognises that it is necessary for alternative water supplies to be used in exceptional circumstances when normal supply configurations are interrupted or compromised. Alternative water supply requirements are included in the Security and Emergency Measures Direction and the associated guidance.

The activities associated with alternative water supplies from tankers, bowsers or Arlington tanks introduce additional risk to water quality. Water companies are responsible for all alternative supply operations and are required to actively manage and mitigate risks to prevent unwholesome water being supplied to consumers.

This guidance document addresses a number of areas associated with alternative supply operations and takes the opportunity to set out requirements which water companies should implement. The following is not aimed to be exhaustive and water companies should undertake assessments in order to effectively manage the risks posed by their alternative supply operations.

Guidance on Alternative Supply Operations

1 Introduction

- 1.1 When normal drinking water supply arrangements are disrupted, due to planned events or following an operational emergency, water undertakers must provide alternative water supplies to consumers. This can include the use of tankers to refill service reservoirs or inject direct into distribution networks, deploying static tanks or bowzers for consumers to collect water or by providing bottled water.
- 1.2 Water companies must have appropriate plans and procedures in place to ensure the efficient deployment of alternative supplies, requirements are outlined in the Security and Emergency Measures Direction and associated guidance. It is good practice to maintain contingency plans with lists of suitable tanker filling locations, bottled water collection points and static tanks deployment locations, considering accessibility for consumers in the affected area. These plans should be regularly practiced, reviewed and updated where necessary.
- 1.3 Tankers or alternative supplies should only be used in emergency situations or to support planned network operations where the supply network is interrupted. Alternative supply options should not be considered as a substitute for a robust and well-maintained treatment and resilient distribution system. Where it becomes necessary to undertake alternative supply activities on a regular basis or over a prolonged period this is an indication that the receiving supply is inadequately sized to meet demand. In instances such as this water companies should consider whether appropriate investment is required to upgrade the supply configuration.
- 1.4 Water companies must ensure that water provided during alternative supply operations is similar to the quality of the original supply, including taste, odour and hardness. Changes in quality should be avoided at all costs however where emergency situations occur, and changes are unavoidable, management through effective consumer liaison should take place. Consideration should be given to chloraminated systems to avoid taste and odour risks caused by free chlorine mixing and staff should be aware of how to manage these risks. Water supplied from alternative sources must be acceptable to consumers with no abnormal change to maintain standards of wholesomeness.

2 Alternative Supplies

- 2.1 Water companies should carry out periodic deployment checks and trials to ensure that employees are trained and competent in the operational requirements. Deployment practices will support training, liaison with third parties and reviews on associated procedures and documentation to ensure these remain fit for purpose.

- 2.2 Stakeholder engagement should be maintained with local emergency services and authorities, such as local resilience forums, to ensure external parties are familiar with the actions involved in deployment to support emergency planning. All parties must be aware of Security and Emergency Measures Direction requirements and associated guidance.
- 2.3 If mutual aid is requested from other water companies, the receiving water company is responsible for the water quality supplied by the shared tanker. Operational checks and sampling should be carried out on tankers to confirm they are suitable and fit for purpose. Water companies may choose to use third-party food grade tankers in emergency situations however these must be supplied with evidence of prior cleaning and disinfection and compliance with regulation 31 requirements. Companies should ensure that British Standard (BS) 8551: 2015 Provision and management of temporary water supplies and distribution networks – code of practice is considered in temporary water supply operations.

3 Ancillary Equipment

- 3.1 All ancillary equipment or chemicals that come into contact with water should meet the relevant requirements under regulation 31 and relevant material in contact with water requirements. It is considered best practice for tankers to have their own dedicated equipment which should be stored hygienically, numbered, bagged, tagged and disinfected prior to use.
- 3.2 Hoses and other fittings should have suitable end caps which are secured in place when the equipment is awaiting use. Disinfection should always be carried out in accordance with the manufacturer's instructions and records of disinfection and usage of the equipment should be kept for traceability purposes.
- 3.3 Backflow protection should be included on standpipes which connected to the live network to prevent any risk of back-siphonage/contamination.

4 Disinfection and Chemical Storage

- 4.1 Alternative supply vehicles should be thoroughly cleaned and disinfected prior to use. Ideally such vehicles should be restricted to drinking water use. In exceptional circumstances tankers used for the transport of appropriate food-grade liquids may be used however, these should be subject to thorough cleaning, disinfection and flushing. Particular care should be taken to avoid tastes and odours and passing microbiological samples should be obtained from food transportation tankers prior to use for any water delivery operation.

- 4.2 Disinfection procedures associated with alternative supply equipment should be sufficiently accurate on the preparation of chlorine solutions regarding the target concentration of sodium hypochlorite solution. Procedures on disinfection should include the volume of alternative supply tanks to be filled and calculations on chlorine concentrations should take this into account. Contact times should be clearly stated in procedures and be accurately monitored and recorded. Disinfection procedures should be specific on solution concentration, volume to be filled and the recording of residuals pre and post disinfection in addition to contact times. It is important that auditable records are held for tanker disinfection to demonstrate that, prior to deployment, procedures have been followed and standards met.
- 4.3 Verification of disinfection is essential and holding auditable records of disinfection is important. Companies should utilise high range chlorine meters able of measuring the higher concentrations required in disinfection procedures. Monitors should always be part of a regular service and calibration schedule and validation must be against traceable standards.
- 4.4 Chemicals such as sodium hypochlorite used during the disinfection of tankers and ancillary equipment must be stored in accordance with the relevant BSEN requirements.
- 4.5 The storage of sodium hypochlorite for disinfection should be well managed in a temperature-controlled environment. The Inspectorate suggests the use of batch rotation to ensure turnover of stock. The use of 5L volumes reduces the risk of deterioration of the chlorine concentration in open containers. The storage of sodium hypochlorite with other chemicals is considered poor practice due to the risk of the disinfection chemical being inadvertently contaminated and stock rotation potentially being deficient if storage units are not kept organised.

5 Filling

- 5.1 Water companies should have dedicated filling points, with backflow protection, across their area, which are suitable for filling tankers. Water companies should ensure these fill points are secure to prevent environmental contamination and/or misuse. Fill points should be routinely inspected, cleaned and maintained.
- 5.2 When preparing the hydrant and standpipe for filling a tanker, the equipment should be disinfected appropriately before use. Water quality checks must be carried out on the feed water prior to connection to the tanker. Turbidity of the feed water should not exceed 1NTU and chlorine residuals should be checked before the tanker is filled. If an actual or potential deterioration in water quality becomes apparent, actions must be taken by the water company to investigate the issue and ensure unwholesome water is not supplied to consumers from the contaminated tanker.
- 5.3 Care should be taken to avoid negative impacts on the donor system such as starving the supply, vortexing, air entrapment or disturbing sediments. Risk assessments with clear mitigation measures should be set out prior to commencing operations.

- 5.4 Fill points utilised in alternative supply operations should be readily identifiable with specific GIS location data and recorded for auditing purposes and any necessary water quality investigations.

6 Infusion

- 6.1 During infusion (direct injection) activities it is important to understand the pressures on the receiving network infusion point and to be able to sufficiently control the discharge pressure from the tanker by utilising variable speed pumps or having pressure control valves in place.
- 6.2 Water quality risk assessments should be completed to minimise the risk of water quality deterioration, such as discolouration, occurring in the receiving supply due to disturbance of sediment. Assessments should feed into the operating plans for individual infusion activities.
- 6.3 Company procedures should clearly define the roles and responsibilities, steps and operational settings which are required to risk assess and facilitate the safe and hygienic discharge into the network.
- 6.4 Every delivery point utilised by alternative supply vehicles should be readily identifiable with specific GIS location data and recorded for auditing purposes and any necessary water quality investigations.

7 Discharge

- 7.1 In order to avoid contamination and compromise of water quality, care should be taken during tanker discharge. A risk assessment of the proposed tanker operation must be carried out considering the discharge stage and any water quality risks, for example sediment disturbance due to changes in flow rates and flow direction.
- 7.2 Discharge activities can be divided into two categories - discharge to waste and discharge into a live tank, reservoir or supply network.
- 7.3 When discharging to waste measures must be taken to ensure all hoses and couplings are not contaminated and that a sufficient air gap between the tanker supply hose and the discharge location is maintained. All materials used should be disinfected and properly identified to prevent contamination of pipe work after operating near environmental waters and/or surface water or foul sewers. If using hoses to discharge to waste, sufficient equipment must be in place to prevent back siphonage or vermin contamination via the pipework. Companies are reminded to ensure compliance with Environment Agency/Natural Resources Wales discharge permits and dechlorination requirements to prevent pollution incidents.

- 7.4 When discharging into a reservoir, tank or supply network, risk assessment must be undertaken, particularly where multiple tanker discharges are taking place simultaneously. In situations where continuous discharge of multiple tankers is necessary, measures must be taken to ensure all hoses and couplings are protected from contamination or tampering whilst in use. Tanks and reservoirs receiving deliveries should be readily identifiable with GIS location data that is recorded for auditing purposes and any necessary water quality investigations.
- 7.5 Service reservoirs and tank hatches must be protected from the elements whilst open and should be appropriately secured. Where the hatches are double skinned, the inner hatch should be cleaned prior to being opened.

8 Sampling

- 8.1 Sampling from alternative supplies such as tankers, static bowzers and Arlington tanks must be carried out at the commencement of the distribution from that alternative supply vessel and every 48 hours thereafter as per the requirements of regulation 6(16) [England] and 6 (4) [Wales] of the Water Supply (Water Quality) Regulations. Sample results from tankers will provide retrospective confirmation of wholesomeness and therefore it is important to ensure that appropriate validation of procedures and processes is in place to protect consumers.
- 8.2 Free and total chlorine readings should be taken upon filling and before discharge/infusion. If there is a significant difference in readings taken between filling and discharge this may indicate the presence of contamination or that the age of the water is not appropriate for use in the supply network and should not be released from the vessel. Water companies should determine what constitutes a significant difference and include in procedures provided to staff. Where results indicate a risk, investigations to confirm wholesomeness should be completed before delivery into the live network.
- 8.3 Alternative supply vehicle deliveries should take place and be delivered as soon as possible after filling to avoid potential deterioration in water quality inside the vessel. Holding water inside tankers, static bowzers or Arlington tanks for excessive periods should be avoided.
- 8.4 Companies should consider water quality risks associated with the use of alternative supply vehicles and keep these risk assessments under continuous review to support sample scheduling and parameter analysis. The mobilisation of historical sediments in tanks and water mains should be considered and location risk assessments prior to discharge or infusion should identify whether further sampling is required.
- 8.5 Tanker design should enable investigations to be easily completed with facilities on alternative supply vehicles enabling appropriate and representative sampling from the body of the tanker.

9 Procedures and Quality Assurance

- 9.1 Vertical audits should be carried out periodically to ensure training is embedded and that staff are competent in completing field checks and assessing sample results and filling point locations. Routine audits should also be conducted on the filling points and alternative supply vehicles to review the cleanliness of the connection points and ensure the condition of the tankers and fill points are satisfactory with appropriate equipment available for operation.
- 9.2 Water companies must ensure that alternative supply vehicles (company-owned, or received from third parties) are disinfected appropriately with evidence of acceptable sample results prior to deployment.
- 9.3 For all alternative supply vehicle deployment operations records must be held centrally to support investigations and audits. Records must include site names, GIS locations, dates and times of filling, infusion and discharge points, reasons for using alternative supplies in the area, identification of the alternative supply vehicle and driver/staff involved with deployment. Disinfection history and water quality sample identification and parameter results should additionally be recorded for each vessel.
- 9.4 Procedures associated with alternative supply operations should be kept up to date and appropriate training and refreshers for staff should be carried out periodically and recorded.

10 Products and Materials

- 10.1 All tanker, bowzers and alternative supply vehicles used by water companies for the transportation of water supplies must meet regulation 31 approval requirements and relevant material in contact with water requirements. Instructions for Use documents must always be followed correctly for operations and storage to ensure compliance with regulation 31. Companies using specific components and fittings on tankers or alternative supply tanks must be able to demonstrate verification of compliance with the regulations. Ancillary equipment, such as hoses, utilised for the transfer of water from alternative supply vehicles to consumers that fall under the requirements of regulation 31 4(b) must have confirmed passing results for BS 6920 parts 2.2.1 and 2.4 for taste and odour and microbial growth testing. Companies are reminded that components falling under regulation 31 4(b) for small surface area should hold passing BS 6920 test results and contact time ratios should be well understood. Further information on regulation 31 4(b) and calculating contact time (C scores) can be found in [Advice Sheet 8 on the DWI website](#).
- 10.2 Instructions for use (IFU) documents associated with approved products should be readily available for staff to use. Under regulation 31 approved products should be operated in compliance with the associated IFU document, and any conditions attached to the approval. It is good practice for operational tanker staff and management to have access to relevant IFU documents and that internal audits are completed for assurance that IFU and any approval conditions are being adhered to.

- 10.3 Companies are encouraged to ensure tanker teams understand the requirements of regulation 31 to safeguard against avoidable events caused by misused products. The Inspectorate reminds the industry that failure to comply with regulation 31 is a potential offense under regulation 33 of the Water Supply (Water Quality) Regulations. Procedures for the procurement of products and materials should be sufficiently robust to ensure that regulation 31 approval checks are completed and that there is accountability within the company for regulation 31 compliance responsibilities.

11 Risk Assessments

- 11.1 Where alternative supply vehicles and/or tankers are part of processes and procedures for maintaining supply, these should be included in the drinking water safety plan and risk assessment as part of regulation 27.
- 11.2 It is considered good practice to include alternative supply vehicles/tankers as a hazardous event within drinking water safety plans. The questions, data and information included as part of the risk record assessment should cover the risks arising from the alternative supply vehicle/tanker operations.
- 11.3 Water companies should be able to demonstrate how risk has been calculated for alternative supply activities in a logical, scientific and robust manner. This would usually be through the use of risk questions and data which is validated through audits, visual inspection and sampling, as appropriate.
- 11.4 The use of alternative supplies/tankers is frequently included as a control measure for a number of hazards or hazardous events, especially those relating to loss of supply. In order for these to be included as a single control measure at an asset the use of alternative supply vehicles or tankers should, alone, provide adequate resilience for the supply if DWI category A is to be used.

12 Roles and Responsibilities and Training

- 12.1 All personnel (internal water company staff and third-party contractors) involved with the collection and delivery of alternative supplies should have appropriate training both on specific tasks and the principles of water supply hygiene. At a minimum, this should be demonstrated by a valid National Water Hygiene Card. Water should never be collected or delivered without an appropriately trained person being present to support the coordination and completion of tasks.
- 12.2 All companies should hold suitable systems for tracking employee and contractor's National Water Hygiene card registration and expiry dates to ensure that re-training takes place in a timely manner. The Inspectorate reminds the Industry of the importance of upholding a valid National Water Hygiene EUSR registration for all individuals entering clean water sites or working on the clean water network (known as 'Restricted Operations').

- 12.3 There are inherent risks if water companies utilise third-parties to provide tanker services and roles and responsibilities of both the water company and third-parties should clearly be defined. Ultimately water companies are responsible for any activities that are undertaken in their networks so having clearly defined roles and responsibilities, captured in documented procedures which are followed and can be audited is an important quality assurance measure.
- 12.4 The Inspectorate considers it good practice for all roles to have defined training requirements with modules that are assessed to ensure that staff have reached the required level of competency before undertaking live operations. Competency-based assessments should be undertaken periodically to confirm that changes and updates to procedures are embedded. Operational control centre staff should be considered as part of the tanker training schedule to support decision making on the identification of suitable fill and infusion locations making sure these are appropriate and that consequences for water quality are understood. It is good practice for staff to be able to readily have access to training and instructional videos to review procedures whenever necessary. Internal audits should be utilised as development tools to identify any further training needs and maintain staff competency. A central record of staff training and when periodic refresher training is due should be held by companies.
- 12.5 For companies utilising third-party contractors in alternative supply operations regular liaison meetings should be held to maintain understanding of each other's processes and support the identification of any gaps that may present a risk to water quality. These liaison meetings should ensure that procedures are kept updated as best practice evolves.

13 Summary

- 13.1 Tankers or alternative supplies should only be used in emergency situations or to support planned network operations. Alternative supply options must not be considered as a substitute for a robust and well-maintained treatment and resilient distribution system.
- 13.2 Water companies must consider whether water provided during alternative supply operations is of similar quality to the original supply, consideration should be given to taste and odour, pH and corrosion impacts on pipework in addition to hardness and fluoridation. If this is not possible appropriate consumer notification should be carried out regarding the need for a temporary change. Chloraminated systems receiving alternative supplies should be risk assessed to avoid taste and odour risks. Water supplied from alternative sources must be acceptable to consumers with no abnormal change.
- 13.3 Stakeholder engagement should be maintained between alternative response teams and water quality teams alongside external parties such as local emergency services and local authorities.

- 13.4 This guidance serves to provides further clarification on risk assessment, sampling and alternative supply disinfection practices. It also includes expectations on operational procedures and training and clarifies requirements under regulation 6 and 31. It is the responsibility of water companies to ensure that operations on the water supply network are undertaken using methods and practices that safeguard a wholesome water supply.

14 References

- 14.1 DWQR (2021) Information Letter 1-2021 'The Augmentation of Drinking Water Supplies by Tanker'. Edinburgh
- 14.2 Security and Emergency Measures Direction and Guidance
(<https://www.dwi.gov.uk/water-companies/legislation/>)
(<https://www.dwi.gov.uk/semd/>)
- 14.3 BS 8551: 2015 Provision and management of temporary water supplies and distribution networks – code of practice. British Standards Institution
(www.bsi-global.com/)
- 14.4 BS 6920 Parts 2.2.1 Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water – Part 2: Methods of test – Section 2.2: Odour and flavour of water – Subsection 2.2.1: General method of test. British Standards Institution
(<https://standards.globalspec.com/std/1691331/BS%206920-2.2.1>)
- 14.5 BS 6920 Parts 2.4 Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water – Part 2: Methods of test – Section 2.4: Growth of aquatic microorganisms test. British Standards Institution
(<https://standards.globalspec.com/std/1691316/BS%206920-2.4>)
- 14.6 Principles of Water Supply Hygiene (2015) Water UK
(<https://www.water.org.uk/guidance/principles-of-water-supply-hygiene/>)

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