

Drinking Water Quality Regulator for Scotland

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Information Letter 1-2021 **The Augmentation of Drinking Water Supplies by Tanker**

The purpose of this letter is to communicate DWQR's expectations in respect of Scottish Water's operations when providing alternative water supplies by tanker.

DWQR recognises that it is necessary for Scottish Water to augment water supplies in exceptional circumstances where the security of the normal supply through the distribution system is compromised by drought, high demand or operational incident. The associated activities introduce additional risk to the quality of water supplied which Scottish Water is required to actively manage and demonstrate that it has done so.

It is apparent too, that the practice of direct injection of tankered water into water mains is a method of mitigating loss of supplies which has become more prevalent. This letter addresses the risks to drinking water quality presented by that activity and takes the opportunity to refresh the requirements set out in DWQR Information Letter 1/2011, 'The augmentation of drinking water supplies by tanker'; 25 August 2011, which is withdrawn.

The following requirements do not aim to be exhaustive and Scottish Water will wish to undertake its own assessment of how the risk from tankering water is managed.

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Circumstances of tankering

Where it becomes necessary to undertake this activity on a regular basis or over a prolonged period, this should be taken as an indication that the receiving supply is inadequately sized to meet demand and Scottish Water should consider whether appropriate investment is required to upgrade the supply. It is vital that an accurate record of instances of tankering is provided to staff involved in investment planning so that the issue may be taken into account.

The supply from which water is to be taken (the donor supply) must be appropriate for that use. As far as possible, relevant water quality characteristics should match those of the receiving supply. Particular attention should be given to those parameters likely to be noticed by consumers, such as chlorine residual, colour and hardness. Where free chlorine and chloraminated supplies are mixed, risking taste and odour issues, staff should be aware of these risks and how they may be controlled, documenting them via the risk assessment. All tankering operations must be authorised by a senior member of Scottish Water's operational staff.

If, in exceptional circumstances, a tanker is used via a semi-permanent connection to create additional storage for a system, a full written risk assessment must be undertaken. The risk assessment, and the requirement for the tanker, must be reviewed on a monthly basis. An inspection and sample programme must be created to satisfy the requirements of Regulation 6 of the Water Supply (Water Quality) (Scotland) Regulations 2001. The requirements of the regulation shall be considered a minimum and the sample programme should also address any risks highlighted in the risk assessment.

Staff involved in tankering operations

All personnel involved in the collection and delivery of tankered water between supplies should have appropriate training both on the specific task and general water hygiene, as demonstrated by the possession of a valid National Water Hygiene Card (Blue Card). This should be the case whether the person is a member of Scottish Water operational staff or a contractor. Water shall not be collected from or delivered to a site without an appropriately trained person being present. Ideally this shall be a Scottish Water employee, however if this is not possible a contractor may be used provided they have received equivalent training and are sufficiently familiar with the sites concerned.

Equipment used in tankering operations

It is Scottish Water's responsibility to ensure that all equipment used in tankering operations is appropriate for that use and complies with the relevant materials in contact with water requirements. Tankers should have been thoroughly cleaned and disinfected prior to use. Ideally such vehicles should be restricted to drinking water

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use. In exceptional circumstances tankers normally used for the transport of appropriate food-grade liquids may be used, but these should be subject to the particular cleaning required, disinfection and flushing. Particular care should be taken to avoid taints and odours and a passing microbiological sample should be obtained from each such tanker prior to use for any delivery operation.

Where the tanker has been in continuous use between the same two donor and receiving sites, a microbiological sample is required on first use, each day and chlorine residuals measured at every collection and delivery.

All equipment used in the tankering process, such as hoses, couplings and hydrants must, as a minimum, have a recognised water industry testing house approval and be kept specifically for drinking water use. They must be clean, in good condition, hygienically stored and have been disinfected prior to use. Care must be taken with storage of these items, ensuring they remain clean during transit and in particular that they cannot come into contact with any hydrocarbons such as fuel, or other chemicals. All equipment used in the tankering operation must be traceable and its usage recorded.

Operational practice during tankering

Extreme care must be taken to avoid contamination at every stage of the process. A risk assessment of the proposed tanker operation must be carried out and approved, within which, the donor and receiving points, whether SR access points, fire hydrant or some other installation, must be clearly identified.

For fire hydrants identified as donor or direct inject points, the chamber and hydrant must be confirmed as being of suitable appearance for hygienic use. In any operation where at any stage, it is found that a selected hydrant cannot be utilised, there must be authorisation obtained to use an alternative appropriate point on the chosen water main.

Thought must be given to the effects of removing a large volume of water from the donor SR or distribution system. Care must be taken to avoid starving the system, causing vortexing and air entrainment or disturbing any sediment. Similar care must be taken on discharges to receiving SRs, particularly where multiple tanker discharges take place simultaneously.

Where direct inject points are to be utilised, the hazards of disturbing pipeline deposits by creating different flow rates and flow directions in water mains must be clearly assessed with mitigating measures set out for completion prior to an inject commencing. It is essential that the specific location of every inject point utilised can be readily identified and retrieved from records.

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Where continuous filling or discharge of a number of tankers at a particular location is necessary, measures must be taken to ensure all hoses and couplings are raised off the ground and protected from contamination or tampering whilst awaiting use by the next tanker. If the site is to be left unattended, the equipment must be stored securely or securely capped and protected. Hatches to service reservoirs or other water storage points must not be left unprotected from the elements whilst open and must not be left unsecured if the site is unattended.

All risks should be considered, along with the mitigation measures and these must be recorded via the written impact assessment.

Direct injection to distribution systems

The use of tanker water in any circumstance brings a level of risk of contamination occurring but where these alternative supplies are provided as a direct inject to water mains, where there is no opportunity to arrest any contamination that may arise from the load or from the condition of the inject hydrant point, those risks are significantly increased and I consider it appropriate for additional requirements to be set.

It must be recognised that in any such operation to maintain drinking water supplies, each and every instance of a direct injection to the networks system provides an opportunity for contamination to occur. The operation itself also introduces a potential for pipeline deposits to be disturbed as changes in pressure, flow direction and velocity are created within the network system causing discolouration, taste or odour issues and the potential exposure of consumers to water which does not meet water quality standards. A thorough impact assessment, strict observance of hygiene practice, and disciplined record keeping must therefore be maintained for the operation.

Monitoring water quality

It is vital that the quality of water is monitored during a water transfer operation in order to protect consumers by verifying that the water used in the transfer has remained wholesome throughout the entire supply augmentation operation and to provide a record of quality at each stage, should any issues subsequently come to light.

a) Tanker water

Tanker deliveries should take place and be offloaded as soon as possible after filling to avoid the potential for a deterioration in quality due to water remaining in the tanker for excessive periods.

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Water quality checks must be made and recorded at the following stages and locations for each tanker:

WQ check or sample	Location	Stage in Process	Purpose
Free Chlorine Total Chlorine	Tanker sample point	Immediately following tanker fill.	To provide reference chlorine residuals to verify that donor storage point water was wholesome
Microbiological sample	Tanker sample point	Daily for each and every donor point utilised. Immediately following tanker fill.	To verify water is wholesome in tanker from each donor point
Free Chlorine Total Chlorine	Tanker sample point	Immediately prior to discharge.	To provide chlorine residuals for comparison with the 'filled water' reference values to verify no undue deterioration in water quality has occurred in transport.

Should a significant reduction in chlorine residual occur in the water in the tanker during transit, the water shall not be discharged into the receiving water supply system. It is for Scottish Water to determine what constitutes significant, however this shall be documented in procedures and guidance provided to staff.

b) Distribution system

In consideration of the risk of contamination arising from discharging to storage points or accessing hydrants to inject a supply of water, each storage point or inject point should be subject to a downstream sample being taken following its first use.

WQ check or sample	Location	Stage in Process	Purpose
Service Reservoir: Microbiological Sample + Check on site: Free Chlorine Total Chlorine Visual appearance Taste & Odour	Regulation sampling tap of receiving storage point	Once tanker has discharged, allowing for mixing time and revert thereafter to normal scheduled storage point monitoring programme.	To verify that water supplied to consumers is wholesome and acceptable.

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Inject points: Microbiological Sample	Appropriate point downstream of each direct inject point.	Once tanker has discharged following the initial use of each injection point and daily thereafter.	To verify that water supplied to consumers is wholesome.
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Note: The normal daily monitoring for microbiological and chemical parameters within an area affected by an operations event should then come in to play to monitor any extended circumstances or event. Where direct inject points are used, the microbiological sampling should include the same initial sampling point within any others selected.

Records

In addition to records relating to the Impact Assessment and wider distribution system sampling, Scottish Water shall keep a record of all tanker operations, as a minimum, for each load:

- name of donor storage point / the specific GIS location of the donor hydrant;
- name of receiving storage point / the specific GIS location and water main of each direct inject point to the network system;
- reason for tankering;
- identification of the tanker;
- identification of tanker driver and EUSR number;
- last clean & disinfection of tanker;
- identification of sampler, their EUSR number and the sample number for microbiological samples taken from tanker at first daily use of each donor point;
- date and time of filling tanker;
- date and time of discharging tanker;
- results of all tests as specified above;
- name of senior Scottish Water staff member authorising tanker operation.

The requirements of this information letter shall be incorporated into Scottish Water's operational procedures and work instructions.

A copy of this letter has been sent to Public Health Scotland, Water Industry Commission, Water Industry Division of The Scottish Government and the Drinking Water Inspectorates in England and Wales and Northern Ireland.

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If you have any enquiry about the matters set out in this letter, please get back to me.

Yours sincerely,



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