

PE1646/D

Drinking Water Quality Regulator for Scotland submission of 30 June 2017

Thank you for the invitation to provide my views on this petition. The Drinking Water Quality Regulator for Scotland has the general function of ensuring that Scottish Water complies with its drinking water quality duties. In order to fulfil this function the Water Industry (Scotland) Act 2002 provides for specific powers which include:

- Power to obtain information
- Powers of entry and inspection
- Enforcement action provisions
- Emergency notice provisions

I am also able to formally confer these powers onto others who can act on my behalf, so my officers are also able to obtain information, enter premises and if necessary serve enforcement notices.

The Drinking Water Quality Regulator for Scotland is a Public Body and as such is subject to scrutiny by the Scottish Public Services Ombudsman.

The Petitioners raise concerns that the audit my officers undertook of the Aviemore water treatment works did not reveal any deficiencies and this has led them to have concerns about my role and the investigations we undertake. I have appended a summary about the Badenoch and Strathspey supply and our involvement as background information for the Petitions Committee's consideration.

Once I become aware of a drinking water quality event¹, either through notification from Scottish Water, notification from consumers or by media coverage, then my officers will investigate the circumstances. If that event is considered to be significant, in line with our ISO accredited processes, it will be classified as an incident and we will carry out a thorough investigation.

During 2016 we assessed 659 water quality events and classified 26 of these as incidents. The primary purpose of a water quality incident assessment is to investigate the circumstances; assess the action taken during the incident by Scottish Water; determine whether Scottish Water has met its duties under the Public Water Supplies (Scotland) Regulations 2014 ("the 2014 Regulations") and the Water (Scotland) Act 1980 and review lessons learnt and actions put in place to prevent a recurrence. Once complete we publish a summary of our assessment on our website.

With regards to the Badenoch and Strathspey supply I was notified in March 2016 by Scottish Water that a number of consumers in the area remained dissatisfied with the taste and odour of their supply. Scottish Water outlined to me their plan for improvement of this through the introduction of chloramination and informed me that they intended to discuss this at a public meeting. This meeting resulted in further consumer concerns and media attention, as a result of which I considered this to meet the criteria of a water quality incident that required investigation. During that investigation and to satisfy myself of the validity of the improvement proposal my officers audited the treatment works to verify that the process was operating safely, satisfactorily and not producing water of varying quality. This was the second inspection of the works in response to perceived consumer concerns.

¹ DWQR Information letter 3/2012 – Matters to be notified to DWQR and Scottish Ministers via the Event Reporting Process

Our audits cover a range of factors including compliance with industry best practice, instrumentation, calibration and daily testing regimes. We also review water quality data from site instruments and laboratory test results data to ensure that the requirements of the 2014 Regulations are being complied with.

When investigating issues which relate to the taste or odour of water our starting point will generally be the source of the water and the supplying works to ensure that the safety of the supply is not in any way compromised. The standards set out in the EU Drinking Water Directive, which derive from the World Health Organisation's Guidelines for drinking water quality, and the 2014 Regulations are there to ensure that the water is safe for human consumption. The 2014 Regulations include a 'wholesomeness' requirement that the water should not contain any substance or organism likely to present a risk to health and we will also review, if available, analytical data for substances not specifically listed in the Regulations against this requirement. When I comment on the quality of a particular supply it is based on assessment of laboratory sample results against these standards and this includes standards for taste and odour.

Once I am satisfied with the safety of the supply and compliance with standards then other factors come under consideration when reviewing water quality incidents or complaints of an aesthetic nature. These will include the numbers and nature of the complaints; whether the residual chlorine residual is higher than is necessary for ongoing microbiological protection; whether chlorine residuals fluctuate; whether Scottish Water have in place a flushing or maintenance programme; whether byelaws inspections have been carried out by Scottish Water; consideration will also be given to the potential impact domestic plumbing arrangements can have and whether Scottish Water has investigated this; and we will assess whether Scottish Water has a programme of improvement. If I do not consider that Scottish Water has fully investigated an issue, or has no improvement plans, should one be required, then I will consider whether some type of enforcement proceeding² is necessary.

In regard to the Badenoch and Strathspey supply I did not consider it appropriate nor proportionate to instigate enforcement action because Scottish Water had not failed any drinking water quality regulatory duties; continued to sample extensively; continued to liaise with the community, local officials and NHS Highland; and had an improvement proposal.

Scottish Water operate in a highly regulated environment, which has delivered significant water quality improvements over a number of years not only reducing the number of failures of regulatory standards at consumers' taps and water treatment works from 971 in 2005³ to 179 in 2016, but also reducing the number of complaints relating to water quality from 22,553 to 10,659. I believe the approach taken to the regulation of drinking water quality to be robust and proportionate. The application of regulations and the procedures we operate are subject to continuous improvement under our ISO 9001 accreditation and I welcome any opportunity which brings about improvements in the effective delivery of the regulatory process.

The Petitioners raise concerns over the improvement proposal which concerns the use of chloramination. I can understand that using a treatment process which involves the addition of ammonium sulphate to the water may sound alarming, but this is a recognised and extensively used water treatment process, using chemicals which are approved for

² DWQR Enforcement Policy February 2015

³ Data on consumer complaints first published by DWQR in 2005

this purpose. Chloramine has been used as a water disinfectant safely for many years and currently around 25% of drinking water in Scotland is chloraminated. The process is well understood and used in drinking water supplies around the world. In 2009, DWQR published research work that we had commissioned to explore the potential for by-product formation in chloraminated waters. It concluded that, in general, by-product formation was lower in chloraminated waters than those disinfected with traditional free chlorine methods.

The Committee will also wish to be made aware that during 2015/2016 my officers investigated a number of drinking water quality incidents which highlighted short-comings relating to the ammonium sulphate dosing element of the chloramination process predominantly associated with monitoring. I considered it necessary to formally notify Scottish Water that I was considering enforcement action to require investigation and improvements. In response to this Scottish Water appointed an independent technical expert to review all their ammonium sulphate systems against industry best practice and will be reporting the findings of this to me later this year.

The Committee also pose a number of additional questions and my responses to these are set out below.

Who tests the water?

Sampling and analysis of public drinking water supplies is carried out by Scottish Water in accordance with the requirements of the 2014 Regulations. In 2016 this amounted to 311,560 tests taken across the country. These Regulations also make provisions that allow for testing to be carried out by local authorities, although the extent to which this takes place varies.

What are the test protocols?

The testing must meet the requirements of the Drinking Water Quality Directive 98/83/EC which establishes the requirements for collection, transport and analysis of samples. This Directive is transposed into Scots law by the 2014 Regulations. Specifically Regulation 15 requires any laboratory analysing drinking water quality samples to have a system of analytical quality control that must be checked by a person who is not under the control of the laboratory or Scottish Water and is approved by the Scottish Ministers for that purpose. In the case of drinking water analysis in the UK, this is the United Kingdom Accreditation Service UKAS who are appointed as the national accreditation body.

In collaboration with the other UK drinking water quality regulators, I have a Memorandum of Understanding with UKAS that sets out that UKAS is responsible for accrediting water companies, including Scottish Water, to the international standard ISO 17025 which is an international standard for laboratory analysis. Additionally, UKAS act on behalf of UK regulators to accredit water companies, including Scottish Water, to the Drinking Water Testing Specification (DWTS), which is an additional set of requirements relating specifically to drinking water. UKAS carry out annual audits of the laboratories and my staff will attend the audit close out meeting and receive feedback on the audit findings. In addition, my officers audit Scottish Water's analysis on a risk basis.

Most of the analytical methods used by Scottish Water are water industry standard protocols, agreed as best practice by the Standing Committee of Analysts who are set up to develop and approve water industry analytical methods.

Who analyses the results and makes recommendations based on those results?

Scottish Water has a Public Health Team who are notified of all sample failures and they will provide internal advice within Scottish Water to ensure failures are adequately investigated and remedial action is taken. The team also notify key external stakeholders as required by the 2014 Regulations. In practice, these stakeholders are Health Boards, Local Authorities and DWQR. Scottish Water has a specific duty in the 2014 regulations to investigate all failures or likely failures and report on its findings to me, and I may choose to investigate further. Scottish Water is also required to make a monthly data return to me which includes all their regulatory sample results. It is my role to assess the likelihood of any failure to recur and review the action that Scottish Water has taken to secure compliance with standards.

Who has the power to enforce the recommendations?

I have the power to enforce recommendations for action either using the powers from the 2002 Act or using Regulation 22 of the 2014 Regulations. My approach to enforcement is set out in my Enforcement Policy which is published on my website.

Is there any conflict of interest within the process?

I do not believe that there is any conflict of interest. The model of self-monitoring within a stringent regulatory environment is well established and mirrored across the UK and elsewhere in the world.

I trust that I have answered your questions clearly and concisely and will be happy to discuss any aspects of my response and indeed the drinking water quality regulatory framework with the Committee.

Annex 1

Badenoch and Strathspey Supply – Background Note

Background

The Badenoch and Strathspey area is supplied by Aviemore water treatment works (WTW). The treatment works serves a population of 10,542.

This area was until 2012 supplied by the Blackpark WTW which took its water from Loch Einich, an environmentally sensitive loch high in the Cairngorms. Blackpark WTW was included in Scottish Water's enhancement plans because it needed improvements to address failures of standards relating to poor bacteriological quality, turbidity and poor disinfection control. Additional demands were also being placed on the WTW due to growth in the area and the existing works did not have sufficient capacity to meet future needs. In order to meet the growth forecast and provide additional volume, more water was required from Loch Einich which needed the level of the loch to be raised and the installation of a new pipe in an area covered by multiple environmental designations. Scottish Water carried out extensive engagement with a wide range of stakeholders but did not succeed in identifying a feasible solution and after lengthy review proposed an alternative source from boreholes located at Kinakyle.

The new treatment works had ultrafiltration membrane treatment, with pH correction, orthophosphoric acid dosing for lead control and disinfection using chlorine and was brought into service in February 2012. Consumers soon noticed the change in water quality, both in terms of an increase in chlorine reaching their homes and changes in other quality parameters, such as hardness, caused by the different source. Scottish Water began to receive complaints from consumers reporting concerns over:

- Unpleasant taste (especially chlorine)
- Changes in appearance of tea
- "Popping" noises coming from boiling kettles
- Skin irritation

DWQR Involvement

Following the introduction of the new Aviemore WTW into supply, DWQR received 9 complaints during 2012 which were predominantly concerned with the taste and odour of the supply. In response to these concerns, in May 2012, a DWQR officer carried out an inspection of the treatment works, assessed chlorine residuals at service reservoirs and tasted water at a number of locations in the system. DWQR concluded that at no time was the new Aviemore supply unfit for human consumption or non-compliant with the standards set out in the water quality regulations, and at the time of the inspection the taste of the water at several locations in the supply area was found by the DWQR officer to be acceptable. An incident investigation into the actions taken by Scottish Water was carried out and it was evident that when the new supply was introduced the chlorine residuals were much higher for a period of three weeks than those normally experienced by consumers in the area because the new water supply was cleaner and chlorine did not decay away to the same extent. It was concluded that Scottish Water should have anticipated this and made appropriate adjustments, but the company had been slow to respond to consumers' concerns.

In addition DWQR concluded that Scottish Water had not communicated effectively about the change from Blackpark WTW to Aviemore WTW and had not anticipated nor communicated to consumers in the area that the aesthetic properties and hardness of the water would be different. Scottish Water identified two improvement actions:

- (a) to review and communicate commissioning protocols for assessing potential customer impact of changing to a different raw water source and;
- (b) to amend Scottish Water's Communication Plan to include full evaluation of appropriate communication when changing to a different raw water source. DWQR monitors the implementation of any incident recommendations made by Scottish Water. This particular incident was closed in 2013.

In March 2016 Scottish Water informed DWQR that there continued to be on-going concerns regarding the taste of the Badenoch and Strathspey supply. Their investigations had led them to propose improvement by the use of chloramination to reduce the chlorine residual in supply. Scottish Water planned to announce this proposal at a public meeting in March. Following this meeting, Scottish Water received further complaints relating to:

- Unpleasant taste (especially chlorine)
- Skin irritation
- Concerns regarding the proposal to introduce chloramination to the supply

DWQR carried out a further assessment which included auditing the treatment works, a review of water quality data, and liaison with NHS Highland. Our investigations concluded that the borehole source created in 2012 is well constructed and of good quality; the water treatment process at Aviemore is extremely robust, well operated and fit for purpose; and the water supplied by the treatment works is fully compliant with the regulations and remains so throughout the distribution system. NHS Highland has reported no sustained increase in skin complaints since the water supply changed in 2012, and that the level of skin complaints within the community is comparable to the national average.

Scottish Water committed to continue to investigate and optimise operations both at the treatment works and in the network and engage in a series of public meeting and community engagement to address concerns. DWQR did not consider it appropriate nor proportionate to instigate enforcement action because Scottish Water had not failed any drinking water quality regulatory duties; continued to sample extensively; continued to liaise with the community, local officials and NHS Highland; and had an improvement proposal.

Concerns over skin irritation have become more prevalent than taste and odour issues in recent months. Any concerns which are health related must be investigated by health professionals and DWQR's response will always guide consumers to their GP and Regional Health Board. NHS Highland have also been carrying out their own investigation and are engaged with GP practices in the area.

DWQR is currently investigating a complaint against Scottish Water which relates to skin irritation and our investigation has included taking advice from NHS Highland and Health Protection Scotland.

Chloramination was implemented in April 2017, and Scottish Water have continued to sample to monitor the impact this has had.

Water Quality Data

This is a summary of the water quality data from Regulatory samples for the treatment works and samples taken from consumers' taps.

Blackpark WTW			Aviemore WTW		
Year	No. of samples	No. of failures	Year	No. of samples	No. of failures
2007	497	9	2012	510	0
2008	509	12	2013	697	0
2009	492	14	2014	970	0
2010	479	23	2015	552	0
2011	460	6	2016	987	0

Aviemore Regulatory Water supply zone – samples taken from consumers' taps

Year	No. of samples	No. of failures
2008	715	1
2009	712	1
2010	713	0
2011	711	0
2012	729	0
2013	608	0
2014	747	0
2015	731	0
2016	736	0