

Incident Assessment

Rosemarkie DSR
Microbiological contamination
9 May 2014

DWQR Inspector:
Matt Bower

Event No. 5959

Event Category: Significant

Summary of Incident

A third party digger driver caused a burst on the outlet main from Rosemarkie service reservoir in a cattle field. Scottish Water Operations were alerted and shut down the main. Despite a slight delay while the correct size fittings were located, the main was repaired promptly and recharged. Flow measurements reviewed afterwards suggest that the burst main may not have been under positive pressure for the whole time before it was completely shut down. The main was isolated upstream of the burst, so that the repair was undertaken without the main being under pressure, something which is not always possible but which does increase the risk of ingress into the main. Following the repair no flushing was undertaken, reportedly because of concerns around disturbance of deposits in Rosemarkie village. Additionally, no post-repair sample was taken – both actions would be expected for a repair on a de-pressurised main.

Six days after the repair, a scheduled regulatory sample was taken from the sample tap at Rosemarkie SR, which is off the main, downstream of the repair. This contained 15 coliforms. Chlorine was boosted at the service reservoir in response, and resamples were taken including a “dip” sample from the reservoir. This sample also contained coliforms, requiring further resamples. One of these, a hydrant sample from upstream of the reservoir, failed with large numbers of coliforms.

A notice to boil water prior to consumption was issued by Scottish Water to the area downstream of the failing samples, numbering some 550 people. This was lifted two days later, following several sets of clear samples.

DWQR Assessment of Cause of Incident

It is not possible for Scottish Water to exclude the possibility that contamination entered the outlet main from Rosemarkie DSR during the repair to the burst main. Certainly, evidence suggests that this was a “high risk” repair, with potential for faecal contamination from grazing animals and a period when the main was de-pressurised. It is unacceptable that no post-repair sample was taken by Scottish Water which could have detected any contamination immediately after the work was

undertaken instead of six days later when a regulatory sample was taken. This is clearly in contravention of water industry guidance and Scottish Water procedures.

The severity and duration of the incident was increased by two further failing samples, neither of which were, in all probability, representative of the quality of water being supplied to consumers. The first of these failures related to a “dip sample” taken directly from the reservoir using a bottle attached to a non-sterile wooden pole – an inherently risky process at the best of times, compounded by the use of inappropriate sampling equipment. The second was taken from a fire hydrant, which had a flooded chamber, risking contamination of the sample with dirty water. As Scottish Water well knows, hydrants should only be used to collect microbiological samples as a last resort when consumer taps are unavailable – when this sample was taken in the middle of the afternoon, access to consumer properties should not have been an issue.

DWQR Assessment of Actions Taken by Scottish Water

DWQR is disappointed that failure to follow existing mains repair procedures, compounded by two instances of poor sampling, led to this incident, leaving consumers unable to drink their supply without first boiling it.

Once the first failing sample was reported, Scottish Water acted correctly in increasing chlorine residuals and instigating a thorough investigation. Reporting to NHS Highland appears to have been very good during the incident.

The event has been categorised as significant. Scottish Water has identified eight actions, all of which are appropriate and mainly relate to improving procedures and reminding staff of existing ones.

Action Number	Action Description
1	Superchlorinate the Rosemarkie DSR to increase chlorine levels by 0.2-0.3mg/l
2	Ensure there is a DOMS procedure and approved equipment is specified for when dip samples are required.
3	Investigate the possibility of an automatic generation of a post-repair sample through the operations log after completion of a mains repair.
4	Complete DOMS audit of repair squad involved in the incident.
5	Issue DOMS Tool box talk 11 & 15 relating to sampling procedures
6	Issue DOMS Tool box talk 21 & 27 relating to Sump & Pump procedures in mains repair excavations
7	Reduce storage in Rosemarkie SR
8	Update GIS with the hydrant location near the sample point.