Drinking Water Quality Regulator for Scotland

Incident Summary

Balmore G RSZ
Loss of Ammonia Dosing
31st August – 4th September 2024

Event No. 14876

Event Category: Significant

On the 29th of August at 5pm, the Customer Water Services (CWS) Networks team were made aware of a burst on a 27” cast iron main on the inlet to East Craigs DSR. East Craigs DSR comprises of two tanks, each divided into two cells, which receive and store chlorinated water from Balmore WTW via two inlet mains. On the single outlet, the chlorine residual is boosted at a flow proportional rate with chlorine gas to a setpoint. It is then chloraminated by dosing ammonium sulphate, as the supply mixes with chloraminated water downstream. The burst was located and the main isolated at 21:30 the same day, and the remaining single inlet main fed all cells – all parts of the system remained in supply.

At midnight on the 30th August, the Intelligent Control Centre (ICC) called out the standby treatment Operator as an alarm had signalled that the ammonium sulphate dosing pumps one side of the tank, Side 1, had tripped. They were reset, and ran for 30 minutes, but then tripped again due to low flow. The Senior Operator was called for advice, and the ICC was called to check whether the tank was in service; the ICC called back and advised that it was out of service due to the burst the previous day. At 06:00 the standby Operator received a call from another member of staff from the ICC, asking about the ammonium sulphate pumps. The Operator advised that they had been told by the ICC that the tank was out of service. However telemetry trends were monitored, and it was identified that there was still water flowing through the tank. The Operator was sent to reset the pumps. At 01:28 on the 31st August the ammonium sulphate pumps again triggered an alarm, but the alarm was supressed by the ICC. A further seven alarms were received by the ICC, but all were

supressed, deferred or cleared. At 13:48 on the 2nd November, ammonium sulphate dosing pumps alarms were triggered again. No action was taken until consumer contacts to Scottish Water's call centre for taste and odour alerted Scottish Water to an issue on the 2nd September; at this point Operations staff were called out to site. The ammonium sulphate dosing pumps were reset, and the cells on Side 1 were taken out of service and all water was fed through Side 2 to resolve the low flow issues – the low flow had been caused by a difference in pressure between Sides 1 and 2 and more flow passing through Side 2.

There were 23 consumer contacts for taste and odour between the 31st August to the 4th September. None of the samples taken in response to the incident failed regulatory standards.

The cause of this incident was a lack of understanding of the status of the service reservoir, and a failure to reinstate ammonium sulphate dosing promptly following the pumps tripping, due to the ICC assuming that the tank was out of service. This, followed by a prolonged failure by the ICC to respond appropriately to repeat alarms, meant that the ratio of chlorine to ammonia was not sufficiently controlled, leading to the formation of di- and trichloramines and the resultant taste and odour complaints.

The event has been categorised as significant. Scottish Water has identified eight actions which DWQR accepts are appropriate and will monitor to ensure they are completed prior to signing off the incident. DWQR made zero additional recommendations.