

Incident Summary

Turret WTW
Treatment turbidity failure
November 2019

DWQR Inspector:
Colette Robertson-Kellie

Event No. 10706

Event Category: Significant

At 16:57 and 16:58 on 22 November 2019, turbidity alarms from the clarified water from Actiflo 1 at Turret WTW were received by the Intelligent Control Centre (ICC). These alarms followed a very high volume of repeat nuisance alarms from the treatment works, so were assumed to also be nuisance alarms, so no action was taken. At 18:11 this same alarm was received again by the ICC, and was again assumed to be a nuisance alarm. At 00:08 on the 23rd November, a high turbidity alarm for rapid gravity filter 4 was received by the ICC; this was logged and monitored by the Control Engineer but was not passed out to Operations staff. The same rapid gravity filter turbidity alarm sounded again 19 minutes later, followed by a further two turbidity alarms from different filters and then the treated water turbidity alarm. No action was taken by ICC staff. At 01:36, the treated water aluminium alarm was received, again no action was taken. At 01:43, this alarm was received again, and at this stage the ICC Duty manager reviewed the alarm and passed it to the standby operator.

The Standby Operator asked the ICC for other turbidity data, and then the Operator advised the Standby Team Leader of the situation. The Team Leader contacted a second Operator, since the Standby Operator was 50 minutes away from the site, so another Operator who lived closer to the site was called. This Operator attended the site at 02:05 and was then joined 45 minutes later by the Standby Operator. A faulty polyelectrolyte pump was found to be the cause of the increase in turbidity and so the standby pump was switched on. The Operators closed valves to protect service reservoirs from receiving poor quality water, ran filtered water to waste, located the source of the issue, re-started the treatment works, carried out water quality monitoring, took samples for laboratory analysis, including Cryptosporidium sampling, raised a work order for the broken pump, liaised with the Public Health Team, and manned the site until the day shift Operator arrived.

This incident did not significantly impact on chlorine levels leaving the site, and the sample that was taken in response to increased final water turbidity did not detect Cryptosporidium. While trends from online instrumentation suggested that the final water concentration leaving the treatment works exceeded 0.2 mg/l, samples taken by the Operators at the peak of the aluminium levels showed a maximum of 0.167 mg/l. Samples taken in the distribution system showed that there were no failures of regulatory standards.



The incident started when a polyelectrolyte pump failed; a fouled flow sensor did not detect the failure, which prevented the SCADA control system automatically changing over to the standby pump. However, this would not have been declared an incident had the numerous alarms from the site been appropriately responded to. It is therefore my view that the cause of the incident was a failure by the ICC to respond to alarms.

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

