



Drinking Water Quality Regulator
for Scotland

Incident Summary

Roberton WTW
Ammonium failure6
June 2019

DWQR Inspector:
Moira Malcolm

Event No. 10212

Event Category: Significant

On the afternoon of 7 June 2019 the on-site operator noticed that ammonium sulphate dosing visual alarm was activated and ammonium was overdosing. He assumed the flow meter was faulty, so switched off the pump and contacted the process scientist to investigate the cause. The pump had increased from dosing 9.5 l/h to 31.0 l/h overnight on 6 June, and even with the pump switched off a flow of 16.0 l/h was being delivered. Final water ammonium peaked at 0.918mg/l before injector 2 was isolated, whereupon flow ceased. Dosing was reinstated on autocontrol with the ammonium:chlorine dosing ratio reduced from 4.5:1 to 5:1. The ammonium level then reduced over the following day – finally becoming compliant with the PCV on 8 June at 20:15. Ammonium levels above the PCV were recorded at consumers' taps until the 8 June. Chlorine dosing was unaffected by the issue so chlorine levels and disinfection remained robust throughout the incident.

In May 2019 the Roberton network was chlorinated (which is usually chloraminated) to reduce nitrifying bacteria throughout the network and therefore reduce the amount of nitrite failures. This was done by switching off ammonium dosing at the works for three weeks and running on chlorine only. This was the first time in over twenty years that ammonium dosing had been switched off for a substantial period at Roberton WTW. Chlorination was undertaken for three weeks, after which ammonium dosing was reintroduced to reinstate chloramination. After three days of chloramination, dosing suddenly increased as the dosing injector was stuck in the open position which allowed the chemical to siphon under gravity. This was caused by a blockage in the non-return valve in injector 2 due to crystallised ammonium sulphate (as the line was not maintained during the chlorination period). Compounding this was the lack of telemetry alarms for high ammonium: the final water ammonium alarm had not been configured correctly, and no priority was set – so although there was a visual alarm on site when the EAL and PCV were breached, this was not noted

by telemetry and so the Intelligent Control Centre were unsighted to the issue.

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 four additional recommendations.

