

## Glendevon WTW Loss of coagulation and aluminium failures 30<sup>th</sup> November – 4<sup>th</sup> December 2023

DWQR Inspector:  
Moira Malcolm

Event No. 14038

### Event Category: Significant

Prior to the incident, from 17<sup>th</sup> – 29<sup>th</sup> November 2023, Glendevon WTW experienced difficulties with coagulation control and turbidity increasing towards the end of the filter run time. Operations managed to control this by bringing filter washes forward and shortening their run times; along with altering pH, poly and aluminium setpoints to maintain coagulation.

On the 30<sup>th</sup> November the ICC called out the standby operator to high filter turbidities on three filters. The operator changed the filter queue, but elevated turbidity and aluminium continued, and ICC escalated the situation to PHT for additional sampling. Between 30<sup>th</sup> November and 4<sup>th</sup> December, repeated issues with filter turbidities were experienced at Glendevon, with operators and process science attempting to control this by changing dosing set points and lines on coagulation chemicals (pH, aluminium and poly); and altering filter run times. As a consequence of this, wash water tanks filled frequently, and the wash water recovery tank ( WWRT) supernatant return outlet valves failed to close due to lack of space in the wash water tanks. The failing valves meant that no further filter washes could be carried out until the valves were manually reset by the operator. During this time the EAL for aluminium was repeatedly breached.

After a series of interventions based on jar tests and increased sampling, on the 4<sup>th</sup> December the poly dose was increased significantly, and the supernatant flow increased to allow the wash water tanks to empty quicker and allow more frequent backwashes. Sulphuric acid dosing for pH control was switched back on and aluminium dosing increased. These

actions eventually allowed coagulation to be brought back under control and treatment recovered with turbidity and aluminium levels returning to normal.

There are no auto-shutdown or run to waste facilities at Glendevon WTW, and so when the filters were overwhelmed Scottish Water had no choice but to allow non-compliant water to enter supply. As a result, there were eight PCV failures for aluminium during this time: two from the WTW final sample point (on 1st and 2nd December) and a further six in distribution (on 4th and 5th December). No *Cryptosporidium* detections were made. Demand was at a high level during this time due to Lomond Hills WTW being offline and similarly high demand at neighbouring Glenfarg WTW, so output could not be reduced/diverted to another WTW.

The incident was caused by a change to the raw water quality which was out with the design envelope of the WTW. The lack of representative raw water sampling prevented Scottish Water from being able to react and control coagulation effectively; plus the absence of run to waste and auto-shutdown facilities ensured that operators had to allow non-compliant water to enter distribution.

The event has been categorised as significant. Scottish Water has identified nine 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.

