

Incident Summary

Kirbister WTW
Coagulation Failure
3 October 2020

DWQR Inspector:
Bill Byers

Event No. 11269

Event Category: Significant

On 2 October, poor weather caused a deterioration in raw water quality causing the filtration process to become overloaded. With individual filter turbidities rising, the operator increased the turbidity alarm setting to prevent automatic shutdown of the filters and permit manual operation to maintain production and enough water to manage filter washes in turn. At 08:30 the following morning, a blockage in polyelectrolyte (poly) dosing and continuing poor raw water quality caused turbidity levels to again rise and when the operator arrived on site at 11:00 to carry out routine checks, found the filter turbidities to be greater than 1 NTU. The raw water inlet flow was reduced and checks carried out to determine the cause. This found the post clarifier poly dosing filter to be partially blocked but the alarm had not activated since the restricted flow rate was still greater than the set alarm level. It was also noted the turbidity alarm points had not been reverted to normal following the work the previous day which prevented turbidity alarms being raised earlier. With additional poly arrangements in place, treatment process control recovered and correct turbidity alarm levels restored, the operator left the site. Returning two hours later to check the site, the post clarifier poly dosing filter was again found to be partially blocked. Assistance was called to site to enable shut down of the works and full clean of the poly dosing system and preparation of a new batch of poly. With production restored an hour later and processes stabilised, the works reverted to normal operation.

Sampling of the final water was arranged in response to the first poly blockage and over the course of the incident and in the days following, one sample taken at 3:30pm on 3 October, failed the aluminium standard with 281µg/l recorded.

The cause of this incident is the inappropriate strength of the poly solution for the prevailing temperature conditions and the consequential partial blockage of the poly dosing system leading to control of the coagulation process to fail. It was however compounded by the effectively inhibited turbidity alarms being unable to alert control centre staff of the developing situation. It is possible that with the correct alarms being generated and timely response made to regain control of processes, the incident would have been averted.

The event has been categorised as Significant. Scottish Water has identified nine actions which DWQR accepts is appropriate and will monitor to ensure it is completed prior to signing off the incident. DWQR made no additional recommendations.

