

Incident Assessment

Rosebery WTW
Treatment Failure
May 2011

DWQR Inspector:
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Summary of Incident

On 27 May at 20.05, an alarm was received at Scottish Water's Intelligent Control Centre (ICC) indicating a fault with a Rapid Gravity Filter (RGF) at Rosebery WTW. 11 minutes later another alarm was received indicating high levels of filtered aluminium. Scottish Water dispatched an operator to the site who adjusted the alum pump dosing resulting in the aluminium levels dropping back below alarm levels.

Early on the morning of the 29 May another RGF fault was received from the WTW. On arrival at the site the standby operator found high aluminium and turbidity concentrations in filtered water and evidence of a failed coagulation process.

The senior operator also attended the works and after investigation identified a leak on the number 1 coagulant dosing pump. Operation was immediately switched to pump 2 and the dosing adjusted and verified correctly. The standby operator then washed all filters and remained on site to monitor the water quality throughout the night until the daytime staff arrived.

On 30 May, the fitter sent to the site to carry out the repair identified that the coagulant dosing pump diaphragm had split and so replaced the faulty part. Repair complete, the operator tested pump 1 but inconsistent flow and erratic dosing resulted in a deterioration in quality from the DAF's. Pump 2 was therefore employed on automatic but continually reverted operation back to pump 1 due to a faulty flow switch, which was indicating low flow levels when in fact flow was good. To prevent the automated controls reverting to pump 1 and potentially causing plant shutdown, pump 2 was switched to a manual setting. This stabilised the plant until the next filter came into wash which, due to the flow change, caused a deterioration in water quality, although this was dealt with by the operator.

The disruption to the coagulation process resulted in aluminium concentrations in the final water exceeding the prescribed concentration or value (PCV) for a period of approximately 5 hours.

DWQR Assessment of the Cause of the Incident

The root cause of the incident was a damaged diaphragm on pump number 1. Further disruption was caused by a faulty flow switch on the pump number 2 dosing line. Scottish Water have investigated the maintenance of the pumps prior to the incident and it was found that the diaphragm and seals were replaced in March and April 2011.

DWQR Assessment of Actions Taken by Scottish Water

Upon reviewing the sequence of events and resulting actions taken, DWQR is satisfied with both the telemetry and alarm system coupled with the site attendance and response by Scottish Water. DWQR does question whether following the events of the 27th, the failing pump diaphragm could have been recognised by Scottish Water sooner, thereby averting the incident. However, given the relatively recent replacement of the diaphragms on both pumps, as indicated by comprehensive records, DWQR is satisfied that Scottish Water had little scope for pre-empting such an incident and that asset maintenance at the plant was adequate.

Scottish Water has identified a number of actions from this incident. DWQR accepts that these are appropriate and will be monitoring to ensure they are completed prior to signing off the incident:

Action Number	Action Description	Status
1	Replace dosing pumps	Complete
2	Replace faulty flow switch	Complete
3	Ensure Maintenance Schedule tasks are actioned	Complete
4	Review and update drinking water safety plan for Rosebery WTW as necessary in light of the incident	Complete
5	Copy of the incident report to be circulated to all Water Operations Managers for information	Complete
6	Operator awareness training	Complete