

Bradan WTW
Lime dosing failure
16 April 2014

DWQR Inspector:
William Byers

Event No. 5932

Event Category: Significant

Summary of Incident

An alarm, of a failure of lime dosing pumps, was received by the control centre at 20:25 hrs on 16 April. Standby staff were alerted and after remote investigation of the situation and adjustment to process controls via his field device to reactivate the pumps, the operator attended the works at 22:45 hrs. Bradan treatment works has two lime plants and the one supplying lime to adjust pH for the coagulation process had a low level of lime slurry in the batching tank. This causes the lime dosing and aluminium dosing for the process to be inhibited and the coagulation process stopped. As a result, untreated water passed through to the filters for a period of an hour before the operator was able to override the inhibit and restart the dosing pumps with the remaining volume of lime.

Further investigation of the problem failed to determine any fault with dosing equipment and assistance was sought from maintenance staff. Due to prior workload however, the E&M standby were unable to respond immediately and were only able to arrive on site by 03:45 the next morning. During this time, the operator made adjustment to lime dosing and reduced the flow through the plant to minimise the effect of lower pH on the coagulation processes. With assistance on site, the operator was able to break in to the lime system and make sufficient powder available to manually batch the lime dosing plant. With this done, the front-end coagulation process began to stabilise and show sustainable recovery from around 04:40hrs.

DWQR Assessment of Cause of Incident

Scottish Water's investigation has identified that the lime batching plant was deprived of the powdered lime due to bridging occurring in the silo creating a void above the screw feeder. DWQR is satisfied that this is the root cause of the incident.

DWQR Assessment of Actions Taken by Scottish Water

Scottish Water responded well to the problem and has demonstrated that arrangements for monitoring processes alarms out of hours were effective and that appropriate investigative response was made. Whilst awaiting assistance from E&M standby, the operator took appropriate actions to mitigate the effect of the process failure on final water quality. Evidence provided shows there to have been minimal impact on the final supply to consumers and sampling carried out in the supply zone has confirmed there to have been no related failures of standards.

DWQR is concerned that operators are able to receive speedy relevant specialist support to resolve out of hours situations but acknowledges that Scottish Water has identified this as requiring review following this event.

The event has been categorised as significant. Scottish Water has identified a number of actions and DWQR accepts that these are appropriate and will be monitoring to ensure they are completed prior to signing off the incident.

