

Badachro WTW
pH Failure
9-19th June 2016

DWQR Inspector:
Moira Malcolm

Event No. 7722

Event Category: Significant

Summary of Incident

Between 6th and 14th June 2016, Badachro WTW produced water with gradually rising pH, eventually breaching regulatory limits between 12-14th June. On returning from leave on the 14th, the experienced operator immediately spotted the error and corrected it, however a series of opportunities were missed on the lead up to this date.

DWQR Assessment of Cause of Incident

The initial issue that caused this incident was the failure of the Treated Water pH monitor to hold calibration and drift downwards, masking a gradual rise in pH.

However operator error extended and aggravated the event: first an operator did not allow a handheld pH monitor to achieve a stabilised reading and did not verify the pH by checking the Final Water pH monitor. Secondly an operator unfamiliar with the site used a buffered water stream to take further handheld Treated Water pH readings, (which was unrepresentative and gave readings lower than the actual pH) and compensated for the apparent fall in pH by over-correcting the pH blend. Again, the Final Water pH monitor was not checked. Eventually a third operator noticed the fault, resolved the issue, but failed to record or communicate this to process scientists when he left site, thus prolonging the investigation into the raised pH, which instead was blamed on an earlier issue on the 6th June where the clear water tank (CWT) level dropped and the cells were scoured.

DWQR Assessment of Actions Taken by Scottish Water

The site operators prolonged and exacerbated the incident both by using the wrong sample stream to take hand-held readings which validated the results of the errant monitor, rather than contradicting them; and not allowing the hand-held instrument to stabilise. This was compounded by the lack of information recorded in the site diary as to the actions of all of the operators.

When the experienced site operator realised the issue, he correctly identified and rectified the pH by replacing the faulty pH probe, then recalibrating and adjusting the pH blend valve, but failed to communicate this at the site handover. However this operator did escalate the event to the team leader and Public Health Team (who put an Incident Management Team together), and the service reservoir at Port Henderson was isolated and the level dropped to minimise impact on consumers.

The lack of alarms linked to telemetry on site gave little visibility of the rising pH to operators or staff at the Intelligent Control Centre (ICC). The relatively crude mechanism by which the blend of pH corrected water is adjusted at the site may have hindered accurate control.



The event has been categorised as Significant. Scottish Water has identified a number of actions and DWQR accepts that these are appropriate. In addition, DWQR has made a number of recommendations following the incident and will be monitoring to ensure both these and the actions are completed prior to signing off the incident.

