

Lismore WTW
Disinfection failure
10 May 2018

DWQR Inspector:
Moira Malcolm

Event No. 9294

Event Category: Significant

On 1st May 2018 two low final chlorine alarms were passed from the Intelligent Control Centre (ICC) to the Island Operator who took remedial action by manually dosing chlorine to the Clear Water Tank (CWT).

On 6th May another low final chlorine alarm was received, and as the Island Operator was on leave this was passed to the standby operator based on the mainland. The standby operator attended the following day (due to ferry availability), confirmed that the final water chlorine was at 0.12mg/l. A fault with the dosed chlorine flow meter was diagnosed and this was replaced.

On 16th May a scheduled operator visit to site identified that the final chlorine was again low and the dosed chlorine flow meter was faulty. The operator escalated the issue to the Public Health Team (PHT), fixed the fault and manually dosed the CWT with sodium hypochlorite. Sampling undertaken over the following two days gave satisfactory microbiological results.

The follow up investigation revealed that chlorine dosing reduced, then ceased between 2-7 May and 10-16 May.

A series of systemic failures caused this incident.

The initial cause of the incident was the dosed chlorine flow meter which failed to send a

signal to start chlorine dosing when the works started up. The flow meter was replaced on 8th May, however this also developed a similar fault.

This was compounded by a series of issues with the alarm set up:

- The faulty flow meter also meant that the auto shutdown on low chlorine didn't activate as there was no alarm visibility that the works was producing water.
- The dosed chlorine alarm is programmed to alarm only when the plant is running, and there was a 30 minute alarm delay scheduled on plant start-up to allow the plant to stabilise. However due to demand, it often only runs for 30 minute periods, therefore no alarm would generate.
- The final water chlorine instrument was wrongly labelled as "post CCT Chlorine" and was grouped into the Water Treatment Works (WTW) alarm suppression during no flow and WTW start up conditions.

If there had been adequate alarm visibility, the issue with the flow meter would have been detected and the incident would not have occurred.

The event has been categorised as Significant. Scottish Water has identified eleven 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.