

## Ullapool WTW Significant Loss of Control of Treatment Process 11<sup>th</sup> June 2023

Event No. 13449

### Event Category: Significant

A storm led to three power failures between 16:33pm on Sunday 11th June 2023 and 1:39am on Monday 12th June 2023, resulting in Ullapool Water Treatment Works (WTW) shutting down each time. The standby operator arrived on site following the first and second power outages, finding that mains power had been restored. On both occasions, the standby operated restarted the plant, reset all alarms and confirmed all water quality parameters were within normal limits before leaving site to attend alarms on other sites affected by the weather.

The third power outage occurred at 1:39am on 12th June 2023, at which point the standby operator had run out of hours. Scottish Water's Intelligent Control Centre (ICC) informed the escalation team leader that Ullapool WTW had shut down again and that the operator was out of hours. During this call it was agreed to leave the plant off overnight based on the tank levels and average outlet flow. Further alarms were received by the ICC for final chlorine low low and final pH high high at 2:15am and 2:30am respectively, with the ICC taking the view that these were instrument issues as all other chlorine and pH readings across the site remained normal and the instantaneous change of both parameters. As a result, these alarms were deferred for the daytime operator to respond to in the morning.

The daytime operator arrived on site and restarted the works at 7:45am on Monday 12th June 2023. Having calibrated the final chlorine monitor, it was confirmed that chlorine residuals were healthy and within operational levels. Calibration of the final pH monitor confirmed that this was a genuine reading with the pH at 10.01 at the time with the operator manually shutting down the works straight away. Escalation to the Team Leader, Public Health Team and Business Manager occurred with a decision made to restart the works and reduce the pH set-point in an attempt to dilute the pH of water already in the clear water tank (CWT). Following this, the decision was made to scour one cell of the CWT before isolating the other cell, so as to maximise the dilution of non-compliant water already in the CWT. This plan was carried out, with the final water pH dropping below the prescribed concentration value (PCV) of 9.5pH at 11:30am and below the site's Emergency Action Level (EAL) of 9pH at 18:00pm.

Scottish Water took 7 samples from Ullapool WTW and the downstream area between 12th and 16th June 2023 with no samples failing the pH standard.

It is apparent from Scottish Water's incident report that the elevated final water pH was as a result of the soda ash dosing pumps continuing to dose for a short period despite the plant flow stopping (likely caused by power brown-outs). This resulted in a plug of extremely high pH water passing forward when the plant restarted.

The event has been categorised as significant. Scottish Water has identified seven actions which DWQR accepts are appropriate and will monitor to ensure they are completed prior to signing off the incident. DWQR made zero additional recommendations.

