

Incident Summary

Herricks WTW
Loss of treatment control
6 November 2020

DWQR Inspector:
Bill Byers

Event No. 11348

Event Category: Significant

On 6 November, at 3:00pm, a fault occurred on the raw water process logic controller (PLC) which resulted in the raw water pumps to the dissolved air flotation clarifiers, the chemical dosing pumps and sample pumps all failing to operate, effectively ceasing forward flow into the works. A flow of filtered water continued however under gravity conditions through the final stages of the works and due to the same control problems, failed to be disinfected or be subject to final pH correction. A treated water final pH alarm was received in the Intelligent Control Centre (ICC) at 5:35pm and this was passed to the standby operator for attention. On attending the site, it became apparent that a number of process elements were not working, could not be restored and that no other alarms were being generated for the faults. With no process data available to view, the site operator was called to provide assistance and following his arrival, the works was manually shut down at 7:46pm. Further assistance was requested to investigate the PLC problems and a field automation specialist attended to restore process controls. Public Health Team were also alerted to the issues. The works was successfully restarted in full automated control at 12:25am the following morning and by 1:30am, processes were confirmed to be operating within normal parameters. Although throughput was curtailed by the fault, a quantity of undisinfected water passed forward into the clear water storage tanks in the 4¾ hours before the works was shut down. Monitoring samples taken at the works, in distribution and at consumers taps over the following three days however showed no failure of water quality standards.

Scottish Water's investigations found the failure of the PLC to have been caused by a corruption in the values used within the controller algorithm, itself suspected to be caused by a power blip coinciding with a data refresh. This resulted in subsequent PLCs in the treatment process failing to initiate and carry out their programmed cycle and thus causing loss of control over all treatment processes. DWQR is content that this is the root cause of the event. The various process alarm settings configured in the individual PLCs were not breached as the PLCs retained the acceptable values recorded when they went into fault mode. Earlier awareness of the issue was not therefore possible.



The event has been categorised as Significant. Scottish Water has identified five actions which DWQR accepts are appropriate and will monitor to ensure they are completed prior to signing off the incident. DWQR made no additional recommendations.

