Drinking Water Quality Regulator for Scotland

Incident Summary

Balquhidder WTW
Turbidity, aluminium, manganese and iron failures
22 July 2016

DWQR Inspector:
Colette Robertson-Kellie

Event No. 7828

A power failure on the 20th July 2016 at Balquhidder WTW caused the membrane plant to shut down, and the clear water tank (CWT) continued to supply water into the distribution system. There are two communications systems which feed alarms out from Balquhidder WTW; the power failure did not affect the final water chlorine and turbidity monitor systems, but the other signals from the treatment works, including the CWT level probe, are fed through a radio system which failed and did not restart. The Intelligent Control Centre (ICC) received an alarm reporting a 'radio comms' failure fourteen minutes after the power failure, and following assessment by the ICC, four hours later the ICC contacted the Operator of the works. The Operator discussed the alarm with the ICC and examined the trends from the works remotely; the information viewed led Scottish Water to believe that the tank level was normal. The Operator was aware that the CWT had up to 30 hours storage, and knew that there was a scheduled visit to the site the following day, so he did not attend the site. However, the following day Operations had to deal with issues at another treatment works, so the scheduled visit did not take place.

The ICC received a final water turbidity alarm from the works, followed by a call from a consumer reporting no water at their property, and then a low chlorine alarm, again to the ICC. The ICC then contacted the Operator, who arrived at the site 39 hours after the initial power failure.

The membrane plant was restarted, and water was tankered into the CWT to re-establish the supply. However, the tankering operation disturbed sediment in the CWT, leading to high levels of aluminium, iron and manganese, and failures of the turbidity standard at the treatment works. Limited sampling of the distribution system showed that there had been failures of the iron and manganese standards at consumers' properties. When the water quality problems became apparent, water was tankered directly into the mains instead of the CWT, the network was flushed and the CWT was allowed to fill from the treatment works.

The cause of the water quality incident was the failure by Scottish Water to recognise that the treatment works was not in service and the disturbance of sediment in the CWT by the tankering operation.

The event has been categorised as Serious. 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 five additional recommendations.