

# Incident Summary

## Carron Valley WTW Failure of operating procedures December 2017

DWQR Inspector:  
Colette Robertson-Kellie

Event No. 9040

### Event Category: Serious

Alarms from Carron Valley WTW and from distribution pumps were received by the Intelligent Control Centre (ICC) on the 26th December 2017 at 12:45, indicating high coagulation pH and a power fault.

The standby treatment operator diverted six of the eight rapid gravity filters (RGF) to waste, but kept two running into supply. This is contrary to the site procedure, which requires checks to be carried out, and if water quality is not restored within an hour, all filter inlets are to be closed and the incident escalated. Intermittent power failures continued while the operator was on the site, so the site standby generator was switched on to stabilise the power supply.

At 16:10, the operator noted that the dissolved air flotation plant (DAF) turbidities were high, and visually observed that the DAF plant was not operating correctly. The cause could not be determined, so the operator contacted the works' senior operator. At 16:30, the operator off-scanned the combined RGF aluminium, apparently in the mistaken belief that the works would shut down on high aluminium, and that by off-scanning the aluminium monitor this would over-ride systems in place to protect drinking water quality. At 16:33, the disinfection system shut down because of low carrier water flow, but the operator misdiagnosed this as a high combined filtered aluminium alarm, and so was not aware that the disinfection system had stopped.

The entire works then shut down automatically on low chlorine contact tank (CCT) outlet chlorine levels at 16:48, but the operator restarted it at 16:55. Recognising that the quality of the water from the two filters that had been running had deteriorated, he shut these filters down and brought another two into service. A Cryptosporidium sample filter was installed at 17:20.

At 18:35, the standby team leader arrived on site and at 19:16, the works shut down automatically again on low chlorine from the CCT outlet. At 19:35, all of the filters were shut, and all flow was diverted to emergency lagoons.

Sodium hypochlorite was manually dosed into the CCT at 13:50, 18:00, 19:16 and 19:50, and at 20:30 and 21:10 into the clear water tank (CWT) to enhance chlorine levels.

On arrival at the site at 20:30, the senior operator realised that there was a problem with the air inlet solenoid to the DAF saturators and resolved this issue and at 22:15, the works was returned to service with all RGF operational, and water quality returned to normal.

The disinfection system was out of service for a total of 182 minutes. Samples were taken in the network to assess the impact of the incident, which showed that there were no failures of regulatory standards, and no Cryptosporidium was detected.

The trigger for the incident was power supply failure, but deteriorations in water quality and a failure to adequately disinfect the supply were caused by an inexplicable failure of operational staff to follow site procedures and poor decision making.

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

