

Spey Badentinan WTW  
Disinfection Failure  
30 June 2013

DWQR Inspector:  
William Byers

Event No. 5399

## Event Category: Significant

### Summary of Incident

Ammonium dosing at Badentinan Water Treatment works (WTW) ceased operating on Sunday 30<sup>th</sup> June causing a failure of the chloramination disinfection process. A low Total Chlorine alarm from the Clear Water Tank supply to consumers was passed to Operations standby staff by the Control Centre at 01:43 on 1<sup>st</sup> July but since another monitor on the disinfection process indicated a normal situation and there were no other process alarms from the site, following discussion it was agreed to defer attendance. A further alarm associated with the ammonium dosing process however was received at 07:48.

Attendance at the site determined the carrier water system for dosing the chemical had stopped. Further investigation found that an act of vandalism by intruders to the site had affected the availability of service water for this process and for other uses. Staff were able to take immediate steps to restore the supply and the ammonium pumps were able to start and dosing recommence.

### DWQR Assessment of Cause of Incident

The cause of the failure of the chloramination process was the inability of the carrier water pumps to maintain a flow in the service water system. The water demand caused by the act of vandalism robbed the chemical dosing system of supply. Coincidentally, one of the service water pumps was out of use due to it awaiting commissioning following recent installation to replace an older pump. Had the pump been available to assist the duty pump, it is possible the required flow could have been provided and the incident may not have arisen. Investigation of process monitoring from the site determined that there were a number of issues with the type and configuration of signals. Key signals generated which could have alerted control centre staff to the situation, were of a type not generally used in generating telemetry alarms and therefore prevented an earlier reaction to the event. In addition, it was established that the post chloramination Free Chlorine monitor signal had 'frozen' with a normal low reading and this prevented it going into alarm state and consequently being unable to corroborate the low Total Chlorine alarm from the CWT.

### DWQR Assessment of Actions Taken by Scottish Water

DWQR is concerned that Scottish Water chose to defer attendance to the works on receipt of the low Total Chlorine alarm. The overriding consideration should be to the level of chlorine in the final water and to make an investigative response where any unusual trend in disinfection is apparent. The final Chlorine monitor shows a dramatically reducing Total Chlorine trend and this should have escalated attendance to the works.

DWQR is satisfied that records of the calibration of the post chloramination Free Chlorine monitor show it to have been regularly checked and in working order. Scottish Water re-calibrated and tested the monitor but were unable to gain confidence in its future reliability and subsequently replaced it.

Similarly, there is no evidence of avoidable delay in the procurement and commissioning of the replacement service water pump. Scottish Water has made provision of a spare pump on site to minimise risk to continuity of the carrier water system in future.

The event has been categorised as significant. Scottish Water has identified a number of actions and DWQR accepts that these are appropriate. Additionally, DWQR has made two recommendations and will be monitoring to ensure all are completed prior to signing off the incident.

