

Glenfarg WTW  
Taste & Odour Failures  
17 February 2014

DWQR Inspector:  
William Byers

Event No. 5853

## Event Category: Serious

### Summary of Incident

In carrying out preparatory work for repairs on one of the Dissolved Air Flotation (DAF) tank scrapers, the drain down activity caused a disturbance of sludge in the tank allowing the transport of settled impurities back through the wash water recovery system to the head of the treatment works. This, in turn, resulted in taste and odour problems developing in the final supply to consumers. Scottish Water received some 21 contacts over the 18 and 19 February, with complaints related to taste and odours in their water supply. Treatment Works staff were alerted to the problem by the Contact Centre on the morning of 18 February as they experienced a number of calls from consumers in the supply area. The Treatment Operator stopped the return of supernatant water from the wash water process, which allowed the supply to gradually return to normal.

### DWQR Assessment of Cause of Incident

The cause of the incident is the return of tainted supernatant liquor to the head of the works where it imparted taste and odour causing impurities into the treatment process.

### DWQR Assessment of Actions Taken by Scottish Water

Scottish Water had made preparations for maintenance work to be carried out on one of the DAF tank's scraper apparatus on 18 February. For safety reasons the tank needed to be drained down to allow scaffolding to be erected and whilst a controlled drain-down had been carried out on the previous Friday in readiness for the work at the start of the week, a passing inlet valve ensured that that work was negated as the tank refilled over the weekend. In carrying out a more hurried drain down on Monday 17<sup>th</sup>, the disturbance to the settled sludge in the DAF unit and the subsequent impact on the wash water recovery tank was created.

The need for such maintenance is routine but it should be expected that changes to process or flows through the works present a risk to water quality and that processes will require close monitoring. Although the operator noticed a reduction in the chlorine residual at the disinfection contact tank and made adjustment to the chlorine dose, he failed to identify the cause of the dip or link the situation to the preparations for work on the DAF plant. Scottish Water has since revised the procedure for draining the DAFs, which requires sludge to be diverted to old drying beds to avoid impact on the wash water system, and DWQR welcomes this measure.

The investigation has identified a number of key sensors and monitors were not functioning over this period. One, crucially, the turbidity monitor on the return of supernatant water from the wash water tank to the head of the works, had been out of service for a considerable period of time leading up to and through this incident. Had this been functioning, it would have provided operators with an early warning of the problem and enable action to be taken to avoid or minimise the impact on consumers. Notwithstanding the alarm deficiency, turbidity monitoring of each filter and of supernatant water are key requisites in providing information on the effectiveness of treatment processes and their inoperability constitutes a breach of the *Cryptosporidium* Directions. It has been revealed through the investigation that turbidity monitors on four of the eight filters have also been inoperable. Scottish Water has been unable to provide records to confirm instrument calibrations are being carried out nor substantiate how long they have been out of service. In addition, they have been unable to identify any record being made of the failure of the instrumentation and them requiring repair. It is unacceptable for these deficiencies to exist in a modern day treatment plant and DWQR considers the failure to maintain important monitors in a working condition to be a serious matter.

Whilst it has previously been identified by Scottish Water that the contact time for chlorine is less than desired at Glenfarg and consequently, the disinfection process needs to be maintained in optimal performance, DWQR is concerned that there are inappropriately low alarm levels set on the disinfection system. Again, had the pre-chlorine contact tank low chlorine alarm been set at a relevant level, it would have provided operators with an alarm of a change occurring in the treatment process from which action could have been taken.

DWQR is of the view that the absences of process alarms were central to the operator's failure to understand the reason for the observed dip in chlorine and his need to change the chlorine dose.

Scottish Water undertook sampling and monitoring of the supply in the distribution system in response to the reported complaints and DWQR is satisfied there were no wider issues of water quality, over and above the taste, apparent from this treatment problem.

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

