



Drinking Water Quality Regulator  
for Scotland

# Incident Summary

Moffat WTW  
Turbidity failure  
9 November 2016

DWQR Inspector:  
Matthew Bower

Event No. 8152

## Event Category: Significant

In November 2016, Scottish Water undertook work to refurbish one of its boreholes at Moffat WTW. It employed a contractor to use a technique known as airbursting, which injects high pressure air into the borehole in order to remove loose deposits and debris. Following the work, the borehole was not flushed out as planned, and when a neighbouring borehole started up, this dragged highly turbid water through and into supply. The final water leaving the works exceeded the turbidity standard for a number of hours and there were exceedances of the regulatory standards for turbidity, aluminium and iron at consumers' taps. Perhaps surprisingly, there were no water quality complaints by consumers to Scottish Water.

The incident was caused by work to remove iron deposits in one of the three boreholes at the site. The work should have included the removal of the debris created in the refurbished borehole, however due to slower than planned progress, this part of the job was left until the following day. In the meantime, when a neighbouring borehole started up in order to meet demand, this dragged the debris through, presumably via underground connections in the aquifer. As a result, turbidity increased rapidly, and as there is minimal treatment at this groundwater site, the apparently dirty water went into supply. The sample taken from the final water at the time recorded a turbidity of 11.6NTU (PCV 1NTU). Metals concentrations were also elevated, with both aluminium and iron at almost twice the regulatory standard. Final water turbidity gradually reduced once Scottish Water took steps to improve quality, however final water turbidity was exceeding the treatment standard for 66 hours after the start of the incident. Elevated metals concentrations and turbidities (up to 7.8NTU) were detected in the few samples taken from consumers' taps on the day of the incident but had returned to normal levels when the next set of samples was taken six days later.

This incident occurred due to a failure to follow the agreed method statement for the work. Had the debris from the borehole been removed promptly, this would undoubtedly have reduced the extent of the incident, although it is DWQR's opinion that there is some evidence that final water turbidities had started to rise before the production borehole restarted, suggesting that even the work as originally planned may have had an impact on final water. If so, this would lead to the conclusion that the cleaning method may not have been appropriate for the circumstances at Moffat and an alternative approach should have been found.



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

