

## Bonnycraig WTW Contamination of treated water 25 July 2017

DWQR Inspector:  
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Event No. 8647

### Event Category: Significant

On 25 July 2017, Scottish Water undertook planned work to install and connect two temporary filters into the treatment process at Bonnycraig. This necessitated a connection into the existing pipework downstream of the filters. When the system was re-charged after the work, the change in flow resulted in deposits of aluminium compounds that were on the pipework walls being scoured into the supply. This resulted in aluminium concentrations in water leaving the works exceeding the regulatory standard for just over seven hours, and the 1NTU standard for ex-treatment works turbidity being breached for approximately three hours. The maximum final water aluminium concentration recorded by the online instrumentation was 656µg/l, while a water sample analysed at the laboratory reported a concentration of 969µg/l, nearly five times the maximum permitted value.

There was a significant discrepancy between the aluminium concentrations recorded by the bench test instruments used by the operator and the site online instrumentation. This caused a great deal of confusion and an initial underestimate of the severity of the problem. It was later realised that the difference was because the bench test was only able to measure soluble aluminium and much of the aluminium present in the water was in insoluble form.

No consumer complaints were received, although aluminium concentrations reached 382µg/l in the distribution system on the morning of 26 July, the decision having been taken not to discard the non-compliant water. Concentrations were within permitted limits when the next survey was undertaken a day later.

This incident was caused by Scottish Water's planned work at Bonnycraig WTW. Although the methodology used was the same as one employed without incident on a previous occasion, Scottish Water failed to appreciate the increased head and consequent difference in water velocity in the pipes due to the filters being full of water on the second occasion. This proved unfortunate – it is unclear whether Scottish Water fully appreciated the extent of the aluminium deposits in the filter pipework, however it would have been prudent to have checked this and undertaken cleaning prior to the commencement of the work. Scottish Water has now installed flushing points on the pipework to enable it to be kept clean.

The event has been categorised as Significant. Scottish Water has identified seven actions which DWQR accepts are appropriate and will monitor to ensure they are completed prior to signing off the incident. DWQR made one additional recommendation.

