

Roberton WTW Manganese Failures 20th August 2021

DWQR Inspector:
Moirra Malcolm

Event No. 11965

Event Category: Significant

On 20th August 2021 a scheduled sample from Roberton WTW failed for manganese. No bench testing kits were immediately available to confirm this test, and when these were obtained the incoming raw water levels of manganese were above 100µg/l. The permitted level at consumers' taps is 50µg/l and there is no manganese removal stage at Roberton WTW.

Scottish Water's public health team (PHT) instigated daily sampling and consistently high levels of manganese were recorded in samples taken from both the final sample point at Roberton WTW and in distribution, however consumer contacts remained low (unlike in the Daer and Camps zones which were experiencing similar manganese levels at this time).

The intake at Ale Moor was changed to the bottom draw-off on 10th September due to the rapidly falling reservoir levels, however the raw manganese rose sharply following this intervention and the raw water pumps from Acreknowe reservoir were brought into service on 14th September to augment and dilute the supply. Daily sampling remained in place until the end of October, with failing samples being recorded in distribution until 10th October 2021.

Scottish Water's investigation found that the root cause of this incident was an increase in manganese in the raw water from Ale Moor reservoir following summer drought conditions.

The conditions at Ale Moor were exceptional in summer 2021 with the driest summer on record for the area, and the reservoir dropping to its lowest level since 1995. This low level increased the risk of manganese being released from the sediment at the bottom of the reservoir in its soluble form and entering supply, especially when the lower draw-off was in use (from September 2021 due to the drought conditions). There is no dedicated manganese removal at Roberton WTW and so this extra manganese could not be removed by the treatment works.

Ale Moor reservoir has a 'ResMix' which mixes and destratifies the water. This was installed in 2017 due to the presence of manganese in the raw water and was intended to prevent final water manganese fails. It was out of service between February and September 2021 as specialist contractors were not able to attend due to Covid restrictions. Scottish Water's investigation concluded that this treatment step was not of significant consequence to this incident as the reservoir had dropped below -1.5m in depth; however it is important that Scottish Water recognise that as the ResMix was installed for manganese management therefore while it was

out of service additional manganese monitoring should have been carried out to trend manganese levels and to ensure that the lack of treatment was not affecting the final water quality.

Despite the out of service ResMix and the rapidly dropping reservoir levels, only monthly routine manganese monitoring was undertaken at the raw sample point until the failure was recorded. There was also a lack of sampling at Acreknowe reservoir. If more frequent monitoring had been in place mitigation measures – including the introduction of the alternative Acreknowe source could have been instigated earlier.

The Drinking Water Safety Plan notes the main risks to water quality from the destratification of the reservoir as 'unlikely' and from reservoir low levels as 'medium' – however these assume the ResMix is in service.

The event has been categorised as significant. Scottish Water has identified six 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.

