

Drymen Service Reservoir Discoloration 3 July 2014

DWQR Inspector:
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Event No. 6063

Event Category: Significant

Summary of Incident

On 3rd July 2014, consumers in the Drymen area of Stirlingshire began to experience a discoloured water supply. With a number of calls being received in Scottish Water's contact centre in the early morning, field staff were alerted to carry out investigations and confirmed water in the local service reservoir was discoloured. Investigations of the possibility and benefit of bypassing the storage tank was carried out and after a period of flushing of the inlet mains, this was put in place. Additional flushing was carried out within the distribution system until the supply was observed to be running clear, around 18:00 hrs and sampling in the supply area was instigated to determine the extent and severity of the impact of the discoloration. The final call from consumers on the 3rd July was received at 14:08 in the afternoon and a small number were taken the following day. Overall, 33 contacts were received from consumers in this relatively small supply zone.

DWQR Assessment of Cause of Incident

Scottish Water had experienced difficulties in maintaining the desired level of storage in the service reservoir in the days leading up to the event. Distribution system tests and investigations into possible restrictions in the system had resulted in maintenance work being carried out on the inlet ball valves and isolation valves on 2 July. In returning the valves to service, a significant and unexpected increase in flow in the inlet mains to the tank occurred, which caused the disturbance of settled deposits and their transport into the storage tank. This was compounded by the higher flows entering the tank further disturbing deposits settled on the tank floor. The operation or the re-commissioning of these isolation or inlet ball valves is therefore viewed by DWQR as being the root cause of this event.

DWQR Assessment of Actions Taken by Scottish Water

Scottish Water took the necessary steps to resolve the discoloration through targeted flushing in the distribution system and checking on chlorine levels as clear water was restored. Sampling carried out at the service reservoir and at points in the distribution system was appropriate. These showed there to be minor failures of microbiological standards and elevated levels of iron and manganese as the affected water travelled through the system. Low levels of hydrocarbons were also detected in some samples. Scottish Water has investigated the possible sources for the hydrocarbons and has discounted contamination from the tankering operation to augment supplies in the tank during the event or from the work or materials associated with the maintenance of the valves. DWQR accepts it is possible they may have arisen from the deposits disturbed in the water main feeding the tank. Scottish Water has demonstrated effective flushing of



the distribution system mains improved the supply to consumers and subsequent samples showed the area to be clear of any residual effects.

Scottish Water has a range of procedures in place to control the various operations on their water supply distribution systems (DOMS procedures) and this event has shown compliance with those concerned with the operation of valves, to be poor. An impact assessment form (IAF) to authorise the operation of a boundary valve to introduce a back-feed into the area on 1st July was not raised and a retrospective IAF raised for the operation of valves to bypass the tank, is incomplete. It is a DOMS requirement that any boundary valve operation has the appropriate level of authorisation and that shut-offs and network activity is recorded. DWQR retains a serious concern that there is an insufficient rigour applied to these DOMS requirements.

DWQR considers a key failure in this event was that insufficient attention was paid to the flows and pressures being experienced in the system following completion of the valve maintenance work. Particularly so, since this was the reason for the work being undertaken. It is clear this would have alerted staff to the large increase in flow and stimulated some corrective and mitigating measures being taken to avoid unnecessary impact on consumers.

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

