



Incident Assessment

Bradán WTW Loss of Treatment
16 January 2010

DWQR Inspector:
Matthew Bower

Summary of Incident

This incident occurred when the treatment works at Bradán suffered a power cut at 03:15 on 16 January. Ordinarily, the standby generator would have taken over to ensure that the treatment processes at the works were not affected, however on this occasion this did not happen and water continued to flow through the works for 2.5 hours without being treated. Once the works were re-started, the disruption to the process caused poor water quality to be produced by the works for a number of hours, notably with high aluminium and manganese concentrations.

The water in the clear water tank at the works was promptly dosed with additional chlorine, ensuring that chlorine concentrations did not fall to zero. The sampling that was undertaken during the incident recorded no microbiological failures at the works or in distribution. A number of exceedences of the Aluminium and Manganese standards were recorded throughout the supply system due to the loss of treatment.

DWQR Assessment of Cause of Incident

DWQR's assessment is that a number of unfortunate occurrences created and prolonged the incident. The standby generator at the site was functioning, however the Uninterrupted Power System (UPS) that should have enabled the generator to be switched into service following a power cut had been removed for repairs three weeks earlier with no contingency measures put in place.

Although the power failure generated an alarm and an operator responded promptly, there was a delay in restoring power to the site because the operator did not understand the action that needed to be taken. This prolonged the incident and left the works without power, when in fact the mains supply had become available again after a relatively short period. Following the arrival of assistance, the power supply was restored to the works. The disruption to the treatment process meant that water quality was not restored immediately, and the works was supplying water that was not compliant with the standards for manganese and aluminium for a number of hours.

Scottish Water has correctly identified that **contingency measures should have been in place when the UPS was removed for repair**. At the very least, **operational staff should have been made aware that the standby generator would need to be switched over manually in the event of a power failure**. Scottish Water has also correctly identified that staff should have been fully aware of the process to switch back to mains power following a power cut at the site.

DWQR Assessment of Actions Taken by Scottish Water

Once the loss of treatment was discovered, operational staff reacted relatively promptly to add additional chlorine to the clear water tank. They reported the matter to the standby team leader at 06:45, an hour after power (and therefore) treatment had been restored. Following this, the public health team were notified, and additional sampling to establish the effect on water quality commenced at 10:00 at the works and 12:15 in the distribution system. Health Boards and Councils were not notified of the problems until 20th January. **DWQR considers that both sampling and notification to the local Health Boards and Councils should have occurred much earlier.**

It appears that operational staff at Bradan acted appropriately once power was restored to try to stabilise the treatment process as quickly as possible. It is not possible to determine whether quality could have been restored any quicker. Additional dosing of chlorine into storage points was also undertaken appropriately. The treatment process took time to settle down and the works was still supplying water that was not compliant with the aluminium standard at 14:15 that afternoon.

Scottish Water identified a number of actions to be taken in order to prevent a recurrence of the incident:

Action Number	Action Description	Status
1 -3	Ensure all operators are aware of procedures to be used in the event of a power failure at the site and test this via an exercise.	Complete
4	Improve site operator awareness of reporting similar issues promptly to senior staff.	Complete
5	Improve are mechanical and electrical staff awareness of reporting similar issues promptly to senior staff.	Complete
6	Staff to be made more aware of role of Uninterrupted Power Supply (UPS) and procedures to manage risk if it is not operational.	Complete
7	UPS at Bradan to be added to service contract.	Complete
8	Bradan Drinking Water Safety Plan is to be updated with additional risks following the incident, including the risk relating to the lack of an automatic shutdown.	Complete
9	Facts of incident to be issued to all other Water Operations Managers to enable lessons to be learned across Scottish Water.	Complete

DWQR believes that these actions have been correctly identified and will monitor Scottish Water's progress in completing them. Additionally, DWQR has identified a further 3 recommendations that are to be undertaken by Scottish Water before the incident is signed off.

Recommendation Number:	Recommendation Description:	Status
DWQR 1	(Additional to SW Action 8) Investigate feasibility of installation of automatic shutdown at Bradan to ensure untreated water cannot enter supply and report back to DWQR.	Complete
DWQR 2	Sampling of water quality during the incident should have commenced much earlier. Review Public Health procedures on sampling during incidents to ensure that sampling is undertaken in a way that is adequate to establish the quality of water received by consumers.	Complete
DWQR 3	Investigate why notification of CPHM, EHO and DWQR did not take place until 20 January, 4 days after the incident and respond with an explanation to DWQR, having amended procedures if necessary.	Complete