



## **PRIVATE WATER SUPPLIES – CASE STUDY 2014/07**

### **Change of use from non-domestic to domestic purposes at a public building**

This case study involves a supply owned by an organisation which provides vocational training to teenage pupils. In 2010 it acquired a site comprising a number of metal sheds and outbuildings with water provided by a shallow borehole. The site at that stage was only used as mechanical workshops and the water supply was used for non-domestic purposes.

In 2012, the organisation expanded the site usage to six classrooms and the workshops, together with associated offices, toilets and washing facilities. Unfortunately the site manager and the school did not realise how these changes impacted on the water supply classification bringing it within scope of the private water supply regulations. The site manager arranged for the installation of water treatment (filtration and UV disinfection) and an annual monitoring regime. The initial samples in 2012 gave satisfactory results however, in 2013, the sample contained coliforms and exhibited a very high nitrate result of 130mg/l. Action was taken in relation to the coliform failure but the laboratory did not flag the failed result therefore it was overlooked. In 2014, the results of the annual sample again showed there was a problem with nitrate (value of 153mg/l) and on this occasion advice was sought from Public Health England signage put in place advising that the water should not be used for drinking with bottled water provided for students, staff and visitors.

The company that originally drilled the borehole in 1964 was asked to install treatment for nitrate, and subsequently this was installed in the form of point of use devices at each of the water points around the school. However, samples taken subsequently from three of these points gave nitrate results above the standard (ranging from 70 to 110mg/l). The discussions that then followed on between the borehole contractor and the manufacturer of the treatment units identified that the flow rate at the taps was too high for effective nitrate removal. Additionally the hardness of the water, although not excessive, was above that recommended by the manufacturer for effective functioning of the equipment. Information about the hardness of the water had been available but was not used to inform the selection of appropriate treatment. Although flow restriction valves were then fitted to the drinking water points this action was not sufficient to reduce the nitrate level to below the standard.

When the Inspectorate became aware of the situation, the supply owner was advised to register the supply with the local authority. Subsequent to this the local authority visited the site to understand the up to date situation. This revealed that the root cause of the nitrate problem had been traced to the application of nitrogen fertilizer to a small patch of grass in the immediate vicinity of the borehole to enhance the appearance of the entrance to the premises. Additionally it had been identified that chickens were kept on the premises and there were small scale farming activities on the neighbouring land. Source protection measures had been put in place, for example, fertilizer was no longer being applied and chickens were no longer kept in the grounds, and monitoring had shown that these measures had been successful at improving the source water quality. However, results from other local groundwater sources in the area indicated that there may be a wider problem that could impact on the source requiring further measures or treatment in the future.



This case study highlights the need for local authorities to have in place a process of periodically checking that the use of a private supply has not changed. It also illustrates the difficulties owners face with identifying competent installers of water treatment systems. In this regard the Inspectorate has reviewed and revised the manual of treatment for small water supplies to include an annex providing guidance on how to select a competent treatment installer. Together with the drinking water regulators in Northern Ireland and Scotland, the Inspectorate is also discussing with installers the development of a Code of Practice that can be recognised by, for example, BSI. This case study also provides background to questions in the treatment plant design section of the Inspectorate's private supply risk assessment tool.

