



PRIVATE WATER SUPPLIES – CASE STUDY 2013/03

Commissioning of a private supply to a large hospital

This case study relates to a decision by a large National Health Service (NHS) hospital to develop a private water supply. It was intended by the hospital management that this private supply would replace the existing mains water supply and be used for all domestic purposes, including drinking, food preparation and washing, by staff, patients and visitors. The objectives of the scheme were to realise what were felt to be extensive cost savings in water charges, and to improve resilience. It was intended that the existing mains water supply connection would be kept only as a standby facility. In November 2010, work commenced on drilling a new borehole on site and in August 2012, an abstraction licence was applied for and granted by the Environment Agency (EA). In October 2012, a third party informed the local authority that a borehole had been constructed and made operational, and was shortly to be commissioned into service to supply the hospital. When the local authority made enquiries, it quickly came to light that the hospital management was not aware that private supplies used for domestic purposes are regulated under the Water Industry Act 1991 by local authorities. It was agreed to delay commissioning of the private supply until the local authority had carried out a risk assessment and satisfied itself that the supply was wholesome and safe, and met all regulatory requirements.

During 2011 the borehole contractors had carried out studies, the purpose of which was to support an application for an abstraction licence to the EA. These studies were documented in a pre-feasibility report (March 2011) and, after the borehole was drilled, in a post-feasibility report (March 2012). Between October and November 2011 the feasibility of the borehole to yield the required volume of water was confirmed. The report contained basic borehole water quality test results to determine the characteristics of the borehole water for licensing purposes and to a lesser extent, to identify the need for water treatment. The scope of the report stopped short of determining all existing and potential hazards, and was insufficient in scope for a private water supply regulatory risk assessment. For example, in relation to catchment risks, it contained a recommendation that the EA be contacted to discuss the likely groundwater quality. Furthermore, at a later stage when the Inspectorate became involved in giving advice, it was found that the borehole had been constructed without a 'run to waste' facility, preventing any additional raw water quality monitoring.

As part of the programme of works, the hospital had contracted the services of another company to supply and install water treatment equipment. This system included chlorination, pH correction (using sodium hydroxide) and UV disinfection. This contractor had collected an extensive number



of samples to verify that the treated water complied with the drinking water standards. However, no regard had been paid in the design of the system to Regulation 5 requirements and the chemicals being used were not approved for use with drinking water, and the UV system was not validated. Unapproved chemicals can contain harmful impurities and the concentration of the active ingredient may not be suitable for the intended dosing regime. UV disinfection does not leave a residual that can be measured to verify that the correct dose has been applied and the intensity of the UV light varies within each reactor. Microorganisms passing through a reactor are not all subjected to the same dose because of variations in the water systems as regards residence time, hydraulics and UV intensity. Therefore a process of dose validation is required to demonstrate that a UV system will apply a target dose under defined operating conditions. Validation comprises independent third party testing, commissioned by the manufacturers, in respect of the different models they sell. The Inspectorate is of the opinion that in this type of circumstance (a large private supply to a public building such as a hospital replacing an existing mains supply) it should be mandatory to use only a validated UV system.

The local authority was not satisfied that the water quality information provided by the hospital was sufficient to establish the degree of risk posed by the catchment. In particular, the local authority was aware of several historic, disused landfill sites within a radius of five miles around the new borehole. As a result, the hospital was required to demonstrate that they had considered all risks from the catchment by the provision of further monitoring data and evidence that any identified risks are mitigated by the installed treatment or by other relevant control measures. This led the hospital to contact the EA for information on the catchment risks. In response, the EA referred the hospital back to the local authority because landfill records are held by local authorities. The EA felt that it was the duty of the local authority, not the EA or the supply owner, to carry out the risk assessment.

Faced with this impasse, the hospital installed a run to waste facility and contracted the services of a consultant to undertake further monitoring with the borehole in continuous operation. This established the water met all the drinking water standards. Based on the consultant's report and substantial additional testing data, the hospital was confident that there were no apparent catchment risks that required additional control measures, other than a regime of operational monitoring for indicator parameters. Despite this additional information, the local authority remained uncomfortable about the use of the private supply by the hospital. This uncertainty centred on a focus by the local authority on hazards, rather than risk. The local authority had developed an inexhaustible theoretical list of possible toxic waste substances with a view to requiring extensive monitoring by the hospital for a 'catch-all' range of analytical parameters. The Inspectorate advised that this list was excessive and unrealistic, and not in the spirit of the risk-based regime of drinking water regulation. A compromise was reached whereby both parties would carry out an agreed set of actions to a deadline, after which the supply would be turned on.

This case study is one of a number of situations, which have come to the attention of the Inspectorate during 2013 whereby a public building (for example, hospitals and food premises) has been switched from a public to a private supply without the prior involvement or knowledge of the local authority. In each case deficiencies have been found with the private supply





arrangements that posed a potential or actual danger to human health. This situation comes about because the existing legislation does not compel anyone (premises owners or their contractors) to register a new, existing or standby private water supply with the local authority whereupon they could be made aware of their responsibilities under drinking water law. *The Inspectorate has recommended to Defra that the private supply regulations are revised to include a duty on owners to notify the local authority. Meanwhile, local authorities need to act on any intelligence pointing towards changes in the water supply arrangements at public buildings.*

The Inspectorate draws the attention of local authorities to the need to be proportionate, reasonable and timely in relation to their requests for additional monitoring evidence to support a risk assessment. Whereas it is important to seek out available information about potential and actual hazards in the catchment, particularly in relation to records held by the local authority regarding contaminated land and information held by the EA, the duty of the local authority is to make a judgement of risk, taking into account the controls in place. Monitoring requests should be limited to that which is clearly necessary to validate controls and for ongoing verification of the risk assessment. Guidance embedded in the Inspectorate's risk assessment tool should be followed to identify suitable controls and indicator parameters for different hazard types. In complex supply situations, additional technical advice can be obtained by contacting the Inspectorate.

