Summary

i Reasons

In 2004, the Drinking Water Inspectorate (DWI) informed water companies of the actions they needed to take to ensure that England and Wales complied with the requirements of Article 6(2) of the European Drinking Water Directive (98/83/EC) with respect to establishments where water is supplied to the public. Paragraph 6(2) states *inter alia* that Member States shall be deemed to have fulfilled their obligations where it can be established that non-compliance with the parametric values is due to the domestic distribution or its maintenance, except in premises and establishments where water is supplied to the public ("public buildings"). The Directive cites schools, hospitals and restaurants as examples of "public buildings". At that time to remedy the lack of drinking water quality monitoring where water was supplied in public buildings, the DWI specified that such premises should be included in water companies’ random compliance monitoring programmes from 1st January 2005.

However, it has since been recognised that due to a number of factors such as the close proximity of public buildings and ease of sampling, there may have been a bias towards sampling of urban public buildings. That being the case, the quality of water supplied to rural public buildings is less well known, in addition to any specific hazards and risks that these properties may present. To remedy this gap in knowledge, this project specifically examines rural public buildings and further limits this to those “privately owned and maintained for non-commercial purposes, by and for community use”. This definition of public buildings excludes buildings such as leisure centres, restaurants, pubs and retirement homes, and buildings owned by the local authority/councils such as schools and sports grounds. It does, however, include rural community centres, village halls, properties of youth organisations such as scout huts and church halls.

ii Objectives

The project objectives include the following:

- Determine the number and proportion of rural public buildings that have been monitored by water companies in the last three years compared to urban public buildings.

- Identify specific types of hazards that rural public buildings present to consumers and determine the level of water quality risk (severity vs. likelihood) that these specific hazards present.
• Establish what guidance is currently available to persons in control of water supply arrangements at rural public buildings and its quality.

• Recommend how standard guidance could be best produced and disseminated to relevant people served by and/or in control of rural public buildings.

iii Benefits

The project will confirm whether there has been a bias towards sampling of urban vs. rural public buildings. It will also enable an understanding of the contamination risks (chemical, aesthetic and microbiological) which are associated with drinking water quality supplied to rural public buildings, and how to assess the significance on “wholesomeness” and impact on consumers. The project will also assess whether the existing guidance for persons in control of water supply arrangements for such premises is adequate, and recommend how future standard guidance could be best produced and disseminated.

iv Conclusions

The rural public buildings analysis demonstrated that the classification of public buildings is not consistent between water companies. A standard definition of a public building and a method of audit are essential to enable meaningful analysis of potential water quality issues.

The analysis also found that the spatial location of water quality sample sites is not exact enough to enable matching with a specific building in the Ordnance Survey (OS) AddressBase dataset.

There is some evidence that water companies are not sampling rural public buildings as frequently as their urban counterparts. However, it should be emphasised that the confidence in drawing this conclusion is compromised by differences in the public building classification between AddressBase and water quality sample site data. It was not possible to identify any statistically robust conclusions on the difference of water quality compliance between urban and rural public buildings due to the very low number of reported failures.

There is only very limited monitoring and literature data on chemical, aesthetetic or microbiological hazards specifically associated with drinking water of rural public buildings, with the reported eight compliance failures being due to exceedance of iron, aluminium, manganese, taste and coliform bacteria parameters.

Potential chemical contaminants were identified that may be more likely to occur in drinking water of rural public buildings. Some contaminants are likely to be present as a result of the age and quality of pipework and fittings used in the buildings (e.g. copper, nickel, iron, aluminium or lead) and the intermittent use of supply (stagnation of water and increased potential of leaching). These may result in aesthetic effects (taste, odour or discolouration) which are noticeable to consumers. Another group of potential contaminants include
hydrocarbons following spills of heating oil, petrol/diesel or the use of coal-tar pitch linings in older pipework, which again can result in organoleptic effects. In addition, plasticisers from plastic pipes can potentially leach into water and the possibility of disinfection by-products or compounds of microbial origin (geosmin and 2-methylisoborneol (MIB)) leading to taste and odour problems.

One factor related to rural public buildings considered as giving increased potential for risk of microbiological contamination is their location on remote sections of a distribution system. For example, the greater the length of a distribution system the more likely it will be to experience an ingress event. In addition, water quality at remote locations may have deteriorated caused by decay of the disinfectant residual, the rate of which is dependent on several factors including type of water, temperature and residence time. This may result in an increased potential for microbial growth within the distribution system.

A search of the guidance provided by water companies, local authorities, places of worship networks and insurance companies and the questionnaire to village hall committees showed that there are only a few guidance documents available and none are specifically on water supply systems in rural public buildings.

Several gaps were identified in the review of existing guidance which included that people are unaware that current guidance exists, clarifying the responsibilities of owners/committees members to maintain “wholesome” drinking water in these types of buildings and recognising the lack of consolidated and non-technical data. Inconsistencies were identified on the available guidance from water companies and Water Regulations Advisory Scheme (WRAS) about the length of time stagnant water may cause aesthetic and/or health problems from the drinking water.

It is considered that a standalone official DWI guidance document or guidance pack is needed hosted on the DWI website and then stakeholders may choose to disseminate this directly or include the guidance in their own literature as checklists, posters and other formats to effectively communicate with their own audiences.

Suggestions

It is recommended that the recording of the OS unique property reference number (UPRN) of the water quality sample site building becomes mandatory. The UPRN provides an unambiguous location of a sampling point and allows public (and other) building classification to be audited. All UK water companies use the OS AddressBase product so have commercial use of this dataset (Open Water uses UPRN as a unique identifier of supply point IDs (SPIPs)).

It is also recommended that the definition of public building is standardised between the DWI and all water companies in order to achieve consistent reporting. This could be achieved by...
specifying a data definition from OS AddressBase for public buildings similar to that used by this project.

It is recommended that Water Companies review their monitoring processes to ensure that a fair balance is achieved between rural and urban public building sampling.

It is recommended that where monitoring data are available for chemical contaminants in rural buildings, a comparison be made with drinking water standards, health-based values and taste, odour or discoloration threshold effects in order to assign a level of risk as high, medium or low. Similarly, it is recommended that a qualitative approach be adopted for assessing the risks of non-compliance of microbiological contaminants, with the level of risk assigned as high, medium and low, depending on where the microbiological contamination appears to be located and the nature of the organism. The resulting actions to be taken following this assessment would depend on the category of risk. Essentially a high risk requires immediate investigation to determine and rectify the origin of contamination and consideration of a “boil water” or “do not drink” notice. Medium risk would need an investigation of the cause which may result in flushing the system, improved kitchen hygiene or improved water supply arrangements. Finally, low risk would require no action.

It is recommended that a non-technical leaflet to be distributed to the owners/committee members of rural public buildings, to explain their responsibilities and the necessary steps to reduce/prevent contamination of drinking water in rural public buildings and consequently provide “wholesome” drinking water to rural communities. The leaflet includes sections on highlighting to custodians in rural public buildings about their water supply history and their water supplier, steps to take following a contamination of drinking water, responsibilities to maintain “wholesome” drinking water, the types of chemicals which can cause aesthetic effects following contamination of pipework from outside a rural public building, and the main types of taste and odour effects that can potentially occur and are related to internal plumbing or water storage within the building.

It is recommended that the DWI actively facilitate the production and communication of the guidance by working collaboratively with the stakeholders. A steering group with the task of producing the guidance could be led by an umbrella organisation from the water industry with representation from the target audience. The steering group must have a strong technical and communications input to ensure the guidance is both accurate, understood and practical. A guidance pack should be developed with specific information targeted at the management committees for village halls, places of worship and sports clubs. Consideration should be made to where this guidance can be included in support of existing legislation i.e. health and safety, food hygiene and WRAS.

It is recommended that the development of guidance for specific sectors is considered to maximise the broadcasting of the information. Due to the broad audience, it is recommended that the guidance is disseminated through a variety of routes making use of the stakeholders identified in the production phase.