



guardians of drinking water quality

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Information Letter 09/2000

17 March 2000

To: Board level contacts of water and sewerage companies and water companies in England and Wales

Dear Sir or Madam

Distribution System Undertakings : Investigations, Pre- and Post-Renovation Assessment (PPRA) and New Undertakings

1. Purposes

The purposes of this letter are:

- to confirm requirements for investigations into water quality problems for the purposes of S19 distribution systems undertakings, including investigations associated with trunk mains,
- to clarify certain points with regard to the application of Pre- and Post-Renovation Assessment (PPRA),
- to outline the way in which the Inspectorate will appraise the results of PPRA, and
- to clarify certain points with regard to new distribution systems undertakings.

2. Investigations into water quality problems for the purposes of S19 distribution systems undertakings

2.1 Information Letter (IL) 4/96 (Section 5.1) outlined a requirement for companies to investigate the **causes** of water quality problems in distribution systems, and to collate such information as is required to make an informed choice of the most appropriate **solutions** to such problems. Since IL 4 / 96 was issued, this requirement has had less attention than PPRA (which demonstrates the severity of problems and their amelioration by renovation work). However, it is no less important. Indeed, where investigations into the nature and origin of problems are inadequate, there is a substantial risk that inappropriate work will be carried out, leading to wasteful application of resources and a failure to demonstrate success in Post-Renovation Assessment (Post-RA). In addition, conversely, there is a risk that effective

action may not be taken to solve genuine water quality problems and compliance failures may recur if investigative work is inadequate.

2.2 The Inspectorate is concerned that, in some instances, investigations into the underlying causes of water quality problems may be insufficient. Companies are reminded that thorough investigations should be carried out to confirm the origin and causes of problems. Details of the investigations are likely to be variable, and thus it would not be appropriate for them to be routinely reported, but the investigation procedures should be clearly set out and auditable, and should produce auditable records.

2.3 Similarly, comprehensive procedures should be in place for selecting suitable remedial actions or combination of actions that reflect the nature and causes of the problem. The procedures should be clearly set out and auditable, and should produce auditable records. This would include decisions as to whether mains renovation is the most appropriate remedy, and if so, which mains are selected for renovation.

2.4 In future audits connected with S19 distribution systems undertakings, more emphasis may be placed on these investigations and the processes by which options are appraised.

2.5 Expectations concerning the various stages of investigation of water quality problems are unchanged. Information Letter 5 / 97 defined 'Levels of Investigation' for the purposes of the S19 distribution undertakings, and they were repeated in Information Letter 16 / 97. For convenience, they are reproduced again in Annex B. The inclusion of a Water Supply Zone (WSZ) in a Section 19 undertaking should be justified by Level 1 and Level 2 investigations. Then the need for remedial action, including renovation of mains, should be confirmed by Level 3 investigations which include Pre-Renovation Assessment (Pre-RA), and benefits should be demonstrated by Post RA.

3. Trunk mains

3.1 As a general principle, all renovation of mains for the purposes of a Section 19 undertaking should be justified by measurement of water quality against the PPRA criteria in the Company's strategy document. These criteria apply to water made available to consumers, and thus sampling is largely carried out in the small diameter reticulation. Where a need for action has been demonstrated, it is necessary to investigate the causes of problems and select suitable remedial actions, as indicated above. It is in this context that particular investigation of trunk mains may be required to confirm what, if any, contribution they make to the overall water quality problem, and to determine if renovation is necessary.

3.2 Such investigations are likely to include 'downstream series sampling'. This is used to demonstrate the extent of iron pick-up in the different trunk and feeder mains supplying the zone or sub-zone. An examination of the geographic spread of problems among the areas fed by the trunk mains in

question can also be helpful. These investigations may indicate that corrosion of 'upstream' feeder mains or trunk mains are a significant contributory cause of problems downstream. In order to justify the renovation of trunk mains, results of such investigations should be available, together with results of Pre-RA in zones or sub-zones fed by the mains in question and details of flow patterns. It is neither appropriate nor necessary to devise different PPRA criteria to justify renovation work on trunk mains for an undertaking.

4. Pre- and Post-Renovation Assessment (PPRA)

4.1 PPRA was introduced in 1996, and at least Pre-Renovation Assessment (Pre-RA) has been applied to most renovation work initiated in the last three years. During 1998 and 1999, reviews of PPRA have been conducted by consultants on behalf of the industry [Refs. 1 and 2]. These reviews considered the efficacy of existing investigative methods and the scope for new methods. In essence, they concluded that the existing PPRA process was relatively robust; identification of zones for renovation was not particularly sensitive to changes in criteria, but there were advantages in applying several investigative methods. In the short term, it was recognised that existing PPRA methodologies would continue to be used for the foreseeable future. In the longer term, the most promising approach was considered to be continuous monitoring, e.g. of turbidity, but suitable equipment still needs to be developed.

4.2 In view of these findings, undertakings for the remainder of the quality driven renovation programme will be put in place using companies' existing strategies and criteria, and the Inspectorate will consider proposals for change from individual companies on a case by case basis. A company making such proposals would need to provide considerable supporting evidence to enable the Inspectorate to determine which aspects of the company's strategy or its implementation were deficient, and what further action, if any, is appropriate. (See 4.6 below.)

4.3 In defining requirements for PPRA of discoloured water problems, IL 4 / 96 (Section A.3) included a requirement for companies to use at least one method of measurement from List A **and** at least one method of measurement from List B. This requirement has not changed. The Inspectorate would consider proposals for additional methods to be included in companies' strategies where these have been developed, and sufficient evidence of their suitability can be provided. In particular, where novel measures are proposed, correlation with quality at the consumer's tap must be demonstrated.

4.4 It continues to be the view of the Inspectorate that current investigative methods are not ideal for use in quantifying an intermittent discolouration problem arising from the condition of the distribution system. Also the use of additional methods to confirm the extent, severity, nature and cause of intermittent discoloured water problems will instil greater confidence about the need for and appropriateness of the solutions proposed. To encourage thorough investigation of water quality problems, the Inspectorate has decided that where a company uses multiple methods to assess a problem, results

from any one method from List A and any one method from List B will suffice for reporting purposes. The List A and List B methods chosen by the company should be defined in the agreed strategy, and should be consistent between Pre-RA and Post-RA.

4.5 IL 4 / 96 included both random spot sampling surveys and structured surveys as suitable methods in List A. It appears from one of the consultants' reports mentioned above [Ref. 2] that some companies believe that the Inspectorate favours the former rather than the latter. This is not the case; indeed there may be advantages in the latter. However it is true that the planning and execution of a well conducted random survey can be more straightforward. For a structured survey, the nature of the structuring needs to be clearly defined and the statistical tests applied should be appropriate. It has been pointed out [Ref.1] that the statistical methods applied to a structured survey need to be carefully chosen and may be more complex than those suitable for a random survey. The Inspectorate is willing to review suitable statistical tests for particular situations, and companies are invited to offer suggestions in this respect.

4.6 Companies' current strategies include methods for assessing problems of contravention of the standard for the existing PAH parameter (i.e. that comprising the total of six PAH including fluoranthene). A smaller quantity of work in the AMP3 and AMP4 periods will be necessary to meet the new standard for the PAH parameter (i.e. that comprising the total of four PAH not including fluoranthene) and especially the new standard for the benzo 3,4 pyrene parameter. Some revision to companies' strategies may be required in due course to reflect changes in the regulatory regime when the new regulations are made and implemented.

4.7 IL 4 / 96 included a requirement to report results of PPRA within two years of the start of renovation work in the area assessed. A number of companies have had difficulty in meeting this requirement. For the new undertakings, it has been replaced by a requirement to report PPRA within a year of the milestone date for the completion of the relevant renovation work. As renovation work in zones will in practice be completed at various points between the milestone dates, for the majority of zones this requirement should be easier to meet than the previous requirement.

5. Appraisal of results of PPRAM

5.1 Results of PPRA will be used by DWI to determine whether a particular length of renovation work is credited against a company's commitment in its S19 distribution system undertaking, and to determine whether a particular area (water supply zone or sub-zone) should be listed as being completed in the Annex to the undertaking. Appraisal of results will include an allowance for the application of 'triviality' to the outcome, analogous to the assessment of compliance sampling. Details of the procedure to be applied are set out in Annex A.

5.2 When a zone or sub-zone is listed as being completed in the Annex to the undertaking, the company will be deemed to have fulfilled its commitment in the undertaking in respect of that zone. The zone will then be treated in the same way as zones which have not been included in the Annex, except that for the remainder of the period covered by the undertaking, the determinands listed against the zone in the Annex should be monitored at least at the increased frequency indicated in Table 2 of Schedule 3 of the 1989 Regulations.

6. Failure to demonstrate success

Where Post-RA fails to demonstrate that water quality complies with the criteria in the company's strategy, the company should report the results in the Annual Data Return and submit a brief 'Exception Report'; this should include a plan of actions which will be taken to ensure that the area concerned will comply with the criteria. For zones or sub-zones where this applies, an extra year will be allowed for remedial action and subsequent assessment.

7. New Undertakings

7.1 For many companies, undertakings will shortly be put in place to cover renovation work in the period from 1 April 2000 onwards. Their main requirement will be to carry out all of the renovation that is required to complete the drinking water quality driven renovation programme. They will include lists of water supply zones in 'milestone packages'. These packages will be based on the lengths of renovation specified in the 'Letters of Support' and the 'Enforcement Letters', and on currently available information concerning water quality problems. Companies will be expected to complete work in zones in conformity with this programme unless there are sound reasons to vary it, in which case an amended Annex to the undertaking may be submitted for consideration. If subsequent investigations show that renovation is not needed in a zone or sub-zone, the work should not proceed, and the company would be expected to bring forward the completion of renovation work in other areas to maintain the rate of progress, and thus complete the whole programme earlier.

7.2 Where for such reasons the final length of renovation work completed is less than specified in the undertaking, this would not be considered to be non-fulfilment of a commitment in the undertaking, provided that

- there is a properly documented change of circumstances, **and**
- it can be demonstrated that water quality is satisfactory in all the areas covered by the undertaking, using the criteria in the company's current strategy.

Adjustment for any difference from the original length funded would be dealt with by Ofwat at the next price setting.

8. This letter

8.1 Enquiries concerning this letter should be directed to Milo Purcell, Principal Inspector (020 7944 5933, Milo_Purcell@detr.gov.uk), or Colin Evins (020 7944 5985, Colin_Evins@detr.gov.uk), Floor 2 / F4, Ashdown House, 123 Victoria Street, London SW1E 6DE.

8.2 Copies of this letter are being sent for information to Pamela Taylor, Chief Executive of Water UK; to Bob Dinwiddy, Water Supply and Regulation Division in the Department of the Environment, Transport and the Regions; to Bob Macey, Environment Division of The National Assembly for Wales; to Tim Hooton, Agriculture, Environment and Fisheries Department of the Scottish Office; to Randall Scott, Drinking Water Inspectorate of Northern Ireland; and to Rowena Tye, Office of Water Services.

8.3 Please acknowledge receipt of this letter using the enclosed slip and envelope.

Yours faithfully,

Michael Rouse
Chief Inspector

References

1 Guidelines for Pre- and Post-Renovation Assessment.
K Chambers, M Kowalski, R Lacey & S Williams,
WRc for UKWIR, 99 DW 02/19, November 1999.

2 Mains Renovation - Pre- and Post-Renovation Assessment - Improving Understanding.
Warren Associates (Pipelines) Ltd. for UKWIR, in press for publication in 2000.