

Bathing water revisited : with evidence / Select Committee on the European Communities.

Contributors

Great Britain. Parliament. House of Lords. Select Committee on the European Communities.

Publication/Creation

London : H.M.S.O., 1995.

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HOUSE OF LORDS

SESSION 1994—95
7th REPORT

**SELECT COMMITTEE ON
THE EUROPEAN COMMUNITIES**

BATHING WATER REVISITED

WITH EVIDENCE

Ordered to be printed 21 March 1995

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WITH EVIDENCE

DEPARTMENT OF THE ENVIRONMENT AND THE DEPARTMENT OF HEALTH

ORAL EVIDENCE, 22 FEBRUARY 1995

SUGGESTED READING

WATER SERVICES ASSOCIATION

WRITTEN EVIDENCE

ORAL EVIDENCE, 1 MARCH 1995

OFWAT

WRITTEN EVIDENCE

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NOTE: Pages of the report are numbered in bold type. Pages of evidence are numbered in ordinary type. References to the report are in bold type.

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SEVENTH REPORT

21 March 1995

By the Select Committee appointed to consider Community proposals, whether in draft or otherwise, to obtain all necessary information about them, and to make reports on those which, in the opinion of the Committee, raise important questions of policy or principle, and on other questions to which the Committee consider that the special attention of the House should be drawn.

ORDERED TO REPORT

Bathing Water Revisited

PART 1 INTRODUCTION

1. Our earlier report¹ on the proposal for a new bathing water directive was published in December 1994. In that report we deplored the absence of a soundly-based cost-benefit analysis of the proposal and indicated our intention to report again to the House when we had received and considered the Government's cost compliance assessment. That assessment was made available to us in February 1995. Subsequently we received evidence on its implications in the light of which we now issue this second report.

2. Part 2 of this report summarises the new evidence received. The evidence published in the first report is relevant to this one but is not reprinted here. Part 3 sets out the opinion of the Committee and complements the opinion of the Committee expressed in the first report.

3. Like the first enquiry, the second was carried out by Sub-Committee C whose membership is listed at Appendix 1. The oral and written evidence received is listed at Appendix 2. For ease of reference, the Summary of the Conclusions and recommendations of the earlier report is reprinted at Appendix 3 and the glossary of scientific and technical terms used in that report and in this one is at Appendix 4.

¹ *Bathing Water*, 1st Report, Session 1994-95, HL Paper 6.

PART 2 SUMMARY OF THE NEW EVIDENCE

Four scenarios

4. The Cost Compliance Assessment (CCA) report commissioned by the Government on the revision of the bathing water directive proposed by the Commission considered four separate scenarios, A-D. Scenario A was the Commission's proposal which includes two elements found by the report to have important implications for the cost of compliance. One is the introduction for the first time of a mandatory standard for faecal streptococci, set at 400/100 ml. The other is that the enterovirus standard is made far more stringent. Scenario B was the existing directive made more stringent by making mandatory the standards which are presently the optional *Guideline* standards; C was the Commission's proposal except for the omission of the more stringent enterovirus requirement; and D was the existing directive plus a new mandatory standard of 1000/100ml for faecal streptococci. This standard was selected for consideration by the Department of the Environment because it was seen by the Department as "cost neutral": that is, it was believed that compliance with this standard would be achieved by the programmes already planned for compliance with the existing bathing water directive and the Urban Waste Water Treatment Directive without significant additional cost.

5. The CCA report's cost estimates were based on the provision of suitable engineering and sewage treatment facilities for meeting the limit values of the indicative parameters set by each scenario. What facilities were suitable for each scenario was a judgment made by the consultants responsible for the cost compliance report in consultation with the water companies and the National Rivers Authority. The resulting estimates were intended to be strategic and were not based on feasibility studies. Scenario A was based on the provision of secondary treatment followed by filtration of the effluent followed by disinfection by ultraviolet radiation. Scenarios B and C involved secondary treatment followed by ultraviolet radiation for discharges within a certain minimum distance of a bathing water. Scenario D was judged to require no general provision of facilities additional to those needed to comply with the existing bathing water directive and the Urban Waste Water Treatment Directive.

Scope of the CCA report

6. The CCA report is concerned only with compliance in relation to designated bathing waters. Its scope extends neither to inland waters, none of which in the United Kingdom is designated, nor to wider areas of the sea that might be used by surfers or dinghy sailors.

Costs

7. The following table sets out for the United Kingdom the aggregated cost estimates given in the report. The costs are additional to the £9.5 billion (Q 217) to be incurred in complying fully with the existing bathing water directive and the Urban Waste Water Treatment Directive. The term "cost driver" used in the table refers to the main parameter affecting or "driving" the costs of compliance.

Table 1

Scenario	Capital Costs £ million	Operating Costs £ million/year	Cost Driver
A	1,640-4,240	70-150	Enterovirus
B	1,140-2,640	50-100	F.strep/E.coli
C	440-1,100	20-40	F.strep
D	20-40	<1	F.strep

8. The water companies did not dissent from the cost estimates in the Government's CCA report which were derived from figures provided by them. The companies reminded the Committee that improvements to sewage discharges by the water companies would not guarantee compliance: although allowances had been made in the report's estimates for riverine and diffuse discharges it was likely that failures to comply would occur as a result of these discharges (Q 433).

9. The Department of the Environment told us that the present cost of testing for enterovirus in the United Kingdom was some £27,000. Testing was carried out twice a year for about 200 bathing waters. The Department said that, according to a report from the Commission, in 1993 the United Kingdom monitored 199 bathing waters for enterovirus while the rest of the Community monitored in total 90, of which 85 were in Spain, four in Italy and one in Ireland (Q 204).

10. The estimate given by Mr Byatt, Director General of OFWAT, of the likely impact on water charges of implementing scenarios A-D is shown in the following table (p 27).

Table 2

Scenario	Capital Cost £million	Operating Costs £million/year	Potential Increase in Prices in Real Terms %	Potential Increase in Average Annual Household Bills £
A	1,520-3,940	50-140	4-12	10.0-28.0
B	1,050-2,420	40-90	3-8	7.0-17.0
C	400-1,010	20-40	1-3	3.0-7.0
D	20-40	0	0-0.1	0.1-0.02

Note: The above figures relate to the eight affected companies and exclude Northern Ireland and Scotland.

He thought that the impact in some water company areas might be twice the national average. He expected the worst affected companies to be Northumbrian, South West, Southern and Wessex (p 27).

Public response to higher water charges

11. Our witnesses told us that there was a range of responses from the public to higher water charges. Some market research suggested that 21 per cent were willing to pay more for higher quality water but 32 per cent were not. There were increasing numbers of people who experienced difficulty in paying their water bills, particularly among older people and the lower income groups (QQ 463). Mr Byatt took the view that increases in water charges of significantly more than the percentage increase in household incomes would provoke a public outcry (Q 485). South West Water believed that costs in their region were disproportionately heavy for individual charge payers as the region contained almost one third of the designated bathing waters of the United Kingdom but only about 3 per cent of the resident population although the sewage load was greatly increased by the seasonal influx of tourists. Consequently the level of water charges in the region had become a sensitive political issue (QQ 463-4). None of our witnesses could give a considered estimate of the benefit, or disbenefit, to the tourist trade and to the local economy generally of good, or poor, quality bathing water. Mr Byatt said he had not looked at the possible consequences for the local economy if bathing waters were not improved. He did not appear to consider these factors relevant

to his consideration of the interests of water charge payers in his periodic reviews of price limits (QQ 478,481).

Public health implications

12. The Department of Health foresaw no gain for public health from the implementation of the enterovirus standard in scenario A but thought that Scenarios A, B and C would be likely to lead to a small and difficult to quantify reduction in the incidence of gastro-intestinal symptoms following bathing (Q 144). Although there were no data to suggest that compliance with the present directive had prevented any serious illness, there must be an increasing chance of serious illness following bathing in very polluted water, depending on the pattern of illness in the community (Q 179). Scenario D was seen by the Department as not significantly different from the existing directive in its public health implications.

Timing considerations

13. The Department of the Environment accepted that the programmes for compliance with the existing bathing water directive and the Urban Waste Water Treatment Directive were interactive and were also liable to be affected by decisions on a new bathing water directive. When pressed on the point, the Department conceded that, for the purposes of planning and implementing these compliance programmes, there was some urgency about taking firm policy decisions on the standards to be met in a new bathing water directive (QQ 164,207-209). The water companies illustrated to us the major impact on costs and on the timing and completion of improvement programmes caused by the sharp changes in domestic policy on sewage treatment announced by the then Secretary of State for the Environment in 1990 (QQ 463,467).

PART 3 OPINION OF THE COMMITTEE

Cost neutrality

14. On the evidence before us we believe that the enterovirus standard as formulated in the Commission's proposal could not be achieved unless all discharges of sewage were subjected to primary and secondary treatment followed by filtration and disinfection by chemical or ultraviolet radiation treatment. These levels of treatment are exceptional in the Member States and could not be introduced without major new engineering work. Non-sewage contaminants might still cause non-compliance.

15. Under the present bathing water directive testing for enterovirus is generally not carried out. The position which was described in our earlier report¹ is well-known to the Commission who publish figures on the number of tests carried out. It is, therefore, hard to see how the Commission could have thought that the new standard would not entail costly capital expenditure, if the enterovirus standard in the proposed directive was not to be a dead letter as it is under the present directive.

16. The Commission's claim that the proposed new bathing water directive would be broadly cost neutral, or would even permit some cost savings without any reduction in the level of public health protection provided, does not survive scrutiny. In the United Kingdom the Commission's full proposal would entail significant capital expenditure—somewhere between £1.6 billion and £4.2 billion—additional to that required to comply in full with the existing bathing water directive and the Urban Waste Water Treatment Directive—around £9.5 billion over the next ten years. We regret that the Government was unable to answer our questions about the costs of compliance with these two existing directives in other Member States.

17. We believe that the Commission's claim to cost neutrality for their proposal is so ill-founded that we are dismayed that it could have been made. We have to conclude that in formulating the proposal there was, in DG XI, lack of adequate research or consultation with Member States and a worrying lack of understanding of the microbiology and engineering involved in sewage treatment.

Public health implications

18. The costs entailed by the Commission's proposal might be justified if implementation would bring gains in public health greater than those achievable at similar cost from other actions. We believe that implementation would result in some reduction in the risk to bathers of self-limiting gastro-intestinal illnesses and other minor illnesses of the eyes, ears, nose and throat. There is no convincing evidence for or against claims that the incidence of serious or life-threatening illness would be affected. This is the position for Scenario A, the Commission's proposal, as well as for Scenarios B and C, which are less stringent modifications of the proposal.

19. We see no reason to change the opinion, expressed in our earlier report², that we were unconvinced that there was justification for imposing on the general public significantly higher costs in order to reduce somewhat the present risks of self-limiting illness associated with bathing. In our view the costs of the Commission's proposal remain unjustified on present evidence. However, as we also said in that report³, we see the setting of the mandatory standards in the directive as primarily a political matter to be decided in the light of what is seen as an acceptable level of health risk after a public debate on the data on costs and health risks when they are available⁴. We look to the Government to contribute to that debate in the light of the estimated

¹ *Bathing Water* 1st Report, Session 1994-95, HL Paper 6, paragraph 29

² *Bathing Water* 1st Report, Session 1994-95, HL Paper 6, paragraphs 28 and 72.

³ Paragraphs 24 and 70.

⁴ Paragraphs 68 and 94

costs now available and in the light of the present state of knowledge of the public health risks of bathing and hope that a debate in the House will provide an opportunity for this.

20. We think there is a need for a more serious attempt than appears to have been made hitherto to assess the economic benefits which might flow from a reduction in the minor illnesses associated with bathing if more stringent standards for bathing waters were achieved. In addition to possible environmental benefits there might be benefits for tourism and for the local economies of bathing resorts as well as from some reduction in the economic costs imposed by these minor illnesses. We were concerned that the Director General of OFWAT did not appear to take these wider issues as part of his remit. We believe that these considerations should influence the overall strategy. Wider benefits would need to be balanced against the costs of achieving higher bathing water standards. It might appear after investigation that the higher standards to be achieved should not be made mandatory under Community legislation or, perhaps, even under domestic legislation, but should be left to local decision within each water company area after full consultation with water charge payers and other groups concerned. We would see this as an application of the subsidiarity principle and, indeed, an extension of it if it was applied so as to permit local discretion within the United Kingdom.

Less stringent and less costly options

21. The main "cost drivers" of the compliance costs of the Commission's proposal have been shown to be the mandatory regular sampling for the enterovirus standard of zero in 10 litres and the mandatory standard of 400/100ml for faecal streptococci. We considered whether, by modifying these two cost drivers, compliance costs could sensibly be reduced and justified.

22. In our earlier report we recommended that sampling for enterovirus should not be required because of the uncertainty and complexity of the test¹. We looked particularly, therefore, at Scenario C which is the Commission's proposal minus the enterovirus test. But this scenario, too, entails significant new capital costs—between £0.4 billion and £1.1 billion—driven by the 400/100ml mandatory standard for faecal streptococci and in our earlier enquiry we found the Commission's choice of the figure of 400/100ml to be based on dubious assumptions². We find, therefore, that a justification for the costs of Scenario C has not been established.

23. Scenario B entails capital costs—between £1.1 billion and £2.6 billion—higher than those entailed by Scenario C without any quantified or firm prospect of delivering health gains greater than those of that scenario. We find, therefore, that a justification for the costs of Scenario B has not been established.

The way ahead

24. The existing bathing water directive is certainly in need of up-dating and simplification in the light of modern scientific knowledge and methodologies. The Commission's proposal, however, is unsatisfactory in that it is based on a false assumption about the costs of compliance and in that there is no firm public health justification for the proposed mandatory levels of the parameters for enterovirus or faecal streptococci.

25. We would support a modification of the existing bathing water directive which required the monitoring of only those parameters which are good indicators of public health risk, which set the mandatory levels for those parameters on the basis of proven relationships with levels of public health risk and which set the balance between cost of compliance and the level of protection provided in the light of public debate based on good information on these two factors.

¹ Paragraphs 31 and 76.

² Paragraph 19 and Q 206.

26. Drawing on the conclusions of our earlier report¹, to which we adhere, in our view a new bathing water directive should not require, for compliance, testing for enterovirus; an *E.coli* parameter should replace the total and faecal coliform parameters; the salmonella parameter should be dropped; and parameters not based on microbiological indications of public health risk should also be omitted. A new mandatory parameter for faecal streptococci should be introduced and the level set so as to deliver an acceptable level of protection from public health risk which we would expect to be no less than that provided by the present directive. This mandatory parameter level should be determined after openly conducted consultation between the Commission and scientific, including medical, experts in the Member States.

Timing considerations

27. The United Kingdom's programmes for compliance with the existing bathing water directive and the Urban Waste Water Treatment Directive are, taken together, not scheduled for completion until the year 2005. We are concerned that the engineering and treatment programmes for compliance with these directives should be integrated with any additional work necessary for compliance with a new bathing water directive so that the water companies can operate from a stable base for planning and investment. If this is not done, there must be a risk of considerable wasted expenditure: for example, major engineering such as a long sea outfall required for the Urban Waste Water Treatment directive might not be essential if a new bathing water directive required secondary treatment, filtration and ultraviolet irradiation.

28. We recommend, therefore, that the Government should urge the Council and the Commission to pursue with all speed the further consultation that we consider necessary on the proposed bathing water directive. This would make possible the adoption of a strategic approach to improving the quality of urban waste water and bathing water which took account of economic, public health and environmental issues. In an ideal world, this strategic approach would also cover a revised drinking water directive which, we believe, has been considered by the Commission although it has not yet been formally submitted to the Council. However, we would not wish to delay decisions unduly and we recognise that it might be expedient for the Community to legislate on bathing water before future Community policy on drinking water is agreed.

RECOMMENDATION

29. The Committee considers that this proposal raises important questions to which the attention of the House should be drawn and recommends this Report to the House for debate.

¹ A summary is reprinted at Appendix 4.

APPENDIX 1

Sub-Committee C (Environment, Public Health and Education)

The Members of the Sub-Committee which conducted this enquiry were:

V. Bridgeman
L. Butterfield
L. Dixon-Smith
L. Geddes
B. Gould of Potternewton
B. Hilton of Eggardon
L. Lewis of Newnham (Chairman)
B. Nicol
B. Park of Monmouth
L. Pearson of Rannoch

The Specialist Advisers were Professor David Kay, Director and Professor of Environmental Science, CREH, Leeds Environment Centre, University of Leeds, and Dr Gareth Rees, Head of Environmental Management, Farnborough College of Technology.

APPENDIX 2

List of Witnesses

The following witnesses gave evidence. Those marked * gave oral evidence.

- * Department of the Environment
- * Department of Health
- * OFWAT
- * Water Services Association

APPENDIX 3

*Summary of Conclusions and Recommendations of the earlier Report**General policy considerations*

1. The objectives of the Commission's proposal are admirable but the likely effectiveness and cost-effectiveness of the provisions proposed are controversial (paragraph 17).

2. The setting of the *Imperative* values of the parameters is primarily a political issue to be decided in the light of what is seen as an acceptable level of health risk. Where the requirements of the present directive are met, there is no firm evidence that a satisfactory level of protection from "serious illness" is not achieved. Neither the present requirements nor those proposed under the new directive provide or would provide protection from gastro-intestinal or respiratory illnesses which are self-limiting. These illnesses may be regarded as serious by the individuals concerned but they are unlikely to be reported to doctors or to show up in official statistics of serious or communicable diseases (paragraph 24).

3. More contamination of bathing water means more health risk, but not necessarily more risk of more serious illness. Less contamination means more expenditure on sewage disposal. Until costs and associated health benefits can both be assessed, decisions on what *Imperative* levels to put in the directive will be somewhat arbitrary. This arbitrariness is particularly disquieting where large expenditures are at stake (paragraph 26).

4. The Committee is not convinced that there is justification for imposing on the public significantly higher costs in order to reduce somewhat the present risk of self-limiting illness associated with bathing. In most British bathing waters, including those complying with the present directive, bathing brings a higher risk of gastro-intestinal symptoms than the public meet in normal daily life. The extent to which the health risks from bathing should be reduced should be decided in the light of open discussion of the estimated costs and the associated health benefits. Credible cost data do not yet exist (paragraph 28).

Indicative parameters

5. The Government should carry out further research, taking full account of the findings of the WRc report's conclusions, into the most appropriate depth at which sampling should be carried out. The Committee regrets as unjustified by the latest scientific evidence that the Department of Health is not yet giving sufficient weight to what the Committee regards as one of the key findings of the most recent research, commissioned by the Government, that there is increased risk of gastrointestinal illness where the concentration of streptococci, measured at chest depth, exceeds about 40/100ml (paragraph 21).

6. The crucial issue arising from the WRc findings is whether gastro-intestinal symptoms are "trivial" or whether the increased risk of acquiring them justifies the setting in the directive of an *Imperative* level, (the standard that must be met in order to comply with the directive), for faecal streptococci at about 40/100 ml rather than 400/100 ml as proposed by the Commission (paragraph 22).

7. Research shows that above a threshold concentration of 35-40/100 ml for faecal streptococci there is for adults a continuous relationship between water quality and gastro-intestinal illness. At a concentration of about 80/100 ml the risk of diarrhoea from bathing is more than that from eating some common foods and less than that of living with a family member with a gastro-intestinal illness. For children the risks from persistent diarrhoea are likely to be of greater significance. Further analysis of the WRc data should be carried out (paragraph 25).

8. The uncertainty and complexity of the enterovirus test make it unsuitable for this parameter to be given an *Imperative* value. A bacteriophage standard should be adopted when there is a consensus about the best available bacteriophage and the analytical techniques to be used (paragraph 31).

9. *E. coli* is better than total or faecal coliforms as an indicator of faecal pollution (paragraph 32).

10. The salmonella parameter should be omitted from the directive (paragraph 33).

11. The directive should be confined to monitoring microbiological parameters which are good indicators of public health risks. The parameters covering colour and transparency should be omitted. The objective of the absence of sewage solids from beaches and bathing waters should be pursued by means outside the bathing water directive (paragraph 36).

The scientific basis for the directive

12. The Commission in formulating its proposals for the new directive has not engaged the scientific community in the open discussion which we regard as mandatory. Some of its proposals show regrettable disregard of current science (paragraph 38).

13. Laboratories carrying out testing for assessing compliance with the bathing water directive should have in place a quality assurance programme, including external assessment. The quality assurance programme should include the taking, handling and transport of samples from the time the sample is taken until its analysis is complete (paragraph 39).

14. The present and proposed systems of assessing compliance with the directive are conducive to public misunderstanding. Beaches and bathing waters are not simply clean or dirty; or risk free or dangerous to health (paragraphs 40-41).

15. The sampling of parameters does not produce measurements which have a precise single meaning: the figures are indicative of a range of values. The Committee is attracted to a system which assesses compliance by taking account of the central tendency (the geometric mean or the median) of the measurements as well as of their spread (the standard deviation). Under the system bathing waters could be assigned to one of four quality categories—very good, good, acceptable and poor. The results should be publicised. This could be done by colour gradings—blue for very good, green for good and so on. The Commission should establish an expert committee to advise on such a system (paragraphs 41 and 42).

16. The Committee is not persuaded that “excellence” of water quality should be equated with meeting *Guideline* standards. This would be acceptable only if the *Guideline* delivered a higher standard of public health protection without entailing excessive cost (paragraph 44).

Compulsory closure

17. Compulsory closure of a bathing water is unworkable. Poor test results should be immediately publicised together with advice on the nature and degree of the risk involved in bathing (paragraph 46).

Expert advice

18. The expert committee recommended in paragraphs 42 and 83 should advise also on the interpretation of “abnormal” in connection with peak values and unusual weather conditions (paragraph 48).

19. Abnormal readings should be publicised immediately together with advice on the risk in bathing (paragraph 49).

Public understanding of risk

20. The Government should develop publicity to promote public understanding of the concepts of risk and statistical probability applied to environmental issues (paragraph 50).

Inland waters

21. The Government should clarify and publicise its interpretation of the criteria used for identification of bathing waters. Inland waters which conform to these criteria should be identified as such for the purposes of the directive (paragraph 53).

End-of-pipe solutions: ultra-violet light irradiation and disinfection

22. The evidence from Jersey and Welsh Water on the effectiveness and cost-effectiveness of full treatment of sewage and disinfection by ultraviolet irradiation is impressive although success in reducing sewage contamination may highlight contamination from other sources. The Government and the Commission should give priority to identifying and disseminating the most cost-effective methods of reducing the pathogenic content of sewage discharges (paragraph 57).

23. Resources should be concentrated on the treatment of sewage before discharge; but testing bathing waters at the point of use reassures the public about health risks and spurs those responsible for sewage treatment to good performance. So far as possible testing at bathing waters should be inexpensive, simple to carry out and reliable as an indication of health risks (paragraph 58).

Subsidiarity and competence

24. Legally binding minimum standards for bathing water in the Community are highly desirable. The case against some aspects of the bathing water directive on subsidiarity grounds is well-founded but it may be politically unrealistic to look for the repeal of the directive. In order to accord with the requirements of Article 130r a revised directive should make no change which would either increase the net public cost of compliance without proportionate increase in the level of public health protection or reduce that level. Only microbiological parameters which are good indicators of public health risks should have to be monitored under the directive (paragraphs 64-65).

Costs

25. It is unacceptable that policy formulation has reached the stage of formal proposal from the Commission for revision of the bathing water directive without the attachment of a menu of individually costed measures. The Committee deplores that a soundly based cost-benefit analysis has not yet been produced (paragraph 67).

Further scrutiny

26. As Council negotiations customarily lack openness on the scientific basis on which the prescriptive standards in a directive have been arrived at, it is for national parliaments and the European Parliament to elicit the data on costs and on health risks which must be publicly debated before a new bathing water directive can command public assent. The Government should make a full and prompt contribution to these data and to this debate. The public, whose health and whose pockets will be directly affected by a new regime for bathing water, deserve no less. In the light of the Government's promised cost compliance assessment, the Committee intends to make a further report expressing an opinion on the balance to be struck between the level of protection provided from health risk and the costs entailed (paragraph 68).

RECOMMENDATION

27. The Committee considers that this proposal raises important questions to which the attention of the House should be drawn and recommends this Report to the House for debate.

APPENDIX 4

Glossary of scientific and technical terms

Abnormal Peak Value	in the context of the proposed directive, an unusually high value for faecal streptococci. Such a value may be related to recent unusually heavy rainfall.
Bacteriophages	bacterial viruses which have been suggested as indicators of health risks from sewage pollution.
Coliforms	a type of bacteria found in sewage but also associated with non-faecal sources eg decaying vegetation.
Enteroviruses	viruses common in the human gut which can be measured in bathing water. Measurement is imprecise and there is no scientific consensus on the utility of this measurement as an indicator of health risks.
<i>Escherichia coli</i>	a type of coliform bacteria specifically related to faecal pollution. The numbers of this bacterial species are used to indicate sewage contamination and consequent potential health risk. Generally abbreviated to <i>E.coli</i> .
Faecal coliforms	a slightly wider group than <i>E.coli</i> which is predominantly associated with faecal contamination.
Faecal streptococci	a group of bacteria found in human and animal faeces. This group is longer lived in fresh and marine waters than the coliforms and it may provide a more accurate reflection of the risks of gastroenteritis acquisition than other bacterial indicators do.
Gastro-intestinal symptoms	these may be manifested by vomiting, diarrhoea, elevated temperature, nausea etc.
Guide	the EU recommended standards.
Imperative	the EU mandatory standards, ie less stringent than the <i>Guide</i> levels.
Indicator organisms	these are microbes used to indicate sewage pollution. If that pollution contains pathogens a disease risk may be present.
Microbiological tests	measurements on the presence of micro-organisms in water. This can result in estimates of concentration or simply observations on presence/absence in specified volumes of water.
Odds ratio	a statistical measure of the increase in risk associated with some activity or exposure.
Pathogens	micro-organisms which cause disease.

Preliminary treatment of sewage	passing the effluent through screens to remove larger solids and plastics. Maceration (ie physical agitation to break down larger solids) of the sewage may also be involved. These processes result in little change to bacterial concentrations.
Primary treatment	settlement and sedimentation of the sewage to remove most solids. About half the bacteria are removed with the solids.
Secondary treatment	involves some biological treatment of the effluent stream from the 'primary' process. The purpose is to reduce the effluent's ability to deplete the oxygen content of the receiving water. Secondary treatment can result in bacterial reductions of up to 99 per cent. However, the initial bacterial concentrations are very high and viral reductions are less significant. Thus, high concentrations of bacteria and viruses still remain in the effluent from secondary treatment plant.
Serious illness	might be described as life threatening or debilitating for long periods.
Tertiary treatment	treating secondary treated effluent to achieve bacterial or nutrient removal. UV sterilisation is a form of tertiary treatment.
Ultra-violet treatment	using banks of UV light emitting tubes situated in the final effluent stream to kill bacteria and viruses in the flow. The efficacy of the process is dependent on the clarity of the effluent stream and rigorous maintenance of the UV plant.

MINUTES OF EVIDENCE

TAKEN BEFORE THE EUROPEAN
COMMUNITIES COMMITTEE (SUB-COMMITTEE C)

WEDNESDAY 22 FEBRUARY 1995

Present:

Bridgeman, V.
Butterfield, L.
Dixon-Smith, L.
Geddes, L.
Gould of Potternewton, B.

Hilton of Eggardon, B.
Lewis of Newnham, L. (Chairman)
Park of Monmouth, B.
Pearson of Rannoch, L.

Examination of witnesses

MR J VAUGHAN, MR J BONSALL and MR C BYRNE, Department of the Environment, and DR J HILTON, Department of Health, called in and examined.

Chairman

138. Thank you very much for coming along. We have met all of you on other occasions but I wonder if there is anything you would like to say before we start on the questions?

(*Mr Vaughan*) Thank you, my Lord Chairman. I would like to say two things. One, is that the Government's response to the earlier report which the Committee produced in December is currently before Ministers, and I am afraid we have not been able to let you have it before today's session. Ministers are currently considering it and we hope we can provide it as soon as possible once they are content with the response. The other thing I would say is we have some results from the exercise by Halcrow on cost estimates for the Commission's proposals. Halcrow were still finalising their report until the eleventh hour, however we were able to supply the guts of the report to Mr Goddard, your clerk, that is the executive summary and also section 4. Halcrow have now finalised this report and I have just handed to you a couple of copies of the final report, but there are no significant differences between the final report and those sections which you have already seen. I am sorry that again it was not possible to get this final report to you with a bit more notice, but Halcrow and ourselves wanted to be satisfied that they had completed the job as they were instructed to do. However, I hope the material we have been able to provide will be of some assistance in enabling you to ask us some questions. Other than that, I would simply say we have the same team. Judith Hilton is here to respond to any questions you may wish to address to the Department of Health, and we will do our best on Department of the Environment matters.

Lord Geddes

139. My Lord Chairman, before we start on the questions, can I ask a standard question on a standard

statement? How do you define "as quickly as possible", Mr Vaughan?

(*Mr Vaughan*) I am afraid I cannot give a precise answer to that. All I can say is that our proposed response is currently before Ministers. I am afraid I cannot commit Ministers to a particular timetable, but they are aware of the normal timetable which the Committee works to on these occasions.

140. If I was to take it to a ludicrous extreme, would you expect it to be not before six months?

(*Mr Vaughan*) I would be very surprised if we were talking in terms of six months.

141. A couple of months?

(*Mr Vaughan*) I would certainly hope it would not take two months. I would hope we are not talking in terms of months at all, certainly not two months, but that is all I can say.

142. We are hopefully talking of a small number of weeks?

(*Mr Vaughan*) I hope so. All I would say is there are some quite important topics and Ministers will want to look at it very carefully.

Chairman

143. Thank you. Perhaps we have helped by putting the pressure on you to get this report in, so I think we are all satisfied we have now got it. May I just say that we have not obviously read the full report, but if there are any points in it I imagine you would not worry if we were to come back at you for some amplification. Can I start by saying that there is a slight degree of confusion in people's minds on the dates of these various directives. The Bathing Water Directive itself, I believe, is to be implemented by 1995, yet the Urban Wastewater Treatment Directive is not being completed until 2005, and yet these are very interactive, in our eyes. The problems we have been running into in general discussion are things like

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debris and things of this nature, which of course are more under the 2005 date than the 1995 date, if I understand it correctly. In the proposal which you give us, you state in fact you would not intend to start implementing the new Directive, or supplementary Directive, which I take to be the Bathing Water Directive, until 2005. Is that correct?

(Mr Vaughan) Because we wanted to identify the costs which are in addition to all the other programmes of expenditure, we have made a costing assumption that we will have actually achieved the standards which we are already required to achieve through existing Directives, namely the existing Bathing Water Directive and the Urban Wastewater Treatment Directive. We have done that because we wanted to identify the additional costs. If these proposals by the Commission were actually to find favour with Member States and be agreed, the actual operative date, the deadlines of any revised Bathing Water Directive, could be before the date assumed, but we simply do not know at the moment. I suspect the UK would be arguing, as it has done already publicly with the Urban Wastewater Treatment Directive, that there should be ample time to achieve any large expenditure programmes simply on practical grounds and also because of the potential cost burden. There is a great deal of uncertainty, given that the Commission's proposal has not got far in the Council, and it is far from clear when it will. There is clearly some confusion at the moment and nobody can be certain as to what eventually the deadlines will be in the Commission's revised Directive. But for costing purposes we have made the assumption that we will have achieved the existing standards.

144. Can I ask what public health benefits you would expect from the new Directive? You have given us various scenarios labelled A, B, C and D. Perhaps we could refer to it as the proposed Directive?

(Mr Vaughan) Perhaps I could say something briefly about those scenarios and invite my colleague, Dr Hilton, to comment on the public health benefits. It may look a bit complicated, but what we tried to do in this costing exercise, or got Halcrow to do, was to cost a number of options. One is clearly what one might call the full works, taking in the Commission's proposal, including the enterovirus standard. But we thought it would also be useful to try to illuminate the costs of a number of other options which might be less costly than that or confer different degrees of health effect. One of those, option B, is essentially the Commission's proposal for waters of excellent quality but without the enterovirus requirement. Option C is looking at the Commission's proposals as in Option A but without the enterovirus standard. The final option, D, was designed broadly as a cost neutral option.

(Dr Hilton) As Mr Vaughan has said, Scenario D is designed to be a neutral translation and therefore no change in health effects would be predicted as a result of implementing that scenario. Since we do not predict any reduction in the incidence of symptoms if

the enterovirus standard were applied and implemented, the health effects in Scenario A can be equated to the health effects in Scenario C. So therefore I was not going to consider Scenario A further, except that for C read A. Both Scenarios B and C represent a tightening of standards. Scenario B largely represents a tightening of the E coli standard; Scenario C includes a mandatory faecal streptococcal standard. When I say that, Scenario B obviously also represents an introduction of the faecal streptococcal standard but the harder standard to meet in many cases is the E coli standard. Conclusion 9 of the WRC Report argued that a further tightening of standards was not necessary to protect public health. For both scenarios B and C the health benefit is therefore likely to be small and would be restricted to a reduction in the incidence of gastro-intestinal symptoms. The quantification of how much that reduction would be is difficult and open to interpretation and analysis of the study which has been undertaken so far. The symptoms, we would argue, from the data on use of medicines, the seeking of medical advice, loss of working time, are not severe, therefore we cannot predict that any reduction in the incidence of symptoms would bring about any financial benefits in terms of saving money, either to the people who are suffering or to the public purse in terms of saving GP time. Both parts of the WRC Study showed that the relative risk associated with bathing at beaches which comply with the current standards is not great, it is in the order of about 1.5, and therefore because of the nature of this type of study there is always a possibility, when you have that magnitude of relative risk, that residual confounding and bias play a large part in that. That is one of the reasons why we would support your own recommendations, and recommendations in the WRC Report for further analysis of the study to try to further get to grips with this.

145. So you are saying that the general effects are in agreement with the WRC Report?

(Dr Hilton) Yes.

146. By what level of treatment or disinfection are you intending would the parameter standards for this scenario be obtained?

(Mr Vaughan) If one is talking about Scenario A, the consultants have recommended for continuous discharges within certain specified distances a minimum of secondary treatment followed by filtration and UV disinfection. That is what I described previously as the full works. They have recommended that chemical disinfection, if selected, should include a contact time of at least one hour. In addition, for Scenario A, they have recommended that storm water storage facilities within certain distances and associated infrastructure should be provided to prevent all storm water overflows from discharging more than once in five years.

147. You are quite convinced that the enterovirus can be removed by chemical treatment?

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[Continued]

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(Mr Vaughan) I might have to turn to my colleagues to comment further on that, but the view, as I understand it, of the consultants in consultation with the water industry and also the regulators is that what they have proposed would be a practical and cost effective way of doing so, but there must always be a question perhaps because of these other inputs, for example riverine inputs or inputs from diffuse sources, as to whether one can wholly ever remove enteroviruses.

148. I am sorry, I do accept the fact there may be alternative sources, but you are suggesting the treatment itself should be UV or chemical?

(Mr Vaughan) Yes.

149. The question is, do you feel those are two methods which will ensure the enterovirus is destroyed?

(Mr Vaughan) Yes. The consultants feel that they will achieve that goal, provided however that there is filtration prior to the disinfection.

Lord Butterfield

150. My question is very simple: we put chemicals into the sewerage but how do we get them out, or are they diluted in the sea?

(Mr Vaughan) What the consultants have done is to look at what is technically feasible and either UV disinfection or chemical disinfection in their view would actually do the job. There is also the question, which I think you are alluding to, whether it is desirable on wider environmental grounds to go for chemical disinfection. The NRA has taken a view, rather a cautious view at the moment, about how far the United Kingdom should be proceeding with chemical disinfection. It is keeping the situation under review but I understand its position at the moment is that it would in general prefer not to go for chemical disinfection and it would prefer, where disinfection is contemplated, to go for UV disinfection. But that view remains subject to review. It has not made up its mind once and for all. The consultants were specifically asked to identify the technical possibilities, but the NRA does have this policy that it prefers UV disinfection where disinfection is used.

Chairman

151. The next question may well be in the report, but how were the costs assessed for enterovirus removal?

(Mr Vaughan) I hope that the report, when the Committee actually looks at the detail of the sections of it, will illuminate how this has been done. Essentially the water companies made initial estimates, on the basis of guidance from consultants, which were then audited by Halcrow and in general what Halcrow have specified are what they believe is current best practice used in the industry, and the most up-to-date current best practice available in the industry. This has all been subject to audit by Halcrow.

Lord Pearson of Rannoch

152. I understand it has been audited by Halcrow, but in 4.4.3 of the executive summary you do touch on the errors associated with the cost calculations. To a humble businessman such as myself these do seem rather wide. They go as high as plus or minus 50 per cent. Surely we must have sufficient experience on the work which has already been done to get a little closer than that, perhaps even closer than the plus or minus 30 per cent which seems to be the going rate throughout this paragraph? Finally, an associated question: what element of profit is built in for the contractors in all these works, and how does that compare with levels of profit which are normally obtained in the private sector?

(Mr Vaughan) I am afraid, if I can start with your second question, I simply do not know the answer to that. On your first question, as you say, there is an allowance made, a pretty wide allowance made, for possible errors in this process. Halcrow have taken a view after lengthy discussions with the water industry and also the regulators that this is the firmest view in the circumstances they can come up with. What they have tried to do, again as the summary alludes to, is to identify a number of different areas where there could be error in the estimating process. One of them is simply the question of deciding which bathing waters might or might not pass the standards. For example, in the case of enterovirus the monitoring data currently available on enterovirus inevitably means that there is a degree of uncertainty about which waters will actually achieve these standards. There is also uncertainty in respect of which discharges will actually affect the waters which are being considered. Although there is in general good information about that, there are nevertheless some doubts in the final analysis as to whether all the discharges have been identified, and they have also sought to make allowance, as they said in the report, for possible inland upstream discharges and private and diffuse discharges. But the biggest error band, as you are saying, is the cost errors. All I can say from our point of view is that this is the view of Halcrow, which is a leading consultancy in this area, based on considerable discussions with the water industry and the regulators.

153. Is there any question of Halcrow themselves being involved with substantial work which flows from this Directive? Are we likely to be dealing in any way with a cost-plus element when paying for these projects?

(Mr Vaughan) It would be impossible for me to exclude the possibility of Halcrow, which is a leading engineering consultancy—

154. I accept that.

(Mr Vaughan) — being involved at some stage. I have no idea. My real answer, I suppose, is that we have a privatised water industry in England and Wales, and decisions about which consultants to use are entirely a matter for the water companies.

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[Continued]

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Similarly, the basis on which water companies employ consultants following privatisation is a matter for them, and not a matter which the Department seeks to dictate.

(*Mr Byrne*) I wonder if I can just comment on the cost calculation errors? I think we have to appreciate the nature of this study. It is not a study costing individual sewage treatment works. The design of those works will not be carried out until it is necessary in order to ensure compliance with a new Directive. It is a strategic study, trying to get a broad estimate of the cost, and of course there will be errors associated with it. It is a bit like saying, "We know we want to build a house with three bedrooms, but we are not entirely sure where the house is exactly going to be placed, and we are not entirely sure what materials we are going to use in building the house." So there are going to be error bands, and the error bands for cost calculation is plus or minus 30 per cent. For a study of this type, the advice we have received is that this error band is acceptable.

155. May I ask who gave that advice?

(*Mr Vaughan*) The advice we have received from the consultants.

Chairman

156. The WRC does not suggest zero symptom acquisition—conclusion 9—it suggests adequate protection. What do you mean by the word "adequate"?

(*Dr Hilton*) It is how long is a piece of string, is it not? I think it is made of two components. One is the absence of serious illness associated with bathing, and the second is the level of excess incidence of minor symptoms. I think it takes into consideration very much the minor nature of the symptoms, the self-limiting nature of the symptoms, but I think it also recognises there is an area of uncertainty around the predicted odds ratio, which does mean that one can at the end of the day say, "Perhaps all this is due to bias or confounding factors" however much one has attempted to take them into consideration. I acknowledge a lot of work has been done particularly in the analysis of the second part of the study to take that on board, but in the review we had on the epidemiological analysis our reviewers still took the view that you could not exclude those still being residual factors.

157. In fact would you expect there to be any improvement in the symptoms incidence after having these treatments? That is really the question to ask.

(*Dr Hilton*) I think we cannot be sure at this stage. There could be, and then again there might not be.

Lord Butterfield

158. I wanted to ask whether analysis of the hospital records in bathing resorts showed any changes in the admissions of, say, children with D and V in the

summer months, the holiday months? That is presumably something which epidemiological divisions could dig out fairly quickly. We are sensitive because we have recently had a question on the floor of the House as to why there has been this upsurge in the number of admissions to hospitals in the last year, and inevitably I wondered the extent to which that upsurge might have been due to diarrhoea and vomiting in resorts. Have you heard anything or has any study been done of the clinical admissions in Southend General Hospital, for example?

(*Dr Hilton*) I am not aware of any work of that sort.

Lord Butterfield] It seems to me it would be a good weekend task, if you could find somebody who would do it, just to get a site in shot.

Chairman

159. If we may go on: in your alternative D, that is existing standards but you have chosen to look at the faecal streptococci figure, why did you choose a value of 1,000 to 100 ml?

(*Mr Vaughan*) We chose that on the basis of previous years' monitoring data. As we explained previously to the Committee, we had been doing some monitoring already of faecal streptococci and on the basis of the monitoring data we came to the view that a value of around 1,000, for 95 per cent of samples, could be met in nearly all cases without further improvements. We also thought it would be useful to include this standard in Scenario D as a check on the estimating process. If the results of the study did not show very low costs for D then clearly something would have been awry. Also, going back to the EC Commission's own expressed aim, which is to provide a cost neutral revision of this Directive, we thought it would be interesting to try and identify what for the UK, in terms of the new imperative parameters, would be broadly speaking a cost neutral scenario.

Lord Butterfield

160. I wanted to insert another personal question before I go on to Questions 4(a) and (b). How much difference is the Urban Wastewater Directive going to make to what is demanded for bathing water? Is the Urban Wastewater Directive by 2005 going to give us much less polluted water? If that is so, should that not be taken into consideration by the planners and the calculators?

(*Mr Vaughan*) It will provide some benefits of that kind. In general in this country we have not had treatment at all, as you are aware, for coastal discharges, and a change of policy in that respect was announced a few years ago. What will be provided, improvements which will come under the Urban Wastewater Treatment Directive, are either primary treatment in some cases or secondary treatment, and both of those will in some degree improve the waters and take us towards the goal which is being costed here.

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[Continued]

Chairman

161. It will remove solids?

(Mr Vaughan) The various processes will remove solids. There will be a primary treatment phase with settlement and so on, and where there is secondary treatment as well it will take us yet further, but what it will not do, as Scenario A recognises, is take us all the way.

(Mr Byrne) The costs provided by Halcrow are costs in addition to the cost of implementing the Urban Wastewater Treatment Directive and the existing programme for complying with the existing Bathing Water Directive. So all the work that is needed in order to implement the Urban Wastewater Treatment Directive is assumed to have been carried out, and the additional cost of meeting the standards in the revised or proposed Directive on Bathing Waters are the ones quoted in the actual report.

162. I am sorry if I am making a meal out of this, but basically the consultants have had to produce figures on the grounds that "by the time we have got this going the actual water flowing into our sewage systems will by 2005 have been changed very considerably", so this is an awkward, I will not call it error, uncertainty at that level too, as I sense what you are telling me. Do we know for sure how well the urban wastewater projects are going to perform?

(Mr Byrne) We have a good knowledge of how the various processes which are required by the Urban Wastewater Treatment Directive will perform. We also know what the plans are in relation to individual discharges as to the level of treatments which will be provided by the Urban Wastewater Treatment Directive. There is a further stage to go through in relation to some of the discharges into coastal waters, in so far as the planned level of treatment has to be confirmed when a study of the receiving water has been carried out, but there are firm plans at the moment which will be hopefully confirmed by these studies.

163. This is a question from complete ignorance: will the Urban Wastewater Directive alter the levels of E coli and other organisms in the water which is going into the sewage farms?

(Mr Byrne) Yes. The treatment provided under the Urban Wastewater Treatment Directive will reduce the level of micro-organisms in the effluent which is discharged into coastal waters. The level in the coastal waters therefore will subsequently be reduced from the current level. Those reductions have been taken into account. They have been assumed to have taken place by the consultants in preparing their report on the additional costs of implementing a revised bathing water proposal.

Chairman

164. But it does mean therefore that as far as you are concerned there is no way you can start this operation

until the year 2005 for the country as a whole? There may be sites you can take on which have this primary and secondary treatment but there are going to be other areas which will not attain that particular state until 2005?

(Mr Byrne) I think that if the Government and other Member States signed up to a new Bathing Water Directive it will be necessary, in considering what is the appropriate timescale for implementation of that Bathing Water Directive, to consider how it will affect the plans to implement the Urban Wastewater Treatment Directive. But we have not come to any view and it would be wrong to come to a view before negotiations are under way.

165. But that would be a key question? Deciding the implementation would be a reconsideration of your timescale for the 2005 date?

(Mr Byrne) It would be a key question, yes.

166. Will full implementation of the original Directive actually occur by the end of 1995?

(Mr Bonsall) On the original 1976 Directive the bathing waters actually should have been in compliance by 1985, that is bathing waters identified at the time of adoption. For various reasons, many bathing waters were not identified in this country until 1987 and there has been a continuing discussion with the Commission over what sort of timescale should apply to bathing waters identified after the original period. Our plan is to achieve compliance as quickly as possible and we have at the moment many schemes being completed, the majority of which should be completed by the end of this year or shortly afterwards.

167. But that would still leave a certain number which will not be completed?

(Mr Vaughan) Yes, we have acknowledged publicly there will be a small number of large schemes which will not be completed by that date.

168. A small number of large schemes?

(Mr Vaughan) Well, not all large; a small number of schemes.

(Mr Bonsall) These are very complex schemes where it would have meant digging up all the sewers in a coastal resort all at once, in effect closing down the resort. It was felt to be impractical to do that sort of thing, and by and large the Commission agreed with that view.

(Mr Vaughan) We have told the Commission we will undertake this programme, the £2 billion programme, as quickly as practicable.

169. Have those beaches been identified for the public at large?

(Mr Vaughan) Yes. In every case the schemes where necessary are already planned or in progress, and some of them have been completed. Of course our actual compliance record against the existing Directive has been moved upwards.

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[Continued]

Lord Butterfield

170. Is the fact nothing happened in 1985 because there were not outcries, about people going on our bathing beaches all going sick, or the children going into hospital? The public health service in this country is regarded as one of the best in the world, and if we have an epidemic it is quickly picked up by the Public Health Service. I am asking the question, could we have quietly covered up a great lot of sickness from bathing so that nothing happened about it in 1985?

(*Mr Bonsale*) The evidence from the research is that these symptoms are not sufficiently serious to drive people into hospitals. They do not even consult their doctors more frequently. They do not take more days off work.

Chairman

171. Is it not partly because we only identified 27 beaches anyway?

(*Mr Vaughan*) Originally the Government did only identify 27 beaches, but it came to a different view in 1987.

Baroness Hilton of Eggardon

172. The survey was done in the winter anyway, when they had to count the number of people on the beaches. It was a nonsense. Could I take up the point about the sickness, because there is a lot of evidence, is there not, of children having minor illnesses as a result of bathing in water? There was a study in Lancashire. There is evidence of people having illness as a result of bathing in waters which are polluted with sewerage. It may not be an acute epidemic, as Lord Butterfield has suggested, but it is sub-acute and widespread.

(*Dr Hilton*) We do not know how widespread it is because one of the factors to be considered is how many people actually do go in the water, that is (a) how many people take UK holidays and (b) how many go in the water. The second point is that the study I think you are referring to, and other studies, are generally based on a small, local area and are often not well controlled. So you have a lot of illness reported, yes, but you do not know what the background level of illness is. Certainly the data we have from the WRC Study shows quite a surprising level of illness in people who were not going into the water. So those data must be taken with a degree of caution in their interpretation. It makes very good stories and there are plenty of anecdotal stories, as you are aware, of people becoming ill.

Baroness Gould of Potternewton

173. Is there any acceptance that children are much more likely to contract illness than adults? I appreciate there has been little study done amongst children. If there is that general acceptance, what

effort is going to be made to do a proper analysis in respect of children?

(*Dr Hilton*) On theoretical grounds one would expect children to be more likely to suffer symptoms if those symptoms are due to an infectious organism, because they are less likely to have already encountered the organism. They may also be more likely to develop symptoms because they are likely to stay in the sea for longer periods of time, and those symptoms will be due either to pollution and organisms causing infection, but also the general effect of being in sea water and the fact that causes a number of symptoms. We have data from the WRC Study on children from the age of 5 in the beach study which we are proposing to do further analysis of, and that is an area which is high on our list of priorities to look at. We have a little information from the cohort study because although people under 18 were not allowed to be included in the study there was an attempt to find out whether members of the family who were under 18 had suffered any illness, and although that data is rather soft and not many people were involved it does not suggest a hugely different incidence in infection. One interesting point to come out, going back to the WRC beach study, to bob about a bit, is that the highest level of symptoms seems to be in the 14 to 25 age group. That may well be explicable in terms of the exposure, and that is an area we need to look at. That is a question about the likelihood they will get symptoms. Whether those symptoms are more severe or have worse effects, I have no data on, and we may be able to get some data from further analysis of the study.

Lord Pearson of Rannoch

174. Forgive me if Dr Hilton has already covered this, but has any work been done into what might be the possible public health gains and losses for Scenario D, which seems to be very much the cheapest option, similarly for Scenario C, which is the next cheapest, and particularly is there any real danger of public health losses if Scenario D were to be adopted?

(*Dr Hilton*) Scenario D was designed to be a status quo, in other words not to require any additional work on beaches other than was already proposed to meet the existing Directive, therefore we would not anticipate there being any health effects either way from that scenario. Scenario C is homing in upon the faecal streptococcal standard and there we have a possibility of a reduction in incidence of symptoms but we cannot be sure that would happen. That could be predicted from the WRC Study if the results of that particular part of the study, ie the cohort study, were general to other beaches, but there is a reservation because that part of the study looked at four beaches and we do not know the model works for other beaches yet.

175. Has work been done on the cost of meeting the faecal streptococci 400 per 100 ml but leaving out the enterovirus standard?

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[Continued]

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(Dr Hilton) That was C.

176. I understand it was under C but I did not think Dr Hilton's answer was split between those.

(Mr Vaughan) What we have tried to do is isolate the effect of going for the enterovirus standard, and this is why instead of just having A we have gone for one without, which is virtually the same scenario but without the enterovirus standard.

Lord Dixon-Smith

177. Some £2 billion are to be spent in complying with the existing Bathing Water Directive. Can this cost be justified in public health terms?

(Mr Vaughan) I ought to say a word of explanation about the existing programme. There are a number of reasons perhaps why the public at large expects us to embark on the existing programme. There is a general recognition, it is fair to say, over the last 20 years perhaps, of increasing expectations by the public that we should have cleaner beaches. There was a general view, an increasing feeling, that our existing sewage infrastructure was not providing the kind of treatment for our bathing waters that the public was coming to expect. The other background to this of course is that we do have a legal obligation to do this work. It so happens that it is costing £2 billion. It might have cost something different, but essentially we are fulfilling, rather late in the day, a legal obligation.

178. Chairman, I accept the legal obligation and I accept the public's wish, but perhaps I could turn the question round. How would you justify it? If it were not a legal obligation and it were not perhaps a patently obvious public wish, we could have an argument with OFWAT on this one, I think, and we might question, if you like, the public's desire to have a standard, on the one hand, and not to pay for it, on the other. That is a debate which I think we shall go into on another occasion, but the fact of the matter is that in the end we do have to justify this because the alternative question is: have you considered a standard of water which, if you like, is so awful that bathing ought to be temporarily banned?

(Mr Vaughan) Well, as Mr Atkins explained to the Committee last year, he said he had reacted with horror to the notion that we should be banning bathing on our beaches. The feeling is that in this country at least it is not seen as acceptable that people would be stopped from bathing.

179. Can I ask you to go back to the question I asked you so that if in purely public health terms you cannot justify this, what justification can you put up and how do you attempt to do that?

(Mr Vaughan) Well, I do not know whether Dr Hilton wants to comment further on what I have said. It is right that we should draw attention to the fact that we have got this legal obligation and to the rise in public expectations and the fact that people feel they want cleaner beaches; and the public has a distaste now for seeing raw sewage discharging into our

coastal waters, in a way which perhaps did not apply a number of years ago. I do not know whether Dr Hilton wants to say anything more about the public health aspects.

(Dr Hilton) Yes, it is obviously difficult to quantify the public health benefit which has come about as a result of improvements made so far and the improvements which are in hand. However, the beach study did suggest that if you bathed in waters that did not meet the current standards, then there was an increase in the incidence of symptoms and, therefore, one could predict that the compliance with the current Directive has actually reduced the incidence of those symptoms. We do not have any data that suggests that it has prevented any severe illness, only that it has made the occurrence of what appear to be minor symptoms less frequent. However, there is a stage at which waters become so polluted with sewage that is not treated that depending on the level of illness in the community and the sort of pattern of different illnesses in the community, the chances of somebody becoming seriously ill as a result of bathing must increase and that must be a possibility when you have very polluted water.

Chairman

180. Can I just ask, there has been a banning of a national watersports centre, the one near Nottingham. How did the pollution levels there compare with pollution over our beaches?

(Mr Vaughan) I do not know whether any of my colleagues can comment on that.

(Dr Hilton) I do not have exact figures. I understand that it has happened twice now and certainly on an earlier occasion they were very much higher than the levels of compliance with the current Directive.

181. Perhaps you could write and let us have this information. I think that is probably the simplest way.

(Mr Bonsall) I understand the levels monitored at the water park are between ten and 100 times the present mandatory coliform standards.

182. For the beaches?

(Mr Bonsall) Yes.

Baroness Park of Monmouth

183. My Lord Chairman, I would like to get something straight. As I understand it, OFWAT and the regulator are getting fairly unhappy, are they not, in some areas because naturally if you live near the sea, you are going to have high bills to do this and if you do not live near the sea, you are not presumably. Supposing that there is strong resistance by OFWAT, as I understand it, the NRA would then step in and there would be an appeal which would come to you and because of the legal obligation, I suppose you would have absolutely no choice but to insist, but that seems to me to make it all the more important that we are quite sure that the standards and the criteria which

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[Continued]

Baroness Park of Monmouth *Contd*]

the Commission wish to apply really are the right ones. I wonder whether you could give me any idea how you think it is going to go. Are Ministers, once they have made up their minds, going to go back to the Commission and say, "This is our cost assessment. It is pretty solid. Is everyone going to do that?" What is the sort of timing going to be? Are we going to get perhaps reasonably another two or three years to do this more gradually because of practical considerations like that?

(*Mr Vaughan*) Clearly there are a number of questions there. On the immediate timing, as the Committee probably knows, the European Parliament has told the Commission that it is not prepared to do further work at the moment on this proposal. We understand that the European Parliament Environment Committee is not happy that the Commission have provided sufficient justification for its proposal. I also understand that the European Parliament Environment Committee is going to have a hearing later this year, probably about June, looking at a number of proposals which the Commission has brought forward on Water Directives. Also the French Presidency has not chosen to take this proposal forward, so clearly there is no discussion in Council at the moment and one of the uncertainties is which Presidency will decide to proceed with this. We simply do not know enough about the plans of the Spanish Presidency to know whether or not they will do so. We will certainly want to take advantage of that extra bit of time in the United Kingdom to lay before the Commission and other Member States as much information as we can. We are not aware that other Member States have done—certainly the Commission has not—similar cost estimates. But we will certainly endeavour to find out if they have done any and we will probably want to share results of the work we have done with other Member States. So we hope to make good use of that time. On your point about OFWAT, the formal position must remain that OFWAT, whatever private view OFWAT might have about the desirability of a particular standard, is obliged, has a statutory obligation, to fund water companies' expenditure, in the proper carrying out of their functions. Ian Byatt has certainly been very happy to make views known in the public debate on standards, but at the end of the day he recognises, OFWAT recognises, that if the Government has actually signed up to a new Directive, this obligation will fall to water companies and it will have to be taken into account in any price determinations he makes. So we would not have a situation where OFWAT were refusing to fund the legal obligation; they would simply do so.

Lord Pearson of Rannoch

184. My Lord Chairman, could I ask Mr Vaughan if any progress has been made by his Department or the Department of Health since we last met, not just in trying to discover what cost assessments have been made by other countries of the Community, but actually how much money has already been spent by

the other countries of the Community and with what effect, what genuine effect, bearing in mind, as I think we agreed in the first stage of our enquiry, that these Directives are only justifiable—well, I think it is doubtful whether the Urban Waste Water Treatment Directive is justifiable, but the Bathing Water Directive is only justifiable, if at all, by reason of the scale or effects of the proposed action under Article 3B of the Maastricht Treaty. Are our Government pressing their colleagues in the European Community to know what they are up to and, if not, why not?

(*Mr Vaughan*) We try to have as many bilateral contacts as we can with other Member States and we try to talk generally with other Member States to find out what they think about the proposals from the Commission on Water Directives. We also try and enlist their support.

185. My Lord Chairman, is this not a duty of the Commission under the Maastricht Treaty?

(*Mr Vaughan*) I am not quite sure I understand your point.

186. Article 130R, the cost compliance assessment of Environmental Directives.

(*Mr Vaughan*) Yes.

187. So are we pressing the Commission to fulfil that duty, or are we not?

(*Mr Vaughan*) Well, we have pressed the Commission and have asked the Commission. We draw its attention, wherever appropriate, to that Treaty obligation, and I am sure that the Commission must be itself aware of that obligation. In this particular case the Commission came to the view that its proposals were cost-neutral. We believe that is wrong.

Chairman

188. This is the new proposals?

(*Mr Vaughan*) Yes.

189. But that was, I understand, based on the costing of the testing rather than the costing of the implementation.

(*Mr Vaughan*) Well, our understanding is that the Commission believed that the total package of the costs and the implementation costs would also broadly be cost-neutral. That is the implication and that is the inference we drew ourselves from the Commission's Explanatory Memorandum.

190. Well, this does bring up a point I wanted to ask earlier. How much do we actually spend at the moment on the testing for enterovirus? We do test in this country and many countries do not, but what is the costing at the moment of that particular one?

(*Mr Bonsall*) It is in the region of £27,000, I think, on enterovirus testing.

191. That is for the country as a whole or for beaches?

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[Continued

Chairman Contd]

(Mr Bonsall) For the ones that are done. Not all beaches are tested for enteroviruses at present.

192. So it is done twice a year?

(Mr Bonsall) It is done twice a year on, I think, about 200 beaches. As a minimum, those beaches that fail the standards the previous year are tested again in the following season.

Lord Butterfield

193. Could we press you about whether it is done in Europe?

(Mr Vaughan) Well, we can tell you.

Chairman

194. Well, I think we would like two questions answered. I would certainly like to know something that Lord Pearson has brought up. Do we know anything about the equivalent figures to this £2 billion that we are expending for other countries in Europe?

(Mr Vaughan) We have got no firm information there.

Lord Pearson of Rannoch

195. And, my Lord Chairman, also what has been done with the existing Directive because if other countries are going to spend a similar figure having done nothing in the past, the whole object of the exercise falls away if any of us want to go and swim in Italy or France or wherever.

(Mr Vaughan) As to what other countries have done, we have got information from the reports which the Commission produces every year on other countries' compliance with the Bathing Water Directive. Those are designed to show a comparative view about how countries are doing.

196. And what they are spending?

(Mr Vaughan) Not about what they are spending.

Baroness Park of Monmouth] That will be the acid test.

Viscount Bridgeman

197. My Lord Chairman, as a matter of Community politics, you say the French have not been too enthusiastic, but I think we have Spain and Italy following, do we not?

(Mr Vaughan) Yes.

198. Is it expected that they will give it any higher priority?

(Mr Vaughan) I really do not know. It is unlikely, we think, but we simply do not know at the moment.

Baroness Hilton of Eggardon

199. It is possible they are starting from a higher base of course.

(Mr Vaughan) Well, if one looks at the Commission's reports, every year the Commission produces information which at least purports to show how individual countries are doing on compliance.

Baroness Gould of Potternewton

200. I wonder if I could just go back to the £2 billion. Now, appreciating the importance of understanding what other countries are doing, I am a little concerned about what we are doing with our £2 billion and whether in fact, putting a slightly different emphasis on it from Lord Dixon-Smith's question as to whether the costs can be justified in public health terms, whether in fact at the same time we are finding that the number of beaches which are not meeting the minimum legal standards is actually increasing. How are we actually using this £2 billion in order to prevent that happening?

(Mr Vaughan) No, the number of beaches not meeting the standards is not increasing. What we are seeing is fairly steady progress over a number of years and improvements in our compliance. There has been no falling back in our compliance record in meeting the mandatory standards.

201. Well, that is something I will follow through because according to the figures released by the Department of the Environment, in fact the number of beaches that had not met the minimum legal standards has in fact increased.

(Mr Vaughan) Certainly our overall compliance has been improving over a number of years and has not been going down.

Viscount Bridgeman

202. My Lord Chairman, can I just clarify this for a moment in my own mind, and I think Mr Byrne may have answered this. Is it a practical proposition to rely very largely on the Urban Waste Water Treatment Directive, as it were, to take up the pollution question in the context of this present Directive?

(Mr Byrne) In terms of the standards for bathing waters proposed in the Commission's latest draft Directive, the answer is no. The Urban Waste Water Treatment Directive will not deliver those water quality standards.

Chairman

203. But if you had not got the urban waste water treatment programme going, you would have had to have included it in the costing to have complied with these particular standards?

(Mr Byrne) Absolutely right.

Viscount Bridgeman] And there would have been an extra cost involved.

Chairman

204. Yes.

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[Continued]

Chairman Contd]

(Mr Vaughan) My Lord Chairman, there was one other question which we did not answer. One Member of the Committee was asking about monitoring of the enterovirus standards in Europe. I understand that in 1993 the Commission reported that the United Kingdom monitored 199 sea bathing waters while the rest of the Community in total monitored 90, of which 85 were Spanish. Italy did four and Ireland one.

Lord Butterfield

205. The absence of tides in the Mediterranean will make the Mediterranean countries a bit cautious about sampling for viruses, I suspect.

(Mr Vaughan) Well, I am not sure why other countries have not, but those are the published figures by the Commission.

Chairman

206. Can I be clear that in all your suggestions, other than the final D which was taken from the existing Directive, you are including UV as the ideal method of dealing with the final treatment stage. Is that right?

(Mr Vaughan) Yes. The consultants have costed on the basis of disinfection of some discharges and the assumption, based on the NRA's view, is that we would be going for UV. As far as the actual technology is concerned and the engineering of all of this, the consultants take the view that chemical treatment would do the job, but we are, in practice, based on the NRA's view, assuming that UV would be the preferred option.

207. But in the initial suggestions, I think it must have been in the Urban Waste Water Treatment Directive, you were going to have long sea outfalls which presumably you will no longer require if you do this sort of treatment. How much money would you save by stopping that, or would you not stop it?

(Mr Vaughan) I do not know if Mr Byrne can comment on that.

(Mr Byrne) What we have done so far in implementing the Urban Waste Water Treatment Directive is identify for a number of coastal areas high natural dispersion areas. For the discharges going into those areas, the requirement of the Urban Waste Water Treatment Directive is to provide at least primary treatment. Now, you obviously cannot discharge primary treated effluent on to a beach, so, therefore, you need some form of outfall. The length of that outfall will be determined by such things as need to comply with the existing Bathing Water Directive, but also other factors such as the prevention of slick-formation. Now, all the Government has done is say, "We believe, on the basis of the advice from the NRA, that in these locations primary treatment plus a suitable outfall would be sufficient", but it is for the companies to decide, with the National Rivers Authority, whether

it is more cost-effective to provide secondary treatment and a shorter outfall. There is a balance here which one cannot make general statements about because it very much depends on dispersion characteristics and the geology of the seabed. Now, if we were to come along in 2005, just for the purpose of hypothesis, and implement a new Bathing Water Directive based on the standards in the Commission's draft, then clearly we will have to provide higher levels of sewage treatment and, in the case of Scenario A, micro-filtration and UV. If the existing outfall is sufficiently long and provides good dispersion, the performance of the additional further treatment methods can be adjusted so that the outcome in terms of effluent quality is sufficient to meet the new bathing water proposal. But it is a bit difficult to make generalised statements about whether you would be having a cost saving in terms of reduced lengths of outfall if you did it now rather than wait until some date post 2005 when you have completed the Urban Waste Water Treatment Directive. It is all very hypothetical, and given that we do not really know what standards will be applied in the draft Directive or in the agreed Directive, it is very difficult to make any definitive statement, but, as I think you, my Lord Chairman, rightly pointed out earlier on, the timing is a key element of the implementation of both programmes.

208. But it does seem to me then that there is a real danger that we may end up, when we implement the Directive, if it comes in too late and it insists on the enterovirus problem, that we are going to have to use UV, we are going to have to use secondary treatment, and that we may well then have to undo some of the arrangements if they have already been put in force of the other Directive.

(Mr Vaughan) I would hope, my Lord Chairman, that we would actually have better information. There is uncertainty at the moment in the short term as to which Presidency is going to take this Directive forward, and what will happen in Brussels with this Directive. Bearing in mind that the deadlines for the Urban Waste Water Treatment Directive are 1998, 2000 and 2005, i.e. they are still some way off, I would certainly hope that we would be able to have some firmer information about whether or not Member States were going to sign up to a set of proposals like this in which could require UV disinfection. I cannot be certain when, but I would certainly hope that in the next year or so we would know.

209. In point of fact, there is a real point here, is there not, that at the moment there are going to be long sea outfalls as part of your present strategy and in fact it could be in contest with this particular type of legislation? I know that that can apply to so many different things, but here we have something quite concrete which may well go through, so there is an element of urgency from your planning point of view to get an answer to this particular question.

(Mr Vaughan) Yes.

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[Continued]

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Chairman] Otherwise, it could involve us with the expenditure of significant amounts of money which could be, in no other words but, wasted.

Lord Pearson of Rannoch

210. By the same token, my Lord Chairman, I think I understood Mr Bonsall to say that the Urban Waste Water Treatment Directive was really only providing primary treatment for the effluent which was presumably going to end up in the sea and that was presumably one of the objects of the exercise, so would any of our witnesses care to comment on whether we have actually wasted quite a lot of money on the Urban Waste Water Treatment Directive when I understand we have spent rather more than £7,000 million on that and rather less than £2,000 million so far on the Bathing Water Directive? It seems to me we have spent an awful lot of money on the Urban Waste Water Treatment Directive for, unless I have misunderstood the position, comparatively little gain.

(Mr Vaughan) But, my Lord, there is a timing point here, given that the deadlines of the Urban Waste Water Treatment Directive are still a number of years off. We have not actually incurred that expenditure. This is all planned expenditure at the moment.

211. It is the budget though, over £7,000 million.

(Mr Vaughan) This is planned expenditure at the moment, yes, and the total for the United Kingdom as a best estimate is £8 billion, but we have not actually incurred that at the moment. The process of spending that money will take a number of years and where there are deadlines of 2005, quite a lot of the expenditure will be quite a number of years away.

Chairman

212. But the year 2005 arises, if I may say, because that is the date on which you choose to finish that particular programme. If that programme were moved forward to 2000, then indeed you would implement this other programme in 2000, if I understand your reasoning.

(Mr Vaughan) Well, I think we are getting perhaps into some rather hypothetical areas because Ministers might take the view, our Ministers, and maybe other Governments, for example, that they do not want this enterovirus requirement in this Directive which could fundamentally alter the situation.

213. But it does seem to me what you are saying is that it is a question which ought to be answered as soon as possible.

(Mr Vaughan) Certainly we would want to but it would depend on the view that European Environment Ministers eventually take. The Commission has been sent back, so to speak, to the drawing board in some respects at the moment. I gather it is taking fresh advice, scientific advice, and it is also considering its position on this set of proposals, so we would certainly see the value in taking a bit of time over that. On the other hand, if

our Ministers did decide that they wanted to support a set of proposals, they would not want, all other things being equal, to argue for a lot of delay for the sake of it.

Baroness Hilton of Eggardon

214. I do not understand why we have to wait for Europe for some of this treatment. Why can we not go for UV treatment and, therefore, perhaps not have so many long sea outfalls and so on if that is going to be an unnecessary cost? Why can we not go for something which we know will produce better results in terms of getting rid of bacteria and viruses and why do we have to wait endlessly for European Directives in terms of having cleaner water going into our rivers and the sea and so on?

(Mr Vaughan) You are getting into some quite important areas of policy in those questions, but I think that Ministers would want to look both at any likely benefits and also at costs. They would, I would have thought, expect that any benefits should be commensurate with the costs and all the indications are at the moment that they are going to be very substantial costs.

215. But we might save some costs, might we not?

(Mr Vaughan) There might be some room for manoeuvre, but, nevertheless, we would be talking about a large block of extra expenditure over and above the expenditure which has recently been programmed in by Ian Byatt in setting his price limits.

Lord Dixon-Smith] The reason for sea outfalls is quite simple; it is a vastly cheaper way of disposing of sewage.

Baroness Hilton of Eggardon] It is purely aesthetic, is it not?

Lord Dixon-Smith] I would certainly take the view that it would be better to establish the higher standards of treatment from the start and I would personally be very happy if there was not a single long sea outfall from this country.

Baroness Hilton of Eggardon] But if you look at what Cornwall is doing, it is an enormously expensive project. It is not a cheap option in Cornwall and that will really deliver only primary treatment. It is an enormous tunnel they are boring through Cornwall, not just a cheap pipe running out to sea.

Baroness Park of Monmouth

216. My Lord Chairman, could I just leave with Mr Vaughan one question which he may already know the answer to. I seem to remember that before we were rather taken aback to find that the Commission's procedures did not allow us to know where the scientific advice came from. Do we this time, since they are now taking fresh advice, know who they are consulting now and what do we think about the people they are consulting?

(Mr Vaughan) I may be wrong, but I believe that they are taking some advice from Professor Kay!

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[Continued]

Lord Pearson of Rannoch

217. I am sorry to press on the question of the balance of the costs of these things, but it does seem to me that there might be a case for sending both Directives back to the drawing board because both of these Directives have the same objective at the end of the day and as we seem to be spending, you tell me now, Mr Vaughan, £8 billion on the Urban Waste Water Treatment Directive and only £2 billion on the Bathing Water Directive, surely would it not be sensible to combine the two and to look at them and see if we can get the result by cheaper methods, the results which we all look for?

(Mr Vaughan) Just on a point of fact, my Lord, it may not seem much of a difference, but the actual total figure is some 9.5 rather than 8 plus 2.

218. Those were my original figures and I took them from what you said on the 8 as opposed to rather more than the 7.

(Mr Vaughan) I accept it is slightly confusing, but it is actually around 9.5.

Chairman

219. And the 9.5 is for both?

(Mr Vaughan) For both, for the existing planned programmes, both the existing ones. We provided the Committee with the breakdown last autumn which sets out all the figures. On your second point about going back to the drawing board on the Urban Waste Water Treatment Directive, that would be a very big step. What our Ministers have been arguing is that they think that there is a case for allowing more flexibility within the deadlines, but because the United Kingdom only signed up to the Urban Waste Water Treatment Directive a few years ago, they have not felt that they would want to argue for a complete redrafting of that Directive. However they do want to try and mitigate the cost burden by arguing the case in Europe for more flexibility in the deadlines.

(Mr Byrne) Can I just add one point which I think it is important to bear in mind. The figures quoted for the implementation of the Urban Waste Water Treatment Directive are not solely about providing sewage treatment at coastal locations. There is an enormous amount of work involved in implementing other aspects of the Urban Waste Water Treatment Directive. For instance, in relation to fresh waters there is the improvement of existing sewage treatment works and the provision and proper maintenance of collecting systems or sewers. The coastal sewage treatment element is only a proportion of the total figure.

220. And do we know that proportion?

(Mr Vaughan) I think we gave it to you in the figures, my Lord Chairman. The figures we gave you identified the coastal discharges element.

(Mr Byrne) One other factor is sludge disposal. I also think we might be getting out of proportion the

potential cost savings by going for full treatment or "the full works", as Mr Vaughan described it, earlier today. I think you have to consider that by identifying HNDAs, the Government did not say that the required level of treatment is primary treatment and long sea outfall. It did not say that at all. What it did was give the option for that level of treatment. If there are potential cost savings involved in going for full treatment at an earlier date, and I emphasise the "if", then it is in relation to the length of the outfall. A ready reckoner of cost that I have heard quoted is about £1 million a kilometre. If you consider how many outfalls may be involved and how much saving you might achieve per outfall, then in the overall context of the £9.5 billion, I suggest that the potential saving may not be so large as people might suggest.

221. Do we have any idea what the water failures are due to diffuse and other sources and how much of a problem this is?

(Mr Vaughan) Well, the consultants have taken the general view, and it seems to be a general view anyway in the water industry and that taken by the regulators, that the primary reason for failures is connected with sewage discharges. Therefore, the costs will fall to the water companies. But they have tried in their report to make some allowance for these other sources and they have put in a figure of 5 per cent. Overwhelmingly however, the costs seem to fall on the water industry.

Lord Butterfield

222. I was wondering, my Lord Chairman, whether I could say that there are some questions which we did not delve into, and I know these people are very busy, but would it be possible to ask them to let us have information about question 4(a) and (b), and maybe question 6 about the abnormal peak values?

(Mr Vaughan) If you want us to pick up any questions that you have not had a chance to ask us this morning, perhaps I could have a word with Mr Goddard.

Chairman] Yes, thank you very much indeed. That is very kind of you.

Baroness Gould of Potternewton] I was going to say a similar thing about question 9 because I am not at all sure exactly what the implications of this are both in terms of costing and also in terms of health, and I am not certain whether this is the same situation as the position that the City of Hull has found itself in, and the question of whether there is a loophole in the Act which has allowed the Minister not in fact to ensure that the Urban Waste Water Treatment Directive is carried through. Therefore, I am wondering if it is possible to have an answer to those particular questions, not now, but perhaps in writing.

Chairman] Well, we can arrange for these questions to be answered. Can I just say thank you very much indeed. I think we have kept you much longer than we anticipated, but I think it has been extremely useful to us.

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[Continued

**Supplementary memorandum by the Department of the Environment
and the Department of Health**

1. *Scenario C omits the enterovirus standard. Would you foresee any public health loss from omitting this standard?*

As the Select Committee concluded in its report, the uncertainty and complexity of the enterovirus test make it unsuitable for this parameter to be given an Imperative value. It is not a reliable guide to water quality or possible effects on public health and, provided other reliable indicators are used and appropriate standards set, there would be no public health loss from omitting the standard.

2. *If not, why does the United Kingdom persist in testing for enteroviruses? Do any other Member States regularly test for enteroviruses? What is the present cost of testing for enteroviruses?*

The present Directive requires that enteroviruses be monitored "when an inspection of the bathing area shows that the substance may be present or that the quality of the water has deteriorated". There is thus an obligation to monitor in some circumstances but the requirement is not clear. The United Kingdom interpretation, which has not been questioned by the Commission, is to check for enteroviruses twice a season at bathing waters which failed the mandatory coliform standards in the previous year.

The annual report by the EC Commission on bathing waters provides information on the extent of monitoring by other Member States. The majority of other Member State do not regularly monitor for enteroviruses. The most recent report, for 1993, shows that the United Kingdom monitored 199 sea bathing waters while the rest of the Community monitored 90 (Spain 85, Italy 4 and Ireland 1).

In 1993, the NRA estimated that the cost of enterovirus monitoring of bathing waters in England and Wales was in the region of £27,000.

3. *Why in your scenarios have you chosen to disregard the option to retest after Abnormal Peak Values (APV) for faecal streptococci?*

We were not sure of the interpretation of the relevant footnote in the Commission's proposal. In particular, there was no guidance in their explanatory memorandum as to what was to be considered as an abnormal value. It was also unclear in the memorandum why this provision should apply only to the faecal streptococci parameter. The Department considered that it was desirable to have as much clarity as possible in establishing cost scenarios. Given the uncertainty and doubts, we considered it unwise to base scenario C on this option. Scenario D does, however, reflect a possible interpretation of it.

4. *If you took up the option of re-testing after APVs for faecal streptococci what cost-savings would be achieved?*

The overall costs of the proposed Directive would not be reduced, since the enterovirus parameter is the cost driver. However, if this parameter were to be excluded, inspection of monitoring data for faecal streptococci suggest that if all samples above 400/100ml were disregarded and the next result substituted - one possible interpretation of the footnote - then there would be very few non-compliant waters. In these circumstances the saving would be broadly the difference between scenarios C and D. Monitoring costs would increase if the APV option were used because extra flexibility would need to be introduced into the sampling schedules.

5. *The combined estimates for meeting the requirements of the current Bathing Water Directive and Urban Wastewater Treatment Directive (UWWTD) is approximately £9.5 billion. There is some controversy over the designation of High Natural Dispersion Areas (HNDAs), with large areas of coastline coming under that designation. Discharges into such designated areas will require only primary treatment. Would the additional expenditure due to the proposed Bathing Water Directive be significantly reduced if the policy on HNDAs in the UWWTD were to be more stringently applied?*

At any particular location the regulatory authority will require at least the UWWTD Directive's minimum requirements, taking into account the sensitivity status of the receiving water and the population size. The regulatory authority may in some cases set more stringent requirements to fulfil other EC obligations (eg the Bathing Water Directive) or other legal obligations. The sewerage undertaker may also choose to provide more stringent treatment than required by the regulations. The UWWTD allows primary treatment as a minimum for discharges to HNDAs, provided that there are suitable outfall arrangements, to ensure compliance with the existing Bathing Water and other Directives. In some cases treatment to secondary level with outfall

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arrangements providing less dilution may be more cost effective, particularly where outfall construction costs are high.

A future change in bathing water quality standards could in some cases alter the least cost balance between level of treatment provided and the length and location of the outfall. The new balance would depend on the standards to be met. The Halcrow cost study makes a number of engineering assumptions for each scenario about the level of treatment required for discharges within certain distances of the bathing waters. For example in scenario A, if the outfall discharged more than 2 km from the bathing water, disinfection of a secondary effluent would not be required. Conversely for the less stringent scenario C, disinfection of a secondary effluent discharged within 1 km would be required. Therefore, in some cases the provision of a long outfall under the UWWTD programme could, on the assumptions made by the consultants, lead to savings on treatment to meet more exacting bathing water standards. In other cases additional levels of treatment could be required and with it a shorter outfall might suffice. Quantification of the overall effect for the various scenarios would require further study.

In the decisions on treatment levels which need to be taken for current investment programmes, it would not be justified to anticipate as definite all the possible new proposals which might arise at some time in the future, some of which might impose large additional costs. But it is important for the community to ensure that full account is taken of the complex relationships between directives and the timescales for implementation, so that abortive work is avoided and the scope and pace of investment programmes can be planned efficiently.

6. How do the pollution levels at the National Watersports Centre at Holme Pierrepont compare with the standards for bathing waters?

Water quality at the watersports centre is monitored by the Nottingham laboratory of the Public Health Laboratory Service. We understand that levels of faecal coliforms in the canoe slalom facilities range from within the imperative standard of the Bathing Water Directive to at least an order of magnitude higher. Following complaints about water quality late in 1994, on the advice of the local authority, the management have closed the canoe slalom facilities during periods of very high water flow. High levels of water flow here have been associated with high levels of faecal coliforms.

10 March 1995

WEDNESDAY 1 MARCH 1995

Present:

Bridgeman, V.
Butterfield, L.
Dixon-Smith, L.
Gould of Potternewton, B.
Hilton of Eggardon, B.

Lewis of Newnham, L. (Chairman)
Nicol, B.
Park of Monmouth, B.
Pearson of Rannoch, L.

Memorandum by the Water Services Association of England and Wales

1. Introduction

The United Kingdom water industry is committed to play its full part in the protection of designated bathing waters. Major investments to secure this goal have been or are being made under the current Bathing Water Directive. The industry also supports the updating of legislative and other controls to take account of improvements in scientific knowledge when the environmental and public health benefits are evident and affordable.

The Sewerage Undertakers of England and Wales have assessed the cost of complying with the various scenarios identified by the Department of the Environment and using the guideline instructions prepared by the consultants Halcrow.

Given the timescale associated with the exercise a "broad brush" approach was used, the intention being to identify the order of costs over and above those associated with meeting existing legislation. It was assumed that the investment already identified to meet the existing Bathing Water Directive and Urban Wastewater Treatment Directive would already have been implemented, and hence the further investment to meet the various scenarios would follow on.

Sewerage systems are complex and it is often difficult to decide, let alone cost, appropriate improvements. For example, identifying the effect upon bathing water compliance of sewerage discharges to inland waters is very complex so that no detailed consideration could be given to costing improvements to discharges upstream of tidal waters. Likewise knowledge of stormwater overflow systems and the bacterial impact of discharges from them is still uncertain, making costing, especially on the more stringent scenarios, difficult.

Once the revised Bathing Water Directive has been agreed it will be necessary to undertake detailed costing of the required implementation programme and to evaluate its impact upon programmes already agreed. Often detailed changes can have major implications.

2. Meeting the Mandatory Requirements of the Present Bathing Water Directive (excluding enterovirus)

The further investment to sewerage undertakers' discharges to facilitate compliance with the mandatory standard in the existing Directive (DOE scenario D) is seen to be small (up to £40 million).

The WSA estimate of the point at which no major new investment would be needed was 1200 F.strep. Scenario D assumes a F.strep standard of 1000.

It is pleasing to see that the companies' current programme to meet the requirements of the existing Bathing Water Directive and Urban Wastewater Treatment Directive are confirmed as broadly being adequate for this scenario.

It should be stressed, however, that this does not mean that there will be no bathing water quality failures after completion of the present programmes. Private discharges, riverine discharges and diffuse pollution will inevitably mean that the possibility of some failures will remain. It may be difficult to identify the causes of such failures and to prevent them.

3. Meeting the Proposed 400 F.Strep Standard (excluding enterovirus)

The introduction in the proposed Bathing Water Directive of a Faecal streptococci standard of 400 per 100ml (DOE Scenarios C) is clearly not cost neutral, and therefore reflects a further tightening of standards.

The additional cost of improving sewerage undertakers' discharges to meet this scenario is up to £1100 million.

Further consideration of the relationship between bathing water quality standards and the level of health protection is necessary to ensure adequate benefit vs. cost and to have confidence that further investment is worthwhile.

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The introduction of a second microbiological parameter (*F. strep*) increases the chance of failure and hence the difficulty of predicting the level of investment required. The parameters tend to operate independently of one another, causing a greater level of failure risk than if only a single parameter was used.

Due to the slower decay rate of Faecal streptococci in the aquatic environment (compared with *E. coli*) and the tighter standard, the risk of non compliance due to private, riverine and diffuse sources is greater than for Scenario D.

4. Meeting the "Zero Enterovirus" Standard

The estimated cost of providing further treatment and disinfection of sewage discharges to tidal waters towards meeting the "zero enterovirus" standard (DOE Scenario A) may be up to £4000 million over and above that already funded.

Sewerage undertakers do not expect compliance with the "zero enterovirus" standard to be achievable even if the very considerable further investment indicated were to proceed.

The effect of discharges to inland waters can be significant and further investment over that identified may be necessary. Private discharges (eg hotels, caravan sites) to tidal waters may also be locally significant and would require to be improved in the same time scale to reduce the risk of failure.

Diffuse sources of pollution such as water run-off from urban and agricultural land, riverine inputs, discharges from shipping etc. can also affect bathing water quality. Some of these sources are impractical to deal with and will continue to be a cause of non-compliance.

It should be remembered that measurement of enterovirus is difficult and unreliable. Non-compliance may occur as a result of analytical error or analytical error could provide the illusion of compliance. These factors reduce the confidence of enterovirus as a parameter for judging investment levels.

The significant further cost of improving sewerage undertakers installations, in the light of the expectation that the standard will not be reliably achieved nor that it will bring about significant improvement in public health protection suggests the expenditure would not be efficient.

5. Meeting the Guideline Standards (excluding enterovirus) of the current Bathing Water Directive

The estimated cost of meeting the "guideline" standard (DOE Scenario B) may be up to £2600 million, however the sewerage undertakers doubt whether this would achieve full compliance for much the same reasons as given for Scenario A, ie private, riverine and diffuse discharges.

The additional level of health protection provided by the "guideline" standard is uncertain and the further benefit from such a significant investment is therefore dubious.

Conclusions

The main issue is the need to identify bathing water standards which provide an acceptable level of health protection. This relationship between bathing water quality and the level of health protection is important to allow an appropriate assessment of benefit vs. cost and therefore to give confidence in the appropriate level of required further investment, if any.

It is important that the ability to achieve a "zero enterovirus" standard is further considered. The very significant further cost of improving sewerage undertakers installations in the light of the expectation that the standard will not be achieved, nor public health significantly improved, makes the value of such a standard at best dubious.

Riverine and other direct discharges can affect bathing water quality, and therefore the compliance statistics. These have not been costed in much detail in the current exercise.

The effect of private discharges (eg hotels) on bathing water quality, which can be locally significant, must be remembered. There is a need to ensure that these are identified and improved as necessary.

Diffuse sources of pollution, such as surface water run off from both rural and urban areas, from shipping, beach use etc. can affect bathing water compliance. Even for the present standards it is likely that bathing water quality failures may occur which cannot be attributed to other than diffuse or riverine sources. With the more stringent standards these will have increasing significance. Some of these sources are impractical to deal with and will continue in some cases to cause non-compliance.

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[Continued

Given the significant further investment indicated, over and above the agreed programmes to meet the present Bathing Water Directive and Urban Wastewater Treatment Directive requirements, it is important that any tightening of bathing water quality standards should provide adequate health protection, demonstrating measurable further health gain without excessive cost.

24 February 1995

Examination of Witnesses

MR RICHARD CLAYTON, Quality Director, Southern Water, MR BOB BATY, Engineering Director, South West Water, MR BOB PRICE, Director of Water Quality, Anglian Water, called in and examined.

Chairman

433. May I first of all thank you for coming along to speak to us. I think you fully understand what we are trying to do on this occasion. Would one of you like to give us an overview or would you like to go into some general questioning?

(Mr Clayton) I would like, if it is at all possible, to provide a brief introduction to the team and also to introduce the issue, my Lord Chairman. My name is Richard Clayton. I am Quality Director for Southern Water Services. On my left I have Mr Bob Price, who is Director of Water Quality from Anglian Water Services, and on my right I have Mr Bob Baty of South West Water, Engineering Director. There are one or two points that I would like to make by way of introduction, my Lord Chairman. Firstly, the water companies have been pleased to participate fully in the costing exercise initiated by the Department of the Environment and support the conclusions that have been reached in the final report. There are one or two assumptions, I believe, that it is important to highlight. Firstly, that the costing with regard to sewerage undertakers' discharges was related to discharges into tidal waters. No detailed assessment was made with regard to any discharges upstream because of the complex inter-relationship between those discharges and the effect of bathing water quality at designated bathing waters. An allowance, though, was made by Halcrow in the overall cost estimates. The next assumption was with regard to the number of designated bathing waters. Clearly we had in our mind the designated bathing waters that currently exist. We have not considered any others that might be added or any other bathing waters that currently are not designated. The third important assumption is on the basis that the Bathing Water Directive is about bathing water quality and not about recreational water. There is quite a significant difference between the two, as you probably appreciate. We were pleased to see that scenario D is broadly cost neutral. I think The Water Services Association had indicated at an earlier time that it would have expected cost neutrality, with a faecal streptococci value of somewhere between 1,000 and, say, 1,400 or 1,600. We are pleased to see scenario D is broadly cost neutral. I think the next point I would like to make is that if there is a need for further tightening of bathing water standards there is a need to have a very clear relationship between the benefit that is gained in respect of the reduction in public

health risks and the investment that needs to be made. A delicate balance needs to be considered as to what change, if any, is required in that context. The third and last significant point is that the companies have some concern about the ability to meet the scenario A requirements, i.e. the enterovirus standard just as a result of providing further treatment at the sewerage discharges facilities. To an extent that comment also applies to scenario B. The reason for the concern clearly is as a consequence of the other discharges, the diffuse and riverine inputs into bathing waters which can have an effect upon water quality. We would just like to stress that bathing water quality compliance cannot be guaranteed just as a consequence of improvements to sewerage discharges. Those, my Lord Chairman, are the introductory remarks that we would like to make.

434. Thank you very very much indeed, Mr Clayton. Do you dissent in any way from either the Halcrow Report or the OFWAT figures estimating the water charges?

(Mr Clayton) The figures that have been put forward in the Halcrow Report, my Lord Chairman, relate to the cost of improvements at sewerage undertakers' discharges in relation to meeting at the undertakers' discharges those compliant scenarios. We have not split those costs on a company by company basis. We have through the Halcrow exercise produced national estimates and we would not be able to comment on the individual effect on customers' bills.

435. You refer to the fact that the present figures were based on the present bathing water science. Do you anticipate then that there will be an increase in the number of designated bathing water beaches? In other words, are these figures reliable because we are really talking of the year 2005 in many instances?

(Mr Clayton) My Lord Chairman, perhaps I could indicate the situation for Southern Water. At privatisation there were 65 designated bathing waters; there currently are 67. So they do come forward with new designations from time to time. I think the situation is similar in other regions.

436. You also emphasised, I believe quite rightly, of course, the reduction in risk versus the investment as a rather delicate balance that must be assessed. How do you imagine we are going to go about dealing with that particular assessment?

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AND MR BOB PRICE*[Continued]*Chairman *Contd]*

(*Mr Clayton*) Perhaps I could ask Mr Price to respond to that.

(*Mr Price*) My Lord Chairman, I think the whole question of health gains and how those relate to the standards to which we are working is an area which merits further investigation. At the moment, as far as the benefits are concerned from the proposal, it is not clear to us what the rationale is that lies behind those standards. We have asked, as I think you yourselves have asked, to see the Commission's rationale but as yet we have not seen it. Whilst our view in The Water Services Association is that we would not wish to take a medical view, that is for others to do, we would very much appreciate seeing the rationale that lies behind it. Having identified that rationale, then to consider the health gain that might arise from imposing the standards that are proposed. I think there is an opportunity to have a more structured approach to the setting of standards and to bring the cost-benefit analysis approach more fully into the whole question.

Lord Dixon-Smith

437. Southern Water now has 67 designated bathing waters, but the sea is not a static material; it moves. Really I wonder what proportion, if you like, of Southern's coastline does the bathing water area represent? More importantly, because of the movement of tidal currents and so on and so forth, what is the impact of those locations on the coastline generally and the coastal waters generally? I am asking you to make a lot of assumptions when I ask that question but it is a significant one.

(*Mr Clayton*) My Lord Chairman, the answer to that is not an easy one. It is not easy, I think, to identify the percentage of the coastline that is covered by designated bathing waters because the actual extent of each of the bathing waters is not clearly defined in many cases and, therefore, one designated water may well run into other. It is only where one has clearly defined geographical features such as coves or headlands that there is the opportunity to break up the bathing water in a discreet way. The bathing water is of course identified by the position at the sampling point. That is an important issue. Sampling points are very precisely identified and they are the point at which the achievement of the standard is actually measured.

438. Perhaps I could pursue another point because, of course, the sampling point may be in one place but the water flows past and, therefore, I could envisage a situation where 67 sampling points in Southern Water could effectively perhaps cover the vast majority of Southern's coastal line?

(*Mr Clayton*) It does not operate like that, my Lord Chairman. The actual coastline length is not contiguous from the point of view of bathing water. There are discreet breaks between. I could not hazard a guess as to the proportion of coastline that is covered by a designated water because of the difficulty of identifying the extent of the individuals and it would be a guess on my part and I do not think it is appropriate to make that guess.

Lord Butterfield

439. I want to go back to your remarks about only working on 67 bathing centres on the beaches. What about the Thames, say, or the Severn bringing water down into the ocean? Do we not have to worry a little bit about what is happening the sewage going into our big rivers?

(*Mr Clayton*) The costing exercise, my Lord Chairman, focused on sewerage undertakers' discharges into the coastal waters below the tidal limit with the exception of those points of discharge near the tidal limit that had a pretty clear impact upon a bathing water. Those were costed. Elsewhere Halcrow made an allowance against scenarios A through to C which may or may not prove to be adequate. A very significant amount of detailed study is needed to be undertaken in order to identify relationships between riverine discharges and bathing water quality. It is a difficult relationship. All I think I can do is to indicate by way of an example some work that was undertaken in Jersey and reported through the Institution of Water and Environmental Management's Journal last October which identified that notwithstanding an adequate sewerage discharge through an outfall that there had been difficulties in compliance with bathing water quality because of riverine and other diffuse discharges. Obviously whilst we at the moment with the current Bathing Water Directive regime see some local difficulties in achieving compliance because we cannot see the relationship between sewerage discharge and the bathing water failure (and I think each of us have got some examples that we could trawl out), there is an increasing concern that as standards become more stringent, as in the case of scenario A, so that effect will become more of a possibility. It is difficult to be clear as to what the effect will be.

Chairman

440. I think, Mr Baty, we spoke about this on another occasion. You gave the remarkably high figure on that occasion as to alternative sourcing which was in very high percentages; if I remember rightly 20/30 per cent would be associated with that.

(*Mr Baty*) Of pollutant load, yes.

Lord Pearson of Rannoch

441. Sir William Halcrow and Partners is an excellent firm but I wondered if I could ask the witnesses a few further questions about the Halcrow report because it does seem that Halcrow's are very involved with the Department of the Environment and, indeed, all the way through these costing estimates. The Department of the Environment told us they had accepted Halcrow's advice of a figure of plus or minus 30 per cent, going up to 50 plus on the costings which were in front of us. I wondered whether you had any comments on such a wide variation.

(*Mr Clayton*) My Lord Chairman, if I could answer that from a water companies' perspective. We undertook cost exercises against the four scenarios. We did that on the basis of notional schemes that

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might be required to achieve the water companies' compliance against those scenarios; but we did that without the benefit of a lot of knowledge of the local circumstances; without knowledge of the way in which those notional schemes might superimpose on the present sewerage arrangements in any great detail; without knowledge of the engineering background. Therefore, it was prior to what we would call the feasibility stage. It is a strategic cost assessment or broad brush assessment, sufficient for the purpose to help in the decision making but, as a consequence of that pre-feasibility stage, it has some fairly wide variance bands put upon it, and the companies basically put forward plus or minus 30 per cent which is typical, I may say, of schemes at that stage in the evolution. Mr Baty may well support that.

(*Mr Baty*) Indeed. The earlier in the process, the more difficult it is to have an accurate assessment.

Chairman

442. They are guesstimates really rather than estimates. Are you happy with the actual analysis procedures which were applied by Halcrow to this particular programme?

(*Mr Clayton*) The exercise was undertaken in quite a rigorous way. The National Rivers Authority was asked to consider the compliance of bathing waters against the various scenarios and the company's views were brought in to support that. In most cases, I understand, there was unanimity of view as to what discharges needed to be improved to meet the various scenarios. The rigour of the guidelines as to what notional treatment was required was quite extensively undertaken by Halcrow's. They put a lot of thought into the questions they were asking. The companies obviously contributed to that by questioning some of the assumptions, and Halcrow's identified in some of the scenarios minimum distances from the bathing water within which discharges had to have a certain improvement, provided companies did, in general, use their own knowledge of the discharges and the inter-relationship with bathing water quality, in order to identify the costs of all the discharges that they knew of. Therefore, I think given the time span that was available; given the backcloth of detailed knowledge that was available; it was a comprehensive exercise and sufficient for the purpose, I would suggest, of coming to some conclusion as to the cost versus the benefit and the way forward.

Lord Pearson of Rannoch

443. I did have one further leg to the question on Halcrow's and then a question on the effects of these possible increased costs generally, particularly on the south coast. As to the Halcrow point, are you confident there will be no conflicts of interest in Halcrow's Report in that you would not expect to see them being awarded some of these contracts? Secondly, can you confirm that there is no element of cost-plus accounting in these estimates? That is to finish the Halcrow point. The point as to the general results of these possible increases, if water bills were to go up by some £28 - possibly, we have been

indicated, double that, £56 on the south coast - have you done any work as to how your customers might react to this, compared with other possibilities of spending that money on leisure facilities? Do you see any danger of another rebellion by customers on the south coast in these circumstances?

(*Mr Clayton*) If I may answer these three questions. With regard to the conflict of interests with Halcrow's, I very much doubt whether there is any conflict of interests at all. There are many consulting engineers available to provide support for engineering schemes. We are not tied to one particular consultant. I cannot rule out the fact that Halcrow's may or may not get work arising from any improvements which are required. But there would be no conflict of interests just because they have been involved in this costing study.

444. Is there a cost-plus element?

(*Mr Clayton*) The costs that are put forward are strategic cost estimates, based upon what needs to be done to improve the companies' discharges, and that is it. They are cost estimates. Any consideration of cost-plus comes out much later on when a new obligation is created, and the various financing issues then have to be considered with OFWAT. So at this point in time we simply have an estimate of the costs of dealing with those four scenarios.

Baroness Hilton of Eggardon

445. So far, only sea water places have been designated as bathing places. Do you anticipate any great difficulties in compliance, or from the cost point of view, if we were to start designating Lake Windermere or other places as bathing places?

(*Mr Clayton*) As to whether inland bathing waters become designated that is a question for others - the National Rivers Authority and the Department of the Environment.

446. But if they do the designation it is going to affect your costs because of the clean-up price.

(*Mr Clayton*) I will ask Mr Price to deal with that.

(*Mr Price*) Yes, if I may pick that point up, I think there is no doubt that there would be very substantial additional costs incurred if there were any extensive designation for inland bathing waters. The reason I say that is because our river systems are used to receive treated sewerage effluent from the community, and whilst the treatment that that sewerage receives is designed to prevent any serious pollution in the water it does not seek to render the discharge free from micro-organisms. There is no disinfection practice in this country as there has been in other countries - notably North America - where it is a practice that has been adopted in the past. There are very important implications for the country, as a whole, if one were to move into the area of designating waters. We do know from the monitoring work that has been done that concentrations of faecal coliforms in inland waters, which are normally considered to be of relatively high quality, are above those levels which are set in the existing Bathing Water regulations.

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447. May I ask you two questions on that? In NRA's designation of river quality, it does not consider this particular aspect.

(*Mr Price*) Correct.

448. And secondly, when one considers the Urban Waste Water Treatment Directive, as it will be ultimately applied in 2005, would that also allow this particular aspect? My understanding is that it is required for secondary treatments - certainly for populations greater than 10,000 - whereas, at the moment, I do not think it is being implemented and primary treatment is possibly still being used. But by the year 2005 it will be a prerequisite - or will it not?

(*Mr Price*) It would be a prerequisite for all inland discharges but, at the present time, in the United Kingdom the vast majority of the discharges do all receive secondary treatment unless they are of an intermittent kind such as storm overflows or emergency overflows. But continuous discharges have for many years, if discharged in inland waters, received secondary treatment. Despite that we still have bacteriological results for the rivers which suggest that those rivers would not comply with the existing Bathing Water Directive if they were designated.

449. But is that because of the quality of sewerage or is it because of other diffuse sources?

(*Mr Price*) I suspect it is both, but I cannot say there have been the detailed studies to identify all of the components that contribute to the faecal coliform numbers that we find in our rivers. For example, at the lower end of the river Great Ouse in East Anglia, a typical concentration at the bottom end of that river system is 10,000 faecal coliforms per 100 millimetres. That is five times the number which is set.

450. Clearly there is a major problem diffuse sources. The sewage itself you can deal with. You can measure the outlet and see exactly how effective it is, but I do accept in the diffuse sources that it is a slightly constant worry to us all, the effect that this will have on these particular Directives. Could I turn back to more detail? The United Kingdom is quite legally obliged to meet the standards set by the existing Bathing Water Directive and the Urban Waste Water Treatment Directive. Could you describe for us one or two major schemes, bearing in mind the engineering and treatments works which will be required to meet these Directives; what further works are required to meet the four scenarios that we are given in A to D, for the purpose of the new Bathing Water Directive particularly; and something about the costing of this operation?

(*Mr Clayton*) I will attempt to provide you with the answers that you are looking for, but firstly may I start off by saying that when providing an engineering solution for a particular situation it is, in fact, a site by site assessment that has to be made. There is no single overall approach that is used in every set of circumstances so I will have to illustrate, I think, with alternatives that might be found. Clearly, at the end of the day, selection of the solution is on the basis of the

most economical solution that actually meets the legal requirements. If one looks at the Bathing Water Directive requirement for a large coastal town, the typical solution may well have been the provision of a screening facility to remove the coarse debris and long sea outfall, relying on the dilution and dissipation within the coastal water actually to cause compliance with bathing water quality. That is not the only solution that can occur to meet bathing water requirements. There are other situations that exist, where inland treatment works discharge to an estuary of a river before it discharges into the sea, where secondary treatment may well have been undertaken. There are other circumstances where the most cost-effective arrangement was because a treatment works existed which already had an adequate level of treatment, where the introduction simply of disinfection and discharging—either through a short sea outfall or discharging direct into the estuary—might have been appropriate. So there is a broad range of solutions, even to meet the current Bathing Water Directive. With regard to the Urban Waste Water Treatment Directive, clearly there is a range of additional facilities that are required there. If one looks at a large urban coastal situation where there is an HNDA status which is subsequently proven, the introduction only of primary treatment through a long sea outfall, which probably already exists, might be perfectly adequate. If it is a "normal" status then secondary treatment may be required.

451. Does the Directive not involve secondary treatment for a community greater than 10,000?

(*Mr Clayton*) The basic requirement is for coastal discharges greater than 10,000 secondary treatment is a requirement, but if a higher natural dispersion area is identified for that coastal location which is subsequently demonstrated then primary treatment is all that is basically required.

452. In some of the documentation we have had it is very clear. For instance, I think in Wales they are going for primary UV treatment, which of course is a tertiary treatment process, and in many instances it would appear from reading the documentation from the South West I think that it will depend upon the environment but in certain instances UV treatment is actually cheaper than using the long sea outfall methods. Will it be financial implications that will make the decision between these two because there seems to be indications that UV treatment is going to be more effective in fulfilling particularly some of the new Directive requirements?

(*Mr Clayton*) UV treatment, my Lord Chairman, requires an adequate clarity of effluent before it is reasonably reliable and it depends upon the circumstances of the individual situation, in the main, as to whether it is selected as the process, and in most cases it will be done on the basis of what is cost effective as the solution. I think Mr Baty has got some particular experiences that he can draw out.

(*Mr Baty*) We have a scheme currently being promoted for Plymouth. It is a fairly large conurbation in the South West but sited at the mouth of a number of estuaries that come together. The centre of Plymouth is not subject to sewage treatment

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at present, although some of the peripheral areas are. We have a number of sewage treatment works around the perimeter of Plymouth. The central area has crude discharges. We are seeking to collect those crude discharges and afford a level of treatment primarily to meet the Bathing Water Directive. Because of the coastline's geography and topography the most cost-effective solution at that particular location will be to bring those flows together to a central site to provide a screening arrangement, primary treatment and secondary treatment and then ultra violet light. That is a more cost-effective approach than promoting primary and/or primary and secondary treatment and the practical difficulties of constructing a long sea outfall through Plymouth Hoe to get it out into suitable waters. That one is fairly self-evident. That will be the solution. On increasing standards it would be a question then of perhaps enhancing the level of ultra violet light treatment or whatever tertiary treatment may be necessary to achieve the higher standards that are required. Another example on the north coast of Cornwall is Newquay where again currently there is a crude discharge going out to sea. Under the current arrangements of monitoring and control the bathing water at Newquay complies with the requirements of the Bathing Water Directive so to that extent we do have a crude discharge in that location but the bathing water monitoring point is compliant. We are required to introduce a scheme there in accordance with the Urban Waste Water Treatment Directive by the year 2000 and clearly we are beginning to look at how we will achieve that. The options open to us at Newquay currently are primary treatment with a long sea outfall because it will be into an HNDA, or a higher level of on-land treatment with probably ultra violet light. On the work that we have done so far the balance of costs of those two options are very close and under those circumstances we will pursue both options. We will then discuss the options with the contractors who will actually carry out the work and leave the opportunity for the final most cost-effective solution with the people who will build it for us. We will be pursuing both options at the end of the day. We will be looking for the most cost-effective solution to meet that particular requirement.

453. Am I to understand that the situation in Wales is such that the UV treatment is in all instances the most economic?

(Mr Baty) I do not think they are actually quite as far advanced by comparison. We have 33 schemes in the initial bathing water programme. To date we have constructed four locations involving long sea outfalls. We have 12 locations where a high level of treatment may or may not require the necessity for ultra violet light to meet the current standards, but if it is not physically provided the allowance will be made for it and again it will come down to the straight economics and the most cost-effective solution for meeting the Bathing Water Directive at the present time. Rather like Wales, we have a number of inlets so the settlement itself tends to be a little bit further back from the coast in Wales and probably the South West Peninsular as opposed to perhaps Southern where the coastline tends to be rather more straight and the

conurbation is abutting against the coastline. The difference in cost in collecting the flows together and threading an outfall out of the estuary is greater than pulling it together within the estuary then providing a higher level of treatment with an ultra violet treated disinfected waste water discharging back into the estuary itself.

Lord Dixon-Smith

454. Perhaps I may ask about Newquay. I can well understand that it is a high natural dispersal area if you have a reasonable sea outfall there. Of course, the current will be sweeping it up into the Severn Estuary and across the west coast and up into the Irish Sea so that Newquay's high natural dispersal might actually be somebody else's problem?

(Mr Baty) I think the key issue that we have to look at is what is being discharged from the outfall itself. When you suggest it is somebody else's problem: if the recognisable sewage debris has been removed, which it will be with the treatment that it is afforded to it before it is even discharged to a long sea outfall, essentially we are talking about bacteriological loading and potentially viruses if they are in there. Then from an environmental point of view - and no doubt Mr Price is better qualified to comment than I am - it is the die-off rate of that bacteria within the marine environment that is the critical feature and, of course, the change in standards here to an indicator which has a longer die-off rate will affect the length of the long sea outfall if that particular type of sewage disposal arrangement is found to be the most cost effective. We are talking about treated sewage actually being dispersed and decayed.

455. Although sewage in the water is the most obvious problem that causes the immediate violent public reaction, it is actually the bacteriological and viral problems that are going to be the ones that have the real long-term effect and they are the ones that have, if you like, the dramatic impact—if there is one—on public health. It seems to me in the end there is a large amount of guess work in the whole of this area as to what is an appropriate standard and then how you actually set about trying to meet that standard. I do not want to in any way diminish all the efforts that are being made, but you cannot be certain either of the original hypothesis or of the conclusion, it seems to me.

(Mr Clayton) My Lord Chairman, perhaps Mr Price could enlarge on that point.

Chairman

456. The indicator could disappear but the pathogen may not.

(Mr Price) That is a possibility, my Lord Chairman, yes. We attempt to reduce the uncertainty and the guesstimate problem in these circumstances by using mathematical modelling techniques and normally those techniques model faecal coliforms. I accept that there is still a question as to whether the behaviour of faecal coliforms mimics the behaviour

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of pathogens. We certainly do try to give as much structure and objectivity to the studies as we can to identify whether or not the principle of long sea outfall will be effective. The principle that lies behind long sea outfall is that one should be in a position to be able to discharge the sewage in an area where the natural purification processes can act rapidly in neutralising the effects of that discharge and, therefore, present no environmental problems. As far as my own company is concerned, Anglian Water, we have adopted a similar approach to that in the South West in that we have not adopted a blanket policy either favouring long sea outfalls or full treatment and short outfalls. We have chosen our schemes on the basis of cost-benefit analysis with the consequence, for example, that we have just completed a scheme in the Cleethorpes — You were asking about costs, my Lord Chairman. The cost for the Cleethorpes scheme is just under £50 million in total. That is made up of about 50 per cent for re-sewerage work within the town and surrounding area and about 50 per cent is treatment costs and there we have installed primary, secondary and tertiary treatment in the form of UV disinfection and then discharged the discharge quite close to the bathing water. Our reasoning behind that was that if one looked at the long sea outfall option it was a very very long sea outfall to take it into an area where the natural purification processes could operate and the risk of the bathing water failing was negligible.

457. Do these present costings include management and storage of high flows after rainfall?

(Mr Price) Certainly the schemes that are associated with the bathing water programme are ones where there is storage provided for storm sewage and in these circumstances the normal design criterion would be to work to a one in five year event. In other words, a discharge of storm sewage would only occur on a frequency of once in five years. The storm sewage is held and then returned, rather than going out through a short outfall, to the long sea outfall and put out through the long sea outfall, or if there were treatment it would be put through the full treatment works.

458. I am very conscious of the fact that when you started explaining things to us, Mr Clayton, you made the very important point that we were dealing with bathing waters. We have had representations, you will be aware, from the surfers and, of course, as far as surfing is concerned then the long sea outfall very often provides a major problem because that is an area in which they may well be active. Since we really are talking about the year 2005 for the completion of all this project, do you feel that if there were indeed to be a modification involving this particular group of people it could cause a major perturbation to your system or would it be relatively easy to adapt?

(Mr Clayton) My Lord Chairman, if you are asking the question as to whether the obligation moves from bathing water to recreational water and the impact that that would have on a long sea outfall, say, with primary treatment, it does not create a perturbation

but it does require further expenditure to meet what is basically a further obligation. There would be a need to ensure that the whole of the recreational water complies with whatever standard that was in existence at that time which is an entirely different scenario and moving the obligation on quite a way.

459. I fully understand that, but I do feel that there is a complete misunderstanding in many instances by the public at large as to what we are actually dealing with. It is a point you made and made very clear, but I do understand that there are groups of people who are unaware of the fact that we really are concerned with a relatively short area of water in front of a bathing beach as opposed to the area a considerable distance out. I am asking for a back of an envelope calculation which may be impossible to do which would indicate whether there is going to be a major perturbation or whether it could be included because if you did the UV treatment my understanding is it would cover this?

(Mr Clayton) My Lord Chairman, that is correct. You can through disinfection achieve the appropriate water quality within a very near radius of the point of discharge, but the cost estimates that have been done for the Halcrow exercise have not assumed recreational water quality and, therefore, there would be further costs beyond this if one was considering anything other than, say, scenario A.

Lord Dixon-Smith

460. If we get into this business of recreational water, would you say that the costs would actually be greater to put right perhaps the inland water problems than the coastal water problems?

(Mr Price) It depends very much upon the extent to which inland bathing sites are designated. If one were talking about a very small number then obviously the cost would be in proportion to that. If there were widespread designations then the cost would be very considerable, as I indicated earlier. As far as the coastal issues are concerned—recreational use—one important factor is that at the present time the United Kingdom Government has indicated a relatively high number of high natural dispersion areas. Those are areas where only primary treatment (if those HNDAs are confirmed by comprehensive studies) will be required. If we had to put in ultra-violet we would have to add secondary treatment, so the additional costs associated with designating are relatively to a broad band of water around the coast as recreational water, even if it was only associated with existing bathing waters. Therefore, the cost there is the cost of providing secondary treatment, as well as providing ultra-violet treatment. That would be quite considerable.

(Mr Clayton) If I may extend that, Chairman, in the Halcrow's exercise for scenario A the assumption was that high clarity effluent was required prior to ultra-violet disinfection and, therefore, that required sandfiltration as a tertiary treatment to achieve that. You can see from the Halcrow Report the cost of meeting that is quite high, somewhat over £4 billion.

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Viscount Bridgeman

461. May I clarify, the ultra-violet requires secondary treatment does it? It is tertiary in itself and requires a secondary level?

(*Mr Clayton*) The ultra-violet requires high clarity liquor to be effective and, therefore, while secondary treated effluents may be adequately disinfected in some circumstances, to get a high level of disinfection with ultra-violet further work beyond the secondary level is required, which is the very fine straining or filtration of the effluent from the secondary treatment in order to achieve the adequate disinfection.

Lord Butterfield

462. May I ask a very simple question? If you install ultra-violet and you achieve your clearance as far as virus is concerned, but there are in future increasing numbers of individual viruses or new viruses begin to appear, can you get rid of the problem by turning the voltage or the power up on your ultra-violet radiation? I am really trying to find out whether ultra-violet is a good investment for the future, allowing for the fact that as I suspect affluence increases, more and more people will travel to the sea and more and more viruses will be delivered into the water.

(*Mr Baty*) Ultra-violet, as a technology, is fairly young. It has not been in common use in this country for a long period of time, although it has been used in America and in other parts of the world quite extensively. There is still research on-going into the capability of ultra-violet. Certainly in the south west we have been involved in that research work for quite a prolonged period of time. We have quite a reasonable database - not extensive in scientific terms—but better knowledge than we had a few years ago. There is undoubtedly a relationship between the clarity of the effluent itself - the point that has already been made - and the dose rate of ultra-violet light that one has to apply. So there is a trade-off in cost, of making sure that the effluent is sufficiently clear and the power requirements are not excessive. So there is that fundamental relationship to start with. I do not believe there is yet evidence - and certainly I am not aware of it - that it will completely eradicate all viruses and bacteria. If there are viruses we are unaware of, again we could not know at this stage whether or not ultra-violet light is effective in all circumstances. There can be a tendency for some viruses to be enclosed and protected individually, in some regards, so research work is going on; but we are pretty confident in the terms of results we have to date that it is effective for the issues we are aware of. It is difficult to project about the areas where we may not yet have sufficient knowledge at this stage to say, "Yes, it will be adequate."

(*Mr Clayton*) May I extend that point on to the consideration of the difficulty of actually identifying enterovirus? The technique is not as well advanced as perhaps the technique of determining *E coli* might be or coliform bacteria and, therefore, there is the unreliability of the method as well as the very high

cost of undertaking viral detection. These issues have to be borne in mind when considering that subject.

Chairman

463. Could we turn our attention now to this particular point which seems to me to be a paradox, that we have the reluctance to pay high water charges, coupled with the general expression to support higher water quality on the part of the public. Now it is very simplistic to say, "Well, of course, it is the local people who are paying. It is the public who are coming to a particular site," but clearly in Wales my understanding would be, unless it is a matter (as you imply) of the geology of that part of the world, they are prepared to pay that money in order to attract the public. Is that a fair interpretation?

(*Mr Clayton*) I am going to ask Mr Baty to respond to that but I am just mindful that I did not answer Lord Pearson's question earlier on, on that subject. I just wanted to make the point that Lord Pearson indicated a number of cost factors in his question. I am unsighted as to the costs that he mentioned, from a personal point of view. I do not know their origin. That is all I wanted to make as a preface.

(*Mr Baty*) Clearly water charges is a high profile issue - certainly in the south west - for a number of reasons. It may be helpful to the Committee if I just spend a few moments spelling out the background which perhaps will help in focusing how things move in the future. In reality, the problems in the south west actually stem from the changes in the Bathing Water Directive which were made in 1990. In the run to privatisation in 1989 we agreed with the Department of the Environment and the Government a capital programme for the south west, improving many of the bathing waters. The difference between Wales and ourselves is that we have 134 of the identified bathing waters which is 30 per cent of the country's total - understandably and for obvious reasons—but any impact on bathing water improvements inevitably will have some relationship with the activities in the south west. So we agreed a capital programme which was extended over ten years and which was to be concluded by the year 2000, to meet the initial requirement of the Bathing Water Directive. That produced a requirement of an investment, not only in the bathing water but in other water-related areas - clean water and sewage systems - of a capital programme of £1.4 billion. In 1990 the then-Secretary of State, Chris Patten, in attending a North Sea conference, required some changes to be made in relation to that Bathing Water programme and they had a major impact on charges in the south west. The three changes that were required were: the introduction, as a minimum level of treatment, of primary which was the settlement process; the acceleration of the completion of the programme from the year 2000 to 1995 where that was physically and logistically practicable. There were a number of locations. I mentioned Plymouth where it was not logistically possible because we had not sufficient understanding of what was there, so we were not able to do so in that advanced period of time. Thirdly was the requirement to terminate the disposal of sludge to sea. Again one has to recognise that although we

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historically deposit about 30 per cent of our sludge to sea, despite the increased levels of treatment our volumes of sludge we generate will increase from about 20,000 tonnes to 50,000 tonnes a year, so each time you introduce a level of treatment you do get particulate matter to do something else with, so nothing disappears. Those three fundamental changes in 1990 had a big impact and increased the total level of capital investment over the ten-year period from 1.4 billion to £2 billion. That was to be funded through the mechanism referred to as cost pass-through, which was a submission to the Director General of Water Services to take account of these fundamental changes in the legislation and to reflect that in the impact of customers' bills. That lifted the rate of increase in bills in the south west from 6½ per cent above inflation for the first five years in the initial programme from 1995 to the year 2000 and that would reduce to 5 per cent, but the effect of those changes lifted it to 11½ per cent plus inflation. That is where the main problem arose from, I believe, and understandably customers find that a significant increase and a dramatic change, which has really resulted in some of the difficulties we are faced with currently. That is under review now with some amendments—part of the periodic review—and that has been discussed in other forums. So it is against that background that we are in the position we are in today. We have done some market research about how customers feel about charges, as you would expect, and they fall into three groups. There is a minority - but a substantial minority - for whom water charges are inconsequential to them. They are just another bill and they accept them. There is the majority of customers who can afford to pay their bills but they are noticing they are becoming a higher proportion of outgoings so they are sensitive to it, but they are not in a position where they are not paying. But there is also a growing minority, at this stage, of customers who understandably and genuinely have difficulties in meeting the bills and we share the difficulty with them. So there are those three broad categories. We have a fairly low rate of disconnections of people not paying their bills in the south west - 2.6 per cent per 10,000 customers - and our level of bad debt is about 1 per cent of turnover. That has stayed fairly static, but these can be used as broad indicators about how people feel about paying their bills. We do have in place a lot of mechanisms to help people who are having difficulty paying their bills to find a less painful way of doing so, particularly those in difficult circumstances, and this has proved quite successful. We also have a policy where we will not disconnect anyone who has approached us and tried to develop a management plan with us in order to meet the costs involved. So it is undoubtedly a real issue but again probably based on three issues. There is an emotional argument involved with water charges. There is a political view associated with water charges and there is, again understandably, a lack of appreciation of what is involved in water charges and how particular investment relates to what individuals pay in their bills. On the emotional front most people support the increase in standards in any area, but as far as the south west is concerned they believe that the coastal

waters is a national issue and therefore should be funded by other sources. They want the improvements but hope somebody else will pay. Again, this is quite understandable and their argument is supported by the fact that 30 per cent of the bathing waters are in the south west and only 3 per cent of the population is resident in the south west. Those are the sorts of statistics that one sees in the newspapers. From a political point of view, I think that there is a very strong body of people who feel the provision of water and sewage services should not be an activity which is seen to be promoted by profit and that, in itself, causes some difficulties, albeit that the bulk of the profits are being reinvested to meet the capital requirements that are being asked of us. There is that particular issue which helps to give the argument some momentum. Again, in the forum I attend, many people believe that if the water industry was in the public sector then the Government would find the money. Having been in the public sector before, and in the water industry for over 30 years, I know that has never been the case. Whether we are in the public or private sector we are still left to fund it one way or another. But it is difficult to get people to understand that. There is that misunderstanding. Finally, there is the lack of knowledge about the relationship between the sort of problems that need to be addressed and where their money is going to. We do spend - and certainly the industry at large—does spend a lot of time in trying to help customers understand these issues. I am a party to a process in the south west which is trying to do that. But again, if a customer is suffering from foul sewage flooding in his house he is not interested about the bathing water and thinks that any money we have should be spent on his problem which impacts on him. If people do not use the coastal waters they say, "I'm not too bothered about the coastal waters because I do not go down to the sea." So there is a difficulty in getting people to understand how the whole package fits together; how it is funded and how it impacts on the individual charges. We have done market research about charges - coming back to the question previously - and some of the market research that we have done, (one can use market research to present any argument one wants to) but it is not difficult to see how clear the questions need to be and how one interprets the answers, to make the point. Taking it at face value on the research that we have done, some 32 per cent of the group have indicated they do not wish to pay any higher water charges. Conversely, on a reducing scale, 21 per cent have said they would be prepared to pay some more money up to perhaps a maximum of £40 by the end of the century. So again there is a group of people who do believe these things should be supported. It is not surprising, of course, that if you start to disaggregate the group then the older people and those on the lower incomes are those that are less willing to pay, so there are some obvious conclusions within the research work that has been done. Again, when we look at our complaints statistics, the highest level of complaint is actually about discoloured water. 18 per cent of our total complaints are about discoloured water through the taps. It is not about bathing waters or any other area. Again, it is the issue that hits the customer first and

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they are the sort of issues that they will complain about.

464. Drinking water, of course, is something that we are going to have to deal with in the future. It is a separate issue altogether.

(*Mr Baty*) This is the difficulty, from a customer point of view it is one big package; they get a bill and they expect all these issues to be addressed, understandably and rightly so. I think undoubtedly there is concern about the level of charges, particularly in the South West. There is a higher level of concern from those less well off than those more comfortably placed. The increase in standards generally is welcomed providing somebody else will pay for it. The overall understanding of the standards versus charges debate is actually at an extremely low level. The industry and companies have a responsibility and we are trying to exercise that responsibility to help people understand what the relationships are. The changes in legislation in recent years, and I have in mind the background that I highlighted earlier, has led to a disproportionate increase in charges in the South West to the extent that water charges has achieved a very very high profile. It is very high on the political agenda and that is an issue that we are trying to wrestle with on a day-to-day basis.

465. Do I find it implicit in what you are telling me that the new capital costs have been attacked at both higher charges, which is what you are talking about, and lower profits?

(*Mr Baty*) The question of profits and all the other issues that come into it are clearly part of the total debate. Again, the reality is that to make the capital investments that we are making as a company, and other companies are the same, and to actually obtain that money and support for it is dependent on a total financial framework. Profits, dividend, borrowing ability and all those issues are all inter-related against the financial ratios that are required in order to support enormous capital programmes. Certainly from the South West's point of view, the capital programme has been running at a level in excess of the turnover of the business. There are not many businesses that actually operate within that sort of financial framework and to that extent there is an expectation that somehow or other within that financial framework these anomalies are accounted for.

466. Presumably the group is prepared to make that investment perhaps on the grounds of the benefits to having these beaches rather than having the beaches closed?

(*Mr Baty*) From industry's point of view the standards are set by the regulators, by the legislation, but we as companies are asked to ensure that our responsibilities are exercised within that framework. We are not in a position to decide what should or should not be done. I do not want to be distant from it, but in crude terms we are in effect the contractor who is being asked to address these things within a financial framework which is also determined by others.

Chairman] Mr Clayton, we have kept you for the full hour plus. Are there any questions?

Lord Butterfield

467. We did not actually put part of question one: would there be any savings if the works required for the Urban Waste Water Treatment Directive and the new Bathing Water Directive were planned and implemented in an integrated way?

(*Mr Baty*) Perhaps I could add to what Mr Clayton said earlier because it is very much related to the approach that is taken at the present time on a site specific basis in relation to the most cost-effective way of dealing with it. If it happens at present the most cost-effective way of dealing with the current legislation is a lower level of treatment and a long sea outfall, then there will be a larger impact of the legislation. Currently the most cost-effective way is a higher level of on-land treatment and if it is approached then the consequences of the additional requirements are quite different and you would really need to understand on a site specific basis where individual investments are as to how much extra is required to bring it up to the new standard.

(*Mr Clayton*) My Lord Chairman, perhaps I may take that issue on a little further but not talking about costs but about timescale effects. Mr Baty referred to the requirement back in 1990 to introduce primary treatment to bathing water schemes in anticipation of the Urban Waste Water Directive. Companies were already well advanced with plans to deal with the Bathing Water Directive as it stood at that time and with the sudden requirement to provide for a new obligation clearly there was an adverse effect upon the timescale of delivering the original scheme because companies had to go back and reconsider the implications of adding that level of treatment and in many cases had to reconsider the site that was being selected for the scheme. So there is a potential adverse situation where a new obligation is superimposed in an existing programme on timescale.

Chairman

468. At the moment we are in a nether region of not knowing whether it will or not. Are you telling me that the best decision is for a decision to be made in that direction?

(*Mr Clayton*) I am not saying that, my Lord Chairman. What I am saying is that companies obviously are planning to get on with the finishing off of the existing Bathing Water Directive schemes. Those schemes are well advanced. They are planning for the urban waste water treatment schemes and, therefore, as one firms up the proposals so it becomes just a little bit more difficult to untangle and superimpose something else on top.

Baroness Nicol

469. I am sorry we have not time to pursue at greater length the public attitude towards paying for schemes, but you said that your survey showed that 32 would not pay any more for their water and 21 per cent were

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willing to pay. What about the other 47 per cent, what did they say?

(Mr Baty) They fall into different categories; they support parts of the investment but not others. Without actually going through the full research analysis---

470. I was hoping to find where the balance lay as between those who were prepared to pay.

(Mr Baty) Regrettably I cannot give you that off the top of my head.

Lord Pearson of Rannoch

471. Our witness has made clear that these programmes and these costs come from the European Directives. Do they have any view as to whether we would have gone down these roads to the extent and costs that we have without those Directive? Are they in touch with what is happening in other countries in the Community and what do they think about what is going on there if they are?

(Mr Price) I think we must recognise that the European legislation has been a big drive at improvements to bathing waters. That is quite definitely so. We must also recognise, I think, that the impact of the improvements that have been made for the coastal disposal of sewage really are of two kinds: one relating to the quality of the water, which may not be immediately apparent to the bather, and the other, which is abundantly apparent to the bather, and really is the aesthetic aspect of that water. There is no doubt that there has been a strong public cry for a long time to improve the aesthetic quality of the water and also I think for the bather to feel assured that the risks

associated with bathing in coastal waters are acceptable risks and the water in the bather's view is safe to use. I think even without the Directive there quite clearly, with the change in public perception, would have been a move on the part of the water industry in this company to improve the discharges to bathing waters. There is no doubt that EC legislation has been a main drive for that.

472. Do we know what other countries are doing? Are you in touch with what is going on in Italy?

(Mr Price) We are aware of the compliance that other countries are achieving because the Commission itself publishes an annual report of compliance. It is one of the few that the Commission produce showing compliance against an EC Directive. So we are aware of what the compliance figures are in other countries, but it has in turn begged the question about how the quality of water in those Continental bathing waters is being monitored and whether it is being monitored quite as rigorously as the NRA monitor the bathing water in this country.

Chairman

473. I think that is a very fair point at which to end our discussion. May I on behalf of the Committee as a whole thank you very much indeed for coming along. It has been extremely useful to us and certainly it has amplified some of the points we have been recognising and realising, of course, the difficulty we have is that what we are actually dealing with is not very often the problem that the public think we are dealing with. Thank you very much.

(Mr Clayton) Thank you.

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[Continued

Memorandum by the OFWAT

In February 1994 the European Commission published a proposal to revise the Bathing Water Directive, which included various proposals for changes to the existing Directive. The Department of the Environment provided the Sub-Committee with a compliance cost assessment on 22 february 1995.

This memorandum sets out the potential increase in household bills and the increase in prices over and above inflation for England and Wales which would arise if the Directive were implemented.

An assessment of the Directive's impact on capital and operating costs was carried out by Sir William Halcrow & Partners Ltd, for the Department of the Environment. The terms of reference for the study required the evaluation of costs associated with the Directive and a further three, less onerous, sets of water quality standards. The four scenarios are:

- (i) In accordance with the *proposed* Directive (known as Scenario A).
- (ii) In accordance with the *guideline* standards in the *existing* Directive without the enterovirus requirement (known as Scenario B).
- (iii) In accordance with the *proposed* Directive without the enterovirus requirement (known as Scenario C).
- (iv) In accordance with the *mandatory* standard in the *existing* Directive but with the inclusion of a *F* streptococci standard of 1000/100ml (known as Scenario D).

The possible increases in household bills and percentage increases in prices in real terms are set out in the following table. The calculations have been made using a ready reckoner. The ready reckoner has been developed by Ofwat as a quick way to assess the overall impact of new obligations. It will not reproduce the same results as the full financial model used in the 1994 Periodic Review of price limits, but the results are broadly consistent with those of the financial model and give a good first approximation. (The attached note gives more information on the ready reckoner.)

The ready reckoner indicates the increase in customer bills which would eventually take place in real terms (ie above the rate of inflation) if the costs were as estimated in Halcrow's report and if all other factors affecting bills were unchanged - ie no changes in other obligations, or expenditure by the companies for other purposes or greater efficiency by water companies. It is a hypothetical figure and not a forecast. The exact timing of any change in bills would depend on a number of factors, including the timing of the new obligations and assumptions on how efficiently they could be carried out by individual companies and the financial position of the companies in the markets.

The figures in the table [printed at paragraph 10 of the Report] represent the average effect for the eight companies with discharges into coastal waters. The effect in individual regions may be very different. The population equivalent affected has been used as broad indicator to compare the relative impact on companies. This can only be a broad brush method. It does not, for example, take account of economies of scale, company efficiency or differing attitudes to risk between companies. On this basis the impact on some individual companies may be twice the national average. It appears that the worst affected companies would be Northumbrian, South West, Southern and Wessex.

Given the uncertainty as to whether there is any health gain the Director is concerned at the large possible impact on customers water bills these proposals could impose.

I C Byatt
Director General

February 1995

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Examination of witnesses

MR IAN BYATT, Director-General, MR IAN WHITEAR, Head of Quality Enhancement Branch, MR ANTHONY HAYWOOD SMITH, Senior Analyst, OFWAT, called in and examined.

Chairman

474. Mr Byatt, thank you very much indeed for coming along. I wonder if you would like to introduce your colleagues and perhaps if you have any general overview you would like to make you could make it at this moment.

(Mr Byatt) Thank you very much. I am Ian Byatt. I am Director-General of Water Services. On my right, Ian Whitear, who is Head of the branch in OFWAT concerned with waste water quality matters and on my left, Mr Anthony Haywood Smith who works with Ian Whitear in that branch. My Lord Chairman, thank you for inviting us to this hearing. If I may say so, I greatly welcome your Lordships' interest in the economics of these matters. I have been very concerned about the implications for water customers' bills of programmes of environmental improvement. Environmental improvement is desirable, but I say it must be affordable, or people say that for me. There is always a balance to be struck between spending money on environmental improvements and spending it on other good things, ranging from health and education to family holidays. This may be obvious, but it is often ignored in the pursuit of some, ultimately unobtainable, absolute. In 1993, in advance of setting price limits last July, I published a paper called *Paying for Quality*. This showed that unless something was done to manage environmental and quality obligations, water bills might rise over a ten year period by £77 for the average household. In the event the Secretaries of State set out a perspective on quality obligations which, when all the sums were done, implied an increase on account of water quality alone of £44 in the annual bill for the average household. The actual bill will go up by much less than that, by about half, because the companies will absorb much of the costs through higher efficiency and a lower return on capital. In the absence of quality improvements water bills would have gone down in real terms. Eternal vigilance is needed on these issues. Since price limits were set only last July, the European Commission has proposed a revision of the Drinking Water Directive involving, in particular, heavy expenditure on replacing lead pipes. And, of course, your Lordships have been considering the proposed revision of the Bathing Water Directive involving—as the report of the Department of the Environment shows - further investments on a large-scale. Several things struck me on reading your Lordships' report of last December and the Halcrow Report commissioned by the Department of the Environment. First, the scale of the potential effect on household bills - up to £28 on average for the eight companies affected, and possibly double that in some companies - including a further big impact in the south west. (These figures are set out in the memorandum which I sent to your Lordships at the weekend.) Secondly, the difference between those who would benefit from the proposals of the EC Commission and those who would pay the

costs. Surfers against Sewerage have told you about the growing number of people engaging in wetsuit leisure. This is, of course, a voluntary activity using a natural resource which they do not pay for. Many of those paying the bills for the Directive would be retired people who like living near the sea, but who rarely go into it and an increase in their bills - especially in the south west - has been a great matter of concern for them and their representatives. Thirdly, the almost complete ignoring of costs and benefits by the EC Commission. This contrasts very unfavourably with your Lordships' careful examination of the benefits to health and, no doubt, to the cost of the customers. Finally, my Lord Chairman, I would like to take this opportunity, if I may, of commending a particular amendment to the Environment Bill currently before your Lordships' House, proposed by Lord Jenkin of Roding. This proposes a duty on companies to promote the efficient use of sewerage services and powers to the regulator to enforce them. The Government has accepted the need to put a duty on water companies to promote the efficient use of water, but, for reasons which remain a mystery to me, Viscount Ullswater has told your Lordships' House that he is "concerned about the proposals for promoting the efficient use by customers of sewerage services." If he considers that the existing law is adequate, I hope I can persuade him that it is not because companies have incentives to invest and to make a return from higher bills and not to encourage users to act efficiently. The issue of efficiency in the use of sewerage services has wide application. They may be limited in this case as the justification for spending money on health grounds seems slight, but there must be limits as to how much we should spend to give people free access to treatment of sewerage designed to improve leisure facilities which other members of the population must finance. Thank you, Chairman, for giving me the opportunity to say that.

475. Thank you very much. You touch on many points which, as you rightly point out, have been covered by our particular deliberations to date. It does seem equally true to say that the surfing situation is one that is not covered by the present Bathing Water Directive, as much as really the Bathing Water Directive is concerned with inland waters. Certainly in their evidence to us it became very apparent that they were looking for this particular type of protection - rather a large way out - and that has not been considered at all, or even been costed out in any of the deliberations that have been made to date. I do accept the point you are making about who has to pay the cost of this particular operation. Of course, what we are directing our attention to is the European problem of an imposition on to this country of what would be a statutory obligation - both the Bathing Water Directive itself and the Urban Waste Water Directive - so that we have these coupled; it is very difficult to uncouple, these two. The costings - and I

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[Continued]

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am sure I do not have to say this to you - very often become diffuse as to which is related to which; although decisions can be made. I equally well agree with you that the problem of the sewage is one that is going to be very difficult to deal with in the future and I accept your idea that if we can reduce this at source—or reduce the type of sewage we are dealing with—this can help a lot. I am very conscious of the presence of heavy metals in sewage which is going to make a vast difference to disposal, because this is going to reduce the possibility of disposal on land. But if we get round to your suggestion, do I take it that one of your suggestions (I do not want to put words in your mouth) would be, in point of fact, that people who visit the coast and go to use the bathing waters should be, in one way or another, expected to pay for it?

(Mr Byatt) That is a very tricky one. Of course it sometimes happens that when, for example, the quality of water in the rivers is improved, fishermen buy licenses and so it is sometimes possible to have that. Where that arrangement is administratively feasible it makes a good deal of sense. There are beaches in other countries where you pay to go on them. I am not suggesting - indeed, it would not be proper for me to make such proposals with my statutory duties - that there should be charges made for going in the sea. But I think, in principle, I would make the point that the cost benefit studies are quite difficult to do when the people who are paying the bills are, in no sense, using the facilities and where the people using the facilities could be engaging in other forms of sporting activity for which they did pay.

476. But what about the polluter pays principle?

(Mr Byatt) I think it is a question of how widely you take that particular principle. I am sure you could find people who would say that the Thames Valley is polluted by the existence of people living in London, so there are certain forms of human activity which do have certain effects on the environment but which are reasonably accepted; and I think that if we were to apply the principle to the point that any kind of discharge had to be eliminated so that we had absolute purity, that is a Holy Grail which would be so expensive that none of us could afford to do any of the other things we would like to do.

Lord Dixon-Smith

477. But does not the problem in the south west really mean that it is not analogous with the Thames situation just described because it is, of course, a tremendous tourist attraction and it is that mobile migrant population coming in which creates the difficulty down there. One factor in that surely is that although I accept there are some people down there who are not involved in the tourist industry, the tourist industry must involve large sections of the community (directly or indirectly) and in that sense, so far as they are the people the water company would bill, I would have thought it might be possible to arrive at a form of charging which might go some way towards relieving the situation, particularly those

who have no direct contact with the tourist industry as I have mentioned.

(Mr Byatt) I encourage the water company in the south west to consider the question of the seasonal tariff which would be one way of beginning to get at that. But when I say those things in the south west they say, "That would be destroying the tourist industry." There are no very easy ways out of that. But I take your point which is that people like me living in Birmingham will not pay any higher bills because I pay bills to Severn Trent, and I can go and do my wetsuit swimming (were I to do such a thing) at somebody else's expense off the Cornish coast. There must be a limit as to how far one can expect the purity of the high seas for people to swim further and further out. If I say "at public expense" I mean at the expense of everybody else in the country.

Baroness Gould of Potternewton

478. If I may follow that in a sense, about the actual effects on the tourist industry and the local economy. If the bathing waters are not of a sufficiently high standard, then people will stop going to those particular areas. That will affect the tourist industry, the local economy, and we will then have a spiral effect because you are already, in many of these places, in low pay areas. So you will have a situation where more and more people who are actually resident there will not be able to afford to pay their water bills. How much work is done actually to analyse that in order to find out the ultimate consequences of not having clean bathing water?

(Mr Byatt) My statutory responsibilities include the protection of customers and so I have been looking at the consequences which these things may have for customers' bills. I have not looked at what the consequences for the local economy would be if the bathing waters were not improved, but I do note in this case that there is considerable doubt on the health side as to whether there are, in fact, any real health benefits, although I am well aware that what are real benefits are not always the same as what people perceive.

Baroness Park of Monmouth

479. I would like to take us back to the European Commission because although we were told in the earlier session today that what has been done should be done and is a good thing to do anyway, I am concerned about the fact that we were originally told by the Commission that it would be cost neutral and it soon became very clear that they had not made any serious study at all. The methodology and guidelines that the Halcrow Report produced meant that all our companies here were able to report within the same framework and what they said was comparable, we had something to work on. What does Mr Byatt think should be said to our Ministers that we should be saying to the European Commission? Should we be saying, "The deadlines are too expensive."? That is one of the problems. Or should we be saying, "What is your methodology? What is the comparable nature with what you have judged for the rest of Europe?" Should we be, for our own public's interest,

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considering whether we should challenge both the timing and the lack of serious methodology and data analysis? How do you feel about that?

(*Mr Byatt*) I feel the procedures in Brussels are deficient in that there is not a proper analysis of costs, or little attention paid to the scientific evidence on the side of the benefits. So I would like to suggest to the United Kingdom Ministers that they were very fierce about having proper procedures which allowed these things to be properly looked after in the interests of the people of this country and, I may say, the people in other European countries. Then there is the particular question of whether this particular revision is desirable or not. These are political matters and rightly in the hands of Secretaries of State. From what I have seen, from the point of view of thinking about the protection of water customers, I cannot see the benefits which would be set against those costs. That is the position which I would be grateful if you took into account when making your representation to the Government.

Lord Pearson of Rannoch

480. Staying on the international scene, am I right in thinking that there was a Government initiative led by the Chancellor of the Exchequer in the autumn of 1993, to reschedule the timing of at least the Urban Waste Water Treatment Directive - I do not know whether the Bathing Water Directive was involved in that initiative - and, if so, does Mr Byatt know where that has got? Secondly, when we consider the whole question of subsidiarity, it is presumably only by reason of the scale and effect of the Bathing Water Directive that European legislation should be involved at all in this area. Is he aware of what other countries are doing, how much they are spending and with what success? Do we have other works which we are doing in this country, in any case, without being bossed around by Europe, such as repairing our Victorian sewers and that sort of thing, which to some of us might seem a better way of spending our money than some of these other Directives? What sort of sums are we spending on that if we are indulging in independent initiatives?

(*Mr Byatt*) On the question of the Urban Waste Water Treatment Directive, in the summer of 1993 in my *Paying for Quality* paper I said that the Secretary of State should go so far as to consider re-negotiating European Directives and I particularly had the Waste Water Directive in mind. I particularly was thinking of altering the timescale because that seemed to me relatively easy. I can think of all kinds of other reasons why I am not very fond of the Urban Waste Water Treatment Directive. In the autumn of 1993 the Chancellor of the Exchequer went to ECOFIN in Brussels and said how this would cost £10 billion and that something ought to be done about it. As far as I know, nothing has emerged from that process and I am disappointed about that. Other things, of course, were done. In particular, we looked at exactly how the Directive could be interpreted and the Department of the Environment discovered that it could be interpreted in such a way as it would cost £7 billion rather than £10 billion by, for example, defining exactly what were sensitive waters. There is a lot of

money in the fine print of these things. In terms of other things which we are doing domestically, the price limits set last summer included expenditure of £500 million on the improvement of the quality of river water in England and Wales, £500 million as opposed to a multiple of about ten times that on the Urban Waste Water Treatment Directive. Also, the price limits did allow for another £600 million on the prevention of sewer flooding and expenditure on maintenance of the capital stock running at around 1.1 billion a year for the next ten years. A great deal of the pressure on water bills has come from new obligations such as the Waste Water Treatment Directive.

Lord Pearson] Could I press Mr Byatt on whether he is aware of what other countries are spending and how successful they are being as a result of the other Directives and would it be true that possibly the ECOFIN initiative failed because we were probably outvoted?

(*Mr Byatt*) On the question of the ECOFIN initiative, I think nothing has yet been taken up by the Commission on this matter. On the question of what other countries are doing, I am not privy to any particular information on that. My impression is that the other countries in the Community are proceeding at their own pace on this matter and that their pace tends often to be slower than our pace. There is no inspection machinery which is supervised at a Community level. For example, there was an interesting question in the European Parliament some time ago as to why the city of Marseille was not going to enforce the Urban Waste Water Treatment Directive before the year 2005 and I think the Commissioner gave a rather dusty answer to that one.

Chairman

481. I think we are straying a little. I know that these are very interactive but we are directing our attention to looking at the Bathing Water Directive, so if we could perhaps return to that. In your economic assessment you used only health. You did not include tourism as an economic regulator as well. Is this because you do not think this is a very important feature?

(*Mr Byatt*) Not at all, no. The way I operate is that because I am the economic regulator and the Secretary of State is the setter of standards for water quality, I seek the advice of the Secretary of State on what standards are necessary in the way of implementing the Bathing Water Directive, for example, and receive guidance from him and then set price limits which enable the companies to carry out the investment necessary to meet those standards. So the setting of the standards is not a matter for me but a matter for the Secretary of State and my role is, if you like, to challenge whether it is a good thing from the point of customers, but this is asking questions—and then when the Secretary of State has provided answers then to allow the companies enough money to carry them out.

482. Has any quantification of the economic benefits to tourism been made as far as this is concerned?

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(Mr Byatt) We are not aware of any.

483. This seems to be a critical factor. For example, in the South West we are told that they have 30 per cent of the bathing beaches with three per of the population which makes your particular problem that you pose to us very acute. When you are dealing with the water companies there really are three ways in which money can be obtained: one is by higher charges, one is by higher borrowing and the other one is lower profits. Do you have any influence at all as to which of these three alternatives should be applied?

(Mr Byatt) Yes, in broad terms, because when we have new quality obligations, and this would be an example of that, we then calculate what prices would be sufficient to cover that expenditure in the way that we have suggested in our memorandum, but then when setting prices at periodic reviews we also look at the extra efficiency we can expect from the companies and lower profits. In the price limits set last summer at a national level the quality would have cost another £44. A lower rate of profit and greater efficiency would take about £24 off that, so about half the bill is absorbed in that way. As to whether the companies raise the money by borrowing or by a plough back of profits, then I reckon not to be concerned with that because that seems to be a matter for management.

484. Could we just return to this paradox that I find difficult in this and that is the public's apparent reluctance to pay for higher water charges but they are wanting higher water quality. I realise we may not be dealing with the same individual as far as this is concerned, but there is a general belief that water should be pure.

(Mr Byatt) There is a general warm feeling for the environment and that is good. Not very much market research has been done in that area, but I wonder if I may report one piece of work? A survey undertaken by the National Rivers Authority in the summer of 1993 found that half the respondents were willing to pay a little more on their water bill to clean up rivers and sea water, but, equally, half were not willing to pay any more. On average, if we take the ones who would be prepared to pay and those who would not, they were prepared to pay between £1 and £2 a month, so that is £24 a year. I talked about an extra quality bill of £44, of which people would pay about half and the company, so to speak, would pay about half. So if you take literally the results of that survey, they suggest that people were not prepared to pay for the increases in prices that I announced last July. There is not anything left in the kitty. Of course, this science is very much in its infancy and a lot of people say they want things but they want other people to pay for them and this is the great dilemma which we also face in the Health Service and Education, there is always somebody else who should pay. One of the merits, I think, of the regime for water which we now have is that the bills and the quality are much more closely linked and this concentrates the mind. Quite often in surveys people want to get off this subject. There is, I suggest, not adequate quantified survey evidence to suggest that people do want to pay the very large amounts that are incurred for the kinds of

things which in general terms they say must be a good thing. I suppose that is because there are plenty of other good things that they would like.

485. This is not a very fair question I am going to ask of you but it simply is: we have a future in which we are going to have to deal with the drinking water quality. As you rightly say, at the moment this implies a large expenditure of monies - more than we are talking about here in many instances - lead and various things of this nature. Where would you put your priorities?

(Mr Byatt) It must be a balance, rather than an absolute priority one way or the other, and I think it is a question of achieving some sensible rate of environmental improvement for some affordable rate of increase of the bills. I suggested at the time of the last periodic review of water prices that customers would be unhappy with bills that went up significantly, in real terms, and certainly not more than household incomes which over the long period have gone up at about 2 per cent a year. I had a notion that the real increase in water bills should be no more than 0 to 2 which is what customers want, and that is a very broad and crude way of expressing some sensible balance because there is a lot of improvement going on. The notion that the environment is going into some awful black hole seems to me quite unreal. I can, myself, remember the environment of 30 or 40 years ago. There have been big improvements and I am sure they should continue, but if you ask people to pay increases in bills of 5 per cent a year you get the kind of reactions you have had from water customers in the last five years, and if you ask them to pay 10 per cent a year - an increase above the rate of inflation which is what happened in the south west - you will get everybody knocking at the door of 10 Downing Street.

Lord Pearson of Rannoch

486. I wanted to ask Mr Byatt whether he feels an increase in bills on the scale he is talking about—which I understand could be £28 overall and double that in the south west—might it not re-open the whole problem of the settlement which was only achieved with some difficulty, as I understand it, in 1994, through his *Paying for Quality* letter, which reduced the increase from £77 to £44, as I think he said earlier. If we are going to be faced with increases of up to £56, do we face yet another rebellion by customers in the south west and has any work been done in that area?

(Mr Byatt) I fear that could well happen. This is talking about standards which would not have to come in until after the year 2005, but a lot of money would have to be spent before then and I have always been very concerned about the regional dimension of these matters. When the Secretary of State, Chris Patten, went and advanced the Bathing Waters programme in 1990/91, it did not look too bad nationally but it looked awful in the south west. We see that Halcrow's Report talked about figures at a national level, although these figures are built up from individual company figures. Perhaps your Lordships would like to know more about those individual

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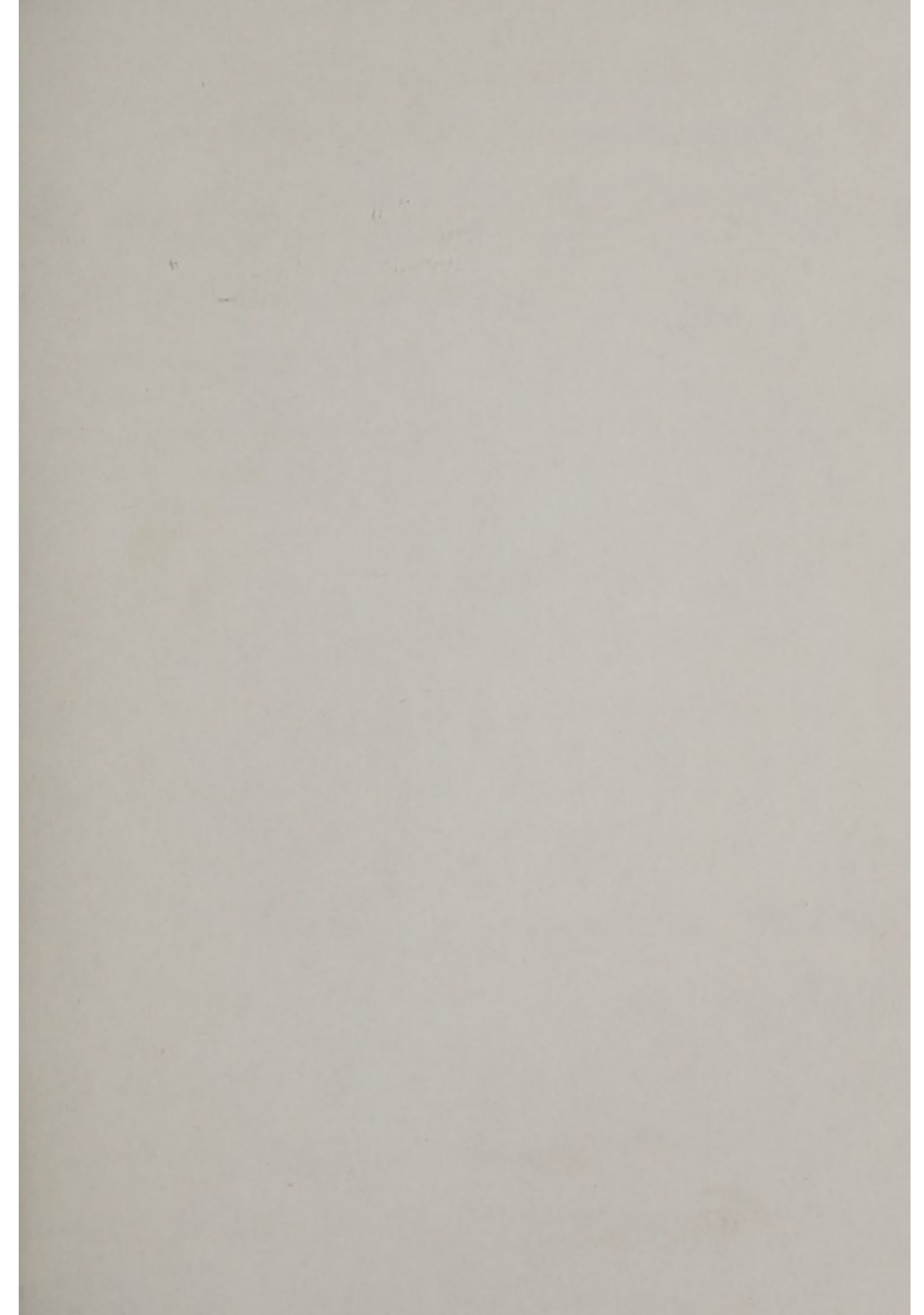
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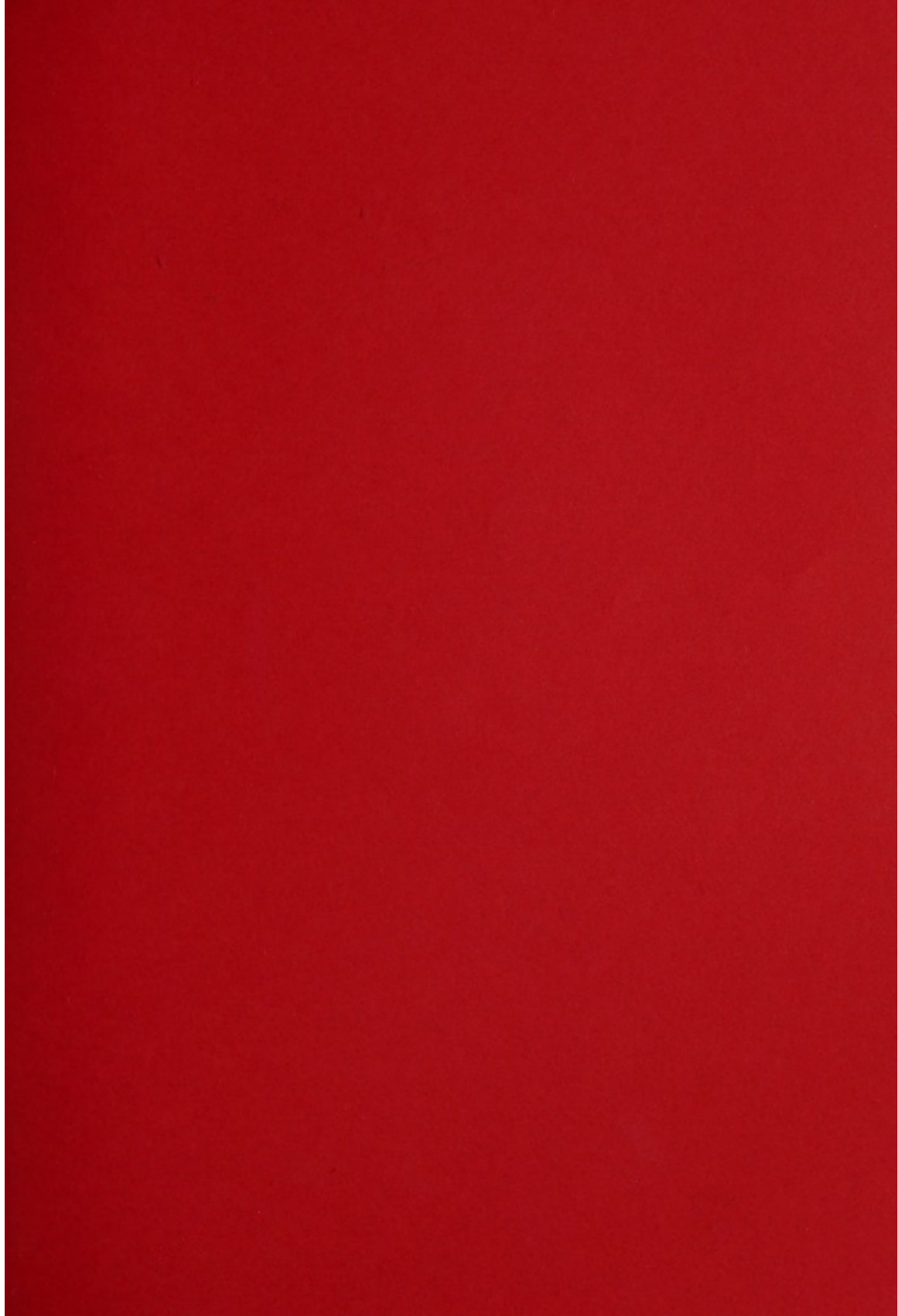
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company figures, because the companies presumably provided them to Halcrow's, to see the differences? I have no access to those numbers. I have simply looked at the population equivalent in different areas (or my staff have done so) and that is why there is the notion that it might be twice as much along the south coast, in the south west, but very much less in the north west. That is where it has come from but it is rather back of the envelope kind of calculations for what is a rather important matter.

487. Mr Byatt, may I thank you very much indeed for coming to see us today. It has been extremely useful to us. I realise that some of these figures, as you rightly say, are not hard figures but they do indicate to us the magnitude of the problems you face if you want to proceed in this way. May I say thank you on behalf of the Committee. It has been kind of you.

(Mr Byatt) Thank you, my Lord Chairman.





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