



FLOODING FROM SEWERS

Response to consultation

September 2002

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1. INTRODUCTION

- 1.1. In March 2002, Ofwat published "Flooding from sewers - a way forward". This set out our analysis of the problem of sewer flooding. It set out an approach for dealing with the issue, both in the short term, and after the periodic review in 2004 (PR04).
- 1.2 This paper summarises the views expressed by respondents and sets out our conclusions on how to deal with sewer flooding in the run up to PR04.
- 1.3 Our approach to longer term issues will be incorporated within our methodology paper, "The proposed framework and approach to the 2004 periodic review", due to be published in October 2002.

2. CONSULTATION

- 2.1 In our consultation we invited views on:
 - the priorities for reducing sewer flooding;
 - the strategic aims for the periodic review of price limits in 2004, so far as sewer flooding is concerned; and
 - changes in the way in which Ofwat (and the WaterVoice committees) monitor companies' performance in dealing with sewer flooding.
- 2.2 We received 64 responses to the consultation and these are available from the Ofwat library. Responses were received from WaterVoice Committees and water and sewerage companies as well as from the Environment Agency, Water UK, groups representing consumer and environmental interests, and companies operating in the water sector. A full list can be found in Appendix A.
- 2.3 We also held a seminar on 21 May to discuss the issues raised in the consultation paper. 93 delegates from companies, WaterVoice Committees, Reporters, and other organisations attended. A summary of the points raised in the seminar can be found in Appendix B.

3. CONCLUSIONS ON PROGRESS UP TO 2005

- 3.1 Our consultation paper invited comments on whether additional investment to tackle sewer flooding in the short term was desirable and practicable. Before and during the consultation period for 'Flooding from sewers – A way forward' we received representations for additional investment to deal with sewer flooding problems before we set prices again at the next periodic review in 2004-05. Amongst those proposing additional work before this date were WaterVoice Committees and their Council, companies and local authorities. As set out in MD180 we now confirm that we are prepared to discuss with companies, proposals for additional work.

- 3.2 To date we have had substantive discussions or agreed programmes with three companies about alleviating more sewer flooding problems than agreed at the last periodic review and have had initial discussions with a further three. So far these discussions have led to agreement to deal with nearly 1,000 additional problems of sewer flooding, including some of the worst cases of external flooding.
- 3.3 The majority of companies and WaterVoice have asked what we would expect companies' proposals to cover. In this section we detail the areas of information which companies should provide both to us and to their WaterVoice Committee to demonstrate the benefits to customers of their proposed programmes.
- 3.4 Before agreeing to additional investment we and the WaterVoice Committee would want to be content that:
 - 3.4.1 The company establishes a prioritization scheme in consultation with the WaterVoice Committee, which conforms to the principles set out below.
 - 3.4.2 The company discusses with us and the WaterVoice Committee what progress it expects to make against its prioritized list of projects and the expected net reductions in the number of properties on the at risk register.
 - 3.4.3 The company's Reporter confirms that the estimated costs are reasonable and that the schemes can be completed by March 2005.
 - 3.4.4 Delivery of other outputs required in the period to 2005, particularly the quality programme, is not jeopardized by the increased sewer flooding programme.
 - 3.4.5 Expenditure for sewerage supply/demand, or base capital expenditure (CAPEX) allowances have not significantly varied from that agreed at the last price review. And where there are significant variations that the reasons are explained to us by the company.
- 3.5 The costs incurred by the company in delivering the increased outputs will be taken into account either by logging-up or at an interim determination, subject to confirmation by the company's Reporter that:
 - 3.5.1 The expected additional improvement has been achieved.
 - 3.5.2 Where necessary the company's Reporter confirms that high priority schemes have been addressed.
 - 3.5.3 Where scheme costs are unusually high that he gives us his view as to whether the costs are reasonable. Where we are not

satisfied that costs are reasonable we may make an adjustment to the amounts allowed.

Principles for a prioritization process.

- 3.6 Any prioritization process should be guided by the principles outlined below:
 - 3.6.1 Problems should be prioritized on the basis of an overall assessment of the severity and frequency of the problems faced by the customers concerned. The cost of solving the problem may be either an integral part of the prioritization; or the scheme cost can be subject to a cap. Prioritization may also take account of properties in which customers are particularly vulnerable to the effects of sewer flooding incidents eg hospitals or schools.
 - 3.6.2 Companies should not simply base their prioritization on the cheapest cases but should consider the balance of costs and benefits in each case. Where the costs are extremely high a lower priority for a property may be justified.
 - 3.6.3 Prioritization schemes should take account of opportunities for reducing the risk of flooding afforded by synergies with other investment programmes - such as the combined sewer overflow (CSO) programme.
 - 3.6.4 Processes may place appropriate importance on schemes where the proposals are to deal with the worst cases of external only flooding. We would expect companies to have developed broad criteria so that judgements can be made to identify where cases are so severe and frequent that they could be considered as harmful to customers as internal flooding.

4. SUMMARY OF RESPONSES TO CONSULTATION

We received 64 responses: 9 water and sewerage companies, 10 WaterVoice Committees, 14 councils/MPs and 29 others, including several from members of the public. Each response covered some or all of the issues raised in the consultation paper, and the views expressed are summarized below. A list of respondents is included at Appendix A and responses have been placed in the Ofwat library.

The scale of the problem

- 4.1 The consultation document provided figures to show the numbers of incidents occurring each year, and the numbers of properties at risk of flooding from sewers. We suggested that it was unlikely that internal sewer flooding often goes unreported.

- 4.2 Respondents from all sectors suggest that current at risk figures underestimate the scale of the problem. Internal flooding incidents do go unreported by customers for several reasons: fear of impact on property prices, residents not being present to notice the flooding until after it has receded (eg in cellars or holiday homes), or one resident not reporting because a neighbour has reported his incident. Since at risk registers often rely on reports of flooding incidents, current estimates of properties at risk may be affected by under-reporting of incidents.

Causes of hydraulic overload

- 4.3 In the consultation document we discussed growth and new development as a cause of new problems. Several respondents expanded on this to highlight other factors that contribute to the occurrence of new sewer flooding incidents.
- 4.4 The most common contributing factor mentioned was increased runoff from hardstanding areas and infill development. Highway drainage was also raised by six respondents (four WaterVoice Committees, Water UK and Thames Water) as a particular problem. Other factors included infiltration into poorly maintained private sewers, and misconnection/unauthorized connection of surface water into foul/combined sewers.
- 4.5 Companies, Reporters and others predict that new problems will continue to appear as storms affect previously untested parts of the network.

Should water and sewerage companies be statutory consultees in planning decisions?

- 4.6 A significant number of respondents expressed the view that it would be helpful to make water and sewerage companies statutory consultees in the planning process. However others disagreed (including two companies) feeling that it would create more work and increase costs. Even where companies thought it helpful they suggested that it would lead to increased costs. They also observed that being made statutory consultees did not guarantee that their advice would be heeded. Some suggested that the power to require developers to pay for improvements and improving working relations with local authorities would be more beneficial.
- 4.7 In general, better communication between companies and the planning authorities is supported, whether by enforced consultation or otherwise. Yorkshire Local Councils Association suggests that developers should inform town/parish councils downstream, as well as those in the area of development.

- 4.8 We sought respondents' opinions on proposals to change the law to enable sewerage undertakers to limit the connection of storm or surface water drains to combined sewers in future. There is an almost unanimous view amongst those commenting, that companies should be able to restrict the right to connect surface flow from new properties to combined sewers. This was supported by the companies, WaterVoice committees, Environment Agency and others. However, members of the public feel that the right to foul drainage on appropriate terms should not be prejudiced by any changes to the law.

Reporting requirements

- 4.9 We suggested that reporting requirements/information systems need to be developed to support cost benefit analysis and to identify emerging trends.
- 4.10 Respondents feel that more consistency of reporting is required if the DG5 at risk statistics are to be used for comparison purposes. More prescriptive reporting requirements were requested by some. (For example: when should a property be moved from the 2 in 10 register to the 1 in 10 register? If not flooded in eight consecutive years; if not flooded in five consecutive years; only after preventative works have been carried out?) A contrary suggestion was to focus on actual incidents (eg the number of properties that have flooded in the last 5/10 years) rather than at risk figures.
- 4.11 Respondents agreed in their desiring for a clearer definition of severe weather. The current 1 in 10 threshold for a rainfall event used by the majority of companies should be clarified by specifying the duration of the rainfall event and/or preceding conditions eg high groundwater levels. A few people questioned the level of the current threshold, suggesting that a 1 in 30 event would be more appropriate. Some (the Environment Agency and residents' groups) dispute whether any exclusions due to severe weather are acceptable at all. Other requests to change reporting requirements appealed for more detail about cause of flooding, and the inclusion of restricted toilet use as well as actual flooding.

Prioritization procedures

- 4.12 We proposed that companies should base their prioritization schemes on a generally accepted framework to ensure consistency across England and Wales. This would be based primarily on frequency and severity of flooding incidents, as well as the unit costs involved. We also proposed to monitor company performance on progress against a prioritized list.

- 4.13 Most were in favour of a generally accepted framework for prioritization schemes, although this should not be too prescriptive. Frequency and severity of past flooding incidents should be the main driving factors of any prioritization methodology. Twenty respondents favoured including cost in the process to support cost benefit analysis, but at a lower weighting than frequency and severity. Four consultees (members of the public and residents associations) however, consider that cost should not be a factor.
- 4.14 There was general support from the industry for flexibility regarding cases where those affected by flooding were particularly vulnerable to ensure that these problems are dealt with quickly. Several companies however argued that as customers may move house the priority should be linked to properties which by their nature house vulnerable customers, such as schools, hospitals or residential homes.
- 4.15 There was a lot of support for monitoring companies' progress against a prioritized list. This came particularly from the companies themselves, as long as adequate allowances are provided. Some concerns were raised about how emerging problems would be dealt with under this system.

Uneconomic problems

- 4.16 The consultation paper raised the issue of schemes that are too expensive to be economical. Respondents accepted that there was a point at which remedial work becomes excessively costly. But there was no consensus on how to decide where that point lies.
- 4.17 The majority of respondents that expressed a view (particularly from WaterVoice committees) feel that a uniform cap on cost per property would not be appropriate. Those that did support a cap were unclear about the appropriate level. Reigate and Banstead Borough Council was the only respondent to express support for weighing up the cost of solutions against property values. Others were concerned that the variability of property values would make such an approach unfair.
- 4.18 In cases where an engineering solution is considered uneconomic, there was support for the use of interim solutions. This option was preferred by some WaterVoice Committees as an alternative to compulsory purchase of the property involved, although it was accepted that compulsory purchase might be considered as a last resort in some cases.

External flooding

- 4.19 We proposed the inclusion of external flooding in prioritization schemes, assessed according to severity and frequency.
- 4.20 The overwhelming majority are eager to see external sewer flooding cases included in the prioritization scheme alongside internal flooding problems. WaterVoice Central make the point that household insurance

is less likely to provide cover for external flooding. Many parties felt that it creates more of a health risk than internal flooding: More people potentially come into contact with the raw sewage when the flooding is external. Anglian Water maintained that it would be relatively easy to see which external cases were severe enough to take priority over internal cases. Respondents accepted that a lower severity rating could generally be allocated to external flooding events.

- 4.21 There was general support for tackling the most serious cases before 2005. Several respondents, however, expressed concern about investing in external sewer flooding whilst data on the occurrence and severity of the problem is limited. Most respondents agreed that Ofwat should extend its monitoring to cover external flooding. Work is needed to develop practicable definitions and reporting requirements.
- 4.22 Our consultation paper noted the possible impact of the Marcic case on companies' investment programmes and liability to pay compensation. The House of Lords has now granted Thames Water leave to appeal. However the case is unlikely to be heard for some time. We will need, in due course, to take account of the outcome in our decisions on sewer flooding in the longer term.

WaterVoice involvement

- 4.23 We proposed that prioritization systems should be developed in consultation with the relevant WaterVoice Committee.
- 4.24 Sixteen respondents from WaterVoice and the industry suggested that WaterVoice should help establish the prioritization process and agree ranking criteria. There was some concern, however, that WaterVoice Committees should not get involved in management decisions about the positioning of individual cases unless asked to arbitrate. Three WaterVoice Committees were keen to monitor progress of works and audit achievements.

Synergies with other programmes

- 4.25 We proposed that prioritization schemes should take account of opportunities for reducing the risk of flooding afforded by synergies with other investment programmes.
- 4.26 All those who commented agreed in principle with this idea. This could minimize disruption, save money and may involve sharing costs with other authorities. However, in practice, more than half of the industry respondents feel that there would be few opportunities for this. In particular, the CSO programme is not felt to offer synergies with the sewer flooding programme. Companies commented that CSO schemes tend not to be in areas where sewer flooding is a problem.
- 4.27 We invited comments on the costs, effectiveness and desirability of mitigating actions or temporary solutions.

- 4.28 All members of the public that commented felt that interim solutions should be used if a property is at risk of flooding but has to wait for a permanent solution. This view was shared by eleven other respondents (companies, WaterVoice Committees and councils).
- 4.29 Non-return valves (NRVs) are seen as temporary measures, and the view was that these properties should remain on the register, either at the same position or at a slightly lower priority. Mini-pumping stations could be considered permanent, although Southern Water and the Institute of Civil Engineers both point out that they do not address the problem if it is driven purely by lack of capacity, and may move the problem elsewhere.
- 4.30 Some WaterVoice Committees and companies argue that interim measures could be used in place of permanent works where the costs of capital schemes would be high, or where schemes are not planned in the short term.
- 4.31 Some companies want interim measures to be recognized in price reviews and also in their Overall Performance Assessment (OPA) score.

Studies to assess cost of solutions

- 4.32 We mentioned that we had recently commissioned work to better understand the costs of solutions to sewer flooding problems.
- 4.33 Respondents were pleased to note that research has been undertaken to assess costs of typical solutions to sewer flooding problems. However, five respondents (including four from the industry), feel that the results should not be used to benchmark solutions. There is no such thing as a typical solution, since each problem needs a tailor-made engineering project.

What should be done in the short term?

- 4.34 We proposed that each sewerage company should consider whether there is a need to progress more rapidly with the more serious problems.
- 4.35 There was much support for additional progress before 2005, and most felt that companies should aim to address more problems than planned for in the last price review. There was little specific comment on how much should be done in the short term. Members of the public in particular feel that work should begin in the short term, even if data about the exact scale of the problem is not available. Interim measures should be implemented to provide residents with some reassurance that something is being done. The worst cases of external problems should also be dealt with before the next periodic review.

- 4.36 The only notable exception was Northumbrian Water, who said that additional work is not necessary or practical in their region. They say that a sudden increase in the sewer flooding investment programme would be difficult to design and resource in the time available, given that we are currently in mid-period. They note that many engineering staff are engaged in other projects, including the CSO programme.
- 4.37 Whilst consensus from other respondents is that more work is necessary, there are concerns from Water UK and the Institute of Civil Engineers about the availability of skilled labour.
- 4.38 Companies want clarity about how additional work carried out before 2005 would be allowed for in the next price review.

Longer term progress

- 4.39 We invited comments on the rate and extent of progress in the longer term.
- 4.40 There was general consensus that further significant progress is needed before 2010 but few respondents expressed clear views about the extent of progress. There are calls from WaterVoice Committees and Water UK to clear the backlog of known problems on the at risk register by 2010, clearing the way to deal with emerging problems, and to address projected growth/demand and climate change after 2010. Severn Trent and WaterVoice Central both suggest that no property should remain on the register for more than five years. Several WaterVoice Committees felt that sewer flooding should be the highest priority, taking precedence over environmental and quality issues.
- 4.41 Dŵr Cymru Welsh Water said that they would like to progress seamlessly on works from this period to next, but that Ofwat's processes do not support this. If work for the first year of AMP4 is planned and agreed in advance, it may prevent the stop-go effect of the price review. Other companies have made the same point in discussions.
- 4.42 The issue of cost benefit analysis, and how it should be used to decide how far to progress is a very delicate one. Whilst accepting that sewer flooding is an emotive issue, and unpleasant for all those affected by it, respondents agreed that there are varying degrees of suffering involved. There was general consensus that it was appropriate to weigh the costs and benefits of schemes when deciding whether to proceed. There is currently limited information on the valuation of benefits. Respondents agreed that such issues would become more important once those properties most at risk had been dealt with.

Regulatory impact assessment

- 4.43 An underlying issue in the consultation paper was how far to progress in relation to the costs and benefits involved. The previous sections on progress in the short and longer term also relate to this. An initial attempt at a regulatory impact assessment was included in an annex to the consultation paper, and views were invited on this.
- 4.44 Within the regulatory impact assessment we discussed the benefits of sewer flooding alleviation in terms of the losses that would be avoided. Respondents did not comment on the scale of tangible and intangible costs incurred by those affected by sewer flooding.
- 4.45 Companies' experience suggests that the cost of solving sewer flooding problems generally vary from £17K to £150K, depending on the scale of works required. No significant further information on the value of benefits was provided by respondents. We do not therefore propose to issue a revised regulatory impact assessment but will keep the issue under review as new information becomes available.
- 4.46 While many respondents accepted that it was appropriate to weigh the costs and benefits when deciding whether schemes should go ahead, it was generally felt that this was a developing area.

Other issues raised by respondents

- 4.47 Respondents raised several other issues which go wider than the issues raised in our consultation but which are worth noting.
- 4.48 Companies and others felt that longer term planning for sewerage systems should take account of the possible impact of climate change. They suggested that this should be reflected in design standards for sewers.
- 4.49 A number of WaterVoice committees argued that there was a need for better co-ordination between the parties and clearer responsibilities in dealing with land drainage and flooding generally. They noted that customers do not always distinguish between the various causes of flooding. A number of respondents noted the impact of highway drainage on the operation of sewerage systems and called for more effective communication.

LIST OF RESPONDENTS

Water and sewerage companies

Anglian Water
Dŵr Cymru Welsh Water
Northumbrian Water
Severn Trent Water
Southern Water
Thames Water
United Utilities
Wessex Water
Yorkshire Water

WaterVoice Committees

WaterVoice Central
WaterVoice Eastern
WaterVoice North West
WaterVoice Northumbrian
WaterVoice South West
WaterVoice Thames
WaterVoice Wales
WaterVoice Wessex
WaterVoice Yorkshire
WaterVoice Southern

Organisations representing customer interests

Bricket Wood Residents' Association
Mencap

Trade bodies

Unison
Water UK

Environmental organisations

International Society for the Prevention of Water Pollution
Environment Agency

Local councils/MPs

Cherwell District Council
Cheshire Association of Town and Parish Councils
Chester City Council
Hart District Council
Jenny Randerson AM, National Assembly for Wales
Labour Councillor Ron Grahame, Burmantofts Ward
Leeds City Council
National Association of Local Councils
North Yorkshire County Council
Reigate and Banstead Borough Council
Rt. Hon. James Arbuthnot, M.P.
Sevenoaks District Council
Southsea Town Council

Yorkshire Local Councils Association

Reporters

CWJ Turner

Other Organisations

Association of Building Engineers

Architecture and Surveying Institute

Association of Drainage Authorities

Chartered Institution of Water and Environmental Management

Earth Tech Engineering Limited

Fusion Provida

G Forge (Civil Engineering) Ltd.

Institution of Civil Engineers

Linkwork Ltd

WaPUG

WRc

Other Respondents

H Aikinson and E Leyland

J Bristow

B Carter

P Foreman

S French

J Gass

B Goddard

D King M.I.C.E.

P Little

C Mallward

R Spencer

C Stott

D Young

FLOODING FROM SEWERS SEMINAR

Delegates from across the industry gathered on the 21 May 2002 to discuss the issues raised in the consultation paper. Presentations in the morning were followed by breakout workshops focusing on different aspects of the sewer flooding problem. The groups then reconvened to draw together the discussions in a plenary session. The wide spectrum of views sparked a lively debate, and the opinions gathered were very useful to the consultation process. A summary of the views expressed is set out below.

WORKSHOP 1:

HOW SHOULD SEWER FLOODING CASES BE PRIORITIZED?

We asked :

- What are the key criteria and how should they be balanced? Eg severity, frequency, recent events, cost.
- How separate are internal and external sewer flooding and what weight should we attach to schemes aimed at solving only external flooding problems?
- How should cases be treated when mitigating action has been taken to reduce risk?
- When is remedial action uneconomic and how should such cases be dealt with?

What are the key criteria and how should they be balanced? Eg severity, frequency, recent events, cost.

- Severity and frequency are generally considered to be the key element, although different companies have different definitions of this.
- Costs incurred in resolving the problem should be taken into account, but opinions varied about the weighting.
- Including intangible elements e.g. type of customer (pensioners, children?), use of property (second home, rarely used?) poses difficulties when ownership changes, as the priority would need to be reassessed to consider the new occupants.
- Cross-benefits with other schemes, such as those involving the Highways Authority or Environment Agency.
- Recency is a questionable factor, since its inclusion may lead to recent events taking priority over longstanding problems, or more severe incidents.
- Public relations e.g. involvement of the press or MPs should not be a factor, but in practice often affects priorities.
- It was generally felt that criteria should be decided by individual companies, although common parameters should be used for consistency.

How separate are internal and external sewer flooding and what weight should we attach to external only?

- Severity/impact is more important than whether an incident is internal or external.
- The nuisance factor may be greater with external flooding.
- The risk of contamination spread is greater externally, due to cars driving through it, pets taking it into several homes etc.
- The consensus was that internal and external flooding cases should be prioritized under the same criteria, without distinction.

How should cases be treated when mitigating action has been taken to reduce risk?

- This depends on the effectiveness of the measure used.
- The installation of a small pumping station serving a few properties may be considered a permanent measure, and protected properties could be removed from the register.
- Non-return valves should be considered short-term measures, therefore the property should remain on the at risk register, at least until permanent works have been carried out.

When is remedial action uneconomic and how should such cases be dealt with?

- Cases shouldn't automatically be ruled out due to high costs.
- Companies should make a judgement after looking at the individual case.
- The economic viability of purchase/demolition costs may vary by region, due to variations in house prices.
- Other factors, e.g. view of the residents/owner need to be considered.

WORKSHOP 2:

APPROACH TO REGULATION

We asked:

- Is the proposal to monitor progress against a prioritized list workable?
- How far should the WaterVoice Committees' involvement extend?
- What does this mean for the future of DG5?

Is the proposal to monitor progress against a prioritized list workable?

- The consensus was largely yes, although it could be complicated, since prioritized lists are rather dynamic.
- It may be possible to monitor progress retrospectively; i.e. funding granted according to what has been done.
- The list must be explainable to customers, so that they can see that their position is fair.
- Customers who have actually experienced flooding should be at the top of the list.

How far should the WaterVoice Committees' involvement extend?

- WaterVoice could provide a useful aid in deciding the cut-off between action and no action.
- WaterVoice could view individual cases from an individual's point of view, and move away from looking at numbers.

What does this mean for the future of DG5?

- There is some support for discontinuing use of the register for the purpose of monitoring company progress against sewer flooding.
- Most agree that the DG5 register doesn't represent the actual problem.
- The fact that the DG5 register doesn't cover external flooding is perceived as a problem.
- More consistency of definition is needed.

WORKSHOP 3:

FORECASTING AND MANAGING NEW PROBLEMS.

We asked:

- What is the most significant cause of new cases -weather, growth/new development, better modelling, other?
- How do companies plan for and manage impact of growth in demand on the local network and the impact further downstream.
- Should growth in demand on sewerage systems be more closely linked to sewer flooding programmes in business plans?

What is the most significant cause of new cases - weather, growth/new development, better modelling, other?

- New development is not a problem, because it can often be planned for.
- Creep (increased surface water input from patios/conservatories etc) from increased hardstanding areas is a major problem.
- WaSCs have relatively little power over illegal connections, which cause significant increases in flows.
- Other significant factors include deterioration of the system, increased infiltration, removal of CSOs, failure of private drainage and changes to highways.
- Customers do not distinguish between causes, they just want problems dealt with.
- Changing weather patterns, including an increasing number of localized storms, which affect previously unaffected sections of the sewerage network.
- Pre-existing problems emerge all the time, as more people report flooding incidents.

- We should expect new problems to emerge. Statistically it would take perhaps 50 years to expose all potential 1 in 30 problems across a network.

How do companies plan for and manage impact of growth in demand on the local network and the impact further downstream.

- A two-pronged approach is needed, firstly to deal with existing problems, and secondly to prevent future problems.
- Drainage area planning is currently used.
- Some companies use previous experience of additions to register to plan for the investment needed to remove properties from register in the future.

Should growth in demand on sewerage systems be more closely linked to sewer flooding programmes in business plans?

- This suggestion was strongly supported, and would fit more comfortably with the way that companies deal with sewer flooding programs.

WORKSHOP 4:

HOW MIGHT OFWAT'S REPORTING REQUIREMENTS BE IMPROVED?

We asked:

- Are there significant omissions?
- How should severe weather cases be dealt with?
- How should mitigating measures/temporary solution be reflected – do properties remain at risk?

Are there significant omissions?

- External sewer flooding should be included, but only with a loose definition, to encourage data collection.
- The cause and effect of flooding incidents should be included, e.g. is it exacerbated by creep? Who is responsible?
- Factors additional/particular to a region e.g. topography, very steep catchments should be considered when reporting performance.
- The use of the data was queried, with the suggestion that it should be used to understand the problem, not to compare the companies.
- More detailed specifications from Ofwat would be welcomed as to how/when properties should be included on the register.

How should severe weather cases be dealt with?

- Flood return periods may be a better measure than storm return periods for determining whether an incident was caused by severe weather. The antecedent conditions and length of the rainfall should be taken into consideration.
- Many incidents occur within a 1:10 to 1:30 return period, but most companies define severe weather as greater than 1:10. Should there be two categories?

- There is support for defining an exceptional event (including soil moisture deficit, groundwater levels etc), rather than specifically rainfall events.

How should mitigating measures/temporary solution be reflected – do properties remain at risk?

- It was felt that mitigating measures e.g. Non return valves (NRVs) do not take away the problem, but may alleviate it.
- A temporary solution may serve as a permanent solution e.g. pumping stations.
- Generally where an NRV has been used companies keep the property on the at risk register, regardless of whether the property floods.

LIST OF SEMINAR ATTENDEES

Other government departments

Department For Environment, Food & Rural Affairs

Water and sewerage companies

Anglian Water

Dŵr Cymru (Welsh Water)

Northumbrian Water

Severn Trent Water

South West Water

Southern Water

Thames Water

United Utilities

Wessex Water

Yorkshire Water Services Ltd

WaterVoice Committees

WaterVoice Central

WaterVoice Eastern

WaterVoice North West

WaterVoice Northumbria

WaterVoice South West

WaterVoice Southern

WaterVoice Thames

WaterVoice Wales

WaterVoice Wessex

WaterVoice Yorkshire

Other organisations

Binnie Black & Veatch

Charles Haswell and Partners Ltd

Earth Tech Engineering Ltd

Ewan Associates

Fusion Provida Limited

Halcrow Management Sciences

HR Wallingford Ltd

Linkwork Limited

Montgomery Watson Harza

Mulholland and Doherty

R Addison Engineering Services

Strategic Management Consultants

Tully De'Ath Consultants

Tynemarch Systems Engineering Ltd

VOCE

WRc Plc

WS Atkins

Environmental organisations

Country Land & Business Association

Environment Agency

Environment Agency - Midlands Region
The Wildlife Trusts

Trade bodies

Association of British Insurers
Association of Building Engineers
Unison

Organisations representing customers' interests

National Flood Forum