

Collaborative Research Programme On River Basin Management Planning Economics

Public Preferences for WFD Outcomes



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CRP Project 4d:
Public Preferences for WFD
Outcomes [Prioritisation]

Final Report

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1. INTRODUCTION

This report for DEFRA is the final output from CRP 4d, a project jointly funded and steered by WFD stakeholders in the UK as part of the UK Collaborative Research Programme (CRP).¹ By way of introduction, 1.1 sets out the objectives for the study, 1.2 describes the structure of the project, and 1.3 outlines the remainder of the report.

1.1. Objectives

The aim of the CRP 4d is to deliver public preference information which will aid the Environment Agency and other stakeholders to maximise the benefits delivered through prioritisation of the Programme of Measures within the River Basin Management Plans (RBMPs). The project is to elicit the general public's preferences and opinions for WFD outcomes (ecological status of water bodies) and related non-WFD outcomes (presence of general litter and access to the water environment). The key purpose of the study is to provide qualitative, and, where possible, quantitative information regarding the public's preferences for the different sub-components of WFD improvements, and the sequence of delivery of these components. This will inform decision-making on what areas of the water environment relative to other water environment aspects would yield more or less benefit to the general public.

The present study follows the recent CRP Project 4b/c, a major stated preference survey that assessed the monetary value of the non-market benefits to households in England and Wales arising from implementation of the WFD. This previous study was designed to guide the scale of implementation, by deriving values for incremental changes in the amount of water environment improved, and to provide some information that would be useful for prioritising between schemes.

The amount of information on public priorities elicited from CRP 4b/c was necessarily limited because of the practical issues regarding the length and complexity of the survey. The main stated preference element of CRP 4b/c elicited household priorities between improving water bodies that are local to their household, against non-local water bodies, and between improvements that bring the worst areas up to moderate quality, against those that bring moderate quality water bodies up to good ecological status. An additional, non-stated preference, question elicited households' opinions on the most important of the benefits of the WFD that were described to them.

The present study deliberately sought to build on the findings from the earlier study, and avoid duplication. This report therefore includes the findings from CRP 4b/c, and draws on these findings, as well as the new findings from the present study, to conclude on the public's priorities over a fuller range of prioritisation issues arising in relation to WFD implementation.

¹ The CRP was set up early in the life of the WFD to develop the methodologies needed to undertake the WFD economic analysis. The CRP involves fourteen parties and is chaired by DEFRA. Parties to the CRP are: Department of Environment, Food and Rural Affairs (DEFRA), Scottish Executive, the Environment Agency, Scottish Environment Protection Agency (SEPA), Natural England, Department for Business, Enterprise and Regulatory Reform (BERR), UK Water Industry Research (UKWIR), Royal Society for the Protection of Birds (RSPB), Welsh Assembly Government (WAG), Department of Environment Northern Ireland (DOENI), British Ports/UK Major Ports Group (UKMPG), Countryside Landowners and Business Association (CLBA), National Farmers Union (NFU), and Joint Environment Programme (JEP). Involved groups include the Consumer Council for Water (CCW).

Specific policy questions to be addressed within CRP Project 4d included the following:

1. In designing programmes of measures are there aspects in terms of outcomes brought about by mitigating specific pressures of the water environment that the general public would like to have improved first/earlier/last if there is a choice of measures leading to differing sub-outcomes?
2. If so, is it possible in an intelligible way to assess the strength or give a sense of proportion of such preferences?
3. Do the general public have preferences for improvements to be focussed on certain types of water bodies?
4. Will the level of WFD generated benefits be impacted by the presence of litter in and around water bodies?
5. Is the realisation of WFD benefits constrained by issues related to the level of access to improved water bodies?

The study was also to consider the underlying motivational grounds or drivers of people's attitudes for water environment improvements, ie what drives a person's benefit for water environment improvements? Finally, due to concerns raised during the course of the study regarding the public's lack of knowledge or interest in water environment issues, the study sought to investigate the extent to which this is the case, and to understand households' preferences regarding the extent to which they would prefer to leave decisions to experts as opposed to responding to their own possibly under-informed opinions.

1.2. Structure of Project

The project has consisted of a two-phase approach. The first phase involved a review of existing materials relating to public preferences towards water environment-related outcomes. These materials included outputs from the qualitative and main survey research components comprising the CRP 4b/c study, plus the wider literature relating to public preferences towards water environment-related outcomes. The materials were reviewed to determine concrete options for taking the study forward for the second phase. For Phase 2, the research strategy agreed with the Steering Group was to design and implement a telephone non-stated preference survey of a representative sample of 750 households across England and Wales. The present report covers the full study²

1.3. Structure of Report

The remainder of the report is structured as follows:

- Section 2 presents a review of the findings from CRP 4b/c relevant to prioritisation;
- Section 3 describes the design of the main survey and its implementation, including a description of the sample obtained;
- Section 4 presents the findings from the main survey; and,
- Section 5 presents our conclusions on all the issues covered in this report.

² The full reference for the Phase 1 report is: Accent (2007) *Public Preferences for WFD Outcomes [Prioritisation]: Report on a Scoping Study to Guide the Specification of Further Research*, A Report for DEFRA, December 2007

The report is accompanied by a separate document containing three appendices: Appendices A, B and C contain the recruitment questionnaire, main survey questionnaire, and main showcards used in the survey, Appendix D contains the verbatim responses to the open-ended questions asked in the survey, Appendix E presents supplementary analysis tables, and Appendix F contains our review of two reports from the wider literature relevant to prioritisation over WFD schemes;

2. REVIEW OF CRP 4B/C FINDINGS

This section summarises the key findings from CRP Project 4b/c in relation to the public's preferences for different types of water environment improvement. Findings from the qualitative research preceding the main survey are presented first. The second part then presents findings from the main survey³.

2.1. Qualitative Research Findings

This subsection summarises findings on public priorities from two phases of qualitative research: (i) an initial phase of deliberative (focus) group research, prior to the design of a full survey instrument, and (ii) an interim stage of focus groups and cognitive interviews in which a full draft survey instrument was tested and refined.

Results from qualitative research cannot be treated as representative of the population because of the small sample sizes, and because some views are, by the nature of the process, crowded out by dominant characters. The findings presented here should therefore be interpreted as indicative, rather than as robust quantitative evidence on public priorities.

2.1.1. Deliberative Group Research⁴

The deliberative research group structure included an initial group discussion, which explored what individuals value about the water environment and how they value it. At the end of this discussion respondents were given a pack of information to take away and 'deliberate' on before reconvening to see if, and to what extent, the information changed respondents' views and attitudes towards how individuals value the water environment. The main aim of the research was to provide data that would aid in the formulation of the stated preference (SP) questionnaire and other aspects of the main survey design.

Six pairs of groups were held, 12 in total, across three locations. Each group was split by socio-economic group (SEG) and each had a mix of age and gender.

High priority for the worst areas

A majority of participants felt that the worst areas - defined as those most at risk of failing to achieve Good Ecological Status in the absence of intervention - should be given most attention, and should be tackled first. There was a strong sense that any site in this condition needed attention. Sites that were described as 'moderate' were middle priority and those described as 'good' were least priority.

Higher priority to local water bodies than those further afield

The proximity of water bodies was a strong influence on participants' priorities for improvement. Local water bodies were clearly a highest priority for many participants.

A perceived importance of the linkages between waterways

A small number of respondents felt the priority should be making all locations a bit better; the rationale being that if the focus is on certain areas only, those that are not tackled will start to deteriorate. There was also a strong sense that the source of the

³ The full reference for the main CRP 4b/c report is: NERA-Accent (2007) *The Benefits of Water Framework Directive Programmes of Measures in England and Wales*, A Final Report to DEFRA re CRP Project 4b/c, 6 November 2007

⁴ The full reference for the deliberative research report is: Accent (2007) *Water Framework Directive – CRP 4b Benefits Context Study*, Final Report for DEFRA

problem should be tackled first. For example, there was seen to be little point in improving estuaries and lakes if what feeds them is polluted.

Higher priority to addressing point-source and diffuse source pollution, than other pressure sources

Participants discussed the problems caused by the five main pressures identified by the WFD: (i) abstraction, (ii) point source pollution, (iii) diffuse-source pollution, (iv) hydro-morphology, and (v) alien species. Of these, having been presented with maps showing the risks posed by these sources around the country, some participants expressed a strong view that the main areas that should be addressed were point source and diffuse source pollution. The former because the problem was easier to identify and therefore solve; the latter because there were more sites at risk. The area of least priority was low flow rivers as this was seen as being dependent on the weather with the outcomes largely aesthetic improvements.

Higher priority to rivers and lakes than other types of water body

A mix of views was expressed regarding the importance of maintaining and improving different types of water body. Rivers seemed to be a more important priority than other types of water body, and more people were willing to pay for improvements to rivers and lakes than for improvements to coasts, estuaries and groundwater. Some considered different types of water body to have equal status however. Interestingly, people seemed more willing to pay for improvements to groundwater than either coasts or estuaries, perhaps indicating their concern about long term water supply.

The strength of feeling towards rivers and lakes in Northallerton, a rural town in North Yorkshire, was much stronger than in the cities of London and Cardiff, where there was a more equal spread in terms of paying for improvements to all different types of water bodies.

2.1.2. Phase 2 Focus Groups and Cognitive Interviews

Focus groups and cognitive interviews were conducted to test and refine specific aspects of the main survey instrument. One of the main aims was to explore the public's priorities with respect to the different attributes that could be used to describe the state of water bodies at different ecological status levels. This exploration was to provide guidance for drafting the descriptions of the high, medium and low quality levels needed for the main SP survey instrument.

High priority to addressing litter problems

Litter seemed to be a particularly important issue for many. People spontaneously mentioned litter in Birmingham, Bristol and Norwich saying things like...

“The quality of water is beautiful because it comes straight out the ground, but its just what the people have done. Whatever council is in charge of it, they don't seem to give it much”.

Bristol C2DE

“I've been on a boat all around the Bristol canals and waterways and the sides of the canals seem to be in a very sad condition. There are a lot of places where they have cement, I don't know what they would have been, but they were crumbling and ugly, and the rubbish up against the sides. It just looks very depressing”.

Bristol C2DE

“I have seen a lot; boats chuck their rubbish over the side”
Norwich ABC1

There was a perception that people throw all kinds of rubbish into rivers and canals. A variety of litter was mentioned including burnt out cars, shopping trolleys and plastic bags.

Priority ranking of water attributes

A set of 18 possible attributes describing the quality of water bodies was presented to focus group participants and cognitive interview respondents to rank in order of priority for improvement, generally across the country. This exercise was designed to assist in the drafting of descriptions of the state of water bodies at different ecological status levels.

Table 2.1 presents the findings from this ranking exercise.

Table 2.1. Public Priorities Regarding WFD Outcomes

Attribute	Cognitive Interviews (30) Average Rank	Focus Groups (58) Average Rank
The clarity of water – whether the water is discoloured or clear	5.5	6.9
How often and how many fish are killed from sewage or pollution	5.6	5.6
Whether or not the water is safe for drinking	6.0	8.2
The presence of slimes or foams on the water’s surface	6.5	6.8
The smell of the water	7.0	7.0
The presence of litter	7.3	9.3
Number and types of fish in the water	8.1	5.5
Number and types of insects and other small living things in and around the water	8.6	6.0
Number and types of plant life in and around the water	9.0	5.5
Number and types of animals and birds living around the water	9.2	5.8
The number and frequency of algal blooms	10.2	8.6
The ability to see the water body and its surroundings	10.8	11.1
The flow of the water – how quickly or slowly the water moves along	11.7	11.6
The presence of non-native or invasive plants, fish and insects	11.9	10.3
The ability to use the water for swimming	12.5	10.0
The amount of man made changes to the water body	12.5	11.0
The ability to use the water for fishing	13.1	10.8
The ability to use the water for canoeing	15.9	13.9

Source: NERA-Accent (2007)

The cognitive interview results show that, apart from the number of fish killed as a result of pollution, that water aesthetics were the highest priority. This was followed by the necessity to ensure a healthy environment for animals, flora and fauna. The least important issue was recreational activities on the water such as canoeing, fishing and swimming.

The focus groups show that protecting fish, animals, flora and fauna is the most important aspect of maintaining a healthy water environment. Water aesthetics were of secondary importance while recreational activities, albeit in a different order to the cognitive interviews, were of least importance to consumers.

The ranking results, and all of the qualitative research findings presented here, should be interpreted only as indicative, rather than as robust quantitative evidence on public priorities. Quantitative evidence from a large sample survey is needed to draw valid inferences to the public’s priorities.

2.2. Main CRP4b/c Survey Findings

2.2.1. Main Findings from CRP 4b/c Stated Preference Research

The CRP 4b/c survey included a choice experiment which enabled the estimation of separate values for local and non-local improvements, and separate values for improving the worst areas and for increasing the amount of good areas. These values represent a good source of quantitative evidence on the public's priorities with respect to these types of improvements.

Higher priority to local water bodies than those further afield

The results showed that percentage improvements to the whole of England and Wales were found to be valued only somewhat more than percentage improvements in the local area. The relative size of the areas is around 20-1, implying that 'per sq. mile' values are very much higher for local improvements than for distant ones. This finding is supported by descriptive statistics showing that the feeling of the majority of respondents that making improvements near where people live should be a priority.

Higher priority for creating good areas than tackling the worst areas

As regards improving the worst areas versus increasing the amount of good areas, the general result was that increases in good quality were valued somewhat more than decreases in low quality, though not at all models exhibit this, and the qualitative work found the reverse. Overall, the evidence is therefore mixed on this issue.

2.2.2. Other Findings from Main CRP 4b/c Survey

The main survey for the CRP 4b/c study also included two attitude / opinion questions relevant to prioritisation. The first of these asked respondents their opinions on the most important of the WFD benefits described to them. The second asked, in a limited way, how they felt improvements should be prioritised.

Table 2.2 shows the full results on households' opinions on the most important of the WFD benefits, as described to respondents.

Table 2.2: Opinions on Most Important WFD Benefits

Most Important WFD Benefit	Proportion of Sample (%)
Direct Use Benefits	
Improved conditions for fishing	2.7
Improved conditions for contact activities	23.0
Improved conditions for other activities	20.7
All Use Benefits	46.4
Non-use and Perhaps Use Benefits	
Knowledge of improved habitats for plants, animals and fish	49.2
Other	1.9
Equal	1.9
None/Don't know	0.6
N	1389

Source: NERA-Accent (2007)

Table 2.2 shows that there are an approximately equal number of households saying that improved conditions for direct use benefits were the most important, as those that said that knowledge of improved habitats benefits were the most important.

The second attitude / opinion question related to respondents' preferred order of improvements. Table 2.3 shows the full results for this question.

Table 2.3: Attitudes towards WFD Improvement Priorities

Preferred Order of Improvement	Proportion of Sample (%)
Worst areas, judged by scientists	36.4
Near where people live	44.2
Quick + low cost	18.9
Don't know	0.4
<u>Not Stated</u>	0.1
N	1389

Source: NERA

The most popular order of improvements amongst respondents was for those areas near where people live to be improved first. Quick, low cost solutions were not preferred.

3. MAIN SURVEY DESIGN AND IMPLEMENTATION

The first part of this section, 3.1, describes the design of the questionnaire for the main survey for the present study, and our approach to testing it prior to implementation. The second part, 2.2, describes the sampling strategy, and the implementation of the survey, including comparisons of sample characteristics against target quota.

3.1. Questionnaire Design and Testing

This sub-section begins by discussing the key design considerations involved in developing the survey questionnaire. It then describes our approach to testing, and summarises the results from this testing.

3.1.1. Design Considerations

The design of a questionnaire which aims to elicit public preferences, must address a number of practical questions:

- What types of preference elicitation questions?
- What representation of WFD and related non-WFD outcomes?
- What information and/or visual materials?
- What contextual information?
- What validity checks?

Our approach to these questions is described below.

Types of preference elicitation question

The types of questions adopted for the Phase 2 main survey were two-part continuous rating scales, with the first part an importance rating, and the second part a satisfaction rating, both referring to a discrete feature, or characteristic, of water environments. As an example, one of the features to be considered was the abundance of plants and greenery. For this feature, the adopted question types were as follows:

On a scale of 1 to 10 where 1 is “not at all important” and 10 is “extremely important”, how important is it to your household (/ you) that the water environment in general, ie any rivers, lakes, coastal areas, and so on, provides an abundance of plants and greenery?

On a scale of 1 to 10 where 1 is “not at all satisfied” and 10 is “extremely satisfied”, how satisfied are you with the current state of the rivers, lakes, coastal areas, and so on, that you have visited in the past year, with respect to the abundance of plants and greenery?

The key statistic to be derived from these questions is the difference between mean importance and mean satisfaction. This statistic provides our central measure of the priority that the public, overall, attaches to a feature of the water environment.⁵ This

⁵ While a stated preference approach, such as choice modelling, could be developed with stronger theoretical robustness, the approach agreed with the Steering Group for Phase 2 was to restrict attention to non-stated preference questions for eliciting public preferences. Thus, contingent valuation and choice modelling approaches were explicitly excluded from the scope of the Phase 2 survey design. The principal reason was the lack of time available to design, test and refine a new stated preference instrument.

two-part question type is appropriate for eliciting preferences between types of improvement, and has been used successfully in many surveys.⁶ The format was tested in cognitive pre-testing and found to work effectively for the present context. (More detail on the cognitive testing is provided later in this sub-section.)

Representation of WFD and related non-WFD outcomes

The features asked about, via the question types described above, included the following:

Aesthetic characteristics:

- General litter, such as plastic bags, paper, cans and bottles in and around the water
- Foam or slime on the water surface
- Algae or bindweed
- Murkiness or discolouration
- Bad smells
- Erosion of banks and shores
- Man-made features, such as dams and weirs
- Crowds of people

Ecological characteristics:

- Abundance of plants and greenery
- Variety of plants and greenery
- Abundance of fish, birds and other animals
- Variety of fish, birds and other animals

Accessibility and provision of public facilities.

These features covered the full range of WFD, and related non-WFD outcomes needed for prioritisation. The order in which the features were asked about was randomised over respondents so as to avoid order-related biases affecting the results.

After asking about each feature in respect of the England and Wales water environment generally, respondents were asked which, if any, types of water body each feature was more, and less, important for. These follow-on questions were to elicit households' preferences over different types of water body, for different types of improvement.

Information and visual materials

Whilst it was anticipated that many respondents would feel insufficiently informed to confidently assess their satisfaction with regard to the current state of the water environment across the wide range of features and types of water body in question, and that they might benefit from a concise objective depiction of the current state of the environment, such information did not exist at the time of the survey development, and it would have been impossible to put such information together as part of the present study.

⁶ For example, see MVA (2003) *Customer Research 2003: Periodic Review – National Report*, Research Study Conducted for DEFRA, WAG, Ofwat, Watervoice, Water UK, EA, DWI, English Nature, Wildlife and Countryside Link, December 2003

Basic showcards were given to respondents to assist with the smooth running of the survey. These provided no new information on the national or local prevalence of any problems in respect of the features in question in the survey. Thus, all questions relating to satisfaction with the current state of the water environment were asked with the intention that respondents would answer on the basis of their own experience.

It might be expected that, where respondents have limited experience in using the water environment, and/or limited knowledge of water environment issues, then their preferences may be liable to change upon becoming informed. It was not possible unfortunately to provide respondents with sufficient information of the required type to guarantee a minimum knowledge level with which to respond. Consequently some respondents will not have responded from an informed viewpoint. While this still provides a fair reflection of public preferences, the results from this survey should be interpreted with some caution for this reason.

The importance of information provision was explored in the study, albeit in a fairly limited way, by re-visiting some of the CRP 4c respondents as a portion of the sampled population. Awareness levels of the issues in question were expected to be higher with this subset, than for new recruits. The main results have been compared across the two samples – the re-visited CRP 4c sample, and the new sample – to investigate whether there were any systematic effects relating to the experience of having been through the CRP 4c survey. Appendix E contains the results from this comparison. These results show conclusively that there is no difference between the samples in respect of their priorities.

Whilst the information provided in the CRP4c did not include a scientific assessment of the state of the water environment along each of the attribute dimensions (litter, bad smells, etc), that would be necessary to develop an informed prioritisation, we cautiously conclude, from this limited assessment, that the public's priorities are fairly robust to the provision of information on the overall state of the water environment. We cannot conclude that their priorities would not change had they been given information on the problems in the water environment due to each of the attributes individually.

In order to address the issue that many respondents may lack an awareness of water environment issues, or, for whatever reason, may have difficulty in providing a valid, reasonably considered, response to the preference/opinion questions, the instrument was designed with two targeted features:

- a statement at the start of the survey, saying: *Please feel free to say "I don't know" to any of the questions if you feel you don't have enough knowledge of the issue to offer a reasonably informed opinion,* and
- a section of questions towards the end of the survey, asking respondents for their views on the decision making process.

Results on respondents' views on the decision making process are reported in Section 4.

In respect of visual materials, no illustrations or photos were provided to help respondents picture the types of water environment characteristics, activities and water bodies in question. There was insufficient time during the development of the survey to assemble suitable such materials, as none were readily available. The results from the cognitive testing suggested, however, that respondents did not have difficulty understanding these features of the survey instrument.

Contextual information

The elicitation of preferences requires that respondents are presented with an appropriate context for decision making. For the present survey, to elicit public priorities between types of WFD, and related non-WFD, improvements, the following table breaks down the contextual statement that was read to respondents into its component sentences, and explains why each was included.

Table 3.1: Contextual Statement Preceding Elicitation of Importance and Satisfaction Ratings In Respect of Features of the Water Environment

Statement	Reason
<i>“Over the past 10 years, significant improvements have been made to the quality of the water environment in England and Wales</i>	to prevent respondents from protesting along the lines that they have already paid lots of money but nothing gets done.
<i>Now a new law is in place, which has as its first goal to make sure that no place gets any worse from now on. It then aims to make substantial improvements within the next 8 to 20 years.</i>	to accurately summarise the aims of the WFD so that the decision-making context for the respondent is closely linked to the real policy context.
<i>The following questions ask you to decide how important different features of the water environment are to you, and how satisfied you are with the current situation with respect to these features.</i>	to describe the task they will be asked to perform
<i>The amount of money available to make improvements is limited and not everything can be done.</i>	to stress the fact that there are trade offs to be made so that respondents don't choose “extremely important” for all attributes.
<i>The answers you give to these questions will be used to help determine the priority that will be given to making different types of improvement to the water environment.</i>	to give the respondent an incentive to consider the questions carefully and respond consistently with their true preferences.
<i>Please feel free to say “I don't know” to any of the questions if you feel you don't have enough knowledge of the issue to offer a reasonably informed opinion.”</i>	to increase confidence in the results for those who don't say “I don't know”, given that many were thought likely to lack an awareness of water environment issues, but may not answer “I don't know” without encouragement.

The contextual statement read out for questions relating litter and ecology was as follows:

“The new law is focused on improving the ecological quality of water bodies and their surrounding environments. It aims to improve the abundance and variety of plants, fish, birds and other animals. The presence of general litter, however, such as plastic bags and bottles, does not in general harm the ecology, and so may not necessarily be tackled unless there is strong public demand.”

This statement was to accurately summarise the aims of the WFD and present the respondent with a decision-making context that is closely linked to the real policy context.

Following the questions on priorities for types of improvements, the questionnaire included a section asking about priorities for where to make the improvements. The contextual statement read out to respondents for these questions was as follows:

“The following questions ask for your views on the importance of public accessibility in determining where improvements should be made. In some places, access to the water is restricted to clubs or private land owners. In other places, access is physically impossible, or very difficult. In other places still, whilst the waters are physically and legally accessible, they are rarely visited by the public due to their remoteness from populated areas.”

This statement was again designed to present the respondent with a decision-making context that is closely linked to the real policy context.

Validity

The order in which the attributes were put to respondents for importance and satisfaction rating was randomised so as to avoid order-related biases.

In addition to the main questions, which elicited public preferences for WFD and related non-WFD outcomes, a number of other questions were included in order to be contribute to an assessment of the validity of the survey responses, and the sample obtained. Questions were asked on households’ use of the water environment, on respondents’ reasons for giving the answers they did to the preference questions, and on demographic characteristics. Finally, the survey included questions for the interviewer after the completion of the interview, which asked for assessments of: (i) the level of understanding, (ii) the degree of effort, and (iii) the degree of fatigue, shown by the respondent. An analysis of responses to all of these questions contributes towards our assessment of validity of the survey responses.

Testing and Refinement

A draft of the questionnaire suitable for cognitive testing was prepared by Accent, with Steering Group review, and implemented on a sample of 30 households in the Hull and London areas. The cognitive interview questionnaire was similar to the final version, but several additional questions were included to fully explore the motivations behind all of the answers and to check that respondents were understanding the questions as intended, and responding consistently, and in a way that was likely to lead to useful results for policy decision making.

The results from the cognitive interviews were very positive. Feedback from the cognitive interviewers established that the survey was very interesting, easy to follow, and that people were willing to take part. Interviewees were able to understand and respond to the questions as intended, and with the expected types of motivations for answering in the way they did. Furthermore, the results from the cognitive survey showed sufficient variation to lead us to conclude that the data from the main survey was likely to provide useful information for policy decision making. Some minor issues were identified.⁷ These were dealt with as part of a re-drafting of the questionnaire for the main stage.

⁷ For example, respondents preferred to be able to comment on different types of water body for each feature, rather than being asked to comment on the relative importance of different water body types with respect to all aesthetic features combined, and with respect to all ecological features combined. The questionnaire was re-structured for the final version to take this finding into account.

3.2. Sampling Strategy and Implementation

In this subsection, we describe the sample design, the recruitment methodology, the fieldwork approach and interview length, findings from interviewer assessments of respondents' understanding effort and fatigue, and characteristics of the sample obtained, including a comparison of the recruits achieved against target.

3.2.1. Sample Design

A sample size of 750 interviews was chosen for the study. The sample was designed to include:

- A mix of re-recruits from the CRP 4c WFD benefits survey, and new recruits. The reason for this mix was to allow cross-checks to be performed between the datasets from the CRP 4c and 4d surveys.
- A representative mix of recruits by water company area, but with an over-sampling of recruits from Wales, in order to gain a greater degree of precision on results for Wales respondents separately.
- A representative mix of recruits by demographic characteristics, with quotas for age, sex and socio-economic grade (SEG), within water each company area.

Given the nature of the recruits for this study in that 220 were re-recruits, quotas were not set for these people. As such, age gender and SEG 'fell out' as a result of whoever was willing to participate.

However, for the remainder of the sample, some 530 new recruits, the following demographic quotas were set the sample as a whole:

Age: an equal spread of following categories:

- 18 – 29
- 30 – 44
- 45-59
- 60+

Gender:

- 45%+ male
- 45%+ female

Socio-Economic Grade (SEG): reasonable spread from across the categories⁸

- AB Higher and intermediate managerial/administrative/professional
- C1 Supervisory, clerical, junior managerial/administrative/professional
- C2 Skilled manual workers
- D Semi-skilled and unskilled manual workers
- E On state benefit, unemployed, lowest grade workers
- X Not applicable
(Not applicable category (X) comprises: people aged 15 or under or aged 75 or over)

⁸ National Statistics Socio-Economic Classification (NS-SEC) codes were derived from the SEG data following implementation of the survey using the National Statistics approximation methodology (see http://www.scrol.gov.uk/scrol/metadata/Socio_Econ_Classification.htm). The NS-SEC codes have been used to compare the sample achieved against the 2001 census, which records this category.

3.2.2. Recruitment

There were 693 target recruits from the 4c survey who had agreed to participate in future research. Of these, 220 agreed to take part which meant achieving 530 new recruits. Only respondents who paid their water bills either solely or jointly were eligible to participate in the survey. A top-up sample was purchased that would fulfil the sample design in terms of geographical and demographic mix of respondents.

3.2.3. Fieldwork and Interview Length

The fieldwork was undertaken over a period of three weeks from 26th February to 18th March 2008. The surveys were conducted by telephone by experienced interviewers. Recruits were asked if they wished to be sent show material or if they preferred to look at the information via Accent's web server. The latter approach worked well and enabled the interviews to be conducted more quickly and efficiently than with paper showcards. On average, the interview length was 20 minutes.

3.2.4. Interviewer Feedback

The interviewer assessments of respondents' understanding, effort and fatigue were positive. Overall, respondents had a good understanding of what was being asked of them and were well engaged in the survey process, with only 3% giving the questions very little consideration. Almost nine tenths (88%) maintained concentration throughout the survey.

Table 3.2, Table 3.3 and Table 3.4 present the results of the interviewer feedback.

Table 3.2: How did the respondent understand what he or she was being asked to do in the questions?

	%
Understood completely	55
Understood a great deal	27
Understood somewhat	12
Understood a little	4
Did not understand very much	2

Base:750

Table 3.3: Which of the following best describes the degree of effort the respondent made to arrive at their answers?

	%
Gave the questions careful consideration	74
Gave the questions some consideration	23
Gave the questions very little consideration	3

Base:750

Table 3.4: Which of the following best describes the degree of fatigue shown by the respondent?

	%
Maintained concentration throughout the survey	88
Lessened concentration significantly in the later stages	11
Other	1

Base:750

While the above results are reliant upon interviewers' judgments, these assessments are useful supplements to indicators of understanding (or not) that derive from direct checks

on the survey responses. They are thus helpful in considering the likely validity of the survey responses. Overall, the results of this assessment are positive.

3.2.5. Sample Characteristics

Geographical Spread of Respondents

The targets set for each water and sewerage company (WaSC) were largely achieved as shown in Table 3.5 below. The figure beneath shows a map of WaSC regions for reference.

Table 3.5: No. of Interviews by Water Company Area

	Interview Targets	Interviews Achieved
Anglian Water	72	67
Northumbrian Water	32	33
Severn Trent Water	104	107
South West Water	19	21
Southern Water	46	50
Thames Water	156	157
United Utilities	86	85
Wales/Welsh Water	143	144
Wessex Water	31	32
Yorkshire Water	60	54
Total	749	750

Base:750

Figure 3.1: Map of water and sewerage companies in England and Wales



Demographics

The demographic questions included in the survey instrument were: age, sex, education, employment status, socio-economic class, household composition, and income group. Table 3.6 below compares the sample obtained with respect to these variables against population counterparts drawn from the Census (2001), and the Family Resources Survey (2006).

Table 3.6 shows that the sample contains:

- Slightly too many females, and too few males
- A reasonably good match across the age groups
- Slightly too many part-time workers and retired people in England, too many full-time workers in Wales and too few “not-working – other” in both England and Wales.
- A higher educated sample than in the population
- Too many in the higher professional class, and too few in the semi-routine and routine classes in both England and Wales
- A good match by household composition
- Higher incomes in the sample, particularly for the Welsh sample. Note that the population data comes from 2004/5, however, so there is a three-year gap between sample and population, during which incomes will have risen in the population.

No weighting has been employed to account for any differences in demographic characteristics between sample and the population. The only weights that have been used are to counter-act the over-sampling of Welsh respondents in the sample design. The separate England and Wales statistics are thus unweighted, and the combined England and Wales statistics are weighted in respect of the country of residence only.

Table 3.6: Sample vs. Population Characteristics

	England		Wales		England & Wales ⁽³⁾	
	Sample	Population	Sample	Population	Sample	Population
Gender						
Male	40%	47%	40%	46%	40%	47%
Female	60%	53%	60%	54%	60%	53%
Sample size	606		144		750	
Age						
18-29	13%	19%	15%	18%	13%	19%
30-64	68%	60%	69%	59%	68%	60%
65+	19%	21%	17%	23%	19%	22%
Sample size	606		144		750	
Employment Status (16-74)						
Working full-time	36%	41%	47%	36%	36%	38%
Working part-time	18%	12%	15%	11%	18%	12%
Self employed	7%	8%	4%	8%	7%	8%
Working + student	1%	3%	2%	2%	1%	2%
Seeking work	1%	3%	2%	3%	1%	3%
Not working + student	1%	5%	0%	5%	1%	5%
Retired	22%	14%	17%	15%	22%	14%
Looking after home/family	8%	7%	7%	6%	8%	6%
Not working – other	5%	10%	6%	14%	5%	12%
Sample size	569		129		698	
Education (16-74)						
No qualifications	8%	31%	9%	36%	8%	33%
Low GCSE/O-level	15%	18%	14%	17%	15%	17%
High GCSE/low A-level	15%	21%	17%	21%	15%	21%
High A-level or equivalent	18%	9%	18%	8%	18%	8%
First degree or higher	43%	21%	41%	19%	43%	20%
Sample size	558		127		685	
Socio-Economic Class						
Large employers and higher managerial occupations	4%	5%	4%	3%	4%	4%
Higher professional occupations	19%	7%	23%	5%	19%	6%
Lower managerial and professional occupations	21%	25%	26%	23%	21%	24%
Intermediate occupations	19%	13%	18%	11%	18%	12%
Small employers and own account workers	8%	9%	2%	10%	8%	10%
Lower supervisory and technical occupations	10%	9%	8%	11%	10%	10%
Semi-routine occupations	6%	15%	6%	17%	6%	16%
Routine occupations	8%	12%	7%	14%	8%	13%
Never worked and long-term unemployed	6%	5%	5%	5%	6%	5%
Sample size	524		121		645	
Household Composition						
Households with dependent children (all ages)	31%	29%	31%	30%	31%	30%
Households with dependent children (aged 0-4)	13%	11%	13%	11%	13%	11%
Sample size	606		144		750	
Weekly Income						
Low (<£300) ⁽¹⁾	31%	31%	29%	36%	31%	31%
Medium (£300 - £1,000) ⁽¹⁾	50%	53%	53%	52%	50%	53%
High (>£1,000) ⁽¹⁾	19%	16%	18%	12%	19%	16%
Average income ⁽²⁾	£665	£609	£622	£502	£662	£603
Sample Size	465		111		576	

Sources: Census (2001) except: (1) Family Resource Survey, 2006; (2) National Statistics (2007) Model Based Estimates of Income by MSOA, 2004/05.

Note: (3) Statistics for England and Wales are weighted to take account the disproportionately high number of respondents from Wales, which was a deliberate feature of our sampling approach, in order to increase the reliability of results for Wales.

Use of the Water Environment

The CRP 4d survey questionnaire asked respondents about their use of the water environment, by type of water body, and by type of activity. These questions provide useful information on the sample obtained. Larger studies such as the England Leisure Visits survey provide some related results, but none that are directly comparable to those presented here. Results from a range of sources relating to use of the water environment are presented in Appendix F.

The findings from the present study suggest that overall use of the water environment is limited with around half the public having made specific visits to the coast (56%) or small rivers/streams (48%) on a frequent or occasional basis. One third of people had made frequent or occasional visits to large rivers (35%) and lakes (33%). Half the respondents had never specifically visited canals, estuaries and reservoirs.

It is interesting to note that respondents in Wales had a greater propensity to visit the coast on a more frequent and occasional basis than the national average, 69% compared to 56%. Estuaries were also visited more often in Wales compared to the national average, 30% having made a frequent or occasional visit, compared to 21% across England and Wales.

Canals in Wales were less frequently visited compared to the overall average, 18% in Wales compared to 28% overall.

Table 3.7: How often have you visited a ...

Water Body	Frequency of Use in last 12 months				
	Often (more than times) %	Sometimes (between 3 and 6 times) %	Rarely (once or twice) %	None %	Don't Know %
Coast	26	30	23	22	0
Small river/stream	26	22	18	34	0
Large river	16	19	23	41	0
Canal	15	13	20	52	0
Lake	12	21	26	41	0
Estuary	10	11	21	58	0
Reservoir	7	9	25	59	0

Base:750

Despite the number of activities available to the public in and around the UK water environments, Table 3.8 shows that very few people actually participate in any activities, apart from physical exercise (75%) and bird watching (37%), on a regular basis.

Generally, there is little in terms of participating in different activities between the overall sample and that of Wales. Specific points of difference include more people in Wales involving in paddling/wading, swimming and fishing where 33%, 28% and 18% participated sometimes or often compared to 26%, 18% and 11% respectively, on a national basis.

Table 3.8: Have you used any water environments in England and Wales to participate in...

Activity	Frequency of Use in last 12 months				
	Often (more than 6 times) %	Sometimes (between 3 and 6 times) %	Rarely (once or twice) %	None %	Don't Know %
Walking, running, cycling	53	22	8	17	0
Bird watching	21	16	10	51	1
Paddling/Wading	11	15	15	58	1
Swimming	8	13	14	64	1
Fishing	5	6	5	82	1
Sailing/Windsurfing	1	3	5	90	2
Waterskiing/jet skiing	1	1	2	95	2
Canoeing	1	3	6	89	2
Rowing	1	2	4	91	2
Narrow Boating	1	3	6	87	2
Surfing	1	2	4	91	1
Scuba Diving/Snorkelling	1	1	4	92	2

Base:750

Respondents were also asked about incidental visits to various water bodies that resulted from them walking, cycling or driving alongside a water body on the way to work, to another destination, or taking a ferry or hovercraft as part of a longer journey.

The two main differences, highlighted in Table 3.9, between specific visits to various water bodies and incidental visits are firstly the increased number of people passing by large rivers on a regular basis, (23% cf to 16%), and secondly, but not surprisingly, the reduction of visits to the coast. The former is driven by respondents in South West, Yorkshire and Thames Water, all of which have major conurbations with large rivers running through and where a third of people made these incidental visits, compared with less than a quarter in any of the other water company areas.

Table 3.9: How often have you incidentally visited a ...

Water Body	Frequency of Use in last 12 months				
	Often (more than 6 times) %	Sometimes (between 3 and 6 times) %	Rarely (once or twice) %	None %	Don't Know %
Small river/stream	29	17	15	39	0
Large river	23	14	16	47	1
Coast	21	15	17	46	0
Canal	18	11	15	56	0
Lake	11	15	2	54	0
Estuary	9	10	15	65	1
Reservoir	7	8	18	67	1

Base:750

A similar pattern emerges for differences for incidental visits in Wales as compared to specific visits. Indeed, almost a half (47%) made incidental visits to the coast and over a quarter, 29%, made incidental visits to estuaries. This compares to 36% and 19% overall.

4. MAIN SURVEY FINDINGS

This section presents our main results for the study. It highlights the key findings from the survey in relation to the public's priorities for different types of improvement; their priorities for where to make those improvements and preferences in respect of the decision making process.

4.1. Priorities for Types of Improvement

4.1.1. Aesthetic Characteristics

The main results on public priorities in respect of aesthetic characteristics are shown in Table 4.1, and the two figures beneath. The table and the figures show mean importance and mean satisfaction ratings for each of the aesthetic characteristics, for England, Wales, and England and Wales populations. The table presents importance and satisfaction ratings alongside one another, and includes a "Gap" column, which shows the difference between mean importance and mean satisfaction. We treat the data in this column as the primary indicator on public priorities. Thus, attributes where mean importance minus mean satisfaction is relatively large are considered to have the highest priority by the public.

The main public priority for aesthetic improvement, as shown in Table 4.1, is the presence of general litter, which was ranked extremely important but had an average satisfaction rating. There was a negative gap between peoples' satisfaction and the importance placed on most of the other aesthetic attributes, and while these are important to address, it would appear the clear priority to focus on, is the removal of general litter from the water environment.

The table also reports the proportion of respondents saying "Don't know" to each of the questions. In general, respondents were more likely to respond in this way when asked their satisfaction rating, than when asked about the importance they attached, in respect of each of the attributes. This finding was expected, as it was thought that respondents would have trouble saying how satisfied they were in respect of the features questioned, based only on the experience they had without any further information being given to them.

The attribute that attracted least "Don't know" responses was litter, with 4.5% of the full sample responding in this way when asked how satisfied they were. By contrast, 16.3% of sample responded with "Don't know" when asked their satisfaction in respect of the presence of man-made features.

The distribution of "Don't know" responses in general seems sensible given the awareness and levels of understanding of the issues expected of respondents following the qualitative development work undertaken prior to the main survey. This suggests that the non-"Don't know" responses are genuine attempts by respondents to provide a true reflection of their preferences, based on what they consider to be a reasonably informed perspective.

Welsh respondents were less likely than English respondents to say "Don't know" across most of the attributes. This suggests that Welsh are, or at least consider themselves to be, more informed on water environment issues. Otherwise, the results show very little

difference between England and Wales in either the importance of the attributes, or satisfaction with them.

The figures beneath Table 4.1 show importance and satisfaction ratings on separate figures. In addition to reporting the mean, these figures also include a measure of the dispersion of the results. The range shown is one standard deviation above and below the mean, a range which contains 68% of the distribution of responses. The confidence interval around the mean itself is considerably smaller. The standard error around the mean, on which the confidence interval is based, is equal to the standard deviation of the responses divided by the square root of the sample size.

**Table 4.1: How important is it to your household that the water environment are free of ... where 1 = not at all important and 10 = extremely important?
How satisfied is your household with the current state of the water environment with respect to where 1 = not at all satisfied and 10 = extremely satisfied?**

Attribute	Mean Importance	Don't Know %	Mean Satisfaction	Don't Know %	Gap ⁽¹⁾
General litter					
England	9.4	0.7	5	5	4.3
Wales	9.3	0	5.1	2.8	4.2
England & Wales	9.4	0.5	5	4.5	4.3
Bad smells					
England	8.4	1.2	6.7	8.1	1.6
Wales	8.6	1.4	6.9	3.5	1.7
England & Wales	8.4	1.2	6.7	7.2	1.7
Foam or slime on surface					
England	8	2.6	6.4	9.9	1.6
Wales	8.1	1.4	6.4	4.2	1.7
England & Wales	8	2.4	6.4	8.8	1.7
Erosion of banks/shores					
England	7.3	5.3	6.3	12.5	1.1
Wales	7.2	0.7	6.5	6.9	0.7
England & Wales	7.3	4.4	6.3	11.5	1.1
Murkiness or discolouration					
England	7.2	2.6	6.2	8.9	1
Wales	7.5	2.1	6.4	6.3	1.1
England & Wales	7.3	2.5	6.3	8.4	1
Algae or bindweed					
England	6.9	4.5	6.5	12	0.4
Wales	6.8	5.6	6.4	8.3	0.4
England & Wales	6.9	4.7	6.5	11.3	0.4
Man-made features					
England	5.2	9.4	7.1	16.3	-1.9
Wales	5.1	3.5	6.9	16	-1.8
England & Wales	5.2	8.3	7	16.3	-1.9
Crowds of people					
England	5.2	4	6.8	8.9	-1.7
Wales	5.1	2.8	6.7	4.9	-1.6
England & Wales	5.2	3.7	6.8	8.1	-1.7

Base:750; (1) "Gap" is calculated as mean importance minus mean satisfaction.

Figure 4.1: Importance of aesthetic characteristics of water environments

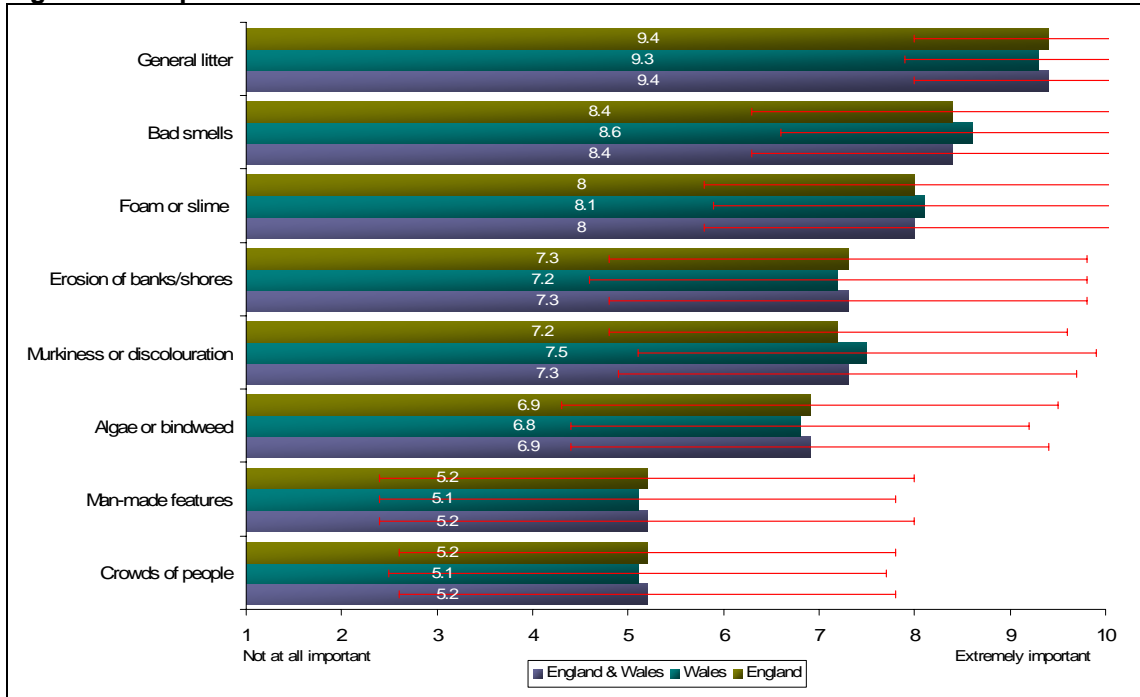


Figure 4.2: Satisfaction with aesthetic characteristics of water environments

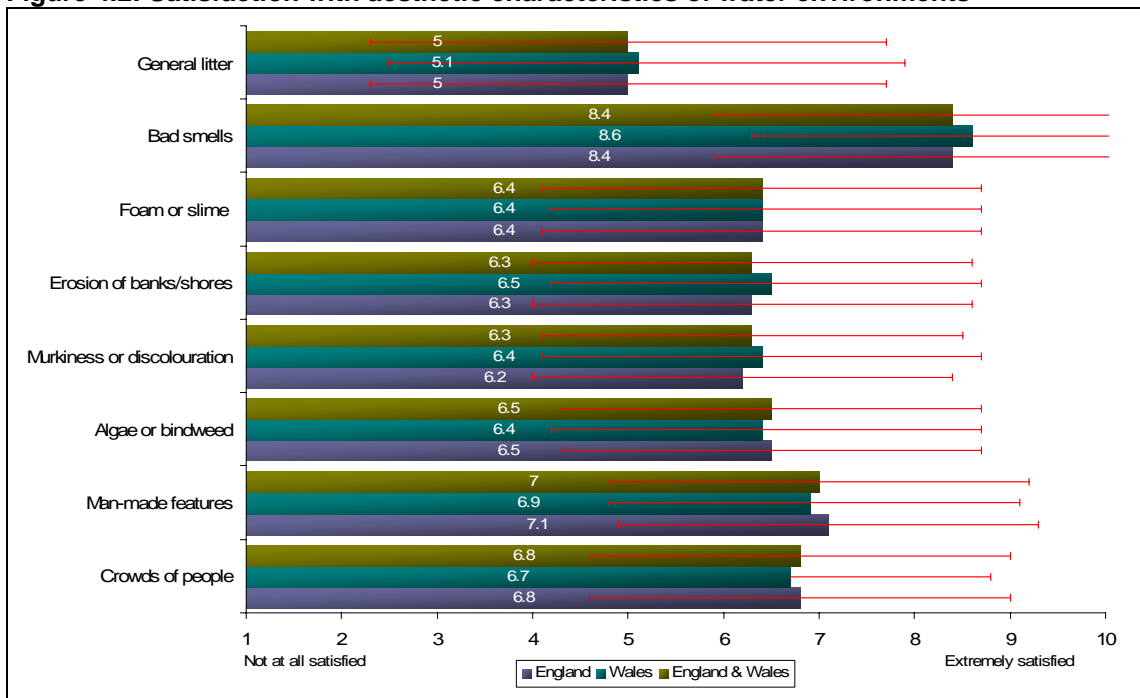


Table 4.2 shows findings for England and Wales in respect of the water bodies for which the aesthetic improvements were more, and less, important to respondents. This table was populated by examining the proportions of people stating each type of water body was more, and less, important.

Water body types were classified in Table 4.2 as “more important” for an attribute if the proportion of respondents stating that the water body type was more important for that attribute exceeded 30%, or, if the proportion stating that the water body type was more important for the attribute was in a statistical cluster of water body types with higher

proportions than those outside the cluster. Where there were no clusters of more, or less, important water body types, and no single water body type with a high enough proportion stating that it was more important for the attribute, the table cell is marked as “All equal”.

Table 4.2: For which types of water body is it more important, and for which is it less important?

Attribute	More Important	Less Important
General litter	All equal	All equal
Bad smells	Reservoirs & lakes	Estuaries & coastal waters
Foam or slime on surface	Reservoirs & lakes	Canal, large rivers, estuaries & coastal waters
Erosion of banks/shores	Coastal waters & large rivers	Reservoirs, lakes, canals & estuaries
Murkiness or discolouration	Reservoirs, lakes & small rivers	Canal, large rivers, estuary & coastal waters
Algae or bindweed	Reservoirs, lakes & small rivers	Estuaries & coastal waters
Man-made features eg dams	All equal	All equal
Crowds of people	Small rivers	Coastal water

From Table 4.2, it appears that reservoirs and lakes are the most important water bodies to focus many of these improvements on while estuaries and coastal waters are the least important. For general litter, however, which is the public’s highest priority for improvement, all water body types were considered equally important.

4.1.2. Ecological Characteristics

With reference to the abundance and variety of animals and plants, Table 4.3, and the corresponding figures beneath, show there is little difference between what is most important. It is clear that the public considers it a high priority to maintain and support an abundance, and a variety, of animal and plant life, especially as peoples’ perceptions of these factors do not match up to the high levels of importance attached to these attributes. Results are very similar for Wales and England.

**Table 4.3: How important is it to your household (/ you) that the water environment in general provides a ... where 1 = not at all important and 10 = extremely important?
How satisfied are you with the current state of the rivers, lakes, etc. with respect to ... where 1 = not at all satisfied and 10 = extremely satisfied?**

Attribute	Mean Importance	Don't Know %	Mean Satisfaction	Don't Know %	Gap
Abundance of fish, birds and other animals					
England	8.8	1	6.9	6.1	1.9
Wales	8.6	0.7	7.1	4.9	1.5
England & Wales	8.8	0.9	6.9	5.9	1.8
Variety of fish, birds and other animals					
England	8.7	1.2	6.8	7.1	1.9
Wales	8.6	0.7	7	5.6	1.6
England & Wales	8.7	1.1	6.8	6.8	1.9
Abundance of plants and greenery					
England	8.9	1	6.7	8.6	2.3
Wales	8.8	0.7	6.7	5.6	2.1
England & Wales	8.9	0.9	6.7	8	2.3
Variety of plants and greenery					
England	8.9	0.8	6.7	9.9	2.3
Wales	8.8	0.7	6.5	6.9	2.2
England & Wales	8.9	0.8	6.6	9.3	2.3

Base:750

Figure 4.3: Importance of ecological characteristics of water environments

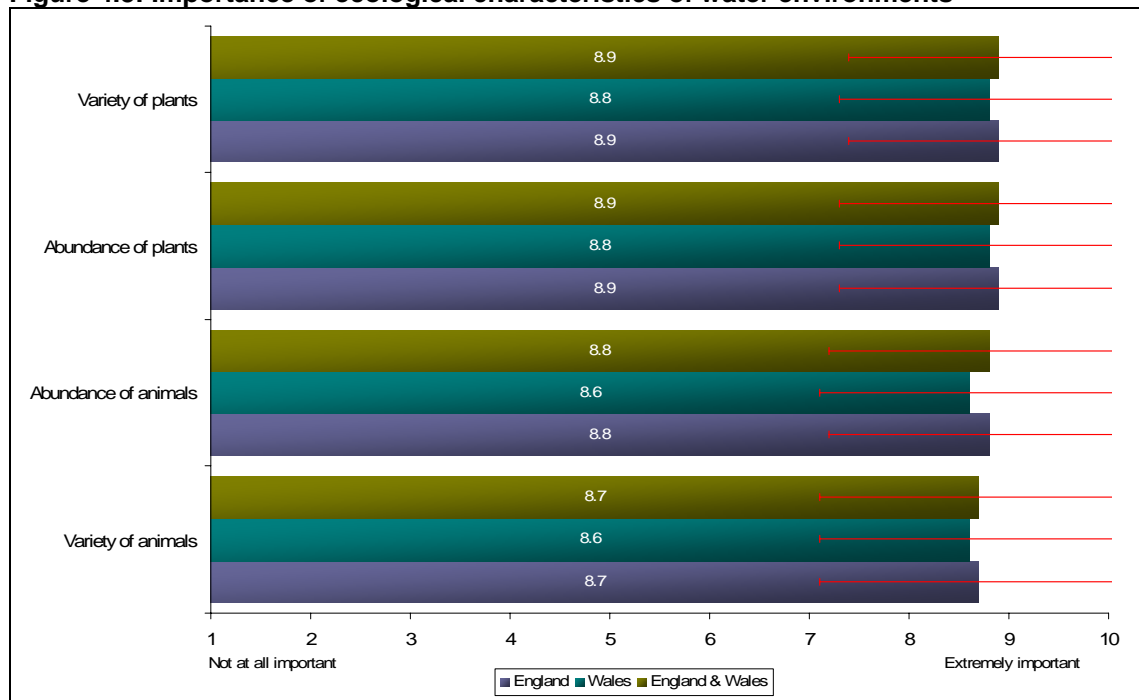
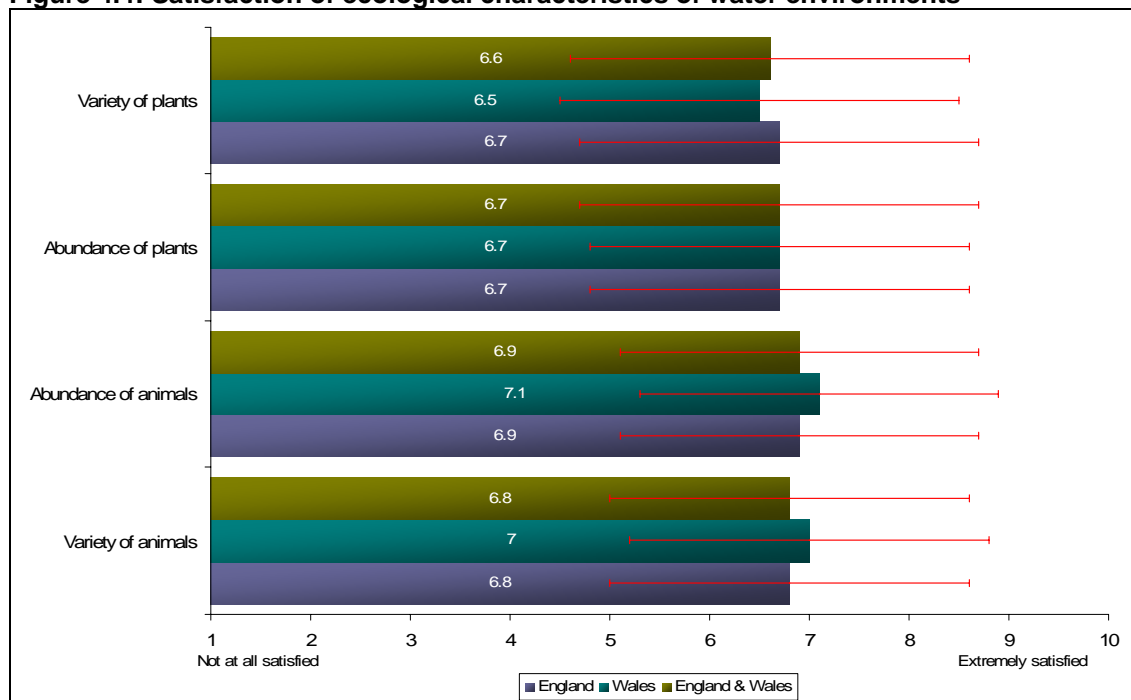


Figure 4.4: Satisfaction of ecological characteristics of water environments



With respect to the water bodies which were more or less important to deliver ecological improvements to, it would appear that small rivers and lakes are the most important water bodies to focus these improvements on while coastal waters are less important in terms of plants and greenery, and reservoirs and canals are less important in terms of fish, birds and other animals.

Table 4.4: For which types of water body is it more important, and for which is it less important?

Attribute	More Important	Less Important
Abundance of fish, birds and other animals	Larger rivers, small rivers & lakes	Reservoirs & canals
Variety of fish, birds and other animals	Larger rivers, small rivers & lakes	Reservoirs & canals
Abundance of plants and greenery	Small rivers & lakes	Coastal waters
Variety of plants and greenery	Small rivers & lakes	Coastal waters

Base:750

4.1.3. Litter and Ecology

Respondents were asked to say on a scale of 1 to 5, how far they agreed with each of two statements relating to the order of priority that should be given to tackling litter and ecological concerns. Clearly, from the results presented above, each of these areas was considered a high priority on average. The further questions were designed to test whether there was a strong public concern that litter would have to be tackled to achieve the benefit of the WFD, which only focuses on ecological concerns and not on the appearance of litter.

Table 4.5, and the figure beneath, reveal that, on average, there is little difference in which should be the first priority for improvement between clearing the waters and surrounding environments of general litter and improving ecological quality even where there is general litter present.

Table 4.5: On a scale of 1 to 5 where 1=strongly disagree; 2=disagree; 3=neither; 4=agree; 5=strongly agree, how far do you agree with the following statements?

Statement	Mean	Don't Know %
Clearing the waters and surrounding environments of general litter should come first before tackling ecological concerns		
England	3.8	1.7
Wales	3.9	2.8
England & Wales	3.8	1.9
Improving ecological quality should be the first priority, even where there is general litter present		
England	3.5	1.7
Wales	3.5	2.1
England & Wales	3.5	1.7

Base:750

Figure 4.5 Agreement on Ecological and Litter Priority Statements

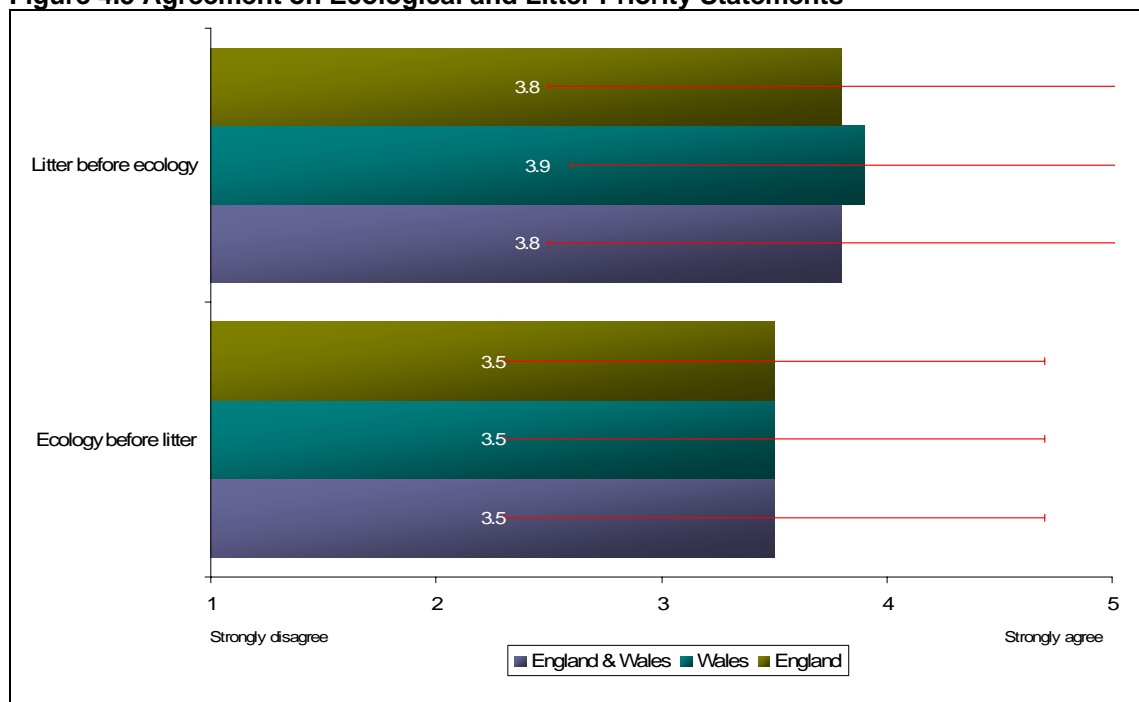


Table 4.6 below presents a cross-tabulation of the agreement ratings for the two litter and ecology statements. The two statements were designed to be opposites to one another, so that those who agreed with one statement should logically disagree with the other.

The results in Table 4.6 show, however, that while only a few (11 out of 730) either disagreed, or strongly disagreed, with both statements, there were a large number of respondents (208 out of 730) that either agreed, or strongly agreed, with both statements.

It seems that the respondents that agreed with both statements either did not see them as opposites, or would be happy to see either alternative, perhaps in preference to the non-presented alternative of doing nothing. If all 219 of the inconsistent responses are removed, the mean agreement for the first statement, litter before ecology, drops from 3.8 to 3.5, and the mean agreement for the second statement, ecology before litter, drops from 3.5 to 3.0. The order therefore remains the same, but the gap widens somewhat.

Table 4.6: Cross-Tabulation of Litter and Ecology Statement Agreement Ratings

	Improving ecological quality should be the first priority, even where there is general litter present					
Clearing the waters and surrounding environments of general litter should come first before tackling ecological concerns	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Total
Strongly Disagree	5	1	1	5	27	39
Disagree	1	4	6	39	33	83
Neither agree nor disagree	0	10	58	36	29	133
Agree	5	62	45	47	32	191
Strongly agree	51	55	49	41	88	284
Total	62	132	159	168	209	730

Note: The total base for this table is 730 respondents. The remaining 20 respondents in the sample said “Don’t know” to, or refused to answer, one or both of the statements.

The results presented here suggest that the public, on average, has a weak preference for tackling litter before addressing ecological concerns, where these are set as exclusive alternatives. Most people, however, would like to see both litter and ecological problems addressed with a high priority.

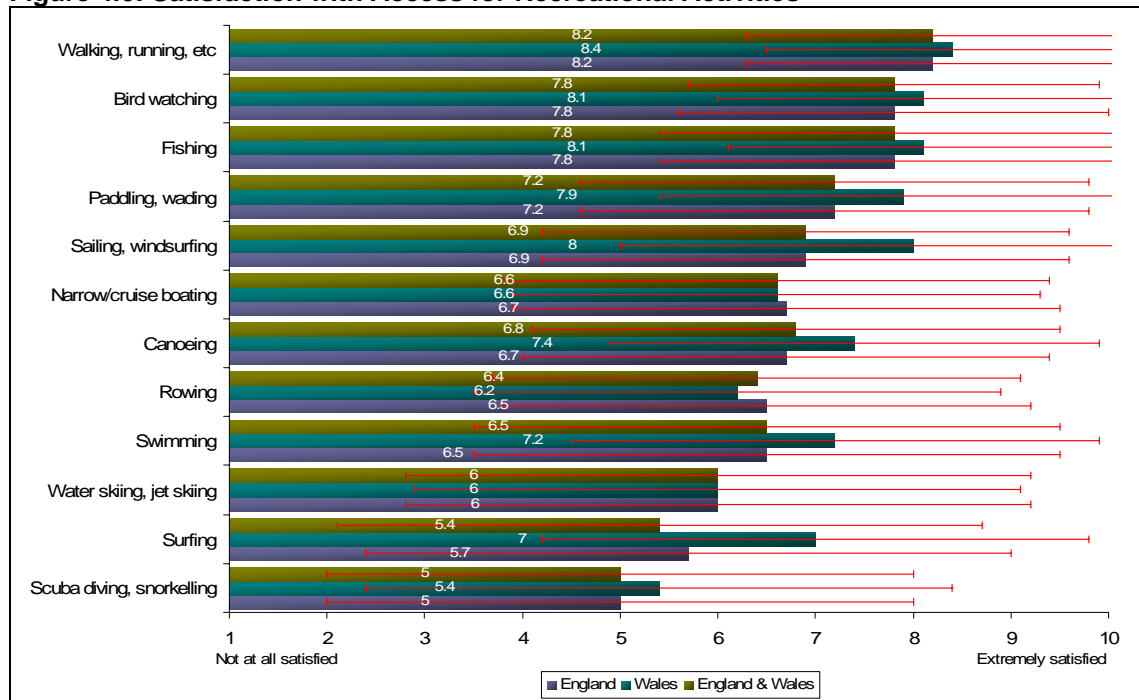
4.1.4. Accessibility and Provision of Public Facilities

Respondents were asked to say, on a scale of 1 to 10, how satisfied they are with the accessibility of water sites, and the provision of public facilities at these sites, for a range of activities that they had done, or considered doing in the last 12 months. Table 4.7, and the corresponding figure beneath, presents the results from this question.

Table 4.7: How satisfied are you with the current amount of ... available to you, where 1 = not at all satisfied and 10 = extremely satisfied?

Activity	Mean Satisfaction	Don't Know %	Base
Walking, running, cycling	8.27	5	643
England	8.2	5.1	517
Wales	8.4	2.1	126
England & Wales	8.2	4.5	643
Bird watching			
England	7.8	9.6	350
Wales	8.1	4.9	87
England & Wales	7.8	8.7	437
Fishing			
England	7.8	13.5	215
Wales	8.1	7.6	59
England & Wales	7.8	12.4	274
Paddling/Wading			
England	7.2	11.1	288
Wales	7.9	8.3	78
England & Wales	7.2	10.5	366
Sailing/Windsurfing			
England	6.9	12.7	192
Wales	6.8	13.2	42
England & Wales	6.9	12.8	234
Canoeing			
England	6.7	14.2	195
Wales	7.4	13.2	43
England & Wales	6.8	14	238
Narrow Boating			
England	6.7	13.9	194
Wales	6.6	13.2	44
England & Wales	6.7	13.7	238
Swimming			
England	6.5	12.2	273
Wales	7.2	7.6	77
England & Wales	6.5	11.3	350
Rowing			
England	6.5	14.2	191
Wales	6.2	14.6	41
England & Wales	6.4	14.3	232
Waterskiing/Jet skiing			
England	6	16.5	153
Wales	6	16.7	33
England & Wales	6	16.5	186
Surfing			
England	5.3	16.5	159
Wales	7	13.9	42
England & Wales	5.4	16	201
Scuba Diving/Snorkelling			
England	5	17.8	154
Wales	5.4	18.1	30
England & Wales	5	17.9	184

Figure 4.6: Satisfaction with Access for Recreational Activities



On the whole people were generally very satisfied with the current amount of access for those activities that received the most frequent use. Indeed, it would seem that there is a direct correlation between use, as shown in 3.2, and satisfaction. Where there was infrequent or no use of the water environment, satisfaction ratings were generally average.

Welsh residents are generally more satisfied than English for most activities. In this instance however, the data should be treated with more caution as some of the base sizes are quite small. The results are nevertheless indicative.

4.2. Priorities for Where to Make the Improvements

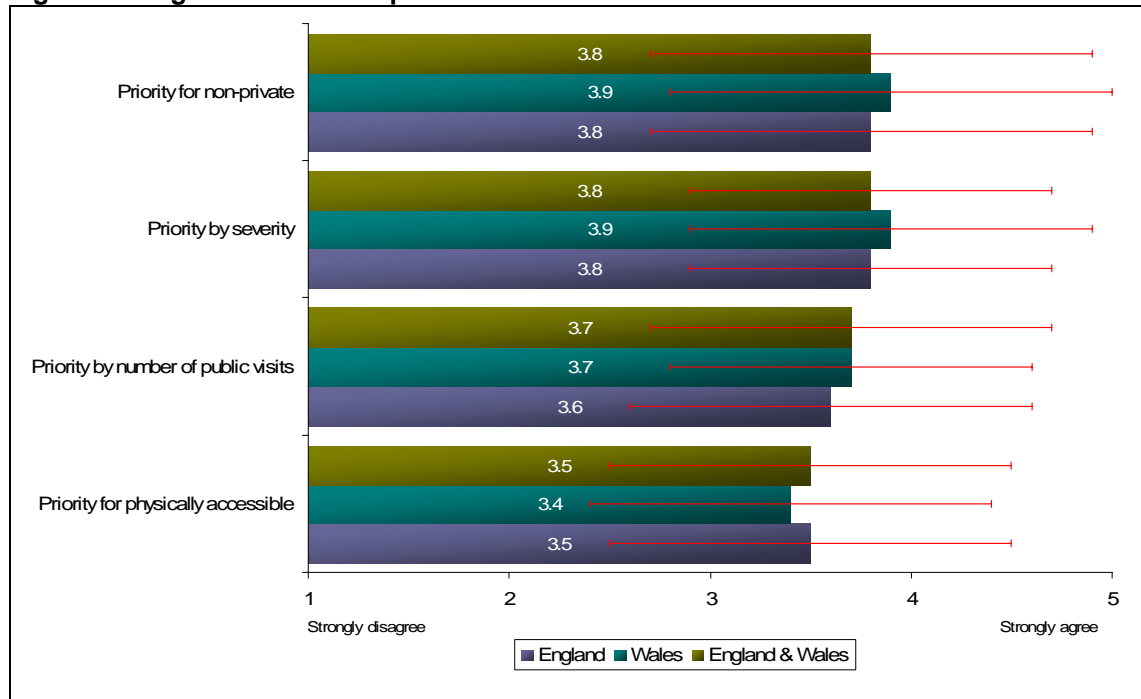
Respondents were asked to say on a scale of 1 to 5, how far they agreed with each of four statements relating to the order of priority that should be given to improvements according to their physical accessibility and ownership or licensing restrictions on use. Table 4.8, and the figure beneath, present the results from these questions.

Table 4.8: On a scale of 1 to 5 where 1=strongly disagree; 2=disagree; 3=neither; 4=agree; 5=strongly agree, do you agree that higher priority should be given...

Statement	Mean	Don't know %
to places where the general public has access than to places where access is restricted to clubs and private landowners		
England	3.8	1.8
Wales	3.9	1.4
England & Wales	3.8	1.7
according to the seriousness of the problem regardless of the accessibility of the water or the number of visits		
England	3.8	4.1
Wales	3.9	2.1
England & Wales	3.8	3.7
to places where more visits are made by the general public		
England	3.6	1.3
Wales	3.7	0.7
England & Wales	3.7	1.2
to places that are physically accessible than places that are not		
England	3.5	3
Wales	3.4	2.8
England & Wales	3.5	2.9

Base:750

Figure 4.7: Agreement with Improvement Priorities Statements



Each of the statements in Table 4.8 was received with a greater degree of agreement than disagreement, and the mean scores were close for all four statements. These results suggest, that the public, on average, has a weak preference for prioritising (i) areas accessible to the general public over private-access areas, (ii) places that are in more severe need of attention over all other areas, (iii) places with high numbers of visits, and, but slightly less so, (iv) places that are physically accessible over those that are not.

There was no noticeable difference observed in any of the results between England and Wales.

The six two-way cross-tabulations of each of the statements against the others are presented in Appendix E. These tables each show a similar pattern to Table 4.6 in that there are many respondents that agree or strongly agree with both statements in each pair. Since some pairs of statements are clearly conflicting, these findings represent a degree of inconsistency in responses.

By contrast, our analysis of the verbatim explanations given by all respondents who answered either “strongly agree” or “strongly disagree” to the four statements individually suggests that these respondents generally had good reasons for answering the way they did. Whilst there were a few people who gave reasons supporting exactly the opposite rating from the one they gave, the verbatim reasons in the vast majority of cases reflected the expected types of motivations given in the initial answers to the rating questions. This provides a strong endorsement of the validity of these results as truthful measures of public preferences. The analysis discussed here is presented in a series of tables in Appendix E.

4.3. Decision Making Process

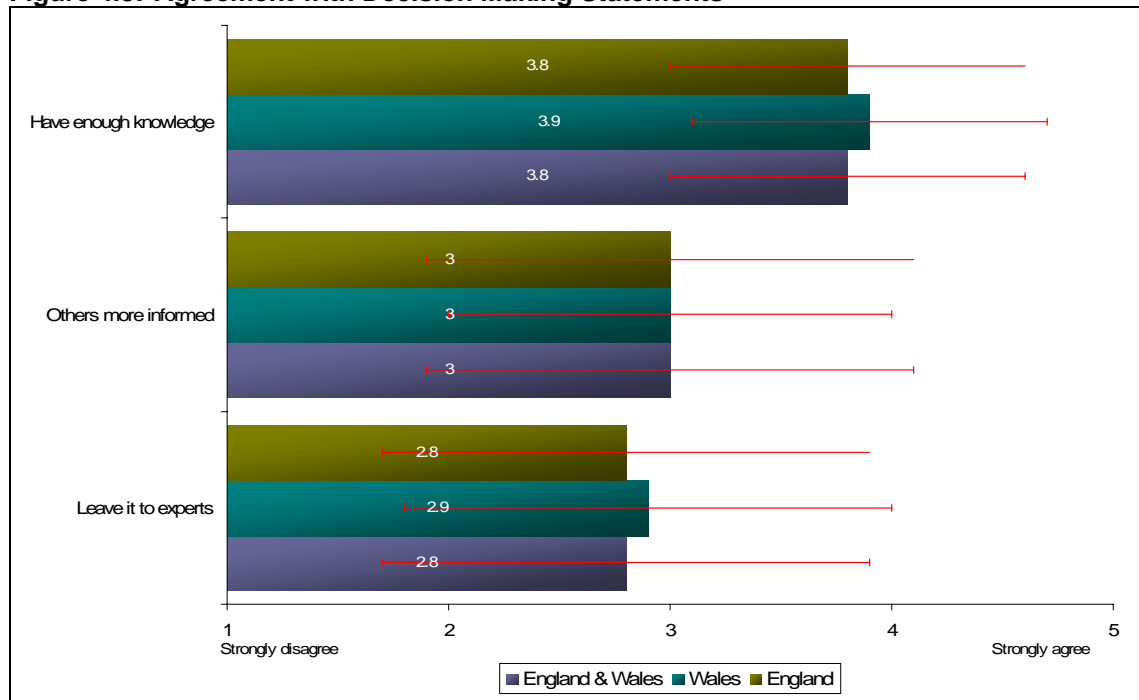
Respondents indicated a strong willingness for their answers to be used in the decision making process, by agreeing to the statement that where they have not answered “don’t know”, they have enough knowledge of the issues covered in this survey to offer a reasonably informed opinion. As shown in Table 4.9, a significantly lesser degree of agreement was found regarding the alternatives: (i) that other members of the public are more informed, and should have a greater influence in setting improvement priorities, and (ii) that decisions on setting priorities for improvement should be left to experts within the government and its agencies.

Table 4.9: On a scale of 1 to 5 where 1=strongly disagree; 2=disagree; 3=neither; 4=agree; 5=strongly agree, do you agree that...

Statement	Mean	Don't know %
Except where I've said "I don't know", I have enough knowledge of the issues covered in this survey to offer a reasonably informed opinion		
England	3.8	1.2
Wales	3.9	0
England & Wales	3.8	0.9
other members of the public are more informed than me, and should have a greater influence in setting improvement priorities		
England	3	3.5
Wales	3	2.1
England & Wales	3	3.2
decisions on setting priorities for improvement should be left to experts within the government and its agencies		
England	2.8	1.8
Wales	2.9	0
England & Wales	2.8	1.5

Base:750

Figure 4.8: Agreement with Decision Making Statements



The results for these questions on the decision making process strongly suggest that the public would prefer that decision were based on the public’s priorities as expressed through this study, than to rely solely on experts within the government and its agencies. There was no noticeable difference observed in any of the results between England and Wales.

The three two-way cross-tabulations of each of the statements against the others are presented in Appendix E. These tables again each show that there are many respondents that agree or strongly agree with both statements in pairs that represent conflicting views. This finding, in conjunction with the similar findings above, suggests that, at least in this survey, respondents are generally more likely to agree with statements than disagree with them, thereby creating a bias towards agreement in rating scale assessments. This tendency needs to be borne in mind when interpreting the results from these measures.

Our analysis of the verbatim explanations given by all respondents who answered either “strongly agree” or “strongly disagree” to the three decision-making process statements individually is given in Appendix E. As for the statements prioritising sites according to their accessibility, we again find that respondents generally gave good reasons for answering the way they do. Verbatim reasons reflected the expected types of motivations in the vast majority of cases. This endorses the validity of the results, and suggests they can be used fairly reliably as indicators of public preferences.

5. CONCLUSIONS AND RECOMMENDATIONS

This report has described the design and development of a survey instrument and its implementation in the field, and it has presented the results from this survey on the public's priorities for WFD and related non-WFD outcomes. It has also reported findings from the earlier CRP 4b/c study, which contained several results relevant to WFD prioritisation. In this final section, we draw conclusions from this research on the strength of public preferences towards improving different types of features of the water environment, and towards making improvements according to the types, locations and access characteristics of water bodies.

We begin this section by presenting our appraisal of the validity of the results from the different parts of the main survey. We then present our conclusions and recommendations in respect of priorities for WFD and related non-WFD improvements, based on the main survey results, and supported by related findings from the CRP 4b/c work.

5.1. Validity Appraisal of Main Survey Results

Overall, the survey worked well, and provides meaningful results

The survey instrument was cognitively tested prior to the main fieldwork, and was found to perform well. Respondents understood the questions being asked of them and answered in a way that suggests that their responses are true indicators of their preferences. Likewise, for the main survey, there are many indicators to suggest that the responses are indeed true reflections of the public's views and preferences in relation to water environment issues. In particular, the verbatim responses given following the agreement-scale questions to explain "strongly agree" and "strongly disagree" responses, show that the responses are, in the vast majority of cases, soundly determined. Furthermore, interviewer assessments immediately after respondents completed the survey show that respondents displayed good levels of understanding, effort and concentration.

There are necessary reasons for caution, however, when interpreting and using the results.

Trade-offs not clear for respondents / no cost impacts discussed

One of the most important reasons for caution in respect of the survey results on priorities is the fact that the survey has elicited no information on the trade-offs that the public is willing to make, at the relevant margins, between improvements of different types, scales, cost impacts, and locations. The preference information is therefore not consistent with an economic model, and so does not have the validity conferred by such consistency. To have elicited the necessary information from the public to derive a preference model of this kind would have required the development of a stated preference construct, for which there was insufficient time allocated to the project to complete.

The preference information obtained in the present survey is indicative of the rank order of public priorities. Quantitative trade offs between improvements of different types, scales, cost impacts, and locations, however, can be supported only very weakly by the results from the survey.

Lack of information / awareness among respondents

A second reason for caution in interpreting and using the results from this study is the fact that no relevant information was presented to respondents on the state of the water environment with respect to any of the features. Thus, respondents were asked to state how satisfied they were with the water environment with respect to, for example, the presence of foams or slimes on the water surface, without being told if there were lots of problems of this sort around the country. It could be envisaged that people would need such information to be able to say how satisfied they are.

Ideally, the survey would have provided more detailed information to respondents to allow them to make more informed decisions. There was no such information available, however, at the time of the survey development, and so the design proceeded as follows:

- a decision was made to elicit people's views based only on their knowledge and experiences, and encourage them to say "don't know", if they felt unable to offer a reasonably informed opinion.
- In addition, respondents were given the opportunity to say if they would prefer that decisions on prioritisation be left to experts, or others, and thereby gain an understanding of whether the public themselves feel that they have sufficient knowledge and experience, independently, to offer a reasonably informed opinion.
- Finally, the sampling approach was designed to test, in a limited sense, whether or not the results were likely to be robust to the provision of relevant information on the state of the water environment by re-visiting respondents from the CRP 4c survey, who had all seen information on the status of the water environment overall, although not by individual attributes, and comparing the difference between new recruits and these re-visited respondents.

The adopted approach seems to have worked well:

- Respondents have been happy to say "don't know" in large numbers (up to 16% on one feature), and the distribution of don't know responses is in line with expectation, with high rates on satisfaction questions than importance questions, and higher rates in respect of features that are generally less well understood.
- Moreover, in respect of the decision-making process, there was strong support amongst respondents for using the answers they had given for prioritisation rather than relying on experts.
- Finally, we found, conclusively, that there was no difference between the samples in respect of their importance, satisfaction or agreement ratings. From this analysis, we cautiously conclude that the public's priorities are fairly robust to the provision of information on the overall state of the water environment. We cannot conclude from this analysis, however, that their priorities would not change had they been given information on the problems in the water environment due to each of the attributes individually.

Despite fears, therefore, concerning the lack of information, and perceived lack of awareness of water environment issues amongst the public, the problems caused appear to us to be fairly well contained.

Some inconsistencies in the results on agreement ratings / bias towards agreement

A final reason for caution in interpreting the results is the fact that several respondents expressed agreement with pairs of statements that directly conflict. For example, the results in Table 4.6 show that a large number of respondents (208 out of 730) either agreed, or strongly agreed, that "Clearing the waters and surrounding environments of

general litter should come first before tackling ecological concerns”, and that “Improving ecological quality should be the first priority, even where there is general litter present”.

Similar results were found in respect of statements relating to the importance of access conditions in determining priorities, and relating to the decision-making process. Statements that were designed to imply opposite priorities to one another, were both agreed with by several respondents.

If large numbers of respondents didn’t understand the statements, a major doubt would be cast on the results from these questions. This hypothesis was found not to be true however, in the vast majority of cases. Upon examining the verbatim explanations of those who strongly agreed and those who strongly disagreed, whilst there were some that had clearly misunderstood the statements, there were many more that had understood the statements and had given sound reasons for answering the way they did. It seems to us that the respondents that agreed with both statements either did not see them as opposites, or would be happy to see either alternative, perhaps in preference to a non-presented alternative, such as doing nothing.

Whilst there is some reason for caution, therefore, we believe that these inconsistencies do not invalidate the results from these questions. There is evidence to suggest, however, that respondents exhibit a tendency to agree with statements more than disagree, when the statements are designed to have opposite implications. As a result, we believe that there may be a bias towards agreement in respect of these questions, which should be borne in mind in interpreting and using the results on the public’s priorities for improvements to the water environment.

5.2. Priorities for Improvements to the Water Environment

We now present a summary of our main findings from this study.

Litter is the highest public priority

The most important priority for improvement across the sample was found to be general litter, (based on Table 4.1 and Table 4.3). Respondents considered the absence of litter to be extremely important to their enjoyment of the water environment. Respondents also considered it equally important to tackle general litter problems for all water body types. (Table 4.2). The importance of litter as an improvement priority for the water environment is a result that was also found during the qualitative research conducted as part of the CRP 4b/c study (see Section 2.1). These results thus suggest that cleaning up litter around all water sites should be a high improvement priority.

Ecological concerns are the next highest priorities

After general litter, the survey results suggest that the second highest priority should be to improve the abundance and variety of plants, fish and other animals, (based on Table 4.1 and Table 4.3). No difference in priorities was found between improvements to plants and greenery, on the one hand, and fish, birds and other animals on the other. Nor was any difference in priorities found between the abundance of plants, fish and other animals, on the one hand, and their variety on the other. Based on the results in Table 4.4, small rivers and lakes should be the most important water bodies to focus these improvements on, while coastal waters are less important in terms of plants and greenery, and reservoirs and canals are less important in terms of fish, birds and other animals.

The importance of maintaining and improving habitats for plants and animals is a result that was also found in the CRP 4b/c study (see Section 2). Based on these results, improving habitats for plants, fish and other animals around all water sites, particularly rivers and lakes, should be a high improvement priority.

Table 5.1 presents our full priority ranking over types of improvements, which is based on the survey results presented in Table 4.1 and Table 4.3.

Table 5.1: Priority ranking of water environment attributes for improvement

Priority Rank	Attribute
1	General litter
2	Abundance and variety of plants, fish and other animals
3=	Bad smells
3=	Foam or slime
4=	Erosion of banks/shores
4=	Murkiness or discolouration
5	Algae or bindweed
6=	Man-made features
6=	Crowds of people

Source: Accent analysis of CRP4d survey data

No noticeable difference was observed in any of the results between England and Wales. All conclusions thus apply equally to England, Wales, and England and Wales combined.

Inconclusive results on the importance of access

In respect of the importance of access, the results from the main survey, (in Table 4.8), suggest that the public, on average, has a weak preference for prioritising (i) areas accessible to the general public over private-access areas, (ii) places that are in more severe need of attention over all other areas, (iii) places with high numbers of visits, and, but slightly less so, (iv) places that are physically accessible over those that are not. The verbatim responses to these questions, coded and presented in Appendix E, show that there are strong feelings amongst many people in respect of these issues, but no overriding majority preferring one order of priority rather than the others. There is a degree of inconsistency between these results for some respondents, since some agree with conflicting priority orders, and there also seems to be a potential bias towards agreement in these questions. These results should therefore be interpreted as inconclusive overall on the public's preferences regarding the importance of access.

This report has presented findings from the CRP 4b/c study on the public's priorities for improvements to the water environment, in addition to the main findings from the survey conducted for this study. Of all the CRP 4b/c study findings, the most reliable are those that derive from the main CRP 4c survey, especially the SP component.

The principal results from the CRP 4b/c study are summarised below.

Higher priority to local water bodies than those further afield

The main result on priorities that derives from the SP questions in the main CRP 4c survey is the finding that improvements to local water bodies are valued more highly than those to more distant water bodies. This result was also found in the preceding qualitative research, and in responses to a related question on the preferred order of improvements in the main CRP 4c survey questionnaire. These findings suggest that higher priority should be given to improvements in populated areas than more remote areas.

Inconclusive evidence on improving the worst areas versus increasing the amount of high quality in the water environment

The general result from the CRP 4c SP survey was that increases in good quality were valued somewhat more than decreases in low quality. Not all of the models exhibited this finding, however, and the qualitative work found the reverse. Overall, the evidence is therefore mixed on this issue.

Non-use, as well as use benefits are substantial

In another, non-SP result from the CRP 4c survey, Table 2.2 showed that there are an approximately equal number of households saying that improved conditions for direct use benefits were the most important, as those that said that knowledge of improved habitats benefits were the most important.

This report has presented the results from an original survey on the public's priorities for WFD and related non-WFD outcomes. It has also reported findings from the earlier CRP 4b/c study, which contained several results relevant to WFD prioritisation. We have drawn conclusions from all of this research on the strength of public preferences towards improving different types of features of the water environment, and towards making improvements according to the types, locations and access characteristics of water bodies. The conclusions and recommendations presented here can have an important role to play in guiding the implementation in England and Wales of the Water Framework Directive.