

# *The Appraisal of Human-Related Intangible Impacts of Flooding*

Phase 1A Report

prepared for

Flood & Coastal Division, DEFRA

by

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## **EXECUTIVE SUMMARY**

### **Overview of Research**

*The aim of this research is to develop a robust, yet simple-to-use, methodology so that the intangible impacts on human health and well-being can be accounted for in assessing the benefits of flood alleviation measures.*

*The research is being carried out in two phases. Phase 1 was concluded in August 2002 and involved the development and validation of survey instruments. It is intended that Phase 2 (due to conclude in March 2003) will involve undertaking extensive survey work, analysing the results and developing the methodology to account for intangible impacts associated with flooding.*

*As Phase 1 drew to a close, one of the key findings to emerge was that the questionnaire designed to elicit willingness-to-pay (WTP) estimates for a reduction in the intangible impacts associated with a range of flood characteristics (risk, depth, warning, etc.) had not proved to be robust - due, primarily, to a high degree of 'protest' votes.*

*At a Project Advisory Group Meeting held on 18 July 2002, it was agreed that the Consultants should develop a revised approach to the valuation of the intangible impacts of flooding. This item of work is hereafter referred to as Phase 1A and is the subject of this report.*

### **The Revised Approach**

*In summary, there were three key elements of the revised approach. Firstly, the elicitation of values was to be based on 'standard' contingent valuation questions ('Are you willing to pay £X to avoid ...?'). Secondly, the focus of the valuation was to be on the impacts of flooding (in terms of stress, etc.) rather than on the nature of the flood itself (flood depth, flood duration, etc.). Thirdly, provided it was practicable, there was to be a single questionnaire for 'flooded' respondents combining both health and WTP aspects (rather than the two separate questionnaires originally envisaged). As before, a single questionnaire was to be used for those 'at risk'.*

### **Development Work**

*As detailed in this report, the development of this revised approach involved drawing up the revised questionnaires (and possible alternatives) which were then subject to a series of one-to-one interviews in Waltham Abbey (Essex) amongst flooded respondents. Following further review and refinement, the revised questionnaires (for both 'flooded' and 'at risk' respondents) were piloted in Newport Pagnell (Bucks) and Bocking (Essex).*

***Results of Phase 1A Work***

*Overall, it was found that the use of a combined questionnaire based on standard contingent valuation questions worked successfully under 'field conditions' (i.e. when administered by a market research company). The valuation questions were of the form 'Are you willing to pay £X to avoid these effects?' in which 'these effects' were those stress effects associated with the impacts of flooding. Furthermore, the level of protest bids was found to be less than 30%.*

*As such, the prime objective of Phase 1A to develop a WTP questionnaire that can be used more reliably in the main survey of Phase 2 is considered to have been met.*

*Overall, the results from the pilot survey work in Newport Pagnell and Bocking confirm the key finding from Phase 1 that the intangible impacts of flooding (both in terms of health and WTP) are dependent on a wide range of factors. As such, a much larger sample (as planned for Phase 2) will be required in order to determine the key explanatory factors with confidence.*

***Recommendations for Phase 2***

*On the basis of the successful piloting of the revised questionnaires, it is recommended that the format and content of the questionnaires used are carried forward to the main survey work.*

*However, in order to provide a check for the validity of the WTP responses, it is recommended that eight variants are used in the main survey where these will incorporate two valuation scales and different combinations of stress levels to be valued.*

## **1. INTRODUCTION**

### **1.1 Background to Phase 1A**

The Consultants<sup>1</sup> are undertaking a major study into the intangible effects of flooding. The study is being undertaken in two phases:

- Phase 1: Develop and validate survey instruments; and
- Phase 2: Undertake two main surveys and associated analysis.

Phase 1 was concluded in August 2002 and Phase 2 is due to conclude in March 2003. As Phase 1 drew to a close, one of the key findings to emerge was that the questionnaire designed to elicit willingness-to-pay (WTP) estimates for a reduction in the intangible impacts associated with a range of flood characteristics (risk, depth, warning, etc.) had not proved to be robust - due, primarily, to a high degree of 'protest' votes.

At a Project Advisory Group Meeting held on 18 July 2002, it was agreed that the Consultants should develop a revised approach to the valuation of the intangible impacts of flooding. This item of work is hereafter referred to as Phase 1A.

### **1.2 Approach to Phase 1A**

The prime objective of Phase 1A was to develop a WTP questionnaire that can be used more reliably in the main survey of Phase 2, building on experience gained using the 'choice experiment' approach in Phase 1<sup>2</sup>.

The key elements of the revised approach were determined to be:

- use of 'standard' WTP questions;
- use of 'indirect' valuation (for example, valuing 'stress' rather than 'flood characteristics'); and
- use of a combined questionnaire (i.e. covering both 'health' and 'WTP' aspects) for respondents that had been flooded.

The development of this revised approach involved:

- development of revised questionnaires;
- a series of one-to-one interviews in Waltham Abbey, Essex; and
- a round of 50 pilot surveys in Newport Pagnell, Bucks and Bocking, Essex.

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<sup>1</sup> Phase 1 was led by Risk & Policy Analysts Ltd (RPA) with support from EFTEC and the Flood Hazard Research Centre (FHRC). Although this team embarked on Phase 1A, there were internal difficulties which, regrettably, resulted in EFTEC's departure from the team in September 2002.

<sup>2</sup> As described in detail in RPA/EFTEC/FHRC (2002): **The Appraisal of Human-Related Intangible Impacts of Flooding - Phase 1 Report**, report for DEFRA/EA dated August 2002 - hereafter referred to as the 'Phase 1 Report'.

### **1.3 Organisation of this Report**

Section 2 discusses the development of the combined questionnaire and the series of interviews that were held to further refine these instruments. Section 3 discusses the pilot surveys and the associated results. Finally, Section 4 concludes the report, discussing the approach to Phase 2 of the project.

## **2. DEVELOPMENT OF THE REVISED APPROACH**

### **2.1 Questionnaire Design**

#### **2.1.1 Phase 1 Questionnaires**

As detailed in the Phase 1 Report, the format of the three questionnaires used in the Phase 1 pilots may be summarised as follows:

***'Health Impact' questionnaire for those flooded since January 1998:***

- Part A: Questions about the property, household members, depth of flooding, numbers of rooms affected, etc.;
- Part B: Questions about the health impacts of flooding;
- Part C: Self-completion health questionnaires (GHQ-12, SF-12 and PTSS); and
- Part D: Standard socio-demographic questions.

***'Choice Modelling' questionnaire for those flooded since January 1998:***

- Part A: Questions about attitudes and opinions towards flooding;
- Part B: The valuation scenarios, choice cards and follow-up questions;
- Part C: Questions about the property, household members, flood awareness, depth of flooding, extent of both 'tangible' and 'intangible' damages, etc.; and
- Part D: Standard socio-demographic questions.

***'Choice Modelling' questionnaire for those at risk of flooding:***

- Parts A, B and D: As above; and
- Part C: Questions about the property, household members and flood awareness.

As would be expected, there was a considerable degree of similarity amongst the questionnaires. Indeed, the two choice modelling questionnaires were identical apart from the additional questions in Part C of the 'flooded' questionnaire.

#### **2.1.2 Revised Questionnaires for Phase 1A**

It was originally envisaged that the main survey would involve 2,000 questionnaires made up as follows:

- 1,000 'Health Impact' questionnaires for those flooded since January 1998;
- 500 'Choice Modelling' (WTP) questionnaire for those flooded since January 1998; and
- 500 'Choice Modelling' (WTP) questionnaire for those at risk of flooding.

As can be seen, this equates to a target of 1,500 respondents amongst those that have been flooded in recent years. The Consultants were concerned that such a target would be difficult to achieve since it would involve interviewing a substantial proportion of all those who have been flooded in England and Wales in the last few years. This issue was discussed at the Project Advisory Group Meeting held on 18 July 2002 and it was agreed that a potential solution would be to develop a combined health/WTP questionnaire for those that had been flooded. As a consequence, it would be possible to obtain 1,000 'health' responses and 1,000 'WTP' responses from those that had been flooded (using 1,000 'combined' questionnaires) with an additional 500 WTP responses from those at risk of flooding (as originally envisaged).

It was agreed that the revised questionnaires to be taken forward for further testing would be of the form:

***For those that had been flooded:***

- Part A: Questions about the property, household members and nature of flooding and associated damages;
- Part B: Questions about the health impacts of flooding;
- Part C: Self-completion health questionnaires (GHQ-12 and PTSS<sup>3</sup>);
- Part D: Valuation questions; and
- Part E: Standard socio-demographic questions.

***For those at risk of flooding:***

- Part A: Questions about the property, household members and awareness of flooding (i.e. similar questions to above but reflecting that respondents have not been flooded);
- Part B: Not used (as flooding not experienced)
- Part C: Self-completion health questionnaire (GHQ-12 only to provide a comparison with 'flooded' respondents);
- Part D: Valuation questions (similar to above); and
- Part E: Standard socio-demographic questions (as above).

In order to pilot the revised questionnaires, consideration was given to four issues:

- the need to focus on relevant questions in order to keep the duration of the combined questionnaire (for those that had been flooded) to a reasonable length (i.e. less than one hour);
- the need for concise and precise wording;
- the format of the valuation questions; and
- the overall format of the questionnaires.

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<sup>3</sup> Note that use of the SF-12 was abandoned as discussed in the Phase 1 Report.



The prevailing view amongst the research team was that the first two items would be resolved through checks and the planned piloting exercise. Although there was debate within the team as to the overall format of the questionnaire, in the event, a variety of formats were subjected to further trials as discussed further below. However, the key issue was the nature of the valuation questions and the team's approach to this issue is discussed below.

## 2.2 Approach to Valuation Questions

As discussed in the Phase 1 Report, there was agreement that there was a need to revise the approach to eliciting respondents' willingness-to-pay (WTP) to avoid the impacts of flooding. Two fundamental changes were made to the approach used in the Phase 1 work:

- a standard contingent valuation (CV) approach was used in which respondents are asked direct questions of the form 'are you willing to pay £X to avoid ...'; and
- respondents were asked to value the benefits of avoiding specified stress effects rather than of changes in flood characteristics (such as a reduced depth or frequency of flooding).

The stress effects were based on an analysis of the Post-Traumatic Stress Scale (PTSS) results from the 72 respondents in the Phase 1 pilots. As indicated in the PTSS Manual<sup>4</sup>, the level of stress may be characterised as 'low', 'mild', 'moderate', 'high' and 'extreme' with reference to the PTSS Intensity Score. The numbers of Phase 1 respondents falling into each of these categories is shown in Table 2.1.

<b>PTSS Intensity Score</b>	<b>Number of Respondents</b>	<b>Characterisation</b>
0 - 41	46	Low Stress
42 - 82	14	Mild Stress
83 - 147	8	Moderate Stress
148 - 209	4	High Stress
210 - 272 (max)	0	Extreme Stress

For each category, the responses to each of the PTSS questions were analysed to identify the five most significant symptoms (as indicated by frequency of occurrence) to the overall scores and the associated level of distress that such symptoms caused. By way of example, the most significant contributor to the scores of those respondents with 'mild' stress was found to be the response to:

*I am reminded of the flood by triggers which resemble or symbolise an aspect of the flood (for example, TV programmes, weather forecasts, etc.)*

<sup>4</sup> Dua J & Scott W (2001): **Manual for the Post-Traumatic Stress Scale**, Melbourne, PsychPress.

The average response from those with ‘mild’ stress was found to be that such events occurred ‘often’. Typically, such symptoms were found to result in a fair amount of distress. By contrast, for those with ‘moderate’ stress, such symptoms were found to result in quite a lot of distress (i.e. those at a higher stress level tend to be distressed to a greater extent by the same symptom).

Although subject to some uncertainties, this approach provides a means to identify the most typical manifestations of different levels of stress associated with past flood events. Areas of uncertainties would include:

- relatively small sample sizes, particularly for the higher levels of stress; and
- the potential for the sampled areas (Leamington Spa, Northfield, Lewes and Waltham Abbey) not to be representative of the ‘flooded’ population as a whole.

Nevertheless, this approach provides a means to characterise the typical stress effects of flooding as shown in Table 2.2. It is worth noting that these descriptions are consistent with anecdotal evidence given by those that had been flooded in the course of both the Phase 1 focus groups and the many informal conversations held in relation to the research work.

<b>Level of Stress</b>	<b>Characteristics (associated with past flood events)</b>
Low	You are sometimes reminded of the flood by triggers (such as TV programmes). You experience rare feelings of nervousness, palpitations or tension, caused by these triggers. You experience rare occasions of being overtly alert or watchful for no reason. You experience rare sleeping difficulties. You experience rare memories of the flood. All of these symptoms cause you a little distress.
Mild	You are often reminded of the flood by triggers (such as TV programmes). You are often overtly alert or watchful for no reason. You sometimes feel nervous, have palpitations or feel tense when reminded of the flood. You sometimes have recurring memories of the flood. You sometimes experience flashbacks to the event. All of these symptoms will cause you a fair amount of distress.
Moderate	You often have difficulty concentrating on tasks or completing tasks. You are often reminded of the flood by triggers (such as TV programmes). You often feel nervous, have palpitations or feel tense when reminded of the flood. You often experience strong startled reactions. You are often overtly alert or watchful for no reason. These symptoms will cause you quite a lot of distress.
High	You always feel nervous, have palpitations or feel tense when reminded of the flood. You always feel emotionally estranged, separated or cut off from others. You are always being reminded of the flood by triggers (such as TV programmes). You always have difficulty concentrating on tasks or completing tasks. You often experience difficulty sleeping. These symptoms will distress you very much.

These descriptions (as shown in Table 2.2) were then used as a basis for the WTP questions to elicit how much a person was willing to pay to avoid the characteristics corresponding to a certain stress level.

In relation to eliciting a WTP value, two approaches were trialled - dichotomous choice questions and use of a payment ladder.

The dichotomous choice approach trialled involved questions of the form:

- *'are you willing to pay £X to avoid ...'*
- *IF 'NO', then ask 'what is the maximum you are willing to pay to avoid ...'*
- *IF 'YES', then ask 'are you willing to pay £Y to avoid ...' (where  $Y > X$ )*
- *IF 'YES' or 'NO', then ask 'what is the maximum you are willing to pay to avoid ...'*

For the payment ladder, respondents are asked to match a value from a pre-defined 'ladder' of payments to their willingness to pay. By way of example, one of the payment ladders used in the interviews described below listed 15 values (in ascending order) between £0 and £450.

## **2.3 Waltham Abbey: One-to-One Interviews**

### **2.3.1 Introduction**

Eleven one-to-one interviews were conducted by members of the research team in Waltham Abbey on 22 August 2002, which was last flooded in October 2000. The objectives of these interviews were to:

- test the new valuation scenario wording;
- test the two new valuation scenario elicitation formats, i.e. dichotomous choice questions and use of payment ladder; and
- test how well the 'combined' questionnaire works in the field.

In order to achieve these objectives, three formats of the overall questionnaire were tested:

- a combined health and WTP questionnaire with two variations:
  - i. valuation scenario appeared before GHQ-12 and PTSS questionnaires (labelled 'WTP middle'); and
  - ii. valuation scenario appeared after GHQ-12 and PTSS questionnaires (labelled 'WTP at the end'); and
- WTP questionnaire, based on the earlier version of the WTP questionnaire (as used in Phase 1) with the new valuation section and GHQ-12 administered once for current health.

The WTP alone questionnaire was trialled in case it was found that the combined questionnaire did not work.

Only those who had been flooded were interviewed. Table 2.3 presents the distribution of the interviews across the different variations of questionnaire design. Due to time constraints eleven out of fourteen planned interviews were completed. This is reflected in the slightly unbalanced distribution of questionnaires trialled.

<b>Qu. No.</b>	<b>Description</b>	<b>Elicitation Format</b>
1, 2	Combined - WTP middle	Payment ladder
3, 4	Combined - WTP middle	Dichotomous choice
7, 8	Combined - WTP at the end	Dichotomous choice
9, 10	WTP alone	Payment ladder
12, 13, 14	WTP alone	Dichotomous choice

### **2.3.2 Results**

#### *Valuation Scenario Wording*

The wording of the new valuation scenario was intended to encourage respondents to think only about the stress effects of flooding. The definition of different stress levels was clear and respondents did not have any difficulty thinking about the 'stress', 'hassle', and 'trauma' effects separately<sup>5</sup> from insured or uninsured financial losses. They were also aware that even if they received prompt and adequate insurance payments for the financial damage, there was still hassle involved. However, the wording of the scenario was found to be long and repetitive, suggesting that this could be reduced without losing detail.

#### *Elicitation Format*

The dichotomous choice format was found to be easier for the respondents to think about than the payment ladder approach and hence was easier and quicker to administer. This would allow more than two bid levels to be asked, if necessary.

Respondents found the payment ladder approach difficult since it required comparing the 'moderate' and 'high' levels of stress simultaneously and then assigning a WTP value from the payment ladder for each of the two stress levels. This was designed to test whether people were willing to pay more to avoid high stress than moderate stress, as might be expected. However, these are the two highest levels of stress, and in most cases respondents were not able to differentiate between the descriptions of characteristics. This suggests that, given there are four levels of stress, respondents should be presented with levels 1 and 3, or 2 and 4, so that there is a greater difference between the scenarios.

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<sup>5</sup> Note that respondents to the 'payment card' questionnaires were asked to consider 'stress' characteristics (from Table 2.2) whilst those to the 'dichotomous choice' questionnaires were asked to consider the impacts (in terms of health, distress, etc.) of their 'worst flood'.

**WTP Results**

Respondents' WTP ranged from 0 to £1,000 as shown in Tables 2.4 and 2.5 (overleaf). There is some suggestion of starting point bias, where respondents' maximum bids are the same as one of the values presented to them. This can be compensated for to some extent in the main survey, where a larger sample size would allow different starting points.

Qu.No.	Start Value	Next Value	Max Value WTP
3	£20	£250	£250
4	£20	£250	£250
7	£100	£750	£750
8	£100	£750	£100
12	£50	£450	£100
13	£20	£250	£50
14	£100	£750	£100

Qu.No.	WTP to Avoid		Comment
	Moderate Stress	High Stress	
1	£95-£120		Person could not differentiate between the two stress levels
2	£0	£0	Respondent stated that stress can be reduced only if no flood, which is not realistic, so why should we pay for it?
9	£0	£0	Respondent stated that 'they' have enough money and never do anything. (Note that this person had received a considerable amount of insurance money but would have been happy to forgo that not to suffer the stress of flooding)
10	£120	£450+	

Some respondents believed that so long as there is a flood, there would be stress no matter how mild the flooding is. Thus, these respondents found the scenario not credible and were not prepared to pay for it. In total there were two protest responses, representing 18% of the sample. However, it should be remembered that this is a very small sample, and thus may not be representative. Whilst the interviews suggest that more people are willing to pay to avoid stress effects than flood characteristics (as presented in Phase 1), the Phase 1A pilot surveys provide a better indication of the protest rate (as discussed in Section 3).

**Questionnaire Duration**

The main concern about combining the original health and WTP questionnaires was that the combined questionnaire may be too long, boring or tiring for the respondent, jeopardising the successful implementation of both health and WTP components. In practice the combined questionnaire took an average of approximately 45 minutes to complete, whilst the WTP alone questionnaire took approximately 35 minutes. This suggests that combining the 'health' and 'WTP' questionnaires adds little to the overall length, due to the fact that the separate questionnaires had originally used

comparable questions. There was also little difference in overall duration between the two versions of the valuation approach used in combined questionnaire.

## 2.4 Summary

The key points to emerge from the series of one-to-one interviews were:

- use of the combined health/WTP questionnaire was a practical proposition;
- respondents were able to value stress effects without undue difficulty; and
- the dichotomous choice approach was found to be more effective than the use of payment ladders.

In relation to the order of questions, the prevailing view was that the valuation questions should come after the health questions (which is in accordance with current best practice<sup>6</sup>). The final issue was whether the wording accompanying the valuation questions should be further expanded to minimise the potential for 'protest votes' (i.e. respondents refuse to express a WTP). This was discussed internally and with the Project Advisory Group at the meeting on 23 September 2002. It was decided that the wording should be reduced rather than being expanded.

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<sup>6</sup> See, for example, DTLR (2002): **Economic Valuation with Stated Preference Techniques**, London, DTLR, dated March 2002.

### **3. PILOT SURVEYS**

#### **3.1 Overview**

##### **3.1.1 The Questionnaires**

For the pilot surveys, two questionnaires were used - one for those that had been flooded and one for those at risk of flooding. The questionnaire components of each may be summarised as:

*For those that had been flooded:*

- Questions about the property, household members and nature of flooding and associated damages;
- Questions about the health impacts of flooding;
- Self-completion health questionnaires (GHQ-12 and PTSS);
- Valuation questions (dichotomous choice); and
- Standard socio-demographic questions.

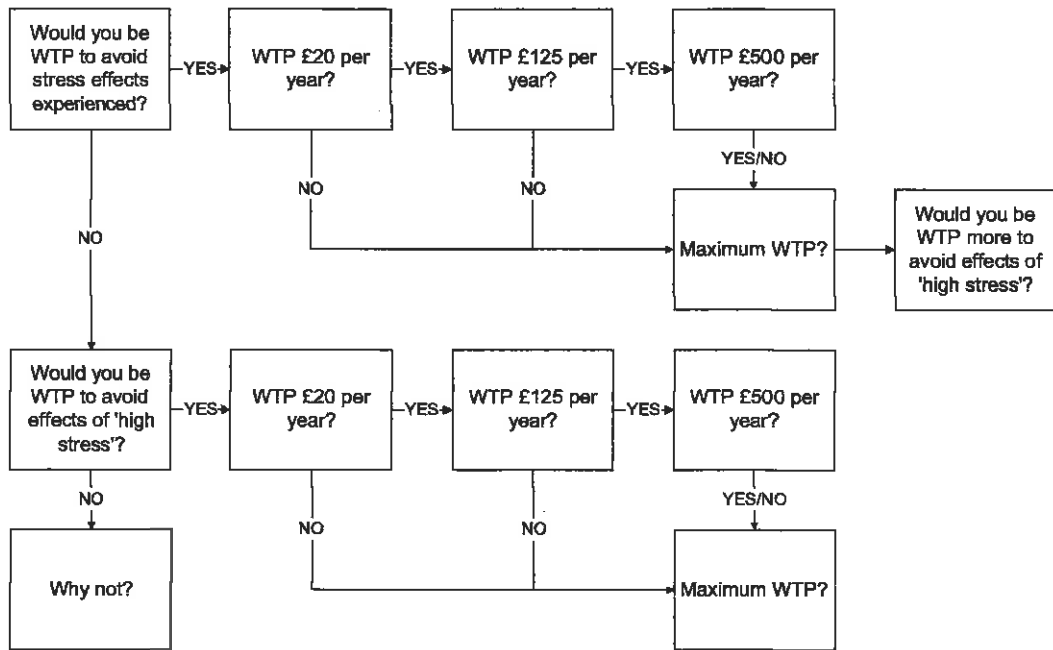
*For those at risk of flooding:*

- Questions about the property, household members and awareness of flooding (i.e. similar questions to above but reflecting that respondents have not been flooded);
- Self-completion health questionnaires (GHQ-12 only to provide a comparison with 'flooded' respondents);
- Valuation questions (similar to above); and
- Standard socio-demographic questions (as above).

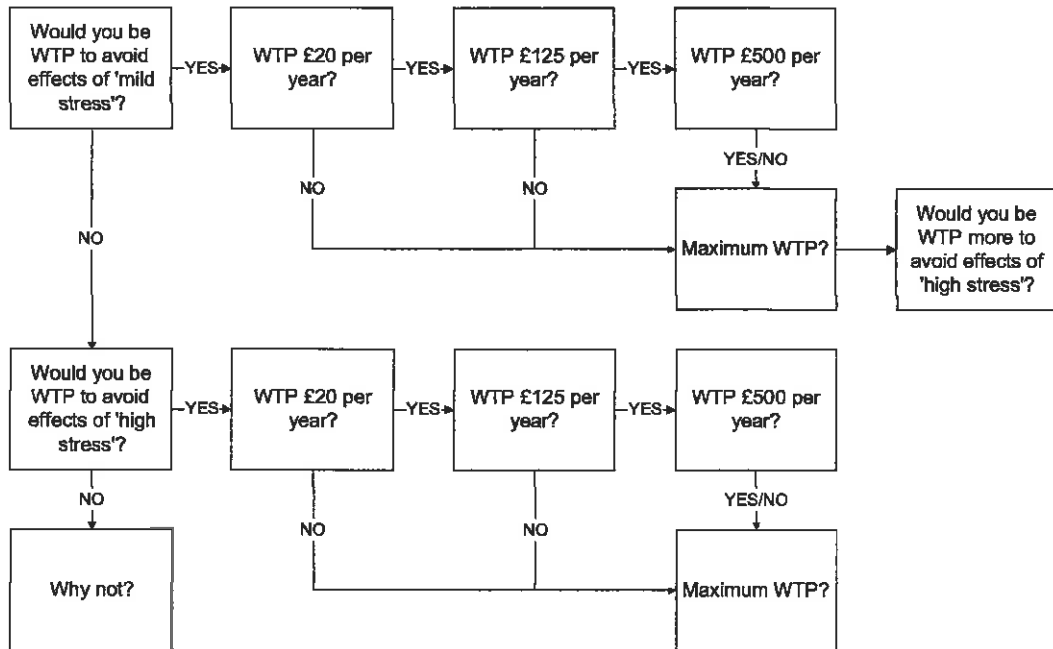
Following consideration of the results of the one-to-one interviews, it was decided that the dichotomous choice questions would have a third payment point to assist in eliciting a WTP value. The resultant frameworks of the valuation questions for the 'flooded' and 'at risk' questionnaires are shown in Figures 3.1 and 3.2 (overleaf). Flooded respondents were asked to express a WTP to avoid both the effects experienced and those symptoms associated with a 'high' level of stress. 'At risk' respondents were asked to express a WTP to avoid the symptoms associated with both 'mild' and 'high' levels of stress.

##### **3.1.2 Pilot Survey Administration**

Following the development and finalisation of the two questionnaires (attached as Annexes 1 and 2), a pilot survey of approximately 50 interviews was planned at two locations. The market research company, Carrick James, which had undertaken the two rounds of pilot surveys during Phase 1 were retained to undertake this third round of pilots.



**Figure 3.1: Valuation Questions for 'Flooded' Respondents**



**Figure 3.2: Valuation Questions for 'At Risk' Respondents**



The Environment Agency provided addresses for the two locations as detailed in Table 3.1 below. These addresses were ratified during site visits by RPA staff on 9 September 2002.

In total, 53 responses were received consisting of:

- 37 responses to the ‘flooded’ questionnaire; and
- 16 responses to the ‘at risk’ questionnaire.

<b>Pilot Area</b>	<b>Addresses Provided</b>	<b>Targets</b>	<b>Responses</b>	<b>Further Comment</b>
<b>Newport Pagnell, Bucks.</b>	150	22 flooded 8 at risk	23 flooded 8 at risk	Newport Pagnell (mainly Lakes Lane) suffered flooding in Easter 1998
<b>Bocking, Essex</b>	40	13 flooded 7 at risk	14 flooded 8 at risk	Parts of Bocking suffered flooding in October 2001
<b>Overall</b>		35 flooded 15 at risk	37 flooded 16 at risk	
<b>Totals</b>		<b>50</b>	<b>53</b>	

## **3.2 Analysis of Responses to the Questionnaire**

### **3.2.1 Objectives and Methods of the Pilot Survey**

The objectives of the pilot survey were to test:

- the use of a combined questionnaire for people who had been flooded, covering both health and WTP, considering the time taken for completion and retaining the respondent’s interest;
- the ability of the revised valuation section to reduce protest votes for both those who had been flooded and those who are at risk of flooding; and
- additional questions which had been incorporated following Phase 1, particularly for the ‘at risk’ questionnaire.

### **3.2.2 Characteristics of Pilot Survey Respondents**

#### ***Interview Duration***

The 53 interviews were undertaken without difficulty. Once contact had been made with interviewees, the response rate was high (about 75%). This indicates that there should be no practical difficulties in administering the revised questionnaires for the main survey.

The time taken to complete the combined questionnaire (for those that had been flooded) ranged from 35 to 90 minutes, with an average of 50 minutes. As expected,

this is only slightly longer than the time taken for the individual health and WTP questionnaires used in Phase 1 (48 and 38 minutes respectively). This was achieved through omitting the Short Form (SF-12) (which assessed physical health effects) from the health questionnaire, and reducing the complexity (and thus time taken) for the WTP valuation section. It should be noted that the separate questionnaires used in Phase 1 already contained many of the same questions for comparability, and therefore few questions were omitted in combining the questionnaires.

The 'at risk' questionnaire took an average of 26 minutes to complete, ranging from 14 to 55 minutes. This was the same duration as for the WTP 'at risk' questionnaire used in Phase 1.

***Socio-Demographic Characteristics***

Both the flooded and at risk samples were representative of gender, with equal numbers of women and men. The pilot sample was weighted towards the older age groups with mean ages of 55 and 52 for the flooded and at risk samples respectively, as was the case in Phase 1. This may simply reflect the period of development and age composition of the particular floodplain areas affected or it may be due to interviewers interviewing older people who were more readily available for interview. Table 3.2 shows the age distribution of respondents by survey area.

<b>Age</b>	<b>Newport Pagnell</b>	<b>Bocking</b>	<b>All</b>	<b>% of All Respondents</b>
18-39	5	9	14	26
40-64	14	8	22	42
65-74	8	4	12	23
75+	4	1	5	9
<b>Total</b>	<b>31</b>	<b>22</b>	<b>53</b>	<b>100</b>

Table 3.3 shows the social grade of respondents by survey area. Social Grade can be approximately interpreted as:

- AB - Professional and Managerial;
- C1 - Clerical and other white collar;
- C2 - Skilled manual; and
- DE - Semi skilled/unskilled manual.

<b>Social Grade</b>	<b>Newport Pagnell</b>	<b>Bocking</b>	<b>All</b>	<b>% of All Respondents</b>
AB	3	3	6	11
C1	12	9	21	40
C2	2	7	9	17
DE	2	2	4	8
Unknown	12	1	13	25
<b>All</b>	<b>31</b>	<b>22</b>	<b>53</b>	<b>100</b>

Most respondents lived in semi-detached (24, 45%) or terraced houses (14, 26%). Only 3 (6%) respondents were particularly vulnerable as they lived in ground floor flats or bungalows. Eleven (21%) respondents lived in detached properties with one in 'other' accommodation (1, 2%). There was little difference in the type of properties by area, although the most vulnerable (bungalow/ground floor flat) were only in Bocking.

**Flood Risk Awareness**

Of the flooded sample, only 6 (16%) reported that they were aware of the flood risk in the area before the flooding. For those at risk, the awareness is much higher, probably as a result of the flooding experienced in the area. This was equal to 50% in Bocking and 75% in Newport Pagnell.

**Concern about Flooding**

Both flooded and at risk samples were asked how worried they were about the possibility of being flooded during the next twelve months. The results are shown in Table 3.4. The majority of respondents are at least 'somewhat worried'. Concern is particularly high in Bocking which was flooded in 2001, compared to Newport Pagnell where there has been no flooding in the last four years.

**Table 3.4: Number of Respondents Concerned about Flooding**

	Newport Pagnell		Bocking		Overall %
	Flooded	At risk	Flooded	At risk	
Not worried at all	3	2	0	0	10
Not very worried	8	4	0	2	27
Indifferent	1	0	0	1	4
Somewhat worried	10	2	5	4	40
Very worried	1	0	8	1	19
<b>Total</b>	<b>23</b>	<b>8</b>	<b>13</b>	<b>8</b>	<b>100</b>

In addition, respondents were asked which characteristic of the flood concerned them most. More than half were worried about the speed of the floodwaters, particularly amongst those who had been flooded, as shown in Table 3.5 (overleaf).

**3.2.3 Flood Experience of Respondents**

All households that had been flooded (37) had only experienced the one flood at or since Easter 1998<sup>7</sup>, and only two households had ever experienced more than one flood (in Newport Pagnell). For all respondents the last flood was therefore the worst one and the one that their responses were focused on.

<sup>7</sup> In response to the question: "How many times have you experienced flooding above floor level in your home since January 1998, including basements and cellars but excluding outhouses and garages?"

**Table 3.5: Characteristic of Flood Causing Most Concern**

Characteristic	Newport Pagnell		Bocking		Overall %
	Flooded	At risk	Flooded	At risk	
Duration of flood	1	0	1	1	6
Depth of water	1	1	1	1	8
Dirtyness of water	2	1	1	1	10
Speed of water rising/flowing	14	3	9	3	56
Time of day/night	3	1	0	0	8
Season of year	1	0	0	0	2
Warning time	0	0	0	0	0
Other	1	1	0	0	4
No specific characteristic	0	1	1	2	8
<b>Total</b>	<b>23</b>	<b>8</b>	<b>13</b>	<b>8</b>	<b>100</b>

The time that had elapsed since the worst flood event and the period of time over which respondents had to recall their experiences and feelings ranged from approximately 11 months in Bocking to 53 months in Newport Pagnell.

Only one person in Newport Pagnell reported receiving a warning, this was from their neighbour approximately 15 minutes before the flood. Most respondents (35, 95%) reported that the floodwaters rose so quickly that you could see them rising.

The depth of flooding in different rooms was obtained from respondents. This ranged from 5 cm to 137 cm, with an average depth of 61 cm. Nearly a quarter of respondents experienced floods of more than one metre. In most cases (32, 86%) peoples' living rooms were flooded, 28 (76%) also had their kitchen flooded, and 8 (22%) had their living room, kitchen and bathroom flooded. Flood depths in living rooms are summarised in Table 3.6.

**Table 3.6: Depth of Flooding in Living Room Experienced by Number of Respondents**

Depth of Flooding	Newport Pagnell	Bocking	All	%
No flooding	3	2	5	14
<25 cms	8	5	13	35
25-99 cms	11	2	13	35
100+ cms	1	5	6	16
<b>Total</b>	<b>23</b>	<b>14</b>	<b>37</b>	<b>100</b>

### 3.2.4 Measures of Health Impacts

The three main measures of the health impacts of flooding (focusing on the impacts of 'worst' flood) used in the pilot survey were:

- GHQ-12 scale;
- PTSS scale; and
- Self-reported health effects of flooding.

The three scales were administered to each respondent that had been flooded, whilst only the GHQ-12 was relevant for those that were at risk, allowing for some comparability between the questionnaires.

### ***GHQ-12***

The GHQ-12 consists of twelve questions relating to symptoms of psychological distress experienced in the past few weeks (prior to administering the questionnaire), although the questions do not relate this distress to a particular event.

In the flooded questionnaire, the GHQ-12 was administered twice, once for the respondents' current health 'over the past few weeks' (current) and then 'with reference to their health at the time when flooding was most severe for them' (the worst time). As discussed in the Phase 1 report, it should be noted the Consultants are not aware of any previous studies that use the GHQ-12 retrospectively and thus the results should be viewed with caution.

Each question has four response categories. Using the Likert GHQ scoring method, the response categories are scored 0, 1, 2, 3 to produce a range of GHQ-12 scores from 0 to 36 (where 0 relates to no psychological distress and 36 to high psychological distress). Research suggests that 11-12 is the most effective threshold indicating potential mental health cases. Using this scoring method, 16 (43%) of the flood victims came into the 'case' category on the basis of their current GHQ Likert score, with half of these scoring 12, just over the threshold.

Respondents were asked 'at what stage during or after the flooding were the health impacts the most severe or worst for you personally'. From the pilot results, it appears that the worst health effects occurred early on: during the event itself and in the first weeks and up to a month after the event for most of those affected (79% - which is slightly higher than the corresponding figure of 70% derived in the Phase 1 pilot surveys). There were few respondents for whom the worst time was later on in the recovery period more than three months after the flood, as shown in Table 3.7.

The GHQ scores reported were markedly higher for 'the worst time' when effects on health were regarded as most severe, with 73% of respondents scoring above the threshold level.

In comparison, the scores of the at risk sample were much lower, with only 31% of these scoring 11 or 12, and none scoring higher.

**Table 3.7: Stage at which Health Effects were the Most Severe for Flooded Respondents**

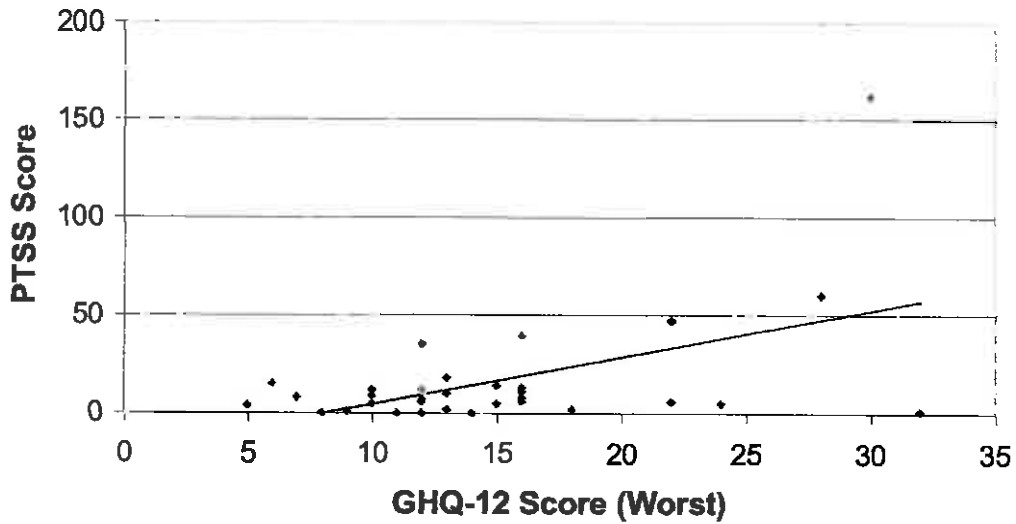
Stage	Newport Pagnell	Bocking	All	%
During the flood event	12	4	16	47
In the first week or two after the flood	2	6	8	24
In the first month after the flood	2	1	3	9
1-3 months after the flood	3	0	3	9
3-6 months after the flood	1	0	1	3
More than 6 months after the flood	0	0	0	0
Other	2	1	3	9
<b>Total</b>	<b>22</b>	<b>12</b>	<b>34</b>	<b>100</b>

***Post Traumatic Stress Scale (PTSS)***

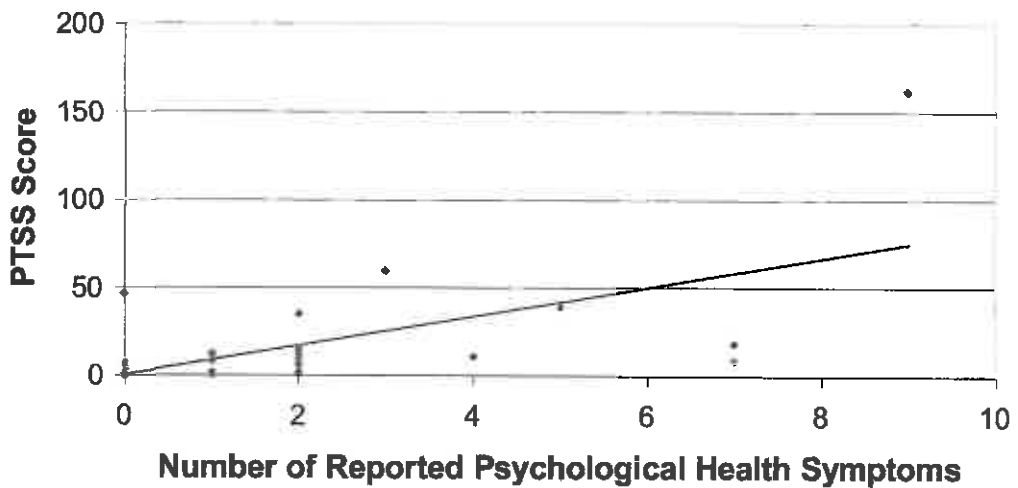
This scale is designed as a diagnostic tool to categorise whether or not subjects are suffering from Post Traumatic Stress Disorder (PTSD). It also provides a measure of the frequency, severity and duration of individual symptoms and symptoms overall. It has three components: 5 questions concerned with 're-experiencing' the event; 7 questions concerned with 'numbing and avoidance' and 5 concerned with 'hyperarousal'. Each of these can be considered as a separate scale and the data can be used to develop four separate scores. In this pilot survey analysis only one of these has been calculated and used in the analysis. This is the PTSS Intensity score which combines responses to questions on frequency of occurrence with responses on distress caused by symptoms, and is regarded by the scale's innovators as the best method for interpreting the symptoms.

The mean PTSS score was found to be 14 (ranging from 0 to 162), compared to a mean of 43 in Phase 1. Thus the psychological health of respondents to Phase 1A surveys was considerably less affected than in Phase 1, as measured by the PTSS. The results from the PTSS can be compared with those from the GHQ-12 and the self-reported health scales (discussed below). Figures 3.3 and 3.4 show the correlations between these scales. Whilst there is some correlation between these scores (0.53 for the PTSS and GHQ-12, and 0.64 for the PTSS and self-reported psychological health symptoms), it is less than that in Phase 1, possibly due to being a smaller sample.

**Figure 3.3: PTSS Score Vs GHQ-12 Score (Worst)**



**Figure 3.4: PTSS Score Vs Self-Reported Psychological Health Symptoms**



***Self-reported Health Effects of Flooding***

Respondents were asked about three categories of health effects that they or other members of their household might have experienced:

- physical health effects during or immediately after flooding;
- physical health effects in the weeks or months after the flooding; and
- psychological health.

The checklists used were built up from the effects that have emerged in previous research conducted by FHRC, as well as the focus groups held specifically for this project.

***Immediate Physical Health Effects***

Only 14 respondents out of 37 (38%) experienced immediate physical health effects from the flooding, compared to 82% in Phase 1. Of the 10 listed effects, the most common response was colds, coughs and flu, followed by shock. These responses are summarised in Table 3.8 (overleaf).

Respondents also reported on the immediate health effects on other adults in the household and on effects on children. In total, 30 households contained another adult and 8 contained children aged under 18. For those reporting effects, the pattern of responses was similar to that for the respondents themselves. Cold, coughs and flu were again the most common immediate effects, felt by 7, followed by shock (6).

Seven out of eight households containing under 18 year olds indicated that there were no effects on the children in the household. The only symptoms experienced were colds, coughs and flu.

**Table 3.8: Immediate Self-reported Physical Health Effects**

Immediate Physical Health Effect	Respondent	Other Adults	Children
Cold, cough, flu	24% 9	23% 7	13% 1
Shock	22% 8	20% 6	0
Injuries due to being knocked over by flood water	8% 3	3% 1	0
Headaches	5% 2	10% 3	0
Injuries due to over exertion	3% 1	3% 1	0
Exposure to contaminants	3% 1	7% 2	0
Skin irritations	0	3% 1	0
Hypothermia	0	0	0
Electric shock	0	0	0
Other	0	3% 1	0
None of the above	62% 23	63% 19	88% 7
<b>Total</b>	<b>37</b>	<b>30</b>	<b>8</b>

***Physical Health Effects in Weeks and Months after Flooding***

Fewer respondents reported health effects in the weeks and months after flooding than had felt immediate effects. More than three-quarters reported no physical effects to themselves in the post event period. Of the 16 listed possible health effects, the most common were gastro-intestinal illness, respiratory illness and cuts and bruises, as shown in Table 3.9.



**Table 3.9: Self-reported Physical Health Effects in the Aftermath of Flooding**

Physical Health Effects in Aftermath of Flooding	Respondent	Other Adults	Children
Gastro-intestinal illness	8% 3	13% 4	0
Respiratory illness	8% 3	7% 2	0
Cuts and bruises	8% 3	3% 1	0
Stiffness in joints	3% 1	0	0
High blood pressure	3% 1	3% 1	0
Insect or animal bites	3% 1	0	0
Sprains and strains	0	3% 1	0
Skin irritations	0	3% 1	0
Muscle cramps	3% 1	0	0
Heart problems	0	3% 1	0
Kidney infections	0	0	0
Erratic blood sugar levels	0	0	0
Other	3% 1	0	0
None	76% 28	77% 23	100% 8
<b>Total</b>	<b>37</b>	<b>30</b>	<b>8</b>

Respondents also reported fewer effects after the flooding than immediate effects for other adults in the household. The pattern of effects experienced was broadly similar to those experienced by the respondents themselves. No children experienced physical health effects in the aftermath of flooding.

***Psychological Effects of the Flooding***

Fourteen respondents did not report any psychological effects of flooding. This indicates that more respondents experienced psychological effects than physical effects, which correlates with previous findings. The most common psychological effect reported, as shown in Table 3.10, was anxiety when it rains which 57% of flood victims experienced, followed by increased stress levels and sleeping problems.

Several flood victims suffered from multiple psychological effects. Four respondents (10%) reported that they experienced 5 or more of the 17 possible psychological effects.

The number of psychological effects reported by the respondents as experienced by other adults and by children in their household were lower than the effects respondents reported for themselves in most cases. This may be because the respondents did not have any way of fully knowing about the psychological state of others as a result of the flooding and therefore these data must be treated with some caution. It is particularly notable that the respondents thought that 88% of the children in their households suffered no psychological effects from the flooding.

<b>Psychological effects</b>	<b>Respondent</b>	<b>Other Adults</b>	<b>Children</b>
Anxiety when it rains	57% 21	50% 15	13% 1
Increased stress levels	41% 15	43% 13	13% 1
Sleeping problems	19% 7	7% 2	13% 1
Flashbacks to the flood	11% 4	7% 2	13% 1
Lethargy/lack of energy	8% 3	3% 1	0
Mild depression	8% 3	7% 2	0
Panic attacks	5% 2	0	13% 1
Nightmares	5% 2	0	13% 1
Mood swings/bad moods	3% 1	0	0
Moderate depression	3% 1	3% 1	0
Severe depression	3% 1	0	0
Increased use of alcohol/drugs	3% 1	3 1	0
Thoughts of suicide	3% 1	0	0
Increased tension in relationships	3% 1	3% 1	0
Anger/tantrums	0	0	0
Difficulty in concentrating on tasks	0	0	0
Other	0	3% 1	0
None	38% 14	43% 13	88% 7
<b>Total</b>	<b>37</b>	<b>30</b>	<b>8</b>

***Subjective Health Effects Compared with Other Subjective Effects***

Respondents were asked to rate 12 possible effects of the flood upon the household’s life, including effects upon health, using a 0 to 10 scale (0 being no effect and 10 extremely serious). There was a not applicable category as well. It is important to note that these subjective measures are made by the respondent for the household rather than for the individual respondent as is the case for most of the health measures used in the survey.

The four subjective effects that were rated most highly were ‘having to leave home’, ‘damage to replaceables’, ‘worry about flooding’ and ‘getting the house back to normal’. The subjective health effects were given a lower rating on average than nine of the twelve items, as shown in Table 3.11. This indicates that the health effects were not experienced as severely as other effects. However, it is unclear whether the respondents in giving this rating were mainly thinking of physical health effects rather than physical and psychological health effects.

**Table 3.11: Subjective Rating of Severity of the Effects of Flooding**

Effect	Mean Rating	Median Rating	Number of Respondents
Health	5.7	6	36
Having to leave home	7.3	9	31
Damage to replaceables	8.0	9	35
Worry about flooding	7.4	8	37
Irreplaceable items loss	6.1	8	33
Getting house back to normal	8.5	9	36
Structure damage	6.7	7	37
Stress of flood	7.2	8	37
Insurance problems	5.9	7	34
Builder problems	6.3	7	34
Loss of/distress to pets	4.8	5	24
Loss of house value	5.0	6	27

### 3.2.5 Multivariate Analysis of Health Impacts

In its simplest form, multivariate regression analysis involves fitting an equation of the form:

$$y = a_0 + a_1x_1 + a_2x_2 + a_3x_3 + \dots + a_nx_n + u$$

to a set of observations where  $y$  is the dependent variable (i.e. the variable to be explained), the  $a_i$  are constants, the  $x_i$  are explanatory variables (i.e. the variables that principally determine the level of  $y$ ), and  $u$  is a random error term capturing all other factors (including the pure randomness of human behaviour) that affect  $y$ .

The associated ‘multiple coefficient of determination’,  $R^2$ , will lie in the range 0 - 1, or 0% - 100% (where 1 (100%) represents a perfect fit, i.e.  $y$  can be completely explained by the variables in the equation). Increasing the number of variables will lead to a better fit (i.e. a higher value of  $R^2$ ) but, if there are  $k$  variables and  $n$  observations,  $n$  should be greater than  $4k$  to avoid ‘overfitting’ (i.e. using an excessive number of variables to generate a good fit). This aspect is reflected in the use of  $R_{adj}^2$  which accounts for the numbers of observations ( $n$ ) and variables ( $k$ ).

The ‘usefulness’ of each variable in the analysis is reflected by the  $t$ -value (which is simply the ratio of the associated coefficient to the standard error, this ratio being larger, the smaller the probability that the dependent variable is not systematically related to the explanatory variable concerned). As a guide,  $t$ -values  $>2.0$  suggest significance with a 95% confidence (although the precise values will depend on the number of degrees of freedom =  $n - (k+1)$ ).

A wide range of factors may contribute to the health impacts of flooding. These factors fall into four categories:

- *factors which relate to the nature of the flooding* where these might include flood depth, speed of waters rising, flood warning time, frequency of flooding, recency of flooding, duration of flood, etc.;
- *factors which characterise those at risk* where these might include age, sex, health, education, employment status, numbers of people in the house, length of residence, social 'grade', etc.;
- *factors which relate to the property* where these might include type of property (detached, terraced, etc.), number of floors, age of property, whether the property is insured, etc.; and
- *post-flood factors* where these might include time taken to get house back to normal, provision of advice by authorities, use of support groups, problems with insurers, problems with builders, etc.

The results of the 37 combined questionnaires were subject to multivariate analysis to explore the dependence of the PTSS scores on the variables found to be the most significant in explaining the results of flood victims in Phase 1 (listed in Table 3.12). This analysis is restricted by the number of cases involved (37).

Variable	Description
maxD	Maximum flood depth (cms) in one or more of the following rooms - kitchen, study, living room, bathroom or bedroom
Speed	Speed at which the floodwaters were observed to rise (1 = quick; 3 = slow; and 2 = in between (and 'don't know'))
WarnT	Flood warning time (minutes)
Age	Based on the Phase 1 findings, age has a quadratic form and was entered as ( $a_4 \times \text{Age} + a_5 \times \text{Age}^2$ )
Prior	State of general health prior to (worst) flood event from 1 = poor to 5 = excellent
ResT	Time in residence (years)
ResN	Number of people in residence (i.e. in household)
OutT	Time before getting house 'back to normal' (days with 365 = one year or more)
Ins	Degree of insurance: 0 = no insurance; 1 = buildings or contents insurance; and 2 = buildings and contents insurance
Probl	Problems with insurers from 0 = none to 10 = extremely serious
ProbB	Problems with builders from 0 = none to 10 = extremely serious

The results of each run are summarised in Table 3.13 with particular reference to the values derived for  $R^2$  and  $R_{adj}^2$  to represent the degree of explanation achieved, and are compared to those values obtained in Phase 1. Depth of flooding is the most significant flood characteristic contributing to the health impacts, and is better correlated to the PTSS results in Phase 1A than in Phase 1. Age of respondent remains a key explanatory factor and, whilst residence time is the third most important factor in Phase 1A, its correlation with PTSS scores is much weaker than in Phase 1. Most noticeable is that post-flood factors, such as problems with insurers and builders, which contributed significantly to the Phase 1 analysis, make very little difference to the PTSS scores in Phase 1A.

Overall, the eleven most significant variables found in Phase 1 contribute less to explaining Phase 1A PTSS results. It is likely that the main reason for this relates to the small sample size of Phase 1A and particularly low PTSS results. At this stage it is not considered worthwhile to look for other explanatory variables.

**Table 3.13: Variation of R<sup>2</sup> (and R<sub>adj</sub><sup>2</sup>) with Numbers of Variables**

Var.	1	2	3	4	5	6	7	8	9	10	11
maxD	y	y	y	y	y	y	y	y	y	y	y
Speed		y	y	y	y	y	y	y	y	y	y
WarnT			y	y	y	y	y	y	y	y	y
Age				y	y	y	y	y	y	y	y
Prior					y	y	y	y	y	y	y
ResT						y	y	y	y	y	y
ResN							y	y	y	y	y
OutT								y	y	y	y
Ins									y	y	y
Probl										y	y
ProbB											y
Phi R <sup>2</sup>	6.3%	8.1%	14.9%	22.6%	26.9%	33.0%	33.2%	34.7%	35.2%	45.3%	46.7%
Phi R <sub>adj</sub> <sup>2</sup>	5.0%	5.5%	11.2%	16.7%	20.2%	25.7%	24.8%	25.2%	24.6%	35.3%	35.9%
PhiA R <sup>2</sup>	13.6%	13.6%	13.7%	26.7%	28.9%	33.5%	33.8%	34.0%	35.4%	36.8%	38.4%
PhiA R <sub>adj</sub> <sup>2</sup>	11.1%	8.6%	5.9%	17.7%	17.4%	20.2%	17.9%	15.1%	13.8%	12.5%	11.4%

A direct indication of the relative significance of the variables is the t-test. This compares the ratio of the coefficient to the standard error and Table 3.14 presents the t-value for variables used in the Phase 1 and Phase 1A analysis.

**Table 3.14: Results of Sample Multivariate Analysis**

Variable	t-value in Phase 1 analysis	t-value in Phase 1A analysis	Comment
maxD	1.44	1.80	There was a significant correlation between depth and stress (stronger than in Phase 1)
Speed	-1.88	-0.44	Unlike Phase 1, speed of onset and warning time were not found to be significant factors
WarnT	-2.57	0.39	
Age	3.02	-1.43	Although not as strongly correlated as in Phase 1, age appears to be a factor. However, the Phase 1A results correspond to a shallow U-shaped distribution - the inverse of that found in Phase 1
(Age) <sup>2</sup>	-3.05	1.74	
Prior	-2.03	-0.69	Unlike Phase 1, prior health and residence time were not found to be significant factors
ResT	-1.86	-0.48	As in Phase 1, number of people in household, time for house to get back to normal and degree of insurance were not significant factors
ResN	-0.65	-0.28	
OutT	0.75	-0.34	
Ins	0.38	-0.08	
Probl	1.88	0.37	Unlike Phase 1, problems with insurers and builders were not found to be significant factors
ProbB	1.24	0.79	

### 3.2.6 Analysis of WTP Responses

#### *Overview*

More than 70% of respondents had, in principle, a willingness to pay to avoid the stress effects of flooding as shown in Table 3.15. As such, the issue of protest votes would appear to have been resolved. Further detail on the valuation results is presented below.

Respondents	N sample	N respondents WTP to avoid		N respondents NOT WTP	% WTP to avoid Stress Effects
		Actual/Mild Stress Effects	High Stress Effects*		
Flooded	37	20	26 = 20 + 6	11	70%
At Risk	16	9	12 = 9 + 3	4	75%
All	53	29	38 = 29 + 9	15	72%

\* The number of respondents WTP to avoid high stress effects is based on the number WTP to avoid actual/mild stress effects *plus* those who were not WTP to avoid actual/mild stress effects but were WTP to avoid high stress effects.

#### *Analysis of WTP Responses*

The valuation questions for both questionnaires are attached (see Sections D and C of the 'flooded' and 'at risk' questionnaires in Annexes 1 and 2). As indicated earlier (see Figures 3.1 and 3.2), both sections are designed to elicit a willingness to pay to avoid stress effects (actual and/or hypothetical).

Both questionnaires introduce the concept of payment with the question:

*Would you in principle be in favour of paying something towards improvements in flood defence to ensure that you and other members of your household do not experience such stress effects? (Qns D.1 and C.1 for 'flooded' and 'at risk' respectively).*

Note that 'such effects' relate to actual effects for flooded respondents and mild stress effects for those at risk.

The results are shown below in Table 3.16, from which it can be seen that 29 respondents were in favour and 24 respondents were not.

Respondents	Question	N sample	N yes	% yes
Flooded	D1	37	20	54%
At Risk	C1	16	9	56%
All		53	29	55%

Of those who were prepared to pay (see Table 3.17), the mean annual WTP was £102 (flooded) and £162 (at risk). Note that no-one offered a WTP of less than the 'entry' point (£20), three people offered the entry amount and two people did not provide a value (and a 'zero' bid was assumed).

Respondents	Question	N sample	Mean	Min/Max
Flooded	D5	20*	£102	£0/£275
At Risk	C5	9*	£162	£0/£500
All		29	£121	£0/£500

*\* one respondent did not provide a value and this was taken as a 'zero' bid.*

For those who provided an initial WTP, the question (Valuation Question 2A) was asked as to whether they would be prepared to pay more to avoid 'high' stress effects which, for the 'flooded' respondents, may or may not have been experienced. Only four respondents (all 'flooded') slightly increased their WTP.

For those who did not provide an initial WTP, the question (Valuation Question 2B) was asked as to whether they would, in principle, be in favour of paying to avoid 'high' stress effects which, for the 'flooded' respondents, may or may not have been experienced. Nine of the 24 respondents who did not provide an initial WTP (to avoid actual/mild stress effects) were in favour of paying something (£50 or more - although one person did not provide a value and, as before, a 'zero' bid was assumed). The results are summarised in Table 3.18.

Respondents	Initial WTP	Question	N sample	Mean	Min/Max
Flooded	Yes	D7	20*	£106	£0/£275
	No	D9/D13	6	£242	£50/£500
At Risk	Yes	C7	9*	£162	£0/£500
	No	C9/C13	3*	£217	£0/£350
All			38	£149	£0/£500

*\* one respondent did not provide a value and this was taken as a 'zero' bid.*

***Analysis of Protest Bids***

Fifteen respondents (28% of total) were not in favour, in principle, of paying to avoid the stress effects of flooding. The reasons given are grouped by category as indicated in Table 3.19 (overleaf), together with some examples of the 'actual' answers.

Reason (with typical answer in italics)	N
I cannot afford to pay • <i>On a pension and would not be able to pay.</i>	3
I do not believe I am at risk of being flooded	2
I have already taken flood protection measures and hence do not need improvements to flood defence	0
I do not believe I will suffer from stress in the event of a flood	0
I do not believe flood defence will be improved	1
I do not believe flood defence improvements can help me avoid stress effects	2
I object to paying higher taxes	1
The government or council should pay for this • <i>It should be covered in the rates or taxes. We pay enough now.</i> • <i>I think the money is there to be used and the government should fund this.</i>	4
Water companies or industry should pay for this	0
Other people causing flooding should pay	0
Other..... • <i>Always have difficulty in completing and concentrating on tasks (?)</i> • <i>The work needed was done last year.</i>	2
<b>Total</b>	<b>15</b>

**Multivariate Analysis of WTP Responses**

A multivariate analysis was undertaken based on all WTP values given by flooded and at risk respondents, with the individual WTP response as the dependent variable and 16 ‘candidate’ explanatory variables. These were related to either the respondent’s actual PTSS score where they were valuing the stress effects experienced, and to average ‘mild’ and ‘high’ scores of 59 and 175 respectively (based on Phase 1 results). Table 3.20 presents the results of each run for the seven most significant variables, with particular reference to the values derived for  $R^2$  and  $R_{adj}^2$  to represent the degree of explanation achieved.

Variable	1	2	3	4	5	6	7
PTSS Value	y	y	y	y	y	y	y
Gross Income		y	y	y	y	y	y
Age (as Age & Age <sup>2</sup> )			y	y	y	y	y
GHQ Score				y	y	y	y
ResN					y	y	y
Months since Flood						y	y
Worried about Flooding							y
$R^2$	2.4%	5.8%	7.7%	11.6%	13.2%	21.1%	32.2%
$R_{adj}^2$	1.5%	4.0%	4.0%	7.2%	7.9%	15.5%	26.6%

Although the explanation of the WTP responses using the variables listed in Table 3.20 is not comprehensive, the analysis provides an indication of the ‘significance’ of each factor used as indicated in Table 3.21.



<b>Variable</b>	<b>Coeff.</b>	<b>Standard Error</b>	<b>t-value</b>	<b>P (nul hyp)</b>	<b>Comment</b>
PTSS	0.21	0.13	1.66	10%	Perhaps surprisingly, only a weak correlation between PTSS and WTP was observed
Income	0.00	0.00	1.35	18%	No significant correlations with income and age were observed
Age	-2.44	2.80	-0.87	39%	
Age <sup>2</sup>	0.02	0.03	0.98	33%	
GHQ	-9.07	2.94	-3.09	0%	Although GHQ (current health) was found to be highly significant, the correlation is counter-intuitive (since WTP increases with well-being)
ResN	17.00	9.56	1.78	8%	WTP was found to increase (weak correlation) with numbers in household
Months since flood	-1.04	0.41	-2.54	1%	As might be expected, WTP was found to decrease with time since flood with a significant correlation
Worry about flooding	30.41	7.64	3.98	0%	The most significant factor in explaining the WTP response was found to be the degree of worry over future flooding

## **4. CONCLUDING DISCUSSION**

### **4.1 Summary of Phase 1A Work**

As Phase 1 of the research into ‘intangibles’ drew to a close, it was agreed that further work was required to develop a revised approach to eliciting willingness-to-pay (WTP) values to avoid the health and stress impacts of flooding. In particular, it was agreed that this revised approach should be based upon:

- use of ‘standard’ WTP questions;
- use of ‘indirect’ valuation (for example valuing ‘stress’ rather than ‘flood characteristics’); and
- use of a combined questionnaire for flooded respondents (i.e. covering both ‘health’ and ‘WTP’ aspects).

As detailed in this report, the development of this revised approach (referred to as Phase 1A) involved:

- development of revised questionnaires;
- a series of one-to-one interviews in Waltham Abbey, Essex; and
- a round of 50 pilot surveys in Newport Pagnell, Bucks and Bocking, Essex.

Overall, it was found that the use of the revised questionnaires based on standard contingent valuation questions worked successfully under ‘field conditions’ (i.e. when administered by a market research company). The valuation questions were of the form ‘*Are you willing to pay £X to avoid these effects?*’ in which ‘these effects’ were those stress effects associated with the impacts of flooding. Furthermore, the level of protest bids was found to be less than 30%. As such, the prime objective of Phase 1A to develop a WTP questionnaire that can be used more reliably in the main survey of Phase 2 is considered to have been met.

## **4.2 Discussion of Results**

### **4.2.1 Health Impacts**

Overall, the results of the 37 flooded respondents from the Phase 1A pilot surveys undertaken in Newport Pagnell and Bocking gave broadly similar results to those from the Phase 1 pilot surveys. As such, respondents suffered various physical and psychological symptoms during and after the flooding event. Furthermore, there were correlations amongst the various health measures (PTSS, GHQ-12 and self-reporting). However, the most noticeable difference between the Phase 1 and Phase 1A results was that, generally, the respondents appeared to have suffered significantly lower levels of stress (as indicated by the PTSS Intensity scores). Furthermore, the level of significance of individual factors was found to be generally lower than for the Phase 1 results. As a result, only flood depth and age were found to be significant in ‘explaining’ the PTSS results using multivariate analysis.

#### **4.2.2 WTP Results**

More than 70% of the 53 pilot survey respondents expressed a willingness-to-pay (WTP) to avoid stress effects associated with flooding. Flooded respondents were asked to express a WTP to avoid both the effects experienced and those symptoms associated with a 'high' level of stress. 'At risk' respondents were asked to express a WTP to avoid the symptoms associated with both 'mild' and 'high' levels of stress.

Overall, the mean WTP values were around £120 and £150 per year to avoid actual/mild and high stress symptoms respectively with broadly comparable results from both flooded and at risk respondents.

The strongest explanatory factor for the degree of WTP was found to be the 'worry about flooding' (i.e. the greater the worry, the higher the WTP). Surprisingly, the next most significant factor was found to be an inverse relationship with current level of well-being as indicated by GHQ-current (i.e. the greater the well-being, the higher the WTP). Overall, the degree of explanation provided by the most likely factors was found to be poor.

#### **4.2.3 Summary**

In general, the results from the pilot survey work in Newport Pagnell and Bocking confirm the key finding from Phase 1 that the intangible impacts of flooding (both in terms of health and WTP) are dependent on a wide range of factors. As such, a much larger sample (as planned for Phase 2) will be required in order to determine the key explanatory factors.

### **4.3 Recommendations for Phase 2**

On the basis of the successful piloting of the revised questionnaires, it is recommended that the format and content of the questionnaires used are carried forward to the main survey work.

To provide a check for the validity of the WTP responses, it is recommended that two valuation scales are used as follows:

- Scale 1 (as used in the pilots): £20, £125 and £500; and
- Scale 2 (higher scale): £40, £250 and £1,000.

Furthermore, it is recommended that additional combinations of stress levels are used to elicit WTP values as follows:

- for 'flooded' respondents: actual and high (as used in the pilots); and  
actual and moderate (additional combination); and
- for 'at risk' respondents: mild and high (as used in the pilots); and  
low and moderate (additional combination).

These additional scenarios for the valuation questions lead to eight variants as shown in Table 4.1, together with the associated (target) numbers of each to be used in the main survey.

<b>Respondents</b>	<b>Stress Levels Valued</b>	<b>WTP Valuation Scale</b>	<b>Approx. No.</b>
Flooded	Actual & High	1 (£20, £125, £500)	250
	Actual & Moderate	1 (£20, £125, £500)	250
	Actual & High	2 (£40, £250, £1,000)	250
	Actual & Moderate	2 (£40, £250, £1,000)	250
At Risk	Mild & High	1 (£20, £125, £500)	125
	Low & Moderate	1 (£20, £125, £500)	125
	Mild & High	2 (£40, £250, £1,000)	125
	Low & Moderate	2 (£40, £250, £1,000)	125

**INTANGIBLE IMPACTS OF FLOODING - FLOODED SAMPLE - SEPT 2002**

				Questionnaire No.		Sampling Point No.	

**RECORD TIME OF INTERVIEW:**

Start (24hr Clock):  :  :  :       End (24hr Clock):  :  :  :

**INTERVIEWER DECLARATION:**

This interview was conducted face to face with a respondent who is unknown to me.

Signature: ..... (Print Your Name: .....)

Date: ..... / ..... / 2002

**Introduction**

**[THANK RESPONDENT FOR AGREEING TO TAKE PART IN THE SURVEY AND CLARIFY INFORMATION BELOW.]**

For your peace of mind, we adhere to the Code of Conduct of the Market Research Society, and anything you say is confidential. Only employees of ..... will see your identity and under no circumstances will your answers be linked to your name or address.

First, may I check some details about you. (EXPLAIN IF NECESSARY THAT THIS IS FOR THE PURPOSE OF RANDOM QUALITY CHECKS TO CONFIRM THAT THE INTERVIEW WAS COMPLETED IN A SATISFACTORY MANNER.)

**Quota Controls**

**A. How old are you? (RECORD EXACT AGE AND CIRCLE AGE/GENDER GROUP)**

Record exact age: (PLEASE TRY TO GET)

AGE 4-WAY	MALE	FEMALE
18-39 years	1	2
40-64 years	3	4
65-74 years	5	6
75 and over	7	8

**C. What is the Occupation of the chief wage earner in your Household? (RECORD GRADE)**

Job: \_\_\_\_\_

Industry: \_\_\_\_\_

AB	1
C1	2
C2	3
DE	4

**C. Please record in CAPITALS:**

Name: \_\_\_\_\_

Full Postal Address: \_\_\_\_\_

Full Post Code: \_\_\_\_\_

Tel. Number: \_\_\_\_\_

**B. (RECORD WEATHER AT TIME OF INTERVIEW)**

Windy	1	Rainy	4
Cold	2	Cloudy/dry	5
Sunny	3	Snow/sleet	6

# The Appraisal of Human-Related Intangible Impacts of Flooding

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## FOR OFFICE USE ONLY

Questionnaire number

Location

---

## RECORD STREET NAME AGAIN & PROPERTY TYPE

Street name: \_\_\_\_\_

### Property type:

- |                         |     |
|-------------------------|-----|
| Detached house          | - 1 |
| Semi-detached house     | - 2 |
| Terraced house          | - 3 |
| Ground floor maisonette | - 4 |
| Bungalow                | - 5 |
| Ground floor flat       | - 6 |
| Basement flat           | - 7 |
| Mobile home             | - 8 |
| Other (specify) .....   | - 9 |

**SECTION A - QUESTIONS ABOUT THE FLOOD EVENT(S)**

**A.1 Can I ask you how long you have lived in this property?**

     Years

(if less than ONE year)           Months

**A.2 Including yourself, how many people in your household are [SHOW CARD 1]:**

*SHOW CARD 1: INSERT ANSWERS:*

Children aged 9 and under	
Children aged 10 to 17	
Adults aged 18 to 64	
Adults aged 65 to 74	
Adults aged 75 and over	

**A.3 Were you aware of the flood risk in this area before you were first flooded?**

Yes    -1  
 No      -2

**A.4 How many times have you experienced flooding above floor level in your home since you have lived at this address, including basements and cellars but excluding outhouses and garages?**

e.g. Two =     0    2     

**A.5 How many times have you experienced flooding above floor level in your home since January 1998, including basements and cellars but excluding outhouses and garages? (Write in number)**

e.g. Two =     0    2     

**A.6 When was the last time you were flooded here?**

(eg. June 1998 = 06/98)      Month/Year    -----/-----

**A.7 [ASK ONLY IF THE ANSWER TO A.5 IS MORE THAN ONE] When was the worst flood you have experienced since January 1998?**

(eg. June 1998 = 06/98)      Month/Year    -----/-----

**READ OUT IN ALL CASES: PLEASE REFER TO THIS (THE WORST) FLOOD SINCE JANUARY 1998 WHEN ANSWERING THE REST OF THE QUESTIONNAIRE**

**A.8 How quickly did the floodwaters rise? (READ OUT)**

- So quickly that you could see them rising -1
- Slowly over many hours -2
- Somewhere in between the above -3
- Don't know -4

**A.9 Did the flood water contain sewage or other pollution?**

- Yes - 1
- Not - 2
- Don't know - 3

**A.10 Which rooms or areas were flooded and to what depth [SHOW CARD 2]?**

(Enter number of rooms and fill in depths in either left or right column depending on unit of measurement. If rooms not flooded or not applicable enter 0)

Rooms	No.	Maximum depth of flooding (metres/cms – specify which)	Maximum depth of flooding (feet/inches – specify which)
Living rooms			
Bedrooms			
Kitchen			
Bathrooms			
Basement/cellar			
Hallway/Landing			
Garage			
Maximum depth of flood in all rooms of the house			

**A.11 In your property, how many rooms in total do you have for use only by your household? (Read out: Do not count bathrooms, toilets, halls or landings or rooms that can only be used for storage such as cupboards. Do count all other rooms e.g. kitchen, living rooms, bedrooms, utility room and study.)**

No. of rooms .....

**A.12 For how long was your home flooded? (Specify hours)**

hours

**A.13 Did you receive a flood warning from any source before the flood?**

- Yes -1 -> Go to A.14
- No -2 -> Go to A.16
- Don't know -3 -> Go to A.16



**A.14 How many minutes before the flood waters entered your home did you receive the warning?**

			minutes
--	--	--	---------

**A.15 From whom did you receive a warning? [SHOW CARD 3]  
(CIRCLE YES OR NO FOR EACH)**

SHOW CARD 3

	Yes	No
Environment Agency automatic telephone message (AVM)	1	0
Environment Agency Floodline	1	0
Environment Agency personnel	1	0
Emergency services (Fire/Police/Ambulance etc.)	1	0
Local authority	1	0
Neighbour	1	0
Family/friend	1	0
Media (TV/Radio etc.)	1	0
Other (Write In)	1	0

**A.16 Did your home or contents suffer from flood damage?**

Yes	- 1
No	- 2

**A.17 Were you insured against flooding for the following?**

(RECORD YES OR NO FOR EACH)

Type of Cover	Yes	No
Building/structure	1	0
Contents - 'New for Old'	1	0
Contents - Other	1	0
Don't know / landlord's responsibility	1	0

IF 'YES' TO ANY CATEGORY, GO TO QUESTION A.18. IF 'NO' or 'DON'T KNOW / LANDLORD'S RESPONSIBILITY' TO ALL CATEGORIES GO TO QUESTION A.19.

**A.18 Please estimate the total amount paid out by the insurance company(s)**

Insurance payment	£
For building/structure damage	
For contents damage	
For both building/structure and content damage	
Don't know	X

**A.19 Did you OR your family bear any financial costs as a direct result of the flooding that were not covered by insurance (excluding loss of earnings if any)?**

Yes -1 -> Go to A.20  
 No (or Don't know) -2 -> Go to A.21

**A.20 Please estimate the total cost of this expenditure (in £) not covered by insurance.** (INT: If respondent can separate amounts, record as such. Otherwise record in third box.)

Expenditure not covered by insurance	£
For building/structure damage	
For contents damage	
For both building/structure and content damage	

**A.21 Did you lose any irreplaceable items of sentimental value such as old family photos, diaries, heirlooms, jewellery etc.?**

Yes -1 Please specify .....  
 No -2 .....

**A.22 After this worst flood, how long did it take to get your home back to normal, or is it still not back to normal?**

Weeks

Still not back to normal - 99

**A.23 Did you or anyone in your household have to leave your home during or after the flood?** (Circle Yes or No in each category)

Self		Other household member(s)	
Yes	No	Yes	No
1	0	1	0

(IF 'YES' TO EITHER, GO TO A.24, OTHERWISE, GO TO A.25)

**A.24 How long was it before the whole household could live in the property again?**

weeks

Less than a week - 98  
 Still not all home - 99

**A.25 (SHOW CARD 4) This card contains a list of institutions and people that might provide help or support during and/or after a flood episode.**

**(a) Please indicate which, if any, of these you received help from? Please point to 9 if no help was needed from an institution or person. (CIRCLE ALL THAT APPLY)**

**(b) (FOR EACH FROM WHICH HELP RECEIVED, IF ANY)**

**Please state a score from 0 to 5, where 0 equals 'no help received', 1 equals 'very little help' and 5 equals 'received all the help I needed'.**

**SHOW CARD 4: CIRCLE ALL THAT APPLY**

	Help received (a)	Very little help				received all the help I needed	no help needed from them
Neighbours / friends	0	1	2	3	4	5	9
Community groups	0	1	2	3	4	5	9
Local authority	0	1	2	3	4	5	9
Charities	0	1	2	3	4	5	9
Environment Agency	0	1	2	3	4	5	9
Church	0	1	2	3	4	5	9
Local businesses / shops	0	1	2	3	4	5	9
Police	0	1	2	3	4	5	9
Fire brigade	0	1	2	3	4	5	9
Family members outside the household	0	1	2	3	4	5	9

**A.26 Have you undertaken any of the following flood prevention measures?**

**SHOW CARD 5: CIRCLE ALL THAT APPLY**

Take out household insurance against flooding	1
Keep sand and bags in the property	2
Keep ditches and drains around the property clean	3
Built walls around the property	4
Purchased water pumps	5
Keep alert for flood warnings during high-risk months	6
Avoid buying expensive downstairs furnishings	7
Avoid keeping irreplaceable items or goods of sentimental value on ground floor of my home at all or certain times	8
Other (specify.....)	9
Did not take preventative actions	10

**A.27 Have you ever:**

- (a) been a member of a local community group related to flooding?
- (b) written letters to relevant authorities about the flood damage?
- (c) attended meetings related to flooding?

	Yes	No
(a) Local community group	1	0
(b) Written letters	1	0
(c) Attended meetings	1	0

**SECTION B - QUESTIONS ABOUT THE HEALTH EFFECTS OF FLOODING**

**B.1 How was your state of health in general before the flooding [SHOW CARD 6]?**  
(Please circle one only)

- Poor -1
- Fair -2
- Good -3
- Very good -4
- Excellent -5

**B.2 Before the flooding did you have any long-term illness, health problems or disability which limited your daily activities or the work you could do (including problems which are due to old age)?**

- Yes -1
- No -2

**B.3 (a) Did anyone else in your household have any long-term illness, health problems or disability before the flooding?**

- Yes -1 -> B3b
- No -2 -> B4

**(b) Please indicate number of people in each age group - if none enter zero in last box. [SHOW CARD 7]**

Age group	Number
Children aged 9 and under	
Children aged 10 to 17	
Adults aged 18 to 64	
Adults aged 65 to 74	
Adults aged 75 and over	
None	

**B.4 Did you need to take any days off work after the flooding (including days taken as annual leave)?**

- Yes.....days
- No -0
- Not employed -99

**B.5 Please indicate whether you or any other member of your household experienced any of these physical health effects *during or immediately after the flooding* [SHOW CARD 8? (Please circle yes or no code for appropriate boxes)**

**SHOW CARD 8**

Physical health effects <i>during, or immediately after, flood</i>	Self		Other adult members of household		Children aged 16 and under	
	Yes	No	Yes	No	Yes	No
Injuries, e.g. cuts and bruises, due to being knocked over by floodwaters, being thrown against hard objects, or being struck by moving objects	1	0	1	0	1	0
Injuries from over-exertion during the flood e.g. sprains/strains, heart problems	1	0	1	0	1	0
Hypothermia	1	0	1	0	1	0
Electric shocks	1	0	1	0	1	0
Cold, coughs, flu, sore throats or throat infections	1	0	1	0	1	0
Headaches	1	0	1	0	1	0
Skin irritations e.g. rashes	1	0	1	0	1	0
Exposure to chemicals or contaminants in floodwaters	1	0	1	0	1	0
Shock	1	0	1	0	1	0
Other (Write In)	1	0	1	0	1	0
None	1	0	1	0	1	0

**B.6 Please indicate whether you or any other member of your household experienced any of these physical health effects *in the weeks or months after the flooding* [SHOW CARD 9? (Please circle yes or no code for appropriate boxes)**

**SHOW CARD 9**

Physical health effects <i>in the weeks or months after flood</i>	Self		Other adult members of household		Children aged 16 and under	
	Yes	No	Yes	No	Yes	No
Gastrointestinal illnesses/upset stomachs	1	0	1	0	1	0
Heart problems	1	0	1	0	1	0
Respiratory/chest illnesses e.g. asthma, pleurisy	1	0	1	0	1	0
Cuts and bruises	1	0	1	0	1	0
Sprains and strains	1	0	1	0	1	0
Skin irritations e.g. rashes, dermatitis etc.	1	0	1	0	1	0
High blood pressure	1	0	1	0	1	0
Kidney or other infections	1	0	1	0	1	0
Stiffness in joints	1	0	1	0	1	0
Muscle cramps	1	0	1	0	1	0
Insect or animal bites	1	0	1	0	1	0
Erratic blood sugar levels (diabetics)	1	0	1	0	1	0
Other (Write In)	1	0	1	0	1	0
None	1	0	1	0	1	0

**B.7 Please indicate whether you or any other member of your household experienced any of these *psychological* health effects since the flooding [SHOW CARD 10]? (Please circle yes or no code for appropriate boxes)**

SHOW CARD 10

Psychological health effects in the weeks or months after flood	Self		Other adult members of household		Children aged 16 and under	
	Yes	No	Yes	No	Yes	No
Anxiety e.g. when rains, when river rises	1	0	1	0	1	0
Panic attacks	1	0	1	0	1	0
Increased stress levels	1	0	1	0	1	0
Mild depression	1	0	1	0	1	0
Moderate depression	1	0	1	0	1	0
Severe depression	1	0	1	0	1	0
Lethargy/lack of energy	1	0	1	0	1	0
Sleeping problems	1	0	1	0	1	0
Nightmares	1	0	1	0	1	0
Flashbacks to flood	1	0	1	0	1	0
Increased use of alcohol or prescription (or other) drugs	1	0	1	0	1	0
Anger/tantrums	1	0	1	0	1	0
Mood swings/bad moods	1	0	1	0	1	0
Increased tensions in relationships e.g. more arguing	1	0	1	0	1	0
Difficulty concentrating on everyday tasks	1	0	1	0	1	0
Thoughts of suicide	1	0	1	0	1	0
Other (Write In)	1	0	1	0	1	0
None	1	0	1	0	1	0

CHECK ANSWERS AT B.5, B.6, B.7. IF RESPONDENT OR OTHER MEMBERS OF HOUSEHOLD HAS EXPERIENCED HEALTH PROBLEMS ASK B.8 and B.9. OTHERWISE: SKIP TO B.10

**B.8 If you or any other members of your household experienced health problems after the flooding, was a doctor consulted about these?**  
(Please ring appropriate codes - If both answers are 'No' go to question B.10)

	Yes doctor consulted	No doctor not consulted
Self	1 -> B.9	0 -> B.10
Other member(s) of household	1 -> B.9	0 -> B.10

**B.9 Did you or the other members of your household receive treatment from the doctor regarding the health problem?**

	<b>Yes, treatment received</b>	<b>No treatment received</b>
Self	1	0
Other member(s) of household	1	0

**B.10 At what stage during or after the flooding were the health impacts the *most severe or worst* for you personally? Please think about health in the broadest sense to include physical, mental and social well-being. [SHOW CARD 11] CIRCLE ONE ANSWER ONLY**

- During flood event itself -1
- In the first week or two after the flood -2
- In the first month after the flood -3
- Between one to three months after flood -4
- Between three to six months after flood -5
- More than six months after flood -6
- Other (specify below) -7

-----

**B.11 Thinking about your answer to the last question, why do you think the health impacts were most severe *at that time*? What specific factors do you think were affecting your health then?**

-----

-----

-----

-----

-----

**B.12 For how long did this 'worst' period last in total? Or was there more than one of these periods?**

weeks

- Less than one week - 98
- More than one period - 99





**B.15 This card [SHOW CARD 14] contains various characteristics of a house flooding. When thinking about your own home, which ONE worries you most?**

**SHOW CARD 14 (CIRCLE ONE ONLY)**

Duration of flood	1
Depth of water	2
Dirtiness of water	3
Speed of water rising / flowing	4
Time of day / night when it occurs	5
Season of the year when it occurs	6
Warning time	7
Other flood characteristics (specify) .....	8
Not worried with any specific flood characteristic	9

**B.16 (SHOW CARD 15) How worried are you about the possibility of your property being flooded during the next 12 months?**

**SHOW CARD 15: CIRCLE ONE ONLY**

Not worried at all	Not very worried	Indifferent	Somewhat worried	Very worried
1	2	3	4	5

We would now like you to complete two sets of questions commonly used in health surveys that are designed to give us more a more detailed picture of your health.

**ADMINISTER SECTION C HEALTH QUESTIONNAIRES (GHQ-12) FOR CURRENT HEALTH (respondent to complete using black/blue pen). Check when completed.**

**THEN RE-ADMINISTER GHQ-12 ASKING RESPONDENT TO FOCUS UPON WHEN HEALTH EFFECTS FROM THE FLOODING WERE THE MOST SEVERE FOR THEM (respondent to use green pen). REFER BACK TO B.10! Check when completed.**

**NOW ADMINISTER PTSS QUESTIONNAIRE (emphasise that this refers to current health)**

**SECTION C - HEALTH QUESTIONNAIRES**

**GENERAL HEALTH OVER THE LAST FEW WEEKS**

General Health Questionnaire (GHQ-12) © David Goldberg, 1978

**Please read this carefully:**

We should like to know how your health has been in general over the past few weeks.

Please answer ALL the questions by ticking the box below the answer which you think most applies to you.

**HAVE YOU RECENTLY:**

	<b>Better than usual</b>	<b>Same as usual</b>	<b>Less than usual</b>	<b>Much less than usual</b>
been able to concentrate on whatever you're doing? <b>(tick one box)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>Not at all</b>	<b>No more than usual</b>	<b>Rather more than usual</b>	<b>Much more than usual</b>
lost much sleep over worry? <b>(tick one box)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>More so than usual</b>	<b>Same as usual</b>	<b>Less useful than usual</b>	<b>Much less useful</b>
felt you were playing a useful part in things? <b>(tick one box)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>More so than usual</b>	<b>Same as usual</b>	<b>Less so than usual</b>	<b>Much less capable</b>
felt capable of making decisions about things? <b>(tick one box)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>Not at all</b>	<b>No more than usual</b>	<b>Rather more than usual</b>	<b>Much more than usual</b>
felt constantly under strain? <b>(tick one box)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**HAVE YOU RECENTLY:**

	<b>Not at all</b>	<b>No more than usual</b>	<b>Rather more than usual</b>	<b>Much more than usual</b>
felt you couldn't overcome your difficulties? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>More so than usual</b>	<b>Same as usual</b>	<b>Less so than usual</b>	<b>Much less than usual</b>
been able to enjoy your normal day-to-day activities? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>More so than usual</b>	<b>Same as usual</b>	<b>Less able than usual</b>	<b>Much less able</b>
been able to face up to your problems? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>Not at all</b>	<b>No more than usual</b>	<b>Rather more than usual</b>	<b>Much more than usual</b>
been feeling unhappy and depressed? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>Not at all</b>	<b>No more than usual</b>	<b>Rather more than usual</b>	<b>Much more than usual</b>
been losing confidence in yourself? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>Not at all</b>	<b>No more than usual</b>	<b>Rather more than usual</b>	<b>Much more than usual</b>
been thinking of your self as a worthless person? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>More so than usual</b>	<b>About same as usual</b>	<b>Less so than usual</b>	<b>Much less than usual</b>
been feeling reasonably happy, all things considered? (Tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## PTSS Questionnaire

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The following questions relate to some of the effects that you may have experienced as a result of flooding. Any answers you give will be treated as completely confidential. There are no right or wrong answers to any of the questions nor is there a time limit for this questionnaire.

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### PART A

In response to each of the following questions, please record your answer by placing a tick (✓) in the appropriate box.

**A-1** As a result of you experiencing the flood, did you personally experience intense fear, helplessness or horror?

Yes

No

---

### PART B

In response to each of the following questions, please record your answer by placing a tick (✓) in the appropriate box.

**B-1-1** I have recurring memories of the flood in the way of thoughts, images and perceptions and I can't seem to push them out of my mind.

Never

Go to B-2-1

Rarely

Sometimes

Often

Always

**IF YOU ANSWER NEVER, GO TO QUESTION B-2-1. OTHERWISE CONTINUE.**

**B-1-2** Indicate the degree to which such recurring memories distress, upset or bother you.

Not At All

A Little

Somewhat

Quite A Lot

Very much

**B-1-3** For how long have you been experiencing such recurring memories?

Less than  
1 month

1 - 3  
months

4 - 6  
months

7 months  
- 2 years

More than  
2 years

---

**B-2-1 I have recurring dreams of the flood.**

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to B-3-1                                                                                       

**IF YOU ANSWER NEVER, GO TO QUESTION B-3-1. OTHERWISE CONTINUE.**

**B-2-2 Indicate the degree to which such recurring dreams distress, upset or bother you.**

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**B-2-3 For how long have you been experiencing such recurring dreams?**

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years  
                                                                                       

---

**B-3-1 I have acted or felt that the flood was happening again. For example, I have felt I have either relived the event, experienced hallucinations, illusions and/or flashbacks to the flood.**

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to B-4-1                                                                                       

**IF YOU ANSWER NEVER, GO TO QUESTION B-4-1. OTHERWISE CONTINUE.**

**B-3-2 Indicate the degree to which such recurrences distress, upset or bother you.**

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**B-3-3 For how long have you been experiencing such recurrences?**

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years

---

**B-4-1** I am reminded of the flood by triggers which resemble or symbolise an aspect of the flood (for example, TV programmes, weather forecasts, etc).

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to B-5-1                                                                                       

IF YOU ANSWER NEVER, GO TO QUESTION B-5-1. OTHERWISE CONTINUE.

**B-4-2** Indicate the degree to which such reminders of the flood distress, upset or bother you.

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**B-4-3** For how long have you had such reminders?

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years  
                                                                                       

---

**B-5-1** When reminded of the flood by triggers which resemble or symbolise an aspect of the flood, I feel nervous, have palpitations or feel tense.

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to C-1-1                                                                                       

IF YOU ANSWER NEVER, GO TO QUESTION C-1-1. OTHERWISE CONTINUE.

**B-5-2** Indicate the degree to which these reactions to the flood distress, upset or bother you.

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**B-5-3** For how long have you had such palpitations, nervousness and tenseness?

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years

---

## PART C

In response to each of the following questions, please record your answer by placing a tick (✓) in the appropriate box.

**C-1-1 I deliberately avoid thoughts, feelings or conversations about the flood.**

Never	Rarely	Sometimes	Often	Always
<input type="checkbox"/> Go to C-2-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**IF YOU ANSWER NEVER, GO TO QUESTION C-2-1. OTHERWISE CONTINUE.**

**C-1-2 Indicate the degree to which your efforts to avoid thoughts, feelings or conversations about the flood distress, upset or bother you.**

Not At All	A Little	Somewhat	Quite A Lot	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**C-1-3 For how long have you been avoiding thoughts, feelings or conversations about the flood?**

Less than 1 month	1 - 3 months	4 - 6 months	7 months - 2 years	More than 2 years
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

---

**C-2-1 I deliberately avoid activities, places, or people that arouse recollections of the flood.**

Never	Rarely	Sometimes	Often	Always
<input type="checkbox"/> Go to C-3-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**IF YOU ANSWER NEVER, GO TO QUESTION C-3-1. OTHERWISE CONTINUE.**

**C-2-2 Indicate the degree to which your efforts to avoid activities, places, or people that arouse recollections of the flood distress, upset or bother you.**

Not At All	A Little	Somewhat	Quite A Lot	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**C-2-3 For how long have you been avoiding activities, places or people that arouse recollections of the flood?**

Less than 1 month	1 - 3 months	4 - 6 months	7 months - 2 years	More than 2 years
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

---

**C-3-1** When I try to recall the flood I am unable to remember certain parts or important things that happened.

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to C-4-1                                                                                       

**IF YOU ANSWER NEVER, GO TO QUESTION C-4-1. OTHERWISE CONTINUE.**

**C-3-2** Indicate the degree to which your inability to recall important aspects of the flood distresses, upsets or bothers you.

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**C-3-3** For how long have you have you had this inability to recall important aspects of the flood?

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years  
                                                                                       

---

**C-4-1** I find I am not interested in people, things and activities which were important to me prior to the occurrence of the flood (for example, family, friends and hobbies).

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to C-5-1                                                                                       

**IF YOU ANSWER NEVER, GO TO QUESTION C-5-1. OTHERWISE CONTINUE.**

**C-4-2** Indicate the degree to which this lack of interest distresses, upsets or bothers you.

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**C-4-3** For how long have you had this lack of interest in people, things and activities which were important to you prior to the flood?

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years



---

**C-5-1 I feel I have become more emotionally estranged, separated or cut off from others.**

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to C-6-1                                                                                       

**IF YOU ANSWER NEVER, GO TO QUESTION C-6-1. OTHERWISE CONTINUE.**

**C-5-2 Indicate the degree to which this emotional estrangement, separateness or feeling of being cut off from others distresses, upsets or bothers you.**

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**C-5-3 For how long have you felt emotionally estranged, separated or cut off from others?**

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years  
                                                                                       

---

**C-6-1 I feel I have a markedly reduced ability to feel emotions and share feelings, especially those associated with intimacy, tenderness and sexuality.**

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to C-7-1                                                                                       

**IF YOU ANSWER NEVER, GO TO QUESTION C-7-1. OTHERWISE CONTINUE.**

**C-6-2 Indicate the degree to which the reduced ability to feel emotions and share feelings distresses, upsets or bothers you.**

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**C-6-3 For how long have you had this reduced ability to feel emotions and share feelings?**

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years

---

**C-7-1 I feel I do not have a future. (For example, not having a career, having a shortened life span or having marriage problems.)**

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to D-1-1                                                                                       

**IF YOU ANSWER NEVER, GO TO QUESTION D-1-1. OTHERWISE CONTINUE.**

**C-7-2 Indicate the degree to which not having a future distresses, upsets or bothers you.**

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much  
                                                                                       

**C-7-3 For how long have you felt that you do not have a future?**

Less than                      1 - 3                      4 - 6                      7 months                      More than  
1 month                      months                      months                      - 2 years                      2 years  
                                                                                       

---

## **PART D**

In response to each of the following questions, please record your answer by placing a tick (✓) in the appropriate box.

**D-1-1 I have difficulty falling or staying asleep.**

Never                      Rarely                      Sometimes                      Often                      Always  
 Go to D-2-1                                                                                       

**IF YOU ANSWER NEVER, GO TO QUESTION D-2-1. OTHERWISE CONTINUE.**

**D-1-2 Indicate the degree to which having difficulty falling or staying asleep distresses, upsets or bothers you.**

Not At All                      A Little                      Somewhat                      Quite A Lot                      Very much

**D-1-3 For how long have you had difficulty falling or staying asleep?**

Less than  
1 month

1 - 3  
months

4 - 6  
months

7 months  
- 2 years

More than  
2 years

---

**D-2-1 I experience irritability or outbursts of anger.**

Never

Go to D-3-1

Rarely

Sometimes

Often

Always

**IF YOU ANSWER NEVER, GO TO QUESTION D-3-1. OTHERWISE CONTINUE.**

**D-2-2 Indicate the degree to which being irritable or experiencing outbursts of anger distresses, upsets or bothers you.**

Not At All

A Little

Somewhat

Quite A Lot

Very much

**D-2-3 For how long have you felt irritable or expressed outbursts of anger?**

Less than  
1 month

1 - 3  
months

4 - 6  
months

7 months  
- 2 years

More than  
2 years

---

**D-3-1 I have difficulty concentrating on tasks or completing tasks.**

Never

Go to D-4-1

Rarely

Sometimes

Often

Always

**IF YOU ANSWER NEVER, GO TO QUESTION D-4-1. OTHERWISE CONTINUE.**

**D-3-2 Indicate the degree to which having difficulty concentrating on tasks or completing tasks distresses, upsets or bothers you.**

Not At All

A Little

Somewhat

Quite A Lot

Very much

**D-3-3 For how long have you had difficulty concentrating on tasks or completing tasks?**

Less than  
1 month

1 - 3  
months

4 - 6  
months

7 months  
- 2 years

More than  
2 years

---

**D-4-1 Since the flood there have been times when I have been overtly alert or watchful when there is no need to feel that way.**

Never

Go to D-5-1

Rarely

Sometimes

Often

Always

**IF YOU ANSWER NEVER, GO TO QUESTION D-5-1. OTHERWISE CONTINUE.**

**D-4-2 Indicate the degree to which being overtly alert or watchful when there is no need to feel this way distresses, upsets or bothers you.**

Not At All

A Little

Somewhat

Quite A Lot

Very much

**D-4-3 For how long have you been overtly watchful when there is no need to feel this way?**

Less than  
1 month

1 - 3  
months

4 - 6  
months

7 months  
- 2 years

More than  
2 years

---

**D-5-1 I have strong startled reactions. (For example, when someone comes behind me unexpectedly or when a car backfires I show strong signs of startle.)**

Never

Go to E-1-1

Rarely

Sometimes

Often

Always

**IF YOU ANSWER NEVER, GO TO QUESTION E-1-1. OTHERWISE CONTINUE.**

**D-5-2 Indicate the degree to which having strong startled reactions distresses, upsets or bothers you.**

Not At All

A Little

Somewhat

Quite A Lot

Very much

**D-5-3 For how long have you had strong startled reactions?**

Less than  
1 month

1 - 3  
months

4 - 6  
months

7 months  
- 2 years

More than  
2 years

---

**PART E**

In response to each of the following questions, please record your answer in the space available.

**E-1-1 How old (in years) were you at the time you experienced the flood?**

Age: \_\_\_\_\_

**E-1-2 How old (in years) are you now?**

Age: \_\_\_\_\_

---

**PART F**

In response to each of the following questions, please record your answer by placing a tick (✓) in the appropriate box.

Indicate how often the disturbances caused by the flood have significantly impaired or negatively influenced your personal and family relationships, your work and your general well-being. Example of disturbances are: reliving the flood; intrusive memories of the flood; avoidance of people, places and situations connected to the flood; trouble sharing your feelings with others; difficulty in concentrating on tasks; difficulties related to sleep; and feeling irritated. If questions are not applicable, please indicate by writing 'N/A'.

**F-1 Mixing socially with others outside my family.**

Not at all

A little

Somewhat

Quite a lot

Very much

**F-2 Family relationships.**

Not at all

A little

Somewhat

Quite a lot

Very much

**F-3 Maintaining a normal healthy relationship with your partner.**

Not at all

A little

Somewhat

Quite a lot

Very much

**F-4 Coping with everyday situations.**

Not at all

A little

Somewhat

Quite a lot

Very much

**F-5 Coping with work.**

Not at all

A little

Somewhat

Quite a lot

Very much

## SECTION D - VALUATION SCENARIO

### VALUATION QUESTION 1:

For the purpose of the following questions, please suppose that all damage to the buildings and contents of your home will be compensated and this will not result in increased insurance premiums for you. Here we are considering the stress and hassle which may result from other impacts of flooding such as those shown on this card [SHOW CARD 16].

SHOW CARD 16 (Keep on Show)

- impacts on physical health: headaches, colds, injuries etc.
- disruption to normal life
- loss of irreplaceable items: photographs, personal letters etc.

We have discussed similar impacts of your 'worst' flood and how these made you feel. Now suppose that through improved flood defence, these effects [SHOWN ON CARD 16] and the stress and hassle they may cause could be avoided in future. Such an improvement will have to be paid for by all households in the country through increased taxation.

**D.1** Would you in principle be in favour of paying something towards such an improvement to ensure that you and other members of your household do not experience the stress effects? Before you answer this question, I would like you to think about the following:

- Flood defence is currently financed through taxation.
- Any money you would pay towards this improvement would not be available for your other household spending or for other public spending.

YES	Go to question D.2
NO	Go to <i>Valuation Question 2B</i>

**D.2** It is not yet known how much such an improvement will cost to each household in the country but it will be at least £20 per year (or 40p per week) per household. Would you be willing to pay this amount to avoid the stress and hassle associated with the effects of your worst flood?

YES	Go to question D.3
NO	Go to question D.5

**D.3** It may be that such an improvement will cost £125 per year (or £2.50p per week) per household. Would you be willing to pay this amount to avoid the stress and hassle associated with the effects of your worst flood?

YES	Go to question D.4
NO	Go to question D.5

**D.4 It is possible that the cost to each household in the country of such an improvement could reach £500 per year (or £10 per week) per household. Would you be willing to pay this amount to avoid the stress and hassle associated with the effects of your worst flood?**

YES	Go to question D.5
NO	Go to question D.5

**D.5. What is the maximum amount you would be willing to pay per year for your household to avoid the stress and hassle associated with the effects of your worst flood? £.....**

**D.6 What is main reason why you would be willing to pay for improved flood defence?**

WRITE ANSWER AND CODE IN TABLE BELOW

.....  
 .....

**CIRCLE ONE ONLY (DO NOT SHOW RESPONDENT)**

I would like to avoid the stress effects described	1
I would like to avoid the impacts on my physical health	2
I would like to avoid loss of my irreplaceable items	3
I would like to avoid damage to my property and contents	4
I would like to avoid my property losing its value	5
I would like to avoid stress to my pets	6
I am concerned about others in this area	7
It is a good cause	8
Other .....	9

GO TO VALUATION QUESTION 2A



**VALUATION QUESTION 2A**

**Now assume that in the event of flooding you experience the stress effects shown in this card [SHOW CARD 17-HI]. These may or may not correspond to your experience to date but please think about how you would feel if you experienced the effects shown.**

**SHOWCARD 17-HI (LEAVE ON SHOW FOR THIS SECTION)**

You always feel nervous, have palpitations or feel tense when reminded of the flood.  
 You always feel emotionally estranged, separated or cut off from others.  
 You are always being reminded of the flood by triggers (such as TV programmes).  
 You always have difficulty concentrating on tasks or completing tasks.  
 You often experience difficulty sleeping.  
 These symptoms will distress you very much.

**D.7 Now suppose that through improved flood defence, these effects may be avoided. As before, such an improvement will have to be paid for by all households in the country through increased taxation. Would you be prepared to pay a higher amount to avoid these symptoms than the amount you have just stated as the maximum amount you would be willing to pay to avoid those associated with your 'worst' flood?**

YES	£..... <b>Go to SECTION E</b>
NO	<b>Go to D.8</b>

**D.8 What is the main reason why you were not willing to pay more?**

**WRITE ANSWER AND THEN CODE IN TABLE BELOW**

.....  
 .....

**CIRCLE ONE ONLY (DO NOT SHOW RESPONDENT)**

I cannot afford to pay any more	1
I do not believe I/we will suffer from the stress effects described	2
The stress effects could be no worse than those I/we experienced in the 'worst' flood	3
Other.....	4

**Go to SECTION E**

## VALUATION QUESTION 2B

Now assume that in the event of flooding you experience the stress effects shown in this card [SHOW CARD 18-HI]. These may or may not correspond to your experience to date but please think about how you would feel if you experienced the effects shown.

SHOW CARD 18-HI (LEAVE ON SHOW FOR THIS SECTION)

You always feel nervous, have palpitations or feel tense when reminded of the flood.  
You always feel emotionally estranged, separated or cut off from others.  
You are always being reminded of the flood by triggers (such as TV programmes).  
You always have difficulty concentrating on tasks or completing tasks.  
You often experience difficulty sleeping.  
These symptoms will distress you very much.

**D.9** Would you in principle be in favour of paying something towards improvements in flood defence to ensure that you and other members of your household do not experience such stress effects? Before you answer this question, I would like you to think about the following:

- Flood defence is currently financed through taxation.
- Any money you would pay towards this improvement would not be available for your other household spending or for other public spending.

YES	Go to question D.10
NO	Go to question D.14

**D.10** It is not yet known how much such an improvement will cost to each household in the country but it will be at least £20 per year (or 40p per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD 18-HI)?

YES	Go to question D.11
NO	Go to question D.13

**D.11** It may be that such an improvement will cost £125 per year (or £2.50p per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD 18-HI)?

YES	Go to question D.12
NO	Go to question D.13

**D.12** It is possible that the cost to each household in the country of such an improvement could reach £500 per year (or £10 per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD 18-HI)?

YES	Go to question D.13
NO	Go to question D.13

**D.13 What is the maximum amount you would be willing to pay per year for your household to avoid the stress effects shown on the card (CARD 18-HI)?**  
 £.....

**GO TO SECTION E**

**D.14 What is the main reason why you would not be willing to avoid the stress effects shown on the card (CARD 18-HI)?**

**WRITE ANSWER AND THEN CODE IN TABLE BELOW**

.....  
 .....

**CIRCLE ONE ONLY (DO NOT SHOW RESPONDENT)**

I cannot afford to pay	1
I do not believe I am at risk of being flooded	2
I have already taken flood protection measures and hence do not need improvements to flood defence	3
I do not believe I will suffer from stress in the event of a flood	4
I do not believe flood defence will be improved	5
I do not believe flood defence improvements can help me avoid stress effects	6
I object to paying higher taxes	7
The government or council should pay for this	8
Water companies or industry should pay for this	9
Other people causing flooding should pay	10
Other.....	11

**SECTION E - STANDARD DEMOGRAPHIC QUESTIONS**

**E.1 Which of these qualifications do you have [SHOW CARD 19]? (Ring all that apply, or, if not specified, the nearest equivalent.)**

**SHOW CARD 19**

<b>Qualifications</b>		<b>Qualifications</b>	
No qualifications	1	Higher Degree (e.g. MA, PhD, PGCE, post-graduate certificates or diplomas)	7
1+ O levels/CSEs/GCSEs (any grade)	2	NVQ Level 1, Foundation GNVQ	8
5+ O levels, 5+ CSEs (grade 1), 5+ GCSEs (grades A-C), School Certificate	3	NVQ Level 2, Intermediate GNVQ	9
1+ A levels/AS levels	4	NVQ Level 3, Advanced GNVQ	10
2+ A levels, 4+ AS levels, Higher School Certificate	5	NVQ Levels 4-5, HNC, HND	11
First Degree (e.g. BA, BSc)	6	Other qualifications (e.g. City and Guilds, RSA/ OCR, BTEC/Edexcel)	12

**E.2 What is your current employment situation [SHOW CARD 20]? (Please circle)**

**SHOW CARD 20**

Employed - <b>full time</b> (or on Government sponsored training scheme)	1
Employed - <b>part time</b> (or on Government sponsored training scheme)	2
Self-employed/freelance or in own/family business	3
Actively looking for any kind of paid work / Unemployed	4
Retired	5
Student	6
Looking after home/family	7
Permanently sick/disabled	8
None of the above	9

**E.3 What is your ethnic group? [SHOW CARD 21]**

**SHOW CARD 21**

White	1
Mixed (e.g. white/black, white/Asian)	2
Asian / Asian British	3
Black / Black British	4
Chinese or other ethnic group	5

**E.4 What is your marital status? [SHOW CARD 22]**

**SHOW CARD 22**

Single (never married)	1
Co-habiting	2
Married	3
Divorced	4
Widowed	5

**E.5 How many cars or vans are owned or available for use by one or more members of your household? (Include company cars or vans if available for private use)**

No. of cars/vans .....

**E.6 Do you own or rent your home? [SHOWCARD 23]? (Please circle)**

**SHOW CARD 23**

Own outright	-1
Own on a mortgage	-2
Rent from Council	-3
Rent from housing association	-4
Private rental	-5
Other	-6

**E.7 Can you please indicate which one of the following letters represents your *gross household* income per week, month, or year [SHOW CARD 24]? (Please circle letter)**

**SHOW CARD 24**

Letter	Gross income per week	Gross income per month	Gross income per year
D	Under £100	Under £400	Under £5,000
K	£100-£199	£400-£799	£5,000-£9,999
S	£200-£399	£800-£1,599	£10,000-£19,999
P	£400-£599	£1,600-£2,399	£20,000-£29,999
M	£600-£799	£2,400-£3,199	£31,150-£41,550
B	£800-£999	£3,200-£3,999	£41,550-£51,999
U	£1,000 or more	£4,000 or more	£52,000 or more
X	D/K, Refused answer		

**E.8 Which daily newspaper do you read most often? [SHOW CARD 25]**

**SHOW CARD 25: CIRCLE ONE ANSWER ONLY:**

The Sport	1
The Sun	2
The Star	3
The Mirror	4
The Mail	5
The Express	6
The Independent	7
The Guardian	8
The Telegraph	9
The Times	10
The Financial Times	11
Daily Record	12
Your local paper	13
Sunday papers only	14
Other (please specify) .....	15
Don't read newspapers	16

**E.9 Last of all, what did you think of this questionnaire? (READ OUT)**

**SHOW CARD: CIRCLE ALL THAT APPLY:**

Interesting	1
Too long	2
Difficult to understand (Record which section/question below)	3
Educational	4
Unrealistic/ not credible	5
Other (Please specify: .....)	6

.....  
 .....

**This is the end of the interview!**  
**Thank you very much for your co-operation.**

**INTANGIBLE IMPACTS OF FLOODING – AT RISK SAMPLE - SEPT 2002**

Questionnaire No.			Sampling Point No.		

**RECORD TIME OF INTERVIEW:**

Start (24hr Clock):  :  :  :       End (24hr Clock):  :  :  :

**INTERVIEWER DECLARATION:**

This interview was conducted face to face with a respondent who is unknown to me.

Signature: ..... (Print Your Name: .....)

Date: ..... / ..... / 2002

**Introduction**

**[THANK RESPONDENT FOR AGREEING TO TAKE PART IN THE SURVEY AND CLARIFY INFORMATION BELOW.]**

For your peace of mind, we adhere to the Code of Conduct of the Market Research Society, and anything you say is confidential. Only employees of ..... will see your identity and under no circumstances will your answers be linked to your name or address.

First, may I check some details about you. **(EXPLAIN IF NECESSARY THAT THIS IS FOR THE PURPOSE OF RANDOM QUALITY CHECKS TO CONFIRM THAT THE INTERVIEW WAS COMPLETED IN A SATISFACTORY MANNER.)**

**Quota Controls**

**A. How old are you? (RECORD EXACT AGE AND CIRCLE AGE/GENDER GROUP)**

Job: \_\_\_\_\_

AB	1
C1	2
C2	3
DE	4

Record exact age: (PLEASE TRY TO GET) \_\_\_\_\_

Industry: \_\_\_\_\_

**C. Please record in CAPITALS:**

AGE 4-WAY	MALE	FEMALE
18-39 years	1	2
40-64 years	3	4
65-74 years	5	6
75 and over	7	8

Name: \_\_\_\_\_

Full Postal Address: \_\_\_\_\_

Full Post Code: \_\_\_\_\_

Tel. Number: \_\_\_\_\_

**B. (RECORD WEATHER AT TIME OF INTERVIEW)**

Windy	1	Rainy	4
Cold	2	Cloudy/dry	5
Sunny	3	Snow/sleet	6

**C. What is the Occupation of the chief wage earner in your Household? (RECORD GRADE)**

# The Appraisal of Human-Related Intangible Impacts of Flooding

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## FOR OFFICE USE ONLY

Questionnaire number

Location

---

## RECORD STREET NAME AGAIN & PROPERTY TYPE

Street name: \_\_\_\_\_

### Property type:

- |                         |     |
|-------------------------|-----|
| Detached house          | - 1 |
| Semi-detached house     | - 2 |
| Terraced house          | - 3 |
| Ground floor maisonette | - 4 |
| Bungalow                | - 5 |
| Ground floor flat       | - 6 |
| Basement flat           | - 7 |
| Mobile home             | - 8 |
| Other (specify) .....   | - 9 |



**SECTION A - QUESTIONS ABOUT THOSE AT RISK**

**A.1 Can I ask you how long you have lived in this property?**

--	--

Years

(if less than ONE year)

--	--

Months

**A.2 Including yourself, how many people in your household are [SHOW CARD R1]:**

*SHOW CARD R1: INSERT ANSWERS:*

Children aged 9 and under	
Children aged 10 to 17	
Adults aged 18 to 64	
Adults aged 65 to 74	
Adults aged 75 and over	

**A.3 In your property, how many rooms in total do you have for use only by your household?** (Read out: Do not count bathrooms, toilets, halls or landings or rooms that can only be used for storage such as cupboards. Do count all other rooms e.g. kitchen, living rooms, bedrooms, utility room and study.)

No. of rooms .....

**A.4 Are you aware that this area is defined as a flood risk area?**

Yes -1  
No -2

**A.5 Have you undertaken any of the following flood prevention measures?**

*SHOW CARD R2: CIRCLE ALL THAT APPLIES*

Take out household insurance against flooding	1
Keep sand <u>and</u> bags in the property	2
Keep ditches and drains around the property clean	3
Built walls around the property	4
Purchased water pumps	5
Keep alert for flood warnings during high-risk months	6
Avoid buying expensive downstairs furnishings	7
Avoid keeping irreplaceable items or goods of sentimental value on ground floor of my home at all or certain times	8
Other (specify.....)	9
Did not take preventative actions	10

**A.6 Have you ever:**

- (a) been a member of a local community group related to flooding?**
- (b) written letters to relevant authorities about the flood damage?**
- (c) attended meetings related to flooding?**

	<b>Yes</b>	<b>No</b>
(a) Local community group	1	0
(b) Written letters	1	0
(c) Attended meetings	1	0

**A.7 (SHOW CARD R3) How worried are you about the possibility of your property being flooded during the next 12 months?**

***SHOW CARD R3: CIRCLE ONE ONLY***

<b>Not worried at all</b>	<b>Not very worried</b>	<b>Indifferent</b>	<b>Somewhat worried</b>	<b>Very worried</b>
1 <b>(SKIP A.8)</b>	2	3	4	5

**A.8 This card [SHOW CARD R4] contains various characteristics of a house flooding. When thinking about your own home, which ONE worries you most?**

***SHOW CARD R4 (CIRCLE ONE ONLY)***

Duration of flood	1
Depth of water	2
Dirtiness of water	3
Speed of water rising / flowing	4
Time of day / night when it occurs	5
Season of the year when it occurs	6
Warning time	7
Other flood characteristics (specify) .....	8
Not worried with any specific flood characteristic	9

**We would now like you to complete a set of questions commonly used in health surveys that are designed to give us more a more detailed picture of your health.**

**ADMINISTER SECTION B HEALTH QUESTIONNAIRES (GHQ-12) FOR CURRENT HEALTH (respondent to complete using black/blue pen). Check when completed.**

**SECTION C - HEALTH QUESTIONNAIRES**

**GENERAL HEALTH OVER THE LAST FEW WEEKS**

General Health Questionnaire (GHQ-12) © David Goldberg, 1978

**Please read this carefully:**

We should like to know how your health has been in general **over the past few weeks**.  
Please answer ALL the questions by ticking the box below the answer which you think most applies to you.

**HAVE YOU RECENTLY:**

	<b>Better than usual</b>	<b>Same as usual</b>	<b>Less than usual</b>	<b>Much less than usual</b>
been able to concentrate on whatever you're doing? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>Not at all</b>	<b>No more than usual</b>	<b>Rather more than usual</b>	<b>Much more than usual</b>
lost much sleep over worry? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>More so usual</b>	<b>Same as than usual</b>	<b>Less useful useful</b>	<b>Much less than usual</b>
felt you were playing a useful part in things? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>More so usual</b>	<b>Same as than usual</b>	<b>Less so capable</b>	<b>Much less than usual</b>
felt capable of making decisions about things? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>Not at all</b>	<b>No more than usual</b>	<b>Rather more than usual</b>	<b>Much more than usual</b>
felt constantly under strain? (tick one box)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

HAVE YOU RECENTLY:

**Not at  
all**

**No  
more  
than  
usual**

**Rather  
more  
than  
usual**

**Much  
more  
than  
usual**

felt you couldn't overcome your difficulties?  
(tick one box)

**More so  
usual**

**Same as  
than usual**

**Less so  
than usual**

**Much less  
than usual**

been able to enjoy your normal  
day-to-day activities? (tick one box)

**More so  
usual**

**Same as  
than usual**

**Less able  
able**

**Much less  
than usual**

been able to face up to your problems?  
(tick one box)

**Not at  
all**

**No  
more  
than  
usual**

**Rather  
more  
than  
usual**

**Much  
more  
than  
usual**

been feeling unhappy and depressed?  
(tick one box)

**Not at  
all**

**No  
more  
than  
usual**

**Rather  
more  
than  
usual**

**Much  
more  
than  
usual**

been losing confidence in yourself?  
(tick one box)

**Not at  
all**

**No  
more  
than  
usual**

**Rather  
more  
than  
usual**

**Much  
more  
than  
usual**

been thinking of your self as a  
worthless person? (tick one box)

**More so  
than usual**

**About same  
as usual**

**Less so  
than usual**

**Much less  
than usual**

been feeling reasonably happy,  
all things considered? (Tick one box)

## SECTION C - VALUATION SCENARIO

### VALUATION QUESTION 1:

For the purpose of the following questions, please suppose that, in the event of flooding, all damage to the buildings and contents of your home will be compensated and this will not result in increased insurance premiums for you. Here we are considering other effects of flooding such as those shown on this card [SHOWCARD R5] which may result in stress and hassle for you.

#### SHOW CARD R5

- impacts on physical health: headaches, colds, injuries etc.
- disruption to normal life
- loss of irreplaceable items: photographs, personal letters etc.

Research indicates that the stress and hassle which you may experience may be similar to that described on this card [SHOW CARD R6-MI]. Please think about how you would feel if you experienced the effects shown.

#### SHOW CARD R6-MI (Keep on Show)

You are often reminded of the flood by triggers (such as TV programmes).  
You are often overtly alert or watchful for no reason.  
You sometimes feel nervous, have palpitations or feel tense when reminded of the flood.  
You sometimes have recurring memories of the flood.  
You sometimes experience flashbacks to the event.  
All of these symptoms will cause you a fair amount of distress.

Now suppose that through improved flood defence, such stress and hassle could be avoided. Such an improvement will have to be paid for by all households in the country through increased taxation.

**C.1** Would you in principle be in favour of paying something towards such an improvement to ensure that you and other members of your household do not experience the stress effects shown on the card (CARD R6-MI)? Before you answer this question, I would like you to think about the following:

- Flood defence is currently financed through taxation.
- Any money you would pay towards this improvement would not be available for your other household spending or for other public spending.

YES	Go to question C.2
NO	Go to <i>Valuation Question 2B</i>

**C.2 It is not yet known how much such an improvement will cost to each household in the country but it will be at least £20 per year (or 40p per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD R6-MI)?**

YES	Go to question C.3
NO	Go to question C.5

**C.3 It may be that such an improvement will cost £125 per year (or £2.50p per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD R6-MI)?**

YES	Go to question C.4
NO	Go to question C.5

**C.4 It is possible that the cost to each household in the country of such an improvement could reach £500 per year (or £10 per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD R6-MI)?**

YES	Go to question C.5
NO	Go to question C.5

**C.5 What is the maximum amount you would be willing to pay per year for your household to avoid the stress effects shown on the card (CARD R6-MI)?**  
£.....

**C.6 What is main reason why you would be willing to pay to avoid the stress effects shown on the card (CARD R6-MI)?**

WRITE ANSWER AND THEN CODE IN TABLE BELOW

.....  
.....

**CIRCLE ONE ONLY (DO NOT SHOW RESPONDENT)**

I would like to avoid the stress effects described	1
I would like to avoid the impacts on my physical health	2
I would like to avoid loss of my irreplaceable items	3
I would like to avoid damage to my property and contents	4
I would like to avoid my property losing its value	5
I would like to avoid stress to my pets	6
I am concerned about others in this area	7
It is a good cause	8
Other .....	9

**GOTO VALUATION QUESTION 2A**

**VALUATION QUESTION 2A:**

**Now assume that in the event of flooding you experience the stress effects shown in this card [SHOW CARD R7-HI]. Please think about how you would feel if you experienced the effects shown.**

**SHOW CARD R7-HI (LEAVE ON SHOW FOR THIS SECTION)**

You always feel nervous, have palpitations or feel tense when reminded of the flood.  
 You always feel emotionally estranged, separated or cut off from others.  
 You are always being reminded of the flood by triggers (such as TV programmes).  
 You always have difficulty concentrating on tasks or completing tasks.  
 You often experience difficulty sleeping.  
 These symptoms will distress you very much.

**C.7 Now suppose that through improved flood defence, these effects may be avoided. As before, such an improvement will have to be paid for by all households in the country through increased taxation. Would you be prepared to pay to a higher amount to avoid these symptoms than the amount you have just stated as the maximum amount you would be willing to pay to for those listed before?**

<b>YES</b>	<b>£.....Go to SECTION D</b>
<b>NO</b>	<b>Go to C.8</b>

**C.8 What is the main reason why you were not willing to pay more?**

**WRITE ANSWER AND THEN CODE IN TABLE BELOW**

.....  
 .....

**CIRCLE ONE ONLY (DO NOT SHOW RESPONDENT)**

I cannot afford to pay any more	1
I do not believe I/we will suffer from the stress effects described	2
Other.....	3

**GOTO SECTION D**

## VALUATION QUESTION 2B

Now assume that in the event of flooding you experience the stress effects shown in this card [SHOW CARD R7-HI]. These may or may not correspond to your experience to date but please think about how you would feel if you experienced the effects shown.

SHOW CARD R7-HI (LEAVE ON SHOW FOR THIS SECTION)

You always feel nervous, have palpitations or feel tense when reminded of the flood.  
You always feel emotionally estranged, separated or cut off from others.  
You are always being reminded of the flood by triggers (such as TV programmes).  
You always have difficulty concentrating on tasks or completing tasks.  
You often experience difficulty sleeping.  
These symptoms will distress you very much.

**C.9** Would you in principle be in favour of paying something towards improvements in flood defence to ensure that you and other members of your household do not experience such stress effects? Before you answer this question, I would like you to think about the following:

- Flood defence is currently financed through taxation.
- Any money you would pay towards this improvement would not be available for your other household spending or for other public spending.

YES	Go to question C.10
NO	Go to question C.14

**C.10** It is not yet known how much such an improvement will cost to each household in the country but it will be at least £20 per year (or 40p per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD R7-HI)?

YES	Go to question C.11
NO	Go to question C.13

**C.11** It may be that such an improvement will cost £125 per year (or £2.50p per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD R7-HI)?

YES	Go to question C.12
NO	Go to question C.13



**C.12 It is possible that the cost to each household in the country of such an improvement could reach £500 per year (or £10 per week) per household. Would you be willing to pay this amount to avoid the stress effects shown on the card (CARD R7-HI)?**

YES	Go to question C.13
NO	Go to question C.13

**C.13 What is the maximum amount you would be willing to pay per year for your household to avoid the stress effects shown on the card (CARD R7-HI)?**  
 £.....

**GO TO SECTION D**

**C.14 What is the main reason why you would not be willing to avoid the stress effects shown on the card?**

WRITE ANSWER AND THEN CODE IN TABLE BELOW

.....  
 .....

**CIRCLE ONE ONLY (DO NOT SHOW RESPONDENT)**

I cannot afford to pay	1
I do not believe I am at risk of being flooded	2
I have already taken flood protection measures and hence do not need improvements to flood defence	3
I do not believe I will suffer from stress in the event of a flood	4
I do not believe flood defence will be improved	5
I do not believe flood defence improvements can help me avoid stress effects	6
I object to paying higher taxes	7
The government or council should pay for this	8
Water companies or industry should pay for this	9
Other people causing flooding should pay	10
Other.....	11

**GO TO SECTION D**

**SECTION D - STANDARD DEMOGRAPHIC QUESTIONS**

**D.1 Which of these qualifications do you have [SHOW CARD R8]? (Ring all that apply, or, if not specified, the nearest equivalent.)**

**SHOW CARD R8**

<b>Qualifications</b>		<b>Qualifications</b>	
No qualifications	1	Higher Degree (e.g. MA, PhD, PGCE, post-graduate certificates or diplomas)	7
1+ O levels/CSEs/GCSEs (any grade)	2	NVQ Level 1, Foundation GNVQ	8
5+ O levels, 5+ CSEs (grade 1), 5+ GCSEs (grades A-C), School Certificate	3	NVQ Level 2, Intermediate GNVQ	9
1+ A levels/AS levels	4	NVQ Level 3, Advanced GNVQ	10
2+ A levels, 4+ AS levels, Higher School Certificate	5	NVQ Levels 4-5, HNC, HND	11
First Degree (e.g. BA, BSc)	6	Other qualifications (e.g. City and Guilds, RSA/ OCR, BTEC/Edexcel)	12

**D.2 What is your current employment situation [SHOW CARD R9]? (Please circle)**

**SHOW CARD 9**

Employed - full time (or on Government sponsored training scheme)	1
Employed - part time (or on Government sponsored training scheme)	2
Self-employed/freelance or in own/family business	3
Actively looking for any kind of paid work	4
Retired	5
Student	6
Looking after home/family	7
Permanently sick/disabled	8
None of the above	9

**D.3 What is your ethnic group? [SHOW CARD 10]**

**SHOW CARD 10**

White	1
Mixed (e.g. white/black, white/Asian)	2
Asian / Asian British	3
Black / Black British	4
Chinese or other ethnic group	5

**D.4 What is your marital status? [SHOW CARD 11]**

**SHOW CARD 11**

Single (never married)	1
Co-habiting	2
Married	3
Divorced	4
Widowed	5

**D.5 How many cars or vans are owned or available for use by one or more members of your household? (Include company cars or vans if available for private use)**

No. of cars/vans .....

**D.6 Do you own or rent your home? [SHOWCARD 12]? (Please circle)**

**SHOW CARD 12**

Own outright	-1
Own on a mortgage	-2
Rent from Council	-3
Rent from housing association	-4
Private rental	-5
Other	-6

**D.7 Can you please indicate which one of the following letters represents your *gross household* income per week, month, or year [SHOW CARD 13]? (Please circle letter)**

**SHOW CARD 13**

Letter	Gross income per week	Gross income per month	Gross income per year
D	Under £100	Under £400	Under £5,000
K	£100-£199	£400-£799	£5,000-£9,999
S	£200-£399	£800-£1,599	£10,000-£19,999
P	£400-£599	£1,600-£2,399	£20,000-£29,999
M	£600-£799	£2,400-£3,199	£31,150-£41,550
B	£800-£999	£3,200-£3,999	£41,550-£51,999
U	£1,000 or more	£4,000 or more	£52,000 or more
X	D/K, Refused answer		

**D.8 Which daily newspaper do you read most often? [SHOW CARD 14]**

**SHOW CARD 14: CIRCLE ONE ANSWER ONLY:**

The Sport	1
The Sun	2
The Star	3
The Mirror	4
The Mail	5
The Express	6
The Independent	7
The Guardian	8
The Telegraph	9
The Times	10
The Financial Times	11
Daily Record	12
Your local paper	13
Sunday papers only	14
Other (please specify) .....	15
Don't read newspapers	16

**D.9 Last of all, what did you think of this questionnaire? (READ OUT)**

**SHOW CARD: CIRCLE ALL THAT APPLY:**

Interesting	1
Too long	2
Difficult to understand (Record which section/question below)	3
Educational	4
Unrealistic/ not credible	5
Other (Please specify: .....)	6

.....  
 .....

**This is the end of the interview!  
 Thank you very much for your co-operation.**