Perspectives on resilience from households in Hull – response to Defra consultation on policy options for promoting property-level flood protection and resilience

Rebecca Sims[1], Will Medd[1],Maggie Mort[1], Nigel Watson[1], Gordon Walker[1], Clare Twigger-Ross[2].

[1]Lancaster University
[2]Collingwood Environmental Planning

31st October 2008

Correspondence
Will Medd (w.medd@lancaster.ac.uk)
Rebecca Sims (r.sims@lancaster.ac.uk)

This response is based on preliminary findings from the study "Flood, vulnerability and urban resilience: a real-time study of local recovery following the floods of June 2007 in Hull" funded by Economic and Social Research Council, the Engineering and Physical Science Research Council, and Environment Agency (October 2007-September 2009).

Further project details:
www.lec.lancs.ac.uk/cswm/hfp

CONTENTS

1. Introduction and summary

Our ongoing research in Hull is providing further evidence about the prolonged impact of the flood recovery process, and the severe distress and disruption to communities and individuals it entails. One core theme emerging in the results is the stress generated by the problems involved in repairing damaged properties. This submission is a response to Defra's consultation on the policy options for promoting property-level flood protection and resilience. By outlining some preliminary findings from our ongoing research in Hull, we comment on the themes and questions highlighted in the consultation and suggest some additional issues for consideration in the policy debate.

By way of summary:

- The trauma and distress experienced by residents during the flood recovery process, which disrupts the fundamental fabric of social life within the household and community, cannot be captured by cost-benefit analyses. Therefore, although we accept that financial analyses will have some part to play in determining where property-level resistance and resilience measures are rolled-out, we argue that other, non-economic factors should be taken into consideration when deciding which properties to target. We would welcome further consultation on different approaches to targeting properties/groups.
- Many of those taking part in our study have had their houses returned to their original condition. We are concerned that this represents a missed opportunity that has reproduced people's vulnerability to future flooding. Consequently, more must be done to encourage resilient repair following future flood events. We therefore support the consultation's statement about the importance of resilient repair (paragraph 1.12). We agree that property-level measures which may normally be considered uneconomical become much more worthwhile – and much less intrusive to family life – if carried out during the repairs process when there is already a high level of disruption in the household.
- We support the consultation's statement that a lack of information on behalf of householders and tradesmen, coupled with an inability to cover the additional costs of resilient measures at a time when finances are already strained, can constitute significant barriers to implementation. However, our research indicates that the type of flooding experienced can also be problematic, with pluvial flooding being perceived by householders as particularly difficult to protect against, particularly when the water comes up from under the floor. By contrast, river or tidal flooding is often perceived as simpler to combat because the water is seen to have a single source.
- Many households in Hull experienced 'secondary flooding', where water entered beneath the property, soaking floorboards and joists, with the result that major repairs had to be carried out months later when the problem was finally identified. Given the magnitude of this problem in Hull, we suggest that it is particularly important to establish whether the kinds of resistance and resilience measures currently being proposed are capable of protecting households against this kind of 'hidden' flood event.
- Our research shows that debates about the causes of the flooding can constitute an additional barrier to the take-up of property-level measures. This is because such debates inevitably influence views about whether the flooding is likely to happen again in future.
- Hull's example indicates that residents might be more willing to protect themselves if they feel that other organisations are also working to improve matters. Such 'joint approaches' are considered by householders to be both fairer and more effective. This

does not mean that residents expect flood defences to be provided – clearly, such circumstances are not covered by this consultation. However, residents do expect local authorities, water companies and other agencies to fulfil their responsibilities (by making sure that the drainage system is properly maintained, for example). In short, householders do not think household-level measures should be viewed as a substitute for continued investment in – and maintenance of – an effective drainage system in urban areas.

- We support the consultation's statement that more people would be likely to choose resistance and resilience measures if their actions were reflected in the terms of their insurance. Therefore, we recommend that, whichever policy option is chosen as a result of this consultation, the government and Environment Agency should work with the Association of British Insurers to ensure that more insurance companies provide financial incentives to encourage more householders to take up these measures.
- Our research shows that tenants – as opposed to homeowners – are particularly vulnerable to the disruptions created by flooding. Those in the rental sector could therefore derive considerable benefit from the installation of property-level resistance and resilience measures. The government should consider how best to engage tenants and – crucially – landlords to ensure that the benefits of these measures can be extended to the rented sector.
- We agree that the strength and nature of the barriers to implementation are such that market forces and individual choice are unlikely to result in more people taking up these measures. Government action is therefore needed to address these barriers by providing more information about such measures alongside funding to encourage their implementation.
- We believe that option 2, where some form of subsidy is offered to residents in addition to a survey, would be a more effective means of encouraging take-up of property-level measures. It would also offer a higher degree of flexibility at the local level which could be used to address concerns about fairness. For example, one approach might be to offer a partial level of subsidy to all households in the community but with the option of providing higher levels – or even a full subsidy – to more vulnerable groups.
- If the objective of the scheme is to create 'showcase' schemes with a view to encouraging implementation elsewhere, it is vital to choose the right communities to approach. We recommend choosing areas where there is already a high level of awareness, activism and community involvement around flood issues.
- When consulting with communities, it is crucial to identify individuals from the local authority and Environment Agency with good people skills who can then approach local communities via trusted intermediaries. These individuals must be willing and able to listen to and work alongside local communities in order to help them take ownership of the scheme.
- Much of the routine building work that is carried out after a flood is poor quality work that remains uninspected and unregulated. Therefore, if resistance and resilience measures are to be installed, either during the reinstatement work or at a later date, it is essential to ensure that this is done properly and then inspected – perhaps with a certificate given to the householder that could then be shown to the insurance company in order to qualify for a reduced premium, or to future buyers who might otherwise be anxious about buying the property.
- We encourage the government to do everything it can to ensure that flooded homes are repaired in a resilient fashion. More research would be needed in order to establish the best way of doing this – for example, whether a voluntary code would be sufficient,

or whether some form of coercion via the Building Regulations would be necessary. However, crucial issues to address include the following:

- Terms of insurance: Homeowners might be encouraged to introduce property-level measures if this were reflected in reduced premiums.
- Who pays for resilient repair? There is a lack of clarity and consistency in financing the repairs process. Homeowners are also often under financial pressure during the recovery process. Therefore, if resilient repair is to become commonplace after flooding, options for funding, including government or self-funding, must be clear to all involved (householders, builders, insurance companies).
- In addition to a general lack of information about what resistance and resilience measures are available, people who have just experienced flooding are often in a state of shock and they are therefore unlikely to spend any time researching and thinking about the options for resilient repair. Participants taking part in our study have said that they would like to have been given a guide which explains simply and clearly how to do all the things that you have to do after a flood. Information and guidance on resilient reinstatement should be included in this guide. Builders and surveyors should also be better informed about the options available, so that they can recommend suitable measures to householders.
- Poor workmanship has been a major problem for flooded residents. Given that it is already difficult to source sufficient numbers of quality builders, tradesmen and materials during the recovery process, serious thought would be needed in order to ensure that resilient repairs are able to be completed swiftly and to a high standard.

2. Background to our research

The aim of our research, *Flood, vulnerability and urban resilience: a real-time study of local recovery following the floods of June 2007 in Hull*, is to undertake a real-time longitudinal study using an action research model to document and understand the everyday experiences of individuals following the floods of June 2007 in interaction with networks of other actors and organisations, strategies of institutional support and investment in the built environment and critical infrastructure. Focusing on Hull, the project design adopts a tried and tested action research methodology previously used to investigate recovery following the 2001 Foot and Mouth Disease disaster (Bailey et al. 2004, Convery et al. 2005, Mort et al. 2005, Convery et al. 2007). The research therefore involves a longitudinal qualitative diary-based method developed to capture peoples' everyday experiences as they move through the drawn out process of recovery.

A growing body of work has sought to better understand the social, economic and health impacts of flooding and the relationship between social and physical parameters of community resilience and preparedness (Twigger-Ross 2006, Thrush et al. 2005, Tapsell et al. 2005, Kirschenbaum 2002, Gordon 2004). However, there is a dearth of empirically-based understanding about the processes people go through in recovering from flood disasters in the UK and the role of institutional support and investment in the built environment – including the potential contribution of property-level flood protection and resilience measures – within that.

Policy concerns for flood management have increasingly emphasised the need for development of both social and physical strategies in building resilience to live with flood (Defra 2005, Environment Agency 2005, National Audit Office 2001) but which strategies are the most appropriate and how these strategies should be balanced, resourced and implemented remains deeply problematic. In the context of the 2007 floods we can examine two dimensions of resilience. First, the resilience that already exists to different degrees within processes of recovery that are currently operating – the task being to identify those aspects of the evolving everyday experience that demonstrate effective recovery and those which restrain, prolong or resist it. Understanding these dynamics of recovery requires a knowledge of the physical conditions of flood, the drainage infrastructure and the structural characteristics of properties in Hull, as well as an understanding of individual agency and the social structures (including socio-economic characteristics, community structures, institutional structures) through which such agency and, consequently, vulnerability and resilience, is produced (Pelling 2003, Perrow 1999, Rodriguez et al. 2006).

Second, we can consider the resilience which can, in principle, be built during the process of recovery to better cope with and recover from future flood events. The installation of property-level resistance and resilience measures is one example of this more future orientated notion of resilience-building, which is particularly important in the context of climate change (e.g. Berkes and Folke, 2003, Brooks 2003, Few et al. 2005, Yohe and Tolb 2002). It suggests that processes of adaptation are required rather than a return to the 'original condition' – a goal which has itself been contentious, for example, in the aftermath of Hurricane Katrina in New Orleans (Daniels et al. 2006; see also Tobin 1999). Whilst some argue that disasters provide moments of opportunity for learning and embedding of preparedness and future resilience (Mileti et al. 2004), there may be many reasons why this does not materialize (Harries 2008). Only by understanding in depth different experiences of, and perspectives on, the recovery process can we begin to identify where the opportunities and constraints for institutional and engineering responses may lie.

The emphasis of this research is therefore on the "what, how and when" of people's everyday adaptation during the flood recovery process, captured over time. The project started in October 2007 and will continue until September 2009.

2.1 Details of participants taking part in the study

To date, we have completed 48 interviews, comprising 43 residents and 11 frontline workers[1] (these figures add up to more than 48 because categories of frontline workers and residents were not mutually exclusive).

Participants have been recruited from all areas of the city with a particular focus on West Hull, as this was the area most severely affected by the flooding. The following statistics provide a profile of our participants by age, tenure type and additional considerations.

[1] Defined as those who may not have been flooded themselves but who have been working with flood victims as part of their employment. The 11 frontline workers we have interviewed comprise 2 teachers, 3 caretakers/community centre managers, 2 community wardens, 5 council/voluntary sector employees and 1 journalist.

Tenure
Of the 43 residents interviewed: 31 owner occupiers, 7 council tenants, 2 private rented, 3 housing association.

Age
Age profile of the 48 interviewees:

20s	**30s**	**40s**	**50s**	**60s**	**70s**	**80s**	**90s**
4	13	9	7	8	3	2	1

Disability
Number of interviewees with a disability in the family: 11

Gender
34 women, 14 men.

Young families
14 participants have children under 10.

Insurance
7 participants were uninsured.

In addition to undertaking initial in-depth interviews, the participants have been recruited to keep diaries over a 12 to 18 month period. The diaries are not structured, leaving it up to the diarist to decide what they feel is important to record. Participants are also being brought together at quarterly intervals during the course of the project to discuss collectively issues affecting the recovery process as they emerge during the research project.

3. Response to consultation

This section is structured in response to the headings and questions outlined in the consultation document. The emphasis of our study is on understanding flood recovery from the perspective of those involved in the process. We therefore use extracts from interviews, diaries and group discussions with householders involved in our study to illustrate the points made. All names are pseudonyms to protect the anonymity of the participants.

3.1 Consultation overview – introduction

Q1 Do you think that the costs and benefits for the measures outlined here and in the Impact Assessment (Annex C) are reasonable estimates? Do you have further information to help refine the estimates?

Householders' accounts of flood recovery in Hull support the consultation's assessment of the extreme distress and expense that flooding can cause. In particular, our research shows that much of this distress and expense results from having to deal, firstly, with the loss and of home and possessions and, secondly, with the lengthy process of repair that ensues as properties are refurbished.

> *"It has affected people… in a bad way. I mean I was getting to the stage where I was in tears all the time because I didn't want to live like this. I've never lived in a house that's a mess and it was, it was just awful, it was just as if – the walls was disgusting and everything. I mean it's took them – I mean some of mine down here – it's still a bit damp but it's took them a good six months to dry out. But there's no one there who will help you, you'll ring the Council and they will pass you from one person to the other, so you are not getting anything done. But it has, it's affected people and… it will affect people in different ways."* (Barbara, council tenant, interview)

> *"It is now April and we have only finished the kitchen area. We are so tired all the time, we argue every week, we never seem to have time for doing things for yourself, things we enjoy, no proper relax time. And we've also lost interest in everything. I don't think we will stay together, I think this has just put a big wedge between us. I think the only way forward is to sort house then sell it and try to start again, putting it behind us. I know this is such a weak thing for us to do and we are both strong and love doing our house up. In the past every week we would be doing home improvements, but not like this, it's just too much. We said we wouldn't let the flood get the better of us but we have… The year of the flood we were getting married and my dad bought my wedding dress, which is still hanging at my parents… But I cannot see us getting married in the near future, as it seems too much stress to contend with. And we have grown apart."* (Abby, homeowner, diary)

In the case of Hull, we know that 1,476 people were still out of their homes one year after the flood, with 293 people still in caravans (Hull City Council, email communication, June 26, 2008). Of the 43 residents taking part in our study, one person is still out of his home, while another has only just returned – further proof that, for many of those affected, the floods are not a past event but, rather, a tragedy that is still occurring.

Stress and anxiety can also continue to be experienced long after repairs have been completed and the person has returned to their home. Periods of bad weather, in particular, can be particularly stressful, as people fear a return of the flooding and are reminded of the emotions and hardships that they faced at the time:

> *"When I go home, the first thing I do if it's been raining or is raining, is stop and check the level of the drain. The last thing before I leave is check the level of the drain just to make sure that I'm aware of its current state… There is a lot of anxiety if the weather is going to be bad. As we move more into winter… the anxiety, I think, will rise and it's affecting people. I think the main one is sleep patterns because a lot of us have said we are not sleeping through it and a lot of us are waking up and we've dreamt it's been raining through the night because that's on our mind all the time."* (Amy, interview)

Given the severity of these impacts and their continuation into the future, it is clear that steps must be taken to ensure that the hardships experienced by householders after flooding are minimised as much as possible. In our response to the Pitt Review, we argued that one way of doing this is to improve the help and support that is given to householders during the recovery process (Sims *et al.* 2008). However, as much of the distress is caused by the expensive and lengthy repairs process, reducing the level of

damage caused to homes and possessions by promoting the uptake of property-level flood protection and resilience measures would be another solution.

In relation to Q1, while we recognise that cost-benefit analyses will inevitably be a factor in deciding how and when such property-level measures should be deployed, we would argue that such analyses should not be the only factor involved as they do not capture wider aspects of recovery, such as the emotional and psychological distress caused to householders. Resistance and resilience measures may therefore be beneficial to a wider range of households than those for whom such measures have been deemed 'worthwhile' on the basis of cost-benefit analysis.

This is particularly important when considering those who may be especially vulnerable to the impacts of flooding – for example, the elderly, the disabled or families with young children – all of whom find the current repair and recovery process particularly difficult. For example, Emma, a pensioner in her 70s, lived in her garage for six months over the winter with only temporary cooking facilities and no water supply because her husband, who suffered from a number of health complaints, refused to leave his home in case he was put into a hospital or nursing home and was not able to return:

> *"They offered us accommodation in Scarborough but it was no good because he needs oxygen and everything. It's just the psychological effect and the loss of everything what you've worked for. We'd just finished at Easter, decorating and I thought at our age we'd finished and now we are back at square one. It's not a home anymore it's a house."* (Emma, homeowner, group discussion)

Emma's acute vulnerability to the disruptions of flood recovery would not be apparent from a cost-benefit analysis. However, had her home been fitted with adequate resistance and resilience measures, she and her husband would have been back in their home much more quickly, thus avoiding much of the trauma that they experienced during their six months in the garage.

We also support the consultation's statement about the importance of resilient repair (paragraph 1.12). We agree that property-level measures which may normally be considered uneconomical become much more worthwhile – and much less intrusive to family life – if carried out during the repairs process when there is already a high level of disruption in the household.

Many people participating in our study have chosen to pay for minor alterations to their home during the repairs process – for example, renovating a bathroom, removing a dividing wall or getting new windows – because they wanted to make the most of the opportunity of having the builders in. However, few people took the decision to have flood resistance and resilience measures installed, for reasons which will be described in the next section.

We are concerned that, in having their houses returned to their original condition, people's vulnerability to future flooding may have been reproduced. Consequently, more must be done to encourage resilient repair following future flood events (see section 3.5 & 3.6).

3.2 Barriers to take-up of property level flood protection and resilience and rationale for government action

Q2 Do you think that the Government needs to give more information to high-risk and help them do more to protect themselves? Alternatively, do you think that the level of property-level flood protection and resilience should be left to market forces and individual choice?

Our research in Hull is in broad agreement with the barriers identified in the consultation document and, as stated above, we agree that few of the houses affected in 2007 have been repaired in a flood-resilient fashion. However, some additional insights from Hull can extend and support the insights from previous research into these barriers.

A) Type and nature of flooding

Firstly, the type and nature of flooding experienced can have a role in affecting people's opinions on the efficacy of resilient repair. None of the participants taking part in our study had had any previous experience of flooding and they were therefore surprised and alarmed when they found water encroaching upon their properties. However, they were aware that Hull was vulnerable to river and tidal flooding and, as a result, they expected any floods to take the form of a slowly advancing body of water coming down the street. By contrast, in June 2007, Hull experienced a pluvial flood which resulted from the drains being overwhelmed (Coulthard *et al.* 2007a; 2007b). This flood manifested itself in strange and unexpected ways which were particularly frightening for householders. For example, many people found that water did not enter their homes via the door, as expected. Instead, it burst up through the floor, or came in through the walls.

> *"I was just sat in the living room just having a cup of tea and then all of a sudden, believe it or not, it came in from the corner behind that chair. It must have come up from under. I went, "Here it comes", and as quick as you went like that it was just up."* (Amanda, council tenant, interview)

> *"I did have all the doors, all the back way, all the front way – I got all the quilts upstairs, all the pillars, padded everything, stuck plastic bags round, just anything that I thought would be OK and it didn't even come through the doors… I came walking through to the kitchen… like in the middle of the floor, like a big pool because I was looking out the window, where did that come from? It had actually come through the bricks of the house before it actually came through."* (Abby, homeowner, interview)

As shown in the examples above, the fact that the flood burst up through floors or came through walls resulted in householders feeling powerless to protect their possessions or prevent water entering their homes. Consequently, when asked if they had had any resistance or resilience measures installed during the repairs, many reported that there would have been no point as they felt that these installations would have had no effect upon keeping the water out.

> *"We had concrete floors but it still came up through the concrete, so if I had put things on my doors, if I had raised my electric up, it wouldn't have done any good because it would have come up through the floors. For people with*

wooden floors, unless you actually line underneath – which would cost money – and actually seal everything – it's still going to come up into the gap under your floor, which it will do because it's soil, so there's going to have to be some drastic work done to your house to get it so it works.'' (Amy, householder, group discussion)

There are several factors at work here. Firstly, our research supports the consultation's statement that the clear preference of householders is not for resistance or resilience measures, but for the water to be kept right away from their houses by flood defences or – in the case of Hull – better drainage management. However, if this first option is not possible then such property-level measures can have an important role to play as a 'back-up plan'. Understanding why these measures are not employed more frequently is therefore an important issue for investigation.

The example given above shows that the nature of a pluvial flood, together with a lack of information about the capabilities of the various resistance and resilience measures available, can constitute a significant barrier to take-up. Most people were only aware of the possibility of sandbags, flood gates or concrete floors and, for the reasons described above, they felt that these measures would have been pointless when deployed against pluvial flooding whereby the water came up through the floors. Consequently, the kinds of changes people had made tended to be relatively minor in character – such as moving sockets and wiring higher up the walls, fitting higher skirting boards or raising the height of the doorstep.

Tessa: We got this letter and it said 'what have you done to make your house flood proof?' And, yeah, we raised the floor in the porch, haven't we, by six inches. But there was nothing else that we could do.
Brian: I mean, they were suggesting things like covers for air bricks and things but, like that lady says, if your next door neighbour hasn't got it…
Amy: It's still going to come in. Whether you raise the floor or what, it will eventually get through the soil. (group discussion)

"All I've had done really for resilient work is to have the height of the sockets increased and, as such, that's all. The kitchen's not removable, and that's a wood kitchen." (Bruce, homeowner, group discussion)

"Interesting article in the paper 'Take steps to protect your homes from floods'. From what I can fathom they are saying people wanted their homes put right and put back the way they were and that people have not took steps to protect their homes. When our plasterer plastered the walls he used lime plaster and also coated the brickwork inside with a water repellent. We had a good insurance company but at no time did they offer any advice about protecting our home. But also in mind perhaps we should have thought about it, but you're that busy with everything I did not really think about it. But I'm going to look into a few things especially the airbricks, as that's where the water flowed in filling the underneath of the house and then rising up" (Tom, homeowner, diary)

In some cases, it was builders, rather than residents, who appeared uninformed about what property-level measures were available. For example, Laura had had a series of problems with poor workmanship which resulted in her spending over a year out of her home. However, although her surveyor told her she could have the void beneath her

floors filled up, her builder refused to do this, and Laura did not feel that she was in a position to argue with him:

> *Laura: They didn't even fill our recess up where the water actually sat. Because the chartered surveyor came round and the loss adjuster's trouble-shooter that they brought in at the end. And he said 'oh, I think we could fill your void up with concrete'.*
> *Bruce: Yes, lots of people have that.*
> *Laura: And then the builder came and said 'no, we're not doing that, this was put there for a purpose'. So I said 'Oh. Right then. But the chartered surveyor mentioned it.' He said 'Oh no, we're not', and it was never done.* (group discussion)

However, some participants had had more major changes instigated. Tim's professional experience as a structural engineer meant that he was able to make the decision to pay for some more radical measures during repairs to his home. In this case, his actions were prompted by a higher level of knowledge about what options were available, thus avoiding the feelings of helplessness experienced by those described above. He also had sufficient income to pay for these additional measures which were not covered by insurance.

> *Tim: As regards the floors we are going to put them back in concrete rather than the timber floor again. It will be a timber finish but it will be concrete up to sort of about that depth from the floor level. The hall is an oak floor so we are having that put back in oak.*
> *Interviewer: With the concrete, is that because you know if something was to happen again it would be…?*
> *Tim: Yes that's right, the airbricks will be replaced with solid bricks so the water won't be able to get in. The worst scenario would be that if it came up to the same level again it could still get to the wooden floor but that would be just floorboards and battens to be replaced, not right down to the bottom. But let's hope it never happens again.* (Interview)

We support the consultation's statement that a lack of information on behalf of householders and tradesmen, coupled with an inability to cover the additional costs of such measures at a time when finances are already strained can constitute significant barriers to implementation. However, our research indicates that the type of flooding experienced can also be problematic, with pluvial flooding – where the water comes up from under the floor – being perceived by householders as particularly difficult to protect against. By contrast, people seemed to regard river or tidal flooding as simpler to combat because the water is seen to have a single source and the flood comes from a particular direction.

The type of flood event involved is also important in relation to Hull because of the major problem caused by 'secondary flooding' in the city. The term 'secondary flooding' refers to houses that were thought to have been unaffected because there was no visible evidence of flood water in the house. However, unbeknown to householders, water had entered into the void under the floor, soaking joists and floorboards, and its presence only became apparent some weeks or months later as problems such as warped floorboards, mouldy carpets and rising damp began to arise. We are told that instances of secondary flooding are still being discovered in Hull to this day, and this is extremely problematic, not only because those whose homes were affected in this way have to undergo the same devastating process of 'stripping out', repair and

reinstatement as people who saw the water enter their property, but also because deadlines for claiming flood assistance imposed by insurance companies and the city council can make it very difficult for householders needing help this long after the initial flood event.

Seven of those taking part in our research had experienced this kind of secondary flooding, including Rachel:

> *"What happened – the downstairs toilet, the door started to stick and it never stuck before and I got my brother in law to come and he shaved a little bit off the bottom because we thought maybe it had just dropped. But it did it again, it was sticking again and then my next-door neighbour's fireplace fell off the wall – the whole fireplace. … I think in my mind I was saying 'well I didn't get any water in so I must be fine, I must be absolutely fine, I didn't get any water in so everything must be OK'. But of course when they came and they tested the walls, the walls were damp. It's amazing that, it's exactly the same amount of devastation, as we would have had if we had had a foot of water in the house"* (Rachel, interview)

Hull appears to have experienced this problem as a result of the type of water accumulation and the city's flat, low-lying topography. However, the scale of the problem and the difficulty that secondary flooding has caused householders, insurance companies and the council shows that this is something that the government and key agencies must be aware of for the future.

In relation to this consultation, we suggest that it is particularly important to establish whether the kinds of resistance and resilience measures currently being proposed are capable of protecting households against this kind of 'hidden' flood event.

B) Dispute over the causes of flooding

While we agree that there is an element of 'moral hazard' in people's unwillingness to install property-level resistance and resilience measures, Hull's example shows that such feelings are exacerbated by uncertainty and dispute over the causes of the flooding. In the aftermath of the floods, reports produced by an Independent Review Body concluded that the floods resulted from the capacity of the drains being overwhelmed by a storm that was of a magnitude so severe that it would normally only be expected once in every 150 years (Coulthard *et al.* 2007a; 2007b). However, the report also criticised Yorkshire Water for the poor maintenance of its pumping systems and suggested that modernisation works carried out by the company had reduced the system's capacity to deal with extreme rainfall events. Locally, some residents also blamed the council for not cleaning the city's roadside gullies, while others suggested that climate change was to blame.

Our research shows that such debates about the causes of the flooding are likely to have an impact upon people's decision whether or not to install property-level resistance and resilience measures in their homes because they inevitably influence views about whether the flooding is likely to happen again in future.

For example, those who felt that the flooding was a freak natural incident saw no reason to make changes to their home as they believed that such an event would not happen again in their lifetimes. Equally, many of those who felt that Yorkshire Water or the

council were responsible were also deterred from making changes, not just because they felt it was unfair that they should bear the burden of protecting themselves (the 'moral hazard' argument) but, more fundamentally, because they felt that individual actions at the household scale would be ineffective unless these bigger agencies also took action. Indeed, responses by several participants suggest that they might be more willing to take action themselves if they were reassured that these agencies were also 'doing their bit' by cleaning drains, providing suitable flood warnings and continuing to invest in the larger drainage infrastructure.

> *Elizabeth: The thing is, how do you protect your property from floodwater? I just do not see – they say, "How are you going to protect it?" Well how can you?*
> *Anna: Apart from having a moat round it!*
> *Brian: We have a dog and I take him out for a walk three or four times a day and… all the man-hole covers… have grass growing out them. So if there's any heavy rain it's not going to go away, there's no way it can. This isn't only one, it's every one.*
> *Tessa: We have actually noticed this last week –*
> *Brian: Yes, the Council seems to have hired a couple of lorries, they are private lorries but they've got badges on that says, 'Hired to Hull City Council.' And they've got these vacuum cleaner things… gully cleaners. And I've seen two of these; they've been down near us twice…*
> *Elizabeth: My son lives on* [street name], *which is straight onto the big drain that goes all the way along, it's tidal. And because you could see the water before but it's all been tidied and there's things like that do give you a bit of hope. Cleaning the bank sides. And when I went to my son's in Barnsley on the train, you know, lots of the riverbanks had seemed to have been done. So I think people are taking some notice of us but it's if they keep it up because they stop, don't they? And then they don't do it.*
> *Elisa: And I think they should give you information and let you know that they've done this area so that people are aware of it, you know, that they've been round and cleaned the drains at such and such an area because people do worry don't they?* (group discussion)

It could therefore be argued that investment in flood protection should not be seen as an either/or choice between individual householder action and larger-scale multi-agency action. Clearly, both approaches have a role to play and Hull's example indicates that residents might be more willing to protect themselves if they feel that other organisations are also working to improve matters. Such 'joint approaches' are considered by householders to be both fairer and more effective. Therefore, for the purpose of this consultation it is important to recognise that, although appropriate household level action by individuals could have an important role to play in reducing the damage caused by flooding, such measures should be undertaken alongside those carried out by larger agencies, and under no circumstances should household measures be viewed as a substitute for continuing investment in – and maintenance of – an effective drainage system in urban areas.

C) Insurance terms

As noted in paragraph 1.17 of the consultation document, many people's insurance terms do not reflect the risk exposure of individual properties. Our research supports the consultation's view that this remains a major barrier to the take-up of property-level resistance and resilience measures. When asked if they would consider implementing such measures in their own homes, many participants said that they would do so if their premiums were to be reduced, while others stated that, although they wanted this done during the repairs to their properties, they had not taken this opportunity because insurance companied classed such measures as "improvements" and refused to pay for them.

> *Marie: If it* [property resistance and resilience measures] *made a difference to your insurance, I think you'd be more keen – if it was taken into account.*
> *Bruce: Well that's the other point. And I did say to the chap from the Association of British Insurers… 'If people signed up to the Floodline number, could that give them a discount from the insurance companies?' Because if you get a phone call saying that there's a potential flood, you'd hike everything upstairs. You'd limit the number of valuables below. Where's the incentive to join the Floodline? You know, it's benefitting insurance companies because, if it did happen again, a lot of stuff would be upstairs… But the response from him, I think, was something to do with data protection and stuff of that nature. And it negates the object of trying to formulate some linkage between everybody involved, which is kind of the crux of the problem, isn't it?* (group discussion)

> *"Some people round here have had solid concrete floors put in so it can't come up through the floor again. But… it's an extra cost, which some loss adjusters wouldn't sanction and others it's impractical because of where the house is and the level of the house and, in other places, it takes so long to dry that it puts you so far back that people have said, 'oh I can't wait that long, I just can't go with that'. So most of us haven't had it done, I think two people have had it done in this area."* (Leanne, homeowner, interview)

Therefore, we recommend that, whichever policy option is chosen as a result of this consultation, the government and Environment Agency should work with the Association of British Insurers to ensure that more insurance companies provide financial incentives to encourage more householders to take up these measures.

D) Tenure type and the problems of the rental sector

We are concerned that much of this consultation and its associated research is based around work with homeowners, as opposed to private renters or those who rent from a council or housing association. Our research in Hull suggests that private renters may be particularly disadvantaged during the flood recovery process because they have little protection or control around what happens to their home. For example, Holly and her husband were private renters with two young children. Their home was rendered uninhabitable by the floods and they immediately set about trying to find somewhere else to rent. However, this task was made virtually impossible by two factors. Firstly, the number of rented properties in Hull were in very short supply because of the number of people who had had to move out. Secondly, because homeowners moving into temporary accommodation were having their rents paid by insurance companies, rental

prices across Hull increased massively, creating problems for genuine renters like Holly who had to meet these inflated costs out of their own pocket.

> *Tom: We went and saw about five or six houses but none of them were….*
> *Holly: The thing is all the prices seemed to like shoot up as soon as the floods happened and the things that we could afford were just ridiculous. Some of them had holes in the walls; there was dampness all around.*
> *Tom: We went to see a foreman down* [x] *Road that, was it £90 a week?*
> *Holly: Yes, it just seemed too good to be true, but it was.*
> *Tom: We went to see it, it had obviously been like student accommodation before because all the doors were kicked in, there was big holes in the walls, banisters were falling away from the walls, there was mouse droppings in the cupboards.*
> *Holly: I think if your brother didn't know the landlord here we'd have probably still been at our parent's house.* (Holly and Tom, private renters, interview)

When they first joined the study, Holly and Tom were not even sure if they would be allowed back into their rented home once it was repaired, so they were under pressure to find somewhere permanent to live at a time when they had lost everything (they had no insurance) and were very strained financially. Equally, Erica was a full-time carer for her grand-daughter who was dependent on income support. Her rented house was badly damaged in the flood but, because she had such difficulty finding somewhere else to move to, she was left living in the house (which, by this time, had mould and fungus growing up the walls) for six months after the floods, during which time her grand-daughter suffered constant illnesses as a result of her living conditions.

> *Erica: You had to find your own accommodation. That's what made it hard because the Corporation never had no houses empty.*
> *Interviewer: Because of everyone else moving out?*
> *Erica: Yes. I had her at the doctors about four times on antibiotics, because the smell was just in the house all the time and all the walls were going black.*
> *Interviewer: And you had to live there like that because you couldn't find anywhere else?*
> *Erica: Yes.* (Erica, private renter, interview)

Similar arguments can be made for those who rent from councils or housing associations and who are often left very dependent on their landlords during the repairs. Helen, a council tenant, described the kinds of problems that arose as she was left waiting for action to be taken about her property.

> *Helen: For about a fortnight I couldn't come downstairs at all because the house had to dry out down here. I was waiting for Council to bring me driers, which they never did, they never brought me any driers. So to dry my house out downstairs I was leaving my central heating on all day and all night downstairs to dry my house out, which I managed to do.*
> *Interviewer: So did someone help you clear anything?*
> *Helen: No, nobody came in to clear anything, it was me. My brother in law and my sons came down, they took all my flooring up and then my daughter in law, myself and my brother in law, we had to clean everything with*

disinfectant and mops, buckets and we had to keep going over and over and over it.
Interviewer: So nobody came from the Council came to ask what had happened, if you needed any help?
Helen: No nothing. All they came to do was to remove furniture and that out of people's gardens. But they never came to clean you house, nothing. (Helen, interview)

These examples illustrate two issues of key importance to this consultation. Firstly, it shows that those in the rented sector can be particularly vulnerable to the impacts of flooding as they often have limited financial resources and little in the way of insurance. For those in the private sector, the rapid rise in demand for rental properties after the flood, and the inflated prices charged for them can make it very hard for them to source alternative accommodation, while those renting from the council or housing associations are very dependent on their landlords in terms of what repairs are done and when. It could therefore be argued that resistance and resilience measures would be especially valuable to tenants because their particular circumstances make them very vulnerable to the loss of home and possessions that often accompanies flooding. Secondly, as highlighted previously, tenants often have little or no control over what physical changes are made to their properties. The decision about whether to install flood resistance and resilience measures is therefore entirely in the hands of the landlord, which is potentially very problematic.

For the purposes of this consultation, therefore, we would urge the government to recognise tenants as a vulnerable group that could benefit from the installation of property-level resistance and resilience measures. The government should consider how best to engage tenants and – crucially – landlords to ensure that the benefits of these measures can be extended to the rented sector.

In answer to Q2, the strength and nature of the barriers outlined above, together with those described in the consultation document, are such that market forces and individual choice are unlikely to result in more people taking up property-level flood resistance and resilience measures. Government action is therefore needed to address these barriers – preferably by providing more information about such measures alongside funding to encourage their implementation (see below). However, our research shows that care must be taken to ensure that the kinds of property-level protection measures proposed are capable of dealing with the particular challenges of pluvial and secondary flooding. The government must also work with insurance companies to ensure that householders implementing such measures are rewarded with a reduction in premiums while also ensuring that the responsibility for tackling flooding does not just lie with the individual homeowner. While we accept that these measures are designed to help householders in areas where large-scale flood defences are not economically viable, it is important to note that property-level resistance and resilience measures must be undertaken alongside continued investment in, and maintenance of, the drainage infrastructure. In short, there is a clear difference between saying 'we would like you to take action to protect your own property because investing in large-scale flood defences is not economically viable in your area' – which seems a reasonable request – and 'we would like you to protect yourself because we are not maintaining the drainage system properly' – which is unacceptable because it is an

abdication of responsibility to the public. Finally, the vulnerability of those in the rented sector must be recognised and efforts made to ensure that the benefits of property-level measures can be extended to those in this group.

3.3 Part 2 – Increasing take-up of property-level flood protection and resilience

Q3 If a government grant scheme were to be introduced, do you agree that it should initially focus on households rather than businesses?

Q4 Do you think that a free home survey scheme to households in high-risk communities would be an effective way to drive increased take-up of property-level flood protection and resilience? What else could be done to encourage greater voluntary take-up of measures?

Q5 Is it reasonable to expect people living in high-risk areas to pay much or all of the cost of protecting their homes from flood damage? What viable options exist for supporting lower-income households?

Q6 Is it appropriate to use public funds to subsidise the costs of flood protection or resilience for individual properties, rather than just paying for a free home survey?

Q7 Do you have suggestions on how we could ensure that any future grant scheme is simple to administer but also fair? Do you think that it would be a good idea to deliver the free surveys or the subsidies via teams who already deliver similar schemes, such as those responsible for private sector housing renewal?

Q8 Should any subsidy scheme offer full subsidies for a small number of high risk properties or partial subsidies for a larger number of properties? Is a £4,500 cap for the measures themselves (excluding survey) an appropriate level for the subsidy?

Q9 Should the subsidy be offered to all appropriate at-risk properties or only low-income households or communities? Should the subsidy be available to all those on qualifying benefits or based on full means testing?

Q10 Do you think that the costs and benefits for the government schemes outlined in the Impact Assessment (Annex B) are reasonable estimates? Do you have further information to help refine the estimates?

Q11 Which approach do you think will be most effective at increasing take-up – offering free home surveys to households in a large number of high risk communities, or offering to subsidise property-level measures for households in a smaller number of communities?

Work with research participants in Hull suggests that the first option of a free survey may be enough to prompt more affluent residents with a high level of risk awareness and motivation to take action. Offering people such a survey would be particularly helpful to those who are considering taking action but are unsure of what measures would be most effective.

However, free surveys would not help those who could not afford to pay for the measures or those who believe that individual action would be ineffective or unfair if carried out without wider commitment on behalf of central and local government and other agencies such as Yorkshire Water. Indeed, some participants were concerned that being offered such a survey without any subsequent help towards the costs of installation would stigmatise their households as being high risk properties, with the result that no one would want to buy them in future

> *"So you have a survey – absolutely fantastic – but all those people who have actually had a survey, when they try and sell their house or they try and move on, they're not going to be able to afford what is suggested in the survey for flood measures. So therefore you've instantly put them at a bad point because you're telling them that this house needs all this done to it to make it safe for flooding in a flood risk area. There's no way you're going to pay for it, so you've devalued the property instantly."* (Amy, group discussion)

Furthermore, if the objective of government intervention is to create 'showcase' areas of property-level resistance and resilience in order to stimulate market growth, raise awareness of what measures are available and provide encouragement to householders in other areas, then uptake of such measures must be as high as possible in the scheme's chosen areas. However, free surveys alone are unlikely to result in high levels of uptake in communities where there are large numbers of low income families, rented or council properties or other vulnerable groups, such as elderly or disabled residents. In such cases, residents would be unable to afford the cost of installing the measures or unwilling to put up with the disruption involved in their installation. Such a strategy would run the risk of creating divisions within communities and resentment towards the government, who might be seen to be favouring wealthier residents at the expense of more vulnerable people. Care should be taken to avoid creating such divisions as our research in Hull shows that, while communities can be brought together in the immediate aftermath of the floods, perceptions of uneven treatment emerging during the longer-term recovery process can lead to resentments arising between particular groups such as the insured and the uninsured, and between council tenants and home owners.

Option 2, where some form of subsidy is offered to residents in addition to a survey, would bring the measures within reach of lower income households and show a greater political willingness to support households in making the transition to property-level measures. Such an approach would encourage higher take-up rates and would ensure that measures are deployed more evenly across communities. It would also offer a higher degree of flexibility at the local level which could be used to address concerns about fairness. For example, one approach might be to offer a partial level of subsidy to all households in the community but with the option of providing higher levels – or even a full subsidy – to more vulnerable or low income groups.

3.4 Delivery mechanisms

Q12 How could local authorities, the Environment Agency and communities best work together to deliver property-level schemes? What should their respective roles be?

Q13 What would be the most effective ways of consulting with members of the selected communities in order to communicate risk information, help them understand flood protection and resilience, and engage them fully in the schemes?

Q14 Do you support an approach that promotes local flexibility of spend or do you prefer a more nationally consistent approach?

Our research in Hull shows that a strong level of community engagement is crucial when trying to prompt debate and action around flooding issues. The Independent Review Body's report into the city's emergency response to the flooding noted that Hull was helped by high levels of social capital and a strong community ethos in the affected areas. In particular, the voluntary sector's role in the recovery was praised as pre-existing community groups went into immediate action to help local people (Coulthard *et al.* 2007a; 2007b). One example of this process at work was the role of Hull's community wardens (Hull Community Warden Service 2008) who, although not specifically trained in flooding issues, were used to working with local communities and thus were able to mobilise quickly to help those most in need. As a result of regular contact with local people, the wardens knew who were the most vulnerable residents and were able to target their recovery efforts accordingly.

The Independent Review Body concluded that future efforts to improve emergency response procedures in the city should work with this existing community structure, rather than against it (Coulthard *et al.* 2007a; 2007b), and our research into flood recovery in the city accords with this finding. For example since the floods, several of our diarists have become active members of community flood groups or other residents' associations and, during group discussions, participants have expressed a willingness to be involved in decisions regarding drainage and infrastructure management in the city:

> *"We've actually started a Residents Association from the flooding, we've got quite a few strong members and we are working towards stopping it... But the support again that everyone has mentioned, it's come from the community. We know all our neighbours, we stop and talk and waving. The strangest thing I found was you are inviting people into your houses and they are inviting you into theirs, which normally doesn't happen with just sort of neighbours that pass in the street. But every one is very open and we are going through the same thing."* (Amy, homeowner, group discussion)

> *Nigel: They* [the council, Yorkshire Water and Environment Agency] *could do to have some of us on a panel or something really and actually start doing these things…*
> *Susan: But a good idea would be if this committee ever came to be, that someone came to a meeting like we are having today, you know? As opposed to somebody else going out there, bringing somebody into us in the area, where it's been flooded, so that people feel at home if you like. You know, rather than going shooting off somewhere totally strange because*

people that go anywhere like that tend to sit with their mouths tightly shut – they don't want to speak. (group discussion)

As stated previously, if the aim of this consultation is to promote showcase schemes of property-level resistance and resilience measures, then it is clear that high levels of community support, ownership and engagement will be crucial in ensuring their success. A sensible approach might therefore be to start with communities where there is already a high level of community involvement, awareness and activism around flooding on the grounds that these communities might be receptive to – and supportive of – property-level schemes.

Identifying such communities could be done with the advice of local authorities and the Environment Agency. For example, Barnsley Metropolitan Borough Council has been working with communities in areas worst affected by flooding by establishing local residents' flood groups and engaging communities in identifying pinch points and problem areas. The council then acts as an intermediary to approach the relevant agencies and deal with the issues involved. It has also established a strategic, multi-agency forum to deal with flooding in the borough, which brings together local residents with a range of stakeholders involved in flooding and drainage issues, from the Environment Agency, Yorkshire Water, Internal Drainage Board, the emergency service and the voluntary sector through to the relevant departments of the local authority. The forum's purpose is to identify, discuss and take action around flood-related issues that need to be dealt with in the Barnsley area[2].

Having identified which communities to target, finding the right way to approach householders will be crucial in determining the success of the scheme. One suggestion might be for a representative from the Environment Agency (EA) or local authority (LA) to make contact with the organiser of the local flood or community group to explain the scheme. The first step here could be a small meeting just involving these representatives and a few key members from the flood or community group. At this meeting, the EA/LA representative(s) could take along some leaflets, explain the scheme to the community group representatives and ask for their support in getting local householders involved. The community group representative(s) could then go back and explain the scheme to local householders via a residents' meeting or other appropriate avenues with the aim of getting residents along to a public meeting where they could meet the EA/LA representative(s) themselves and ask questions about the scheme. It might also be helpful at this point to give residents some input into the design or implementation of the scheme to help them feel involved in the project – for example, what style of flood gates would they prefer? What sort of options for installation?

Such measures could also be supplemented by making information available via articles in the local newspaper, on the local radio station and on dedicated websites.

Obviously some degree of local flexibility would be important here but our research indicates that there are two factors that will be crucial in ensuring the success of this contact process. Firstly, it is essential that the EA/LA representative(s) chosen to meet residents and explain the scheme are approachable, good communicators who are

[2] For more information, contact Derek Bell, Principle Flood Resilience Manager for Barnsley Metropolitan Borough Council on 01226 787654, DerekBell@barnsley.gov.uk.

used to working with the public. Secondly, the role of the community representative is essential because of the need to find some form of trusted intermediary between the EA/LA and local residents. This person would not necessarily have to be the leader of a flood group – for example, they could be a community warden or member of a residents' association. However, they would need to be someone who is well liked and trusted locally and who has good links to the community. Both these factors are vital because it can sometimes be difficult to establish trust and understanding in communities that have experienced flooding. This is because, having gone through a traumatic recovery process where it can sometimes feel as if all the various agencies involved (builders, council, insurance, utilities companies, *etc.*) are against you, people often feel very angry and mistrustful of the many 'experts' that they feel have let them down and, consequently, they are likely to be very hostile to yet another 'outsider' coming in and telling them what they should be doing.

> *"In my lowest moments when logic flies out of the window, I feel very angry at all the agencies who failed in their responsibilities when the floods happened – local council, Environment Agency, Yorkshire Water etc. not only for the trauma people have suffered re. damaged homes + property, but the side effects – far reaching and unique to each family."* (Caroline, homeowner, diary)

> *"Five years ago the Council decided they would cut costs by reducing the amount of drain cleaning and they reduced it to one and they've saved £120,000 a year. Now the Council will only admit that… They've really let the residents down and if they'd been in business they'd have votes of no confidence and they would have been kicked out. I don't hold some of the individual councillors responsible but Cabinet has made these decisions and passed them and must have been aware of what the ramifications might have been. So there's a lot of bitterness."* (James, homeowner, interview)

Thus what is needed is an ability to identify individuals from the local authority and Environment Agency with good people skills who can then approach local communities via trusted intermediaries. These individuals must be willing and able to listen to and work alongside local communities in order to help them take ownership of the scheme.

3.5 Part 3: Further issues including encouraging resilient repair and refurbishment

Q15 Which professional groups are appropriate for the role of conducting household flood risk surveys? What more needs to be done to increase capacity and expertise on flood risk issues amongst these professional groups?

Q16 How can we encourage new innovative flood protection products, while ensuring a robust system for testing new products? What is needed to provide assurance that products are suitable for their intended use, such as the reinstated BSI Kitemark or an alternative quality assurance mark?

We agree that it is essential to find some way of ensuring that the products offered to householders are fit for purpose and – crucially – correctly installed. As indicated in the preceding section, those who have been flooded previously are often very mistrustful of

builders or surveyors as a result of bad experiences with ‘professionals’ whose poor judgement or workmanship has created havoc in their home.

Particular anxiety and resentment centres around the fact that many homeowners have never had an inspector around to check the finished work or been told how much their claim was for. They are concerned that builders may have claimed large sums of money from the insurance company for the work and then done the repairs ‘on the cheap’, thus keeping much of the money for themselves. They are also concerned that, as homeowners, they do not have the experience to recognise shoddy or dangerous work and that the consequences of this may only be apparent years later when they come to sell their homes or when major structural problems occur. However, for one of our diarists, the problems of poor workmanship have been so acute that she and her husband are now having to move out of their home for a second time so that the house can be ‘ripped out’ and refurbished again from scratch.

> *“You get to the stage where you haven’t got the energy, you settle. You want everybody out of your house. We actually said to our workmen, because our back door, when we looked at the top of the back door, the left hand side was three inches lower than the right hand side. We said to the plasterer, ‘Would you accept that in your house?’ He said, ‘Not if I was paying for it, no’. A lot of workmen thought that because it was coming through the insurance, we weren’t paying for it so it didn’t matter.”* (Amy, homeowner, group discussion)

> *“Clear my emails and also send our loss adjuster… a lengthy email and photos of our shell of a house. Show photos to colleague – they are very shocked at the state of my house. One of my colleagues even asks for some copies of photo to forward onto her husband, as his mother’s also a flood victim and she even says his mum’s house isn’t as bad as ours!* [Loss adjuster] *replies to email, he says he will get onto* [company name] *who is supposed to be managing builders* [company name]*. He appears to be quibbling over some of the damage, which the builders did! Not our fault they broke burglar alarm, my toilet and damaged my bathroom floor! Also the fireplaces!... He has seemed to now realise the builders have been telling fibs AGAIN! He is saying he may try to change builders AGAIN!”* (Laura, homeowner, diary)

> *Marie: That’s my worry is what you are saying – we don’t know, we are not tradesmen – we don’t know if that’s been fitted or whether corners have been cut on materials.*
> *Olivia: I mean there were things on there* [the reinstatement schedule] *that we looked at and we thought, ‘you are actually kidding me – that does not need doing’, and then there were things on there that we knew needed doing but they didn’t do. Every tradesman and every sort of loss adjuster company seems to be giving a different – there’s no sort of… standardisation of ‘you need this, this, this and this’… We’d really like somebody independent to check the work because we don’t know what we should have to put up with.* (group discussion)

Such examples show that much of the routine building work that is carried out after a flood is poor quality work that remains uninspected and unregulated. Therefore, if resistance and resilience measures are to be installed, either during the reinstatement work or at a later date, it is crucial to ensure that this is done properly and then inspected – perhaps with a certificate given to the householder that could then be shown to the insurance company in order to qualify for a reduced premium, or to future buyers who might otherwise be nervous about buying the property.

There are several reasons for this: firstly, given that householders may have had bad experiences with builders in the past, it is vital that they are able to feel safe in their homes and regain some trust in the work that has been carried out. Secondly, if the aim of the scheme is to create showcase examples that will encourage other people to take-up property-level measures, it is clear that such measures must be shown to work effectively. Poor quality or badly installed products that are found wanting in the event of a flood would be a disaster for public confidence in property-level measures. Thirdly, and finally, some people have reported companies trying to 'take advantage' of them by trying to sell them products such as flood gates which they suspect may be unsuitable for their situation. Better information, quality assurance and product testing would ensure that residents are able to choose the most suitable options for their homes.

3.6 Resilient repair and refurbishment

Q17 Do you think we have identified the correct costings and the range of costs are right? Do you agree with our analysis of the costs and benefits of flood resilience (Annex C)?
Q18 In the event of a major flood, would the supply of skills and materials be sufficient to enable the resilient repair of all affected homes? Would bottlenecks in the supply system cause delays in restoration?
Q19 Do you think that an independent quality-assurance standard would help to encourage resilient repair? Are there any other viable voluntary approaches?
Q20 Is compulsion an appropriate way to increase the use of resilient repair in high-risk areas or do you think individual consumer choice is the right route? Would you support a compulsory requirement for resilient repairs if an economic case could be made for such a requirement?

As discussed previously, evidence from our research suggests that few properties in Hull have been repaired in a flood resilient fashion. We are concerned that this constitutes a significant missed opportunity that could reproduce people's vulnerability to future flooding events. From a purely economic perspective, the fact that installing flood resilience measures during reinstatement only costs an extra £5,000-£10,000 (as opposed to £10,000-£15,000 at other times) shows that there is a clear efficiency argument to be considered – particularly given the fact that the average damage to a property with resistance and resilience measures is typically 50-80 per cent less than it would otherwise be (Entec and Greenstreet Berman 2008). Furthermore, some groups, such as the elderly and those with young families, are particularly vulnerable to the disruption to the household that can result from months or years spent in temporary accommodation as the person's home is repaired. However, if a person's home is not repaired in a resilient fashion, they may have to go through this traumatic experience for a second time. This was, indeed, the case for one of our diarists, who was flooded in June and then worked hard to get her home repaired for Christmas. However, following heavy rain in January, she discovered that water had entered under her floorboards

again, and she had to move out of her house (with her husband and young daughter) for a second time so that the joists and flooring could be replaced. Going through the whole experience again was incredibly traumatic, as she described in her diary:

> *"I am very emotional at the moment with so much happening in my life, personally and professionally, I feel really alone at the moment with no one really to talk to about how I am feeling so my emotion has really come out in a few different ways, anger, unset, unsettled but then at the same time trying to keep positive for other people. I have just come out of a meeting with a colleague, which was very hard as I was I discussing every thing to do with my work which involves a lot to do with the floods within the city, oh my word, I was crying my eyes out which is not really me as I usually listen to other people, at this moment in time I am really considering going to see my doctor for some support"* (Karen, homeowner, diary)

Had Karen's home have been repaired in a resilient fashion after the first flood, she would not have had to go through this again. After her home flooded for a second time, Karen asked her insurance company if she could have a concrete floor installed in her home. They refused, and she is now left anxious that she may experience flooding again.

We would therefore encourage the government to do everything it can to ensure that flooded homes are repaired in a resilient fashion. More research would be needed in order to establish the best way of doing this – for example, whether a voluntary code would be sufficient, or whether some form of coercion via the Building Regulations would be necessary. However, crucial issues to address include the following:

- Terms of insurance. As stated previously, many homeowners may be encouraged to introduce property-level measures if this were reflected in reduced premiums.
- Who pays for resilient repair? The examples from our diarists that we have presented here shows that many people would have considered resilient repair had their insurance company been willing to pay for it. We have been told that, for reasons of competitiveness, it is unreasonable to expect insurers to fund the installation of such measures. However, homeowners are unlikely to pay these extra costs themselves, particularly because, despite having insurance, many people find that their finances are already tested to the limit during the recovery process. Therefore, if resilient repair is to become commonplace after flooding, options for funding, including government or self-funding, must be clear to all involved (householders, builders, insurance companies)
- In addition to the general lack of information about what resistance and resilience measures are available (as identified previously among both residents and builders), homeowners who have just experienced flooding are often in a state of shock. They find that the process of making an insurance claim and managing builders is difficult enough already and, consequently, they are unlikely to spend any time researching and thinking about the options for resilient repair. Participants taking part in our study have said that they would like to have been given a guide which explains simply and clearly how to do all the things that you have to do after a flood. Perhaps information and guidance on resilient reinstatement should be included in this guide. Builders and surveyors should also be better informed about the options available, so that they can recommend suitable measures to householders.
- As highlighted previously, poor workmanship has been a major problem for flooded residents. Given that it is already difficult to source sufficient numbers of quality

builders, tradesmen and materials during the recovery process, some serious thought would need to be given to the resilient repair process in order to ensure that work is able to be completed swiftly and to a high standard.

References

Bailey et al. (2004) Narratives of trauma and ongoing recovery: the 2001 foot and mouth disease epidemic, *Auto/Biography, 11: 37-46*

Berkes, F., Colding, J., Folke, C., Ed. (2003). *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*. Cambridge University Press, Cambridge

Brooks, N. (2003) 'Vulnerability, risk and adaptation: a conceptual framework'. *Working paper 38*, Tyndall Centre for Climate Change

Convery et al. (2005) Death in the Wrong Place? Emotional geographies of the 2001 foot and mouth disease epidemic, *Journal of Rural Studies*, 21, 99-109

Convery I., Mort M., Bailey C., and Baxter J, (2007) Role Stress in Front Line Workers during the 2001 Foot and Mouth Disease Epidemic: the value of therapeutic spaces. *Australasian Journal of Disaster and Trauma Studies*.

Coulthard, T., Frostick, L., Hardcastle, H., Jones, K., Rogers, D. & Scott, M. (2007a) The June 2007 floods in Hull: interim report by the Independent Review Body Kingston-upon-Hull, UK Independent Review Body

Coulthard, T., Frostick, L., Hardcastle, H., Jones, K., Rogers, D., Scott, M. & Bankoff, G. (2007b) The June 2007 floods in Hull: final report by the Independent Review Body Kingston-upon-Hull, UK Independent Review Body

Daniels, R. J. et al. (Ed.) (2006) *On Risk and Disaster: Lessons from Hurricane Katrina* Philadephia: University of Pennsylvania.

Defra (2005). *Making Space for Water: Developing a new Government Strategy for flood and coastal erosion risk management in England: a delivery plan*. DEFRA: London

Entec and Greenstreet Berman (2008) *Developing the evidence base for flood resilience*, Research Report prepared for the joint Defra/EA Flood and Coastal Erosion Management Research Programme www.defra.gov.uk/environ/fcd/policy/strategy/FD2607SR.pdf

Environment Agency (2005) Directing the Flow, EA's Flood Risk Management Strategy, Making Space for Water, EA January

Few, R. Ahern, M., Matthies, F., and Kovats, S. (2005) *Health and flood risk: a strategic assessment of adaptation processes and policies*, Tyndall Centre for Climate Change Research Technical Report 17

Gordon R (2004) The social system as a site of disaster impact and resource for recovery, *Australian Journal of Emergency Management* 19, 16-22

Harries, T. (2008) 'Feeling secure or being secure? Why it can seem better not to protect yourself against a natural hazard'. *Health, Risk and Society* 10 (5).

Hull Community Warden Service (2008) www.wardens.goodwintrust.org [October 31, 2008]

Kirschenbaum, A. (2002). Disaster preparedness: A conceptual and empirical reevaluation. *International Journal of Mass Emergencies and Disasters*. *20(1)*, 5-28.

Mileti, D. (2004), Sustainable Development And Hazards Mitigation In The United States: Disasters By Design Revisited *Mitigation and Adaptation Strategies for Global Change* 10 (3) 491-504

Mort et al. (2005) Psychosocial effects of the 2001 UK foot and mouth disease epidemic in a rural population: qualitative diary based study, *British Medical Journal,* 26 Nov, Vol 331, No 7527

National Audit Office (2001) *Inland Flood Defence*, HMSO: London

Pelling, M. (2003) The *vulnerability of cities: natural disasters and social resilience*, Earthscan: London

Perrow, C. (1999) *Normal Accidents: Living with High-Risk Technologies*, New Jersey: Princeton.

Rodriguez, H., Trainor, J., & Quarantelli, E. L. (2006). Rising to the Challenges of a Catastrophe: The Emergent and Prosocial Behavior following Hurricane Katrina. *ANNALS, AAPSS,, 604*, 82-101

Sims et al. (2008) The ongoing experience of recovery for households in Hull – response to the Pitt Review Interim Report: Learning the lessons from the 2007 floods, Chapter 9 of the Pitt Review Interim Report (Available for downloading from the project website www.lec.lancs.ac.uk/cswm/hfp)

Tapsell, S., Burton, R., Oakes, S., and Parker, D. J. (2005) *The Social Performance of Flood Warning Communications Technologies* (No. TR W5C-016): Environment Agency

Thrush D, Burningham K and Fielding J, (2005) *Exploring flood-related vulnerability: a qualitative study*. R&D Report W5C-018/3. Bristol: Environment Agency.

Tobin, G. A. (1999). "Sustainability and community resilience: the holy grail of hazards planning?" *Global Environmental Change Part B: Environmental Hazards* 1(1): 13-25.

Twigger-Ross C (2006) Managing the social aspects of flooding: synthesis report, Environment Agency R&D Technical Report SC040033/SR6

Yohe, G. and Tolb, R.S.J. (2002) 'Indicators for social and economic coping capacity – moving toward a working definition of adaptive capacity'. *Global Environmental Change* 12: 25-40.