

# **Social Resilience: Flood risk governance and local participation in the UK**

**Bridget Hutter**

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# Social Resilience

## Flood risk governance and local participation in the UK

Bridget Hutter

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## Preface

As CARR celebrates its 25<sup>th</sup> year, we are delighted to publish Bridget Hutter's final work as a CARR research report. It is a rich and valuable research study on one of the most urgent challenges of our time and therefore a fitting tribute to her wider contribution to the study of risk and regulation.

Bridget passed away in April 2023. At the time of her death, she had been working on a book on how householders experience and make sense of flood risk. She had amassed a wealth of material from interviews, questionnaires and policy documents, and had written at least first drafts of the various chapters. Her husband Clive Briault carefully examined the manuscript as it stood and suggested that, while not yet a fully mature book manuscript, it contained material that was sufficiently well developed to merit publication as a research report, rather than be lost to future researchers. We were very supportive of this idea. Clive himself worked hard to edit the text which follows, and we are most grateful for his efforts in bringing it to fruition.

Bridget was Professor of Risk Regulation in the Department of Sociology at the London School of Economics until her retirement. We knew her best as a colleague and friend who played a major role in the founding of CARR in 1999 and its subsequent development. She was Co-Director of CARR from 2000-2005 and sole Director thereafter until 2010. During this extensive period of leadership she helped to establish CARR as a major international centre for the study of risk management and regulation in organizational and institutional settings. Her own work made major contributions to this agenda.

Bridget achieved first class honours in Sociology at Bedford College London before undertaking a DPhil at Nuffield College, Oxford. A subsequent year at LSE as Morris Ginsberg Fellow in Sociology was followed by an extensive association with the Centre for Socio-Legal studies at Oxford. Bridget was a fellow of Jesus College, Oxford from 1987-1995 during which time she was awarded a British Academy Fellowship and conducted important socio-legal work on compliance in the fields of environmental and health and safety regulation. These studies involved painstaking, theoretically astute empirical work in the field and provided the intellectual foundation for her later role as Director of CARR at LSE. Of particular note was her 2001 book on occupational health and safety on the railways, which set an agenda for a genre of work by her and colleagues at CARR. Together with others, she blazed the trail for regulation scholarship that emphasized the negotiated characteristics of compliance and advanced the academic study of risk regulation. With a strong background in the methods and orientation of socio-legal studies, Bridget went on to write a seminal book on food regulation. More recently, she co-authored *Regulatory Crisis* (with Sally Lloyd-Bostock). In addition to these books and numerous journal articles, she was also involved in the publication of important edited volumes and handbooks, including *Anticipating Risks and Organising Risk Regulation* and *Organizational Encounters with Risk* (with Mike Power). She was an academic who addressed major regulatory and policy issues and frequently gave advice to a wide variety of regulators and policy makers. In this respect she helped to establish CARR not only as a centre for research excellence, but also as a valued source of policy advice which continues today.

This study reflects many of Bridget's key interests. It carefully examines a critical policy issue - flood risk – from a policy perspective that enjoys much currency – social resilience. One of Bridget's key interests lay in the unpacking of terms - such as resilience, or risk-based regulation or compliance - that were usually presented by regulatory agencies and consultancies as easy to define and implement as well as readily measurable. As in previous work, this study on flood risk resilience involved close observation and interrogation of different data sources. Particularly noteworthy in this work is the interest in the local level and the importance paid to social resilience. The conclusion of the study stresses the importance of the long-term cultivation and facilitation of communities, and especially of vulnerable individuals, in overall flood risk management. In an age of depleted public resources, this study therefore offers a warning call for any uncritical endorsement of resilience-based language for the management of flood risks.

We commend this study to readers. It is a research report which stands in its own right but it is also a way for us to honour and remember Bridget's contribution to CARR and the field of risk regulation more generally.

Martin Lodge  
Andrea Mennicken  
Mike Power



*To the grandchildren – Oliver, Oscar and Jessica – who brightened Bridget’s final years, and to Harris, the grandchild she would have been thrilled to meet*



## Foreword

Bridget Hutter sadly passed away in April 2023. She had almost completed this book, based on research that she began in 2017. Bridget would no doubt have made further improvements, but I hope that she would have been content with my editing of the text to produce this version.

This book is being published to make Bridget's research findings, her commentary on how these relate to other empirical and theoretical work in this area, and her conclusions available to academics, policy makers and the public. It is also published as a tribute to Bridget's long and distinguished academic career, including five previous books, five edited volumes, and numerous published articles and research papers.

Bridget was always interested in combining sociological theory with research based on relevant data, survey questionnaires, interviews and participant observation. This approach developed from her very first studies of the police (while an undergraduate at Bedford College, London) and of environmental health officers (research for her doctorate at Nuffield College, Oxford). Bridget was also always keen to share and discuss her research with both policy makers and academics. This publication continues that endeavour.

The survey questionnaires on which this research is based were distributed in 2019, and interviews with local councillors, council staff, Environment Agency staff, and others were conducted in 2019 and 2020.

Bridget would have wanted to thank Tim Monteath, Paz Concha and Maria Kramer for their invaluable research assistance; Will Young and Rebecca Brown for knocking on doors, interviewing members of the public, and distributing the research questionnaires; local councillors and council staff for their insights into the geographical sample areas; Pete Bailey and colleagues at the Environment Agency for their unstinting support, input and encouragement; Mike Power and colleagues at the Centre for the Analysis and Risk and Regulation for their assistance in organising the publication of this manuscript by the London School of Economics; and the London School of Economics for its financial contribution to the cost of this research. I can only apologise if I have inadvertently omitted anyone from this list.

I would also like to take this opportunity to thank Pete Bailey and Pauline Khng for their insightful contributions to the completion and the copy editing of this publication.

Clive Briault

13 May 2024

## Abbreviations and acronyms

ABI – Association of British Insurers  
CCC – Climate Change Committee  
DEFRA – Department for the Environment, Food & Rural Affairs  
EA – Environment Agency  
FCERM – Flood and Coastal Erosion Risk Management  
IMD – Indices of Multiple Deprivation  
IPCC – Intergovernmental Panel on Climate Change  
LLFAs – Lead Local Flood Authorities  
LRFs – Local Resilience Forums  
LSOAs – Lower Super Output Areas  
MAFPR – Multi-Agency Flood Plan Review  
NaFRA – National Flood Risk Assessment  
NRD – National Receptor Dataset  
NRW – Natural Resources Wales  
Ofcom – Office of Communications  
ONS – Office of National Statistics  
PLP – Property level protection  
RFCC – Regional Flood and Coastal Committees  
RRAC – Risk and Regulation Advisory Council  
SUDS – Sustainable drainage systems

## 1 Introduction

This research examines the emergence of notions of resilience in UK flooding policy, and the definition and practice of resilience strategies at a local level. This specific case exemplifies broader concerns – the issues raised are relevant to global efforts to define and implement resilience strategies, and to efforts that relate not just to climate-related events but also to other events such as pandemics and terrorism. The research examines the definition of resilience, its incorporation into policy and governance regimes, and its implementation at the most local level. It considers how we try to govern in a post risk society environment, which recognises the need to embrace uncertainty.

There has been a dramatic increase in the popularity of resilience approaches around the world. They have been advocated by transnational governance bodies such as the United Nations and national policy making authorities and agencies, and some areas have seen the establishment of local network resilience groups. From a social science perspective this indicates that we have moved beyond the attempts to manage and control the world captured in Beck's (1992) 'risk society' thesis to a realisation that anticipating and managing risk is not always possible. Certainly, there is a rich literature pointing to the difficulties with the risk perspectives that dominated ways of thinking, governing and organising at the start of the 21<sup>st</sup> century (Power, 2004; Hutter, 2010). Moves to incorporate resilience approaches are in part prompted by these difficulties and the failure of some risk models (Perrow, 1994; Vaughan, 2005). They are also driven by the challenges posed by global risks such as climate change, supply chain disturbances and cybersecurity failures, which may render historical data a less reliable basis for prediction and planning (World Economic Forum, 2022).

The research takes a social science perspective as it focuses on resilience changes which move away from purely technical, engineering based 'solutions' to ones that embrace consideration of the social impacts of flooding and attempts to capture social resources in efforts to manage flooding and other threats to society (Tierney, 2014). How is the 'social' conceptualised in policy and its implementation? And more importantly, how does this policy translate into action 'on the ground'? This raises important questions about participation, inclusion and empowerment.

The research also touches on controversial sociological debates about the 'responsibilisation' of society (Chandler, 2014; O'Malley, 2011; Rogers, 2013). Are we witnessing a trend to democratising and empowering all members of society, or are governments shifting their responsibilities to local governance organisations and the general population? Issues of inequality and social justice are inextricably linked to such debates. We now have a greater appreciation of the deep inequalities attaching to environmental risks, their ill effects, and the ways in which vulnerability is socially patterned (Cutter et al., 2003). A shift of responsibilities from the state to society and individuals through, for example, moves from social to individual insurance, potentially exacerbates the inequalities attaching to environmental disasters.

Resilience raises important issues about multi-level governance and the incorporation of players other than the state in environmental management. It is important that we take a critical stance towards the conceptualisations in play and what their implications might be in practice. Social resilience is a relative newcomer to policy making. We lack sufficient empirical data upon which to base policy making and to develop further the theoretical relationships between resilience approaches, governance and inequalities. This research contributes to these areas.

## The emergence of resilience approaches in flood governance<sup>1</sup>

Risk-based approaches dominated flood governance in the UK and elsewhere for several decades, in line with the popularity of risk management tools which became central to many areas of modern life including environmental regulatory regimes. Risk approaches are typically portrayed as being based on science and as presenting a rational, objective basis for decision making. They imply that we can anticipate and control risks. Risk-based approaches to flooding were premised on predictability and on attempting to reduce the probability of flooding through control and protection measures such as engineering projects (Zevenbergen, 2016).

The environmental changes we have experienced, including a series of major flooding disasters, challenge these approaches as they highlight the uncertainties and areas of ignorance about environmental problems and how to cope with them. There are debates about the definitions of environment risk, their probabilities, and overall risk assessments. The contestation of the evidence partly relates to debates about whether we are referring to environmental risks or discussing environmental uncertainties, where the risks are not calculable (Knight, 1921). Part of the reason for the uncertainty is that climate change is altering the patterns and the incidence of environmental damage and disasters. It is resulting in new environmental uncertainties which raise questions about whether historical data are a sound basis on which to identify risks and to plan for the future (Cox, 2012; Morgan and Stallworthy, 2013). This centralises the relationship between learning from past events and being open to the unexpected questions, and it has led to a change in the way we see and frame problems in terms of risk. It is partly for these reasons that resilience has emerged as an important concept.

Resilience approaches are premised on uncertainty so they give far greater emphasis to flexibility and the downstream management of problems. Such approaches accept that things will go wrong, whereas notions of risk management convey messages of controllability. Coping with uncertainty in risk frameworks can be a major challenge for policy makers. An important lesson from the disaster literature is the temptation for governments, policy makers and organisations to give the illusion that they have transformed uncertainties into risks through, for example, the preparation of contingency plans (Clarke, 1999).<sup>2</sup> This

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<sup>1</sup> This section draws on Hutter (2010: Chapters 1 and 12); and Hutter (2017: Chapters 1 and 11).

<sup>2</sup> This is also an important message in the disaster literature, where authors caution that much contingency planning is focused on the last disaster when two disasters are rarely the same (Boin, 2010).

can be a dangerous practice when the evidential base is inadequate and it can undermine risk-based approaches. A resilience approach which assumes uncertainty is an important counterpoint in these situations.

Resilience approaches attempt to enhance the capacity to adapt to uncertainties; to balance protection, prevention and preparedness; and to be adaptable, flexible, and open to modification in the event of unexpected change (Zevenbergen, 2016). However, resilience approaches are still emerging, and while there is much rhetoric about their importance, they are beset by definitional issues, a lack of empirical data, and a range of normative and ethical issues. We need more clarity about what resilience approaches to flooding look like and how they are operationalised, hence the focus in this research on resilience strategies. Let us first consider how resilience is conceptualised in the academic literature, particularly with respect to flooding.

## Resilience

### *Defining resilience*<sup>3</sup>

The concept of resilience emerged in the late 1960s and early 1970s in relation to the ability of ecosystems to cope with change and to persist (Batabyal, 1998; Folke, 2006; Holling, 1973; Petak, 2002). Since then, it has been adopted by various disciplines and domains, for example in behavioural studies with reference to an individual's ability to withstand and rebound from crisis (Rutter, 2012; Walsh, 1996); to human environmental interactions, exemplified in discussions of sustainability (Lélé, 1998); and to organisations and their ability to cope with and survive crises (Weick and Sutcliffe, 2001; Wildavsky, 1988).

Resilience has also become increasingly prominent in the 21st century as a strategy for disaster risk reduction (Tierney, 2014: 160). This has led to a distinction between social resilience, which captures the social contexts and effects of risk events, and physical resilience, which refers to matters such as critical infrastructures, engineering defences and maintaining essential supplies and services. Social and physical resilience are relational, as demonstrated by discussions of urban resilience and the capacity of cities to recover from disasters. In this context social resilience focuses on the capacity of communities to stay together in the face of disaster, partly in relation to the resilience of the physical structures and infrastructures around them (Vale and Campenella, 2005).

However, the growth in the popularity of resilience has also been marked by a confusing proliferation of definitions. At the core of most definitions relating to the environment is the ability of ecosystems, societies, cities, communities, organisations and individuals to survive disturbances, shocks and surprises, and to reorganise and reassemble so as to persist and to maintain core systems, function and identity. Beyond this the subject is bedevilled by definitional issues including debates about the status of the term resilience (Hutter, 2017; Jones and Tanner, 2015).

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<sup>3</sup> This section is partly based on Hutter (2010: Chapter 12); and Hutter (2017: Chapters 1 and 11).

Early discussions of resilience saw resilience very much as an *outcome*. For example, flood resilience was taken to be an outcome of engineering defences and, in the event of their failure, of recovery from the flooding which had occurred (Zevenbergen, 2016: 277). More recently resilience has come to be conceptualised as a *process*. For example, Comfort et al. (2010: 273) emphasise that resilience is a lengthy process – ‘it needs to be institutionalised, involves social collaboration and involves a balancing act between risk and resources, between vulnerabilities and escalating or unmanageable catastrophe’ (see also Hall and Lamont, 2013; Park et al., 2013). For these authors resilience is a *basis for action*. Other commentators regard resilience as an *approach and perspective* where resilience is a way of thinking about environmental challenges, their implications, and the longer term (Folke, 2006; Nelson, 2011). The emphasis here is on enhancing the ability to survive and bounce back rather than attempting to control nature (Ebbesson, 2010). There is thus a relationship between resilience and adaptive capacity which copes with change and develops with it (Folke, 2006; Nelson, 2011).

Resilience is seen by many commentators as *aspirational*, embracing egalitarian processes with more democratic and equal outcomes. Resilience can be seen as part of a broader trend to devolve decision making, widen the participatory base and outsource central government responsibilities. It is seen to offer opportunities for change rather than mere survival or stationarity (McDonald, 2017). There is a belief among some commentators that resilience offers the prospect of transforming rather than replicating the social order, representing an opportunity to ‘bounce back better’.<sup>4</sup> What is envisaged is system change rather than the incremental shifts associated with adaptation (Matin et al., 2018).

Normative discussions around resilience relate to issues of power, justice and inequality (Duit et al., 2010). There is an expectation that these approaches will give ‘a voice to vulnerable and marginalized stakeholders’ (Nelson et al., 2007: 93–96). Matin et al (2018: 198ff) refer to ‘equitable resilience’ which can result when ‘... resilience practice takes into account issues of social vulnerability and differential access to power, knowledge, and resources’. These greater equalities of outcome refer to both present generations and the aspiration that current disparities in exposure to environmental risks are reduced for the benefit of future generations (Nelson, 2011: 116).

Positive articulations of resilience are not universally shared (Rogers, 2013) and the notion that resilience is more democratic, egalitarian and bottom-up than other strategies is challenged by some commentators. Resilience, it is argued, is as subject to issues of power, access and political decisions as other strategies, and is subject to social framing by actors with different preferences and resources (Duit et al, 2010; Leach et al., 2010; Nelson, 2011). Whether adaptation and resilience strategies seek to maintain or change the system depends on social decision making and value priorities. There may be vested interests in maintaining the current system and hence its existing inequalities and power relations (Nelson, 2011: 116), while the alternative would demand a radical transformation of existing social and economic institutions and practices (Curran, 2017; Tierney, 2014).

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<sup>4</sup> The concept of bouncing or building back better has also been an aspiration for economic recovery following the COVID-19 pandemic. See, for example, World Bank (2020).

The aspirations underlying resilience approaches depend on how much appetite there is for system change and authors have identified many obstacles to this. Their arguments are varied. One argument is that because sustainability agendas are underpinned by economic stationarity their aims are inherently conservative and limited (McDonald, 2017). Moreover, there may be no political will for change, for example because climate change is slow burn (McDonald, 2017). Related to this there are also economic interests in stasis and vested interests in the present rather than intergenerational equality. The negative view of resilience approaches is prominent among governmentality commentators who warn that resilience is also a form of governmentality as it shifts responsibilities from the state to society and to individuals (Chandler, 2014; O'Malley, 2011; Rogers, 2013).<sup>5</sup>

These definitional issues, varying perspectives and controversies emphasise the importance of discerning the ways in which organisations, policy makers and practitioners conceptualise and understand resilience (Patel et al., 2017). Resilience approaches ideally focus on complex systems, and stress the need to conceptualise social and ecological systems as related coupled systems. How approaches manage such a holistic view needs to be considered (Adger et al., 2011; Nelson et al., 2007: 407ff). Moreover, when examining resilience policies we need to be clear about the subject of resilience, for example, is it holistic or more focused on ecology, biodiversity, infrastructures, cities, neighbourhoods or specific groups of people? When discussing different strategies it is important to be clear about what it is assumed their objectives are, if indeed there is agreement about this. Often the society and ecosystems that resilience strategies aspire to 'bounce back' to are unspecified, which might imply that it is a bounce back to the same or a similar society or ecosystem that previously existed. Some discussions imply that the aspiration is to bounce back to a more inclusive and equal society through resilience processes that are more inclusive and participatory. Is the ambition stasis or system change? This needs to be problematised and this also involves paying attention to how issues are framed.

### Issues of scale: temporal and spatial dimensions to resilience

Resilience is a multi-dimensional concept, and two prominent dimensions are temporal and spatial. The temporal dimension characterises much of the disaster literature which directly or implicitly orders the discussion of disasters around a temporal sequence of phases or stages. A typical sequence involves preparedness, response and recovery, with some adding other phases such as 'mitigation'<sup>6</sup> and 'adaptation' (DEFRA, 2020b). Temporal models do have heuristic value but they also have limitations as the phases may overlap and disaster events are typically more chaotic than the model implies. Moreover, phases may be experienced differently by different individuals, organisations and communities (Hutter and Lloyd-Bostock, 2017; Walker et al., 2011).

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<sup>5</sup> There are debates about the relationship between resilience and neoliberalism – some regard resilience as an expression of neoliberalism, seeing it as referring to the ability of the state and capitalism to maintain power (Neocleous, 2013), whereas others worry about neoliberalism eroding social resilience (Hall and Lamont, 2013).

<sup>6</sup> See, for example, <<https://restoreyoureconomy.org/pages/phases-of-disaster/>>

A further distinction in the literature is between inherent and adaptive resilience. Inherent resilience is generally taken to refer to pre-event resilience in the community and to include engineered structures as well as social organisation. Adaptive resilience refers to a mix of pre-planned and novel activities including responsiveness to surprise and decentralisation, and the ability to learn and change after events (Cutter et al, 2008; DEFRA, 2020b; Tierney, 2014).

The spatial dimension of resilience is of relevance given the geography of flooding. The broad contours of the areas at risk of flooding are usually known, but there is some uncertainty as climate change is affecting rainfall and flooding patterns. Moreover, human activities have been increasing the properties at risk of flooding by, for example, building on floodplains and exacerbating surface water risks (Rözer and Surminski, 2021), as well as by contributing to climate change. Resilience approaches place particular emphasis on reaching out to the lowest spatial and social levels, linking places to people, and aiming to be inclusive of local areas, households and individuals. This is reflected in the shift from seeing flood management as primarily the preserve of physical engineering and resistance planning to one embracing social as well as physical infrastructures and people. Forrest et al. (2020) also characterise this as ‘... a change in perspective from “keeping water out” to “living with floods” and minimising the consequences of flooding’.

### *Social and community resilience*

The concepts of social and community resilience have emerged in response to the changing perspectives on flood management and the increasing popularity of resilience approaches. Social resilience is taken to be the capacity of social groups, networks and institutions to stay together and to prepare, cope with and respond to floods (Kwok et al., 2016: 198). Some authors use the term ‘community’ loosely to refer to a ‘neighbourhood’ or ‘geographically defined area’ (Aldrich and Meyer, 2015). Often the term ‘community resilience’ is used interchangeably with the term ‘social resilience’ (Twigger-Ross et al., 2014). Moreover, there can be a tendency to romanticise notions of ‘community’, images which can gloss over social divisions. Several authors document the positive effects of community resilience (Cutter et al., 2008; Trump et al., 2018), while others are more sceptical, notably governmentality critiques of social resilience policies (Quinn et al, 2020). This is a contested concept (Coates, 2015) and one which does not necessarily refer to geographical location (Delanty, 2003).

Patel et al. (2017) undertook a systematic literature review of definitions of community resilience related to disasters. They identified 80 relevant papers and found no evidence of a common, agreed definition of community resilience. They concluded that ‘the phrase community resilience is not precise enough to be useful in any detailed discussion of the issue’. In this research I have opted to use the term ‘neighbourhood’ in preference to ‘community’. In the case of flooding place and space are important. Moreover, the term ‘neighbourhood’ problematises more clearly the nature of the social ties in that space. It does not, for example, assume that everyone has a sense of belonging or want to engage with others in the locality (Deeming and Fordham, 2012), but rather it considers such issues as research questions (Aldrich et al., 2018).



An important observation in the literature is that the nature of social ties and social resilience can change during and after flooding events. It can be emergent and have a positive effect (Faulkner et al., 2018) but it can also be divisive (Deeming and Fordham, 2012). The crucial questions focus on the social circumstances which can foster social resilience and how these can be facilitated; and on the divisions that may be generated by inequalities, cultural differences, and variations in power relations (Keck and Sakdapolrak, 2013).

### *Multi-level governance*

The growing popularity of resilience approaches resonates with the move from government to governance, with its emphasis on the inclusion of a wider range of organisations and groups. Multi-levels governance regimes connect vertically between different levels of formal government and horizontally between different parts of government and non-state organisations and actors. In the environmental domain these regimes potentially embrace levels of governance from the global to the local (Gunningham, 2009). Holley refers to these changes as the 'new environmental governance' (Holley, 2008; Holley et al., 2012; Holley et al., 2017). This signals an approach marked by greater collaboration between different stakeholders, greater participation and deliberation in decision making, decentralised and flexible approaches to environmental regulation, and approaches that incorporate learning (Holley et al., 2012: 4), a definition which is remarkably similar to some definitions of resilience.

The relationships among different levels of government and their relationships with non-state actors vary. In some cases, non-state organisations and actors play a regulatory role. For example, in the economic sector insurance companies have long been conceived as a 'technology of governance' (Ericson et al., 2003). They assemble risk information, can seek to control behaviour by calibrating premiums, and are potentially a significant non-state source of regulation. In civil society, environmental NGOs can play an important role by lobbying for change and mobilising public opinion, so they may be part of the context and content of regulation; can exert normative background pressure; and in some cases may be formally incorporated in business risk management and corporate social responsibility initiatives (Braithwaite and Drahos, 2000; Hutter and O'Mahony, 2004). Consumers are also important because of the influence they can exercise through their spending decisions (Hutter, 2006) and in the environmental sphere through the creation of so-called 'green markets' (Grabosky, 1994 and 2013; Prakash, 2002).

The nature of the relationships between the different parts of a governance regime varies. What is clear from the existing literature is that governments are not disconnected from other governance structures – they may delegate responsibility to them, work with them, or stay in the shadows ready to step in if they fail. The relationships between different levels of government are likely to be formalised, possibly as a cascading system of responsibilities to lower levels of government and horizontally to government agencies. Governments have increasingly formally delegated or outsourced responsibilities to third parties (Grabosky, 2013). In other cases, participation may rely on more informal means such as cooperative or voluntary relationships, for example with charities or citizens. There is a myriad of hybrid relationships which may comprise flooding governance, so mapping how these are

constituted in each location is important for understanding the social, political and economic contexts within which flood resilience is sought.

## Resilience and inequality

There are deep inequalities associated with environmental risks such as flooding. This is true at all levels from the global to the individual, with environmental and social inequalities frequently intersecting (Pellow and Brulle, 2005). At the most local level the resilience literature includes consideration of the vulnerability of an area and those living within it to the effects of flooding. The focus is therefore on the geographical spaces vulnerable to flooding and the vulnerability of social groups and individuals within those spaces. The social resilience literature is concerned with the recognition that different groups of people suffer greater vulnerability by virtue of where they live, as for example in studies documenting a relationship between inequality and living in areas prone to flooding (Environment Agency, 2022a). Within these areas there is consideration of the capacity of different groups to prepare, cope with and recover from floods, with this being related to levels of individual, household and social resilience in the area. A variety of social circumstances can influence the vulnerability and resilience of individuals and neighbourhoods, for example health, age, socio-economic position, housing and education (Cutter et al., 2008; and see Chapters 2 and 7 below).

There are distributional and moral consequences to resilience policies and indeed broader environmental policies (Ebbesson, 2010: 365). Decisions about such matters as building on floodplains and the location of flood defences, and who participates in the decision making, involve issues of power and politics. These are, as we have seen above, matters which those with aspirational perspectives on resilience hope can be overcome, but they are also issues that lead some to argue that resilience is an inherently political concept (Keck and Sakdapolrak, 2013).

The move to 'living with floods' involves the sharing of responsibility for flooding mitigation and adaptation across varying levels of government, business and householders. As we have seen, this is viewed by some as central government shifting responsibility away from itself, while others see it as democratising decision making and empowering citizens. Whatever perspective is taken, it is important to acknowledge that not every area or everyone is able to respond.

## Implementation challenges

The various perspectives on resilience strategies pose major implementation issues. This is especially true of aspirational perspectives with some arguing that they are unrealistic. Less ambitious resilience approaches also need to negotiate some significant difficulties. Coping with uncertainty is the key differentiating characteristic of resilience approaches compared to risk-based approaches (Hutter, 2010). It also presents some of the greatest challenges, in particular the need for flexibility to handle unexpected events. Flexibility means having in place social and political systems and institutions which can cope with change, adapt to changing circumstances, and be able to deploy different strategies. Some commentators

believe that this is possible (Ebbesson, 2010) while others have concerns. For example, flood governance systems are to varying extents underpinned by laws and regulations which are typically premised on certainty and predictability, and which may struggle to be sufficiently flexible (Pederson, 2017).

Similarly, planning systems can struggle to cope with uncertainty and new developments in science (Serrao-Neumann et al., 2013). One difficulty here can be working to short term planning horizons where, for example, current housing demands are prioritised and little account is taken of longer term changes, including climate change. In democracies such policies will be generated by governments with a greater emphasis on short term rather than longer term horizons. But one of the hallmarks of resilience within these political systems is the participation and inclusion of a wide range of non-state organisations and actors.

Participation is an important part of resilience. For some it is aspirational, for others practical, for some a means of empowerment, and for others a shift of responsibilities from government to the populace (Hutter, 2017). Resilience needs participation and buy-in from groups within and beyond the state in recognition of the scale of environmental risks and it also needs to command broader support for environmental governance. Top-down approaches are seen as limiting local initiatives and not facilitating the engagement of local communities. But there are implementation challenges to the participatory and inclusive ambitions attaching to resilience approaches, many of which are shared by decentred (rather than narrow state-based) definitions of regulation.

The inclusion of wider 'publics' in environmental decision making has been a growing trend worldwide (Richardson and Razzaque, 2006). It is the subject of transnational conventions, notably the Aarhus Convention, and has become encoded in law, for example European Union environmental legislation (Lee, 2014). Disaster planning increasingly acknowledges the need to involve broader communities in planning, evaluating and implementing disaster plans, not least to deploy a greater variety and range of knowledge of environmental risks and uncertainties and a wider range of resources for their management, mitigation and resolution (Tierney, 2012).

However, numerous studies have examined the difficulties associated with who participates in disaster planning, in what capacity, and with what effect (Jones and Irwin, 2010). The very definition of participation is problematic and covers a broad range of possible mechanisms and procedures, from access to information through to full seats at decision making tables (Arnstein, 1969; Dryzek, 1997; Richardson and Razzaque, 2006). Often the participatory base is not as broad or as empowered as many discussions of resilience would lead us to expect.

Moreover, participation does not always mean inclusion. Matin et al. (2018: 200) explain that '... a more inclusive approach recognises different values and interests affecting adaptation outcomes, as well as their potential conflicts'. An inclusive approach considers inequalities of access to power and information, and tries to ensure that vulnerable groups are not excluded from decision making. This is important because there may be financial obstacles to implementation, and participation can be lengthy and costly. These are all issues which

need to be considered if resilience is to be encouraged and cultivated, and the risks of collaboration and participation generating conflict are to be minimised (Orts and Coglianese, 2007).

The aim of environmental control, including both risk regulation and resilience, is to enhance the ability of systems (whether they be global, local, physical, or social) to cope with the risks and hazards with which they are confronted and to reduce proactively the vulnerabilities of people to environmental risks (Smit and Wandel, 2006: 289). Governance plays an important role in decision making and a key consideration here is the ability to implement those decisions. For example, governance can influence the adaptive capacity of a system alongside economic development, technology and human capital (Nelson et al., 2007: 399). Multi-level governance and resilience approaches also involve cooperation between countries and between international organisations and central governments (Satterthwaite, 2017). Within countries, cooperation is required between different tiers of government and governmental agencies and between these formal systems and non-state organisations and individual citizens.

Understandings of risk, uncertainty, mitigation and adaptation may well vary within governance systems. The concepts of mitigation and adaptation generate equivocal messages about how far we can transform the environment and eradicate environmental damage. Mitigation strategies attempt to slow down or reduce the system's exposure to change, whereas adaptation strategies accept that changes will happen (Nelson et al., 2007: 397). How well these different strategies and the risks and uncertainties attaching to them are understood may well vary between different parts of the governance system.

Moreover, there will be variations in commitment to the environment within the governance system. For example, governance partners and organisations cannot be assumed to be pro-environment. There are differential commitments to environmental issues and serious inequalities between different business sectors and between multinational companies and medium, small and micro businesses. The term 'greenwashing' has been coined to question the apparent commitment of many companies in the economic sector to environmental goals, with their marketing claims not being matched by environmentally friendly actions. In July 2022 the Chair of the Environment Agency in the UK called for greater regulation and transparency to combat greenwashing.<sup>7</sup> Also in 2022, a report by the Grantham Institute documented a growth in non-climate-aligned cases including a rise in legal challenges to climate change regulations, most often by industry groups (Setzer and Higham, 2022). NGOs vary greatly in their commitment to environmental and equality issues. They do not always work in the public interest (Hutter and O'Mahony, 2004; Lee, 2014), and it is important to remember there are NGOs operating on both pro- and anti-climate change agendas (Doherty, 2014).

Another source of variation is the commitment of those in the formal governance system to be inclusive of non-state organisations and the public. The level of this commitment may be signalled by government. For example, governments can play a key role in facilitating local

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<sup>7</sup> <<https://www.gov.uk/government/speeches/finance-resilience-net-zero-and-nature>> 4 July 2022.

and wider participation by defining the legal rights and responsibilities to participation (Comfort et al., 2010; Richardson and Razaque, 2006). Some authors believe that broadening participation can be mandated and that governance can be encouraged by inclusive legal arrangements (McDonald, 2017). But the law may also be silent on the issue or contain rights which are not implemented (Pederson, 2017). The law can facilitate or prove an obstacle to participation and inclusion, depending on its framing and implementation. Official documents can also signal commitment. For example, previous research has noted a tendency for the public to be conceptualised as the passive recipients of expert advice, and as reliant on the authorities to initiate their cooperation (Ntontis et al., 2019). Not only does this neglect the possibility of neighbourhood and citizen initiatives, but it may imply that it is up to local governance authorities whether to initiate local involvement.

There has been much discussion of social resilience and the issues discussed in this Chapter but relatively little empirical research. As social resilience strategies become more widespread, it is essential to gain a deeper understanding of how these strategies can be implemented and how social resilience indicators can be operationalised for the purposes of research and policy. Theory and empirical research are inextricably related as we endeavour to connect theory, policy and practice and refine our understanding of resilience approaches.

### The research: flooding in the UK

This research focuses on flooding in England as an example of a domain that has witnessed the emergence and apparent popularity of resilience strategies. This is an area where resilience strategies have become increasingly apparent, partly because flooding is the UK's most common disaster. In 2020 it was estimated that 120,000 residential properties were at high risk of flooding from rivers and the sea, and 241,000 at high risk of flooding from surface water.<sup>8</sup> The insurance industry estimated that 1 in 6 properties in England and Wales, 1 in 11 properties in Scotland, and 1 in 34 properties in Northern Ireland were at risk of flooding.<sup>9</sup> In addition, major floods cause disruption and damage to energy and transport systems and agricultural land. They can also cause fatalities, serious health problems and significant financial costs to the economy and to individuals.<sup>10</sup> Flooding events appear to be becoming more frequent and severe and are one of several weather-related threats, including heatwaves, globally and nationally.

Several notable flooding incidents have brought the issue of flooding to the fore in the UK. Prominent among these was widespread flooding in England and Wales in June 2007 which led to a major review of the events leading up to the floods and the lessons to be learned (Pitt, 2008). The Pitt Review marked a major turning point in the UK's governance of flooding. It signalled the need for much stronger long term flood management at all levels of governance in the UK. It also marked a major change from flood prevention to risk

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<sup>8</sup> <<https://www.gov.uk/government/publications/flood-and-coastal-risk-management-national-report/flood-and-coastal-erosion-risk-management-report-1-april-2019-to-31-march-2020>> 26 September 2023.

<sup>9</sup> <<https://www.abi.org.uk/news/news-articles/2021/06/joint-abi-and-flood-re-report-highlights-the-need-for-adequate-maintenance-of-the-uks-flood-defences/>> 16 June 2021.

<sup>10</sup> <<https://www.gov.uk/government/news/counting-the-costs-of-flooding>> 25 February 2021.

management and a shift from seeking solely technical and physical protection to giving responsibility and voice to a wider range of organisations and individuals. It thus moved towards a greater appreciation of the social elements of flooding and towards a space where resilience approaches started to gain currency in UK flooding policy frameworks.

Since 2007 major floods have variously affected the entire UK from Scotland to Cornwall and have brought more transport disruption, power cuts and sadly more fatalities (Chapter 3). These events have emphasised the uncertainties that exist around patterns of flooding, and about climate change and rising sea levels. They have also continued to highlight the very real social and personal costs that may be generated by flooding, and to underline the blurred divisions between so-called natural disasters and human generated ones. It is against this background that this research examines the emergence, development and practice of resilience approaches with respect to flooding in the UK.

Much of the flooding research that has been undertaken with respect to resilience has taken place in the aftermath of major flooding events. This research takes a different approach, considering areas at high risk but not recently exposed to any recent major flooding. The reason for this is that these areas pose more of a challenge in considering the feasibility of introducing social resilience strategies proactively rather than as a reaction to a major flooding event. Would local councillors and the local population be aware of the risks and if so, would they be willing to participate in efforts to improve resilience or even discuss the topic? This focus on the inherent resilience of varying neighbourhoods not recently exposed to flooding will hopefully give us more information about the potential for, and obstacles to, fostering greater social resilience and suggest pre-planned adaptive resilience measures which may be helpful.

Chapter 2 discusses the methods used in the research to examine understandings of resilience strategies in local governance structures and within the local population. Four research areas were selected to take account of flooding risks and social resilience characteristics, including inequality measures of vulnerability. A qualitative study sampled and interviewed representatives from local governance organisations and a sample of the local populations living in the high risk sample areas.

Chapter 3 interrogates the emergence of resilience strategies in the Pitt Review and subsequent policy documents with a view to establishing how the concepts and strategies they generate are conceptualised. It examines policy documents and analyses how resilience is conceptualised, for example, as a perspective; as a basis for action; and as aspirational or normative. It considers what types of resilience are referred to, for example physical or social resilience, and the resilience of infrastructures, ecosystems, communities, households, or individuals.

Chapter 4 considers multi-level governance and issues of responsibility, while the experiences, understandings, and the views of those living in areas at risk of flooding are examined in Chapter 5. An important consideration is the extent to which the policies and practice of resilience strategies are intended to be participative and, if so, who participates or would be willing to participate.

Chapter 6 examines these issues of participation alongside consideration of the opportunities, limits and obstacles to participation as experienced by our sample respondents. An important theme is how inequalities figure in these discourses and practices, for example with respect to who lives in the flooding areas, their insurance protection, resistance to flooding, and participation in neighbourhood and local resilience activities and organisations.

Chapter 7 examines whether there are inequalities attaching to the constitution, practice, and outcomes of resilience strategies as practised and if so, considers how these are mediated.

It is hoped that the research can contribute to more realistic achievable policies as well as deeper theoretical insights. Theoretically we need a greater understanding of the conceptualisation of social resilience strategies and their relationship to claims of democratisation and inequality. Chapter 8 considers the implications of the research for resilience and policy making.

## 2 Flooding and social resilience in the UK: research approach

The purpose of this research is to examine the policy and practice of social resilience strategies with respect to flooding in England. Perspectives on the measurement, definition and governance of flood risk vary across countries (HM Government, 2016: 99). In the UK, flood risk is taken to be:

... a combination of the probability and the potential consequences of flooding from all sources – including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.<sup>11</sup>

The causes of flooding are normally related to weather events, in particular heavy rainfall, prolonged rainfall, and high tides combined with storm surges. But poor maintenance can be a contributory factor, not least with respect to sewer and drainage systems or poorly designed or maintained flood defences. Planning and development can also be causes, for example building on floodplains and surface water flooding, especially in urban areas.

This research considers different levels of flood governance from the national government to local governments through to the local population (see Chapter 1). The emphasis is very much on resilience as a social concept, where the focus is on ‘neighbourhood’ people and relevant organisations rather than on physical infrastructures, although views about physical resilience are of course also important. The empirical research comprised an analysis of national policy documents about flooding and resilience, and the main study which selected four sample areas in England. Within the four sample areas interviews were conducted with key representatives from the governance regimes and a survey of local residents at risk of flooding.

### Documentary analysis

The documentary analysis involved an examination of national policy documents from the 2007 Pitt Review through the research period. The purpose was to analyse how resilience is conceptualised in the Review, reactions to it, and subsequent major reports of flooding. For example, attention was paid to whether the emphasis in the documents was on physical or social resilience – did it focus on the resilience of infrastructures, ecosystems, communities, households or individuals? Account was taken of the weight given to risk management and resilience strategies in the documents and whether resilience was seen as a perspective, a basis for action, or aspirational; and whether it was seen in normative terms. This analysis forms the basis of Chapter 3.

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<sup>11</sup> <<https://www.gov.uk/guidance/flood-risk-and-coastal-change>> Gov.UK, 6 March 2014.



## Qualitative survey

This research focuses on the experiences and understandings of those involved in flood management and resilience. It is a qualitative study, seeking to analyse how these strategies are experienced by those involved. The importance of qualitative data is that they help us to understand much more clearly how resilience strategies might be implemented in ways which are more likely to increase their uptake. They help us to gauge the limits of resilience; the conditions under which these strategies can gain support and when risk strategies might be more opportune; perceptions and concerns about the risks and uncertainties posed by flooding; and issues that influence the willingness and the ability of people to participate in decision making about the governance of flooding. The social resilience literature suggests that some groups will be more receptive than others and that there may be inequalities attaching to the constitution, practice, and outcomes of different strategies (see Chapters 1 and 7). The aim was therefore to include sample areas with contrasting social resilience profiles.

### *The process and mechanics of sample selection*<sup>12</sup>

The selection of research sites had a spatial component defined in part by the geographical area of flooding and in part by the social resilience characteristics of the area. The first task was to identify geographical areas at risk of flooding, and then to focus in on four limited geographical areas for inclusion in the research. In selecting research areas, the focus moves across regional, local authority and neighbourhood levels.

Table 2.1 (below) shows two sets of flood risk categorisations in use in the UK. The upper part of the table shows the risks in operation for flood planning.<sup>13</sup> These categorise flood risks from river and coastal flooding as high/medium/low and assign areas to a Flood Zone according to the combined probability of river and sea flooding, with properties in Zone 1 having the lowest risk of flooding, and properties in Zone 3 having the highest risk. Interestingly, these calculations ignore the presence of defences, an implicit and important recognition that these defences can fail.<sup>14</sup>

Flood zone maps give a broad view of the likelihood of flooding across a region. More nuanced data areas are provided by National Flood Risk Assessment (NaFRA) flood maps. NaFRA is a national assessment of flood risk managed by the Environment Agency (EA) which shows the risk of flooding from rivers and the sea in spatial units of 50 square metres. Recent NaFRA calculations do not treat rivers and sea flooding separately, and do not consider flood defences, noting that: 'These defences reduce but do not completely stop the

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<sup>12</sup> Parts of this Chapter are reproduced in Hutter and Bailey (2022).

<sup>13</sup> <[Flood risk and coastal change - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/flood-risk-and-coastal-change)>

<sup>14</sup> <<https://www.gov.uk/guidance/flood-risk-and-coastal-change#flood-zone-and-flood-risk-tables>>

These maps do not consider the possible effects of climate change, but this and the economic impacts of flooding are considered in detail by LTIS (Long term investment scenarios) <<https://www.gov.uk/government/publications/flood-and-coastal-risk-management-in-england-long-term-investment/long-term-investment-scenarios-ltis-2019>>

chance of flooding as they can be overtopped, or fail'.<sup>15</sup> NaFRA data give a general indication of flood risk in an area, but do not provide information about the flood risk of individual properties. They can help to raise public awareness of flood risks and provide some general guidance for local authorities. Surface water flooding uses the same risk bands,<sup>16</sup> but the EA cautions that these are especially difficult to predict.

**Table 2.1 UK Definitions of flood risk**

Data source	Source of flooding	Annual probability of flooding			
		High	Medium	Low	Very low
Planning Flood Maps	River/fluvial	Land having 1 in 100 or greater annual probability of river flooding (1% or above)	Land having between 1 in 100 and 1 in 1,000 annual probability of river flooding (between 0.1 and 1%)	Land having a less than 1 in 1,000 annual probability of river flooding (less than 0.1%)	
	Coastal/sea	Land having 1 in 200 or greater annual probability of river flooding (0.5% or above)	Land having between 1 in 200 and 1 in 1,000 annual probability of sea flooding (between 0.1 and 0.5%)	Land having less than 1 in 1,000 annual probability of sea flooding (less than 0.1%)	
	Flood zone: the probability of river and sea flooding	Zone 3	Zone 2	Zone 1	
NaFRA Flood Maps	Rivers and sea	The area has a chance of flooding of greater than 1 in 30 (3.3%)	The area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%)	The area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%)	The area has a chance of flooding of less than 1 in 1000 (0.1%)

Source: Gov.UK <<https://www.gov.uk/guidance/flood-risk-and-coastal-change>> 6 March 2014.

The term 'residual risk' is used to denote the risk that remains should, for example, flood defences fail, perhaps because of poor maintenance or weather conditions that exceed the design standards used in the defences.<sup>17</sup>

The sample selection for this research used both sets of data outlined in Table 2.1. We initially worked with the geographical areas delineated by local administrative governance

<sup>15</sup> Gov.UK <<https://www.gov.uk/check-long-term-flood-risk>> NaFRA methodology has recently changed. Previously rivers and sea flooding were distinguished separately. See <<https://www.gov.uk/government/publications/social-deprivation-and-the-likelihood-of-flooding>> paragraph 2.1.1 for an explanation.

<sup>16</sup>

<[https://assets.publishing.service.gov.uk/media/5a7c1bdee5274a1f5cc75d70/LIT\\_8986\\_eff63d.pdf](https://assets.publishing.service.gov.uk/media/5a7c1bdee5274a1f5cc75d70/LIT_8986_eff63d.pdf)>

<sup>17</sup> <<https://www.gov.uk/guidance/flood-risk-and-coastal-change#residual-risk>>

structures in England. We started by looking at one region of the UK which has a history of flooding and consulted EA flood maps to determine which local authority areas<sup>18</sup> within that region were at risk of flooding. We initially used EA flood maps intended to help with planning, to select first a County Council and then two District Council areas within that County in which to conduct the empirical research.<sup>19</sup> We selected local authority areas with properties in Flood Zone 3 (the areas with the highest risk of flooding).

Once we had examined the data at County and District Council levels we focused in on smaller geographical areas and considered the flood risk in different electoral wards, which are the spatial units used to elect councillors.<sup>20</sup> We looked at the flood risk figures at Ward level using NaFRA flood maps. Given limited resources we considered the flood risk for residential premises (not business premises) and the risk bandings High, Medium and Low. The properties at risk were estimated by counting the number of National Receptor Dataset (NRD) points which lie within each specific banding; these are the number of property points on a national dataset for EA use with information about their risk of flooding.<sup>21</sup> These Ward level data were used in the research to select a variety of possible research sites located in Flood Zone 3 which included properties at high risk of flooding. These NaFRA data were then cross-matched with more localised neighbourhood data relating to social resilience indicators.

### *Social resilience indicators*

There are many different approaches to determining social resilience and each has its own epistemological approach and differing indicators of social resilience. We used the 'community resilience indicators' used by the DEFRA Flood Resilience Community Pathfinder Projects in 2012 (Twigger-Ross et al., 2014) and described by Forrest et al. (2014). This schema is an adaptation of Cutter et al.'s (2010) disaster resilience indicators, adapted for UK use. The indicators relate to five areas of social resilience, namely social, economic, institutional, infrastructure, and community capital. The schema outlines composite indicators developed to serve as proxies for each of these areas and allows comparison between different sites and time points (Cutter et al., 2010: 7ff). For example, the social resilience category embraces a range of different variables such as age, special needs, language capacity, educational equity, communication capacity, and transportation access. Each of these has been found to have either a positive or negative effect on resilience in the existing literature.

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<sup>18</sup> Local authorities are administrative areas with local government responsibilities such as the provision of local services and some flood management responsibilities (See Chapter 4).

<sup>19</sup> The research focused on two-tier authorities, where the County Council is the Lead Local Flood Authority (see Chapter 4).

<sup>20</sup> Local authority areas are governed by elected councils. The electoral areas (wards or divisions) comprising a local authority are determined by an independent boundary commission. The number of councillors for each area depends on the population size of the electoral area.

<https://www.gov.uk/guidance/local-government-structure-and-elections>

<sup>21</sup>

[https://data.wu.ac.at/schema/data\\_gov\\_uk/MGVkYTczNmMtYjg1Yi00YWQ0LWEzMDgtNmZINWZiZDA4ZGM4](https://data.wu.ac.at/schema/data_gov_uk/MGVkYTczNmMtYjg1Yi00YWQ0LWEzMDgtNmZINWZiZDA4ZGM4) The dataset is not available to the public. I was given data on the number of property points within each LSOA (Lower Super Output Areas) but not their precise location as these are confidential data.

Table 2.2 (below) includes a description of the indicators, their expected impact on resilience, and some supporting (and sometimes contradictory) research justifying the inclusion of the indicators. The table is derived from Cutter et al. (2010) and Forrest et al. (2014), with the final column including (mostly US) research cited by Cutter et al. (2010) and (mostly UK) research cited by Sayers et al. (2017).

**Table 2.2 Social resilience indicators, effects on resilience and supporting research**

Variable and rationale*	Indicators**	Expected impact on resilience	Justification
<b>Social resilience</b>			
Educational equity: educational deprivation increases vulnerability	% of population with a Level 4 Qualification and above	Positive	Morrow 2008*** Norris et al. 2008***
Age: older people may be more vulnerable	% of population over 65	Negative	Morrow 2008*** Age UK 2016 Tapsell et al. 2002
Transportation access: access to private transport increases mobility	% of population with a car or van	Positive	Tierney 2009*** Twigger-Ross et al. 2014
Communication capacity: access to high speed internet improves access to warning systems	% of homes with broadband	Positive	Colten et al 2008*** Twigger-Ross et al 2014
Language competency: communities with a higher proportion of the population having English as a second language are more vulnerable	% speaking English as a first language	Positive	Morrow 2008***
Special need: disability and long term health problems increase vulnerability	% of population with long term health problem or disability	Negative	Heinz Center 2002*** Age UK 2016 Cabinet Office 2013a Tapsell et al. 2002 Whittle et al. 2007
<b>Economic resilience</b>			
Housing capital: home owners are more likely to be able to access economic resources	% home ownership	Positive	Cutter et al. 2008*** Norris et al. 2008*** <a href="http://climatejust.org.uk">climatejust.org.uk</a> Porter et al. 2014 Thieken et al. 2007
Employment: employment is usually associated with higher economic resources	% economic active % employed	Positive	Tierney et al. 2001***
Income and equality: income deprivation is equivalent to low economic resources	Indices of deprivation: % in the top 10% of income deprivation	Negative	Norris et al. 2008*** Fielding and Burningham 2005 Tapsell et al. 2002 Werritty et al. 2007

Single sector employment dependence: reliance for employment on sectors that are at risk of damage or disruption from flooding (e.g. farming, fishing, forestry) increases likelihood of disruption from flooding	% employment in fishing, farming, forestry or extractive industries	Negative	Adger 2000*** Berke and Campanella 2006***
<b>Institutional resilience</b>			
Flood coverage: flood insurance reduces financial consequences of flooding	% of houses covered by insurance for flooding	Positive	Burby et al. 2000*** Godschalk 2007***
Municipal services: emergency service provision reduces vulnerability	Local Lead Flood Authority expenditure for emergency services	Positive	Sylves 2007***
Mitigation (1): flood preparedness (awareness) reduces vulnerability	% of population signed up for flood alerts	Positive	Godschalk 2003***
Mitigation (2): flood preparedness (existence of flood wardens) increases capacity to respond	Number of flood wardens in area of influence	Positive	Godschalk 2003***
Previous disaster experience: previous flood experience increases resilience (preparedness) but is affected by the amount of flood damage	Number of previous floods in x years affecting over 100 properties Flood damage per flood	Positive	Cutter et al. 2008*** Fielding et al. 2007 Tapsell et al. 2005 Twigger-Ross et al. 2014 Werritty et al. 2007 Whittle et al. 2010
<b>Infrastructure resilience</b>			
Housing style: Temporary and mobile homes are less resilient	% of housing units that are not bungalows or mobile homes	Positive	Cutter et al. 2003*** McEwen et al. 2002 Pennington-Rowse et al. 2013 Thrush et al. 2005
Shelter capacity: availability of temporary accommodation makes it easier to re-house flooded people	Units of accommodation available for homeless people	Positive	Tierney 2009***
Recovery: Evacuation centres provide a safe place for people to go	Number of designated evacuation centres	Positive	Ronan and Johnston 2005***
<b>Community capital</b>			
Place attachment: migration over short term is associated with reduced sense of belonging	Net migration to area of influence over past 5 years	Negative	Morrow 2008*** Blaikie et al. 1994 Pennington-Rowse et al. 2013
Political engagement: political engagement increases a community's ability to influence decisions and access resources	% voter participation in elections	Positive	Morrow 2008*** Twigger-Ross et al. 2014

Social capital – civic involvement: organisations increase the networks of relationships and support	Number of community / voluntary / religious organisations in area of influence	Positive	Morrow 2008*** Murphy 2007*** Preston et al. 2014
Mitigation and social connectivity: community engagement in flood action groups increases ability to respond to flooding	Number of flood action groups or community resilience groups in area of influence	Positive	Penning-Rowse et al. 2013

\* Adapted from Forrest et al. (2014).

\*\* Adapted from Cutter et al. (2010).

\*\*\* Citations from Cutter et al. (2010), mostly referring to US research.

Cutter et al. (2010) use these variables to generate quantitative analyses, while this research is qualitative in orientation and uses the schema heuristically to generate comparative data to aid the selection of contrasting areas of social resilience. Facilitating comparison was part of the original intention of Cutter et al.'s schema, so that different social and economic capacities within and between areas could be captured (Cutter et al., 2010: 8ff). Institutional resilience is more focused on the individual and household's ability to mitigate, plan and decrease risk prior to a disaster, whereas infrastructure resilience refers to the ability of the 'community' to respond and recover. Community capital gives us some idea of the extent to which there is a sense of 'community' and participation in the locality, which Cutter et al. (2010: 9) proxy through indicators of political and civic engagement.

These variables (and their constituent indicators) embrace some key conceptual themes from our earlier discussion of resilience and the various ways in which it is seen and considered. Resilience is more than physical engineering; it is also essentially social in character. The schema is premised on the belief that resilience has complex and crucial interrelationships with social considerations relating to organisations, neighbourhoods, businesses and individuals.

Resilience is seen here as a process, something that is not static and not an outcome, and which at some level involves adaptation to the risks and attempts to mitigate their effects, while also implying that the risks cannot all be managed. It is accepted that 'bad things' may still happen and that when they do, the aim of resilience is that there will be an ability to bounce back, to keep vital systems functioning, and to recover. Some of this will be the result of pre-planning, but some will take on board the need to be responsive to unknown risks. There is uncertainty, and there needs to be flexibility to cope with the unexpected. An important implication of this is that resilience is not just an inherent characteristic of an area or population, but is something that may be facilitated, nurtured, and maintained, and can increase or decrease over time (Cutter et al., 2010: 2).

Discussions of social resilience have altered the ways in which vulnerability is regarded. These informed early articulations of the community resilience indicators as initially conceived by Cutter and her colleagues. In their 2008 paper they discuss the relationship between vulnerability and resilience, distinguishing vulnerability as a pre-event characteristic which indicates the potential for harm, and resilience as a post-event focus on the ability to

respond and recover. Analytically this can be helpful, although as we saw in Chapter 1 there are dangers in distinguishing too much between different disaster phases. Resilience may be enhanced pre-event and vulnerabilities may be realised during and post event, so the divisions between these phases are not always clear.

A valuable aspect of Cutter et al.'s 2008 paper is the linking of the indicators to geographically defined spaces – helpful in the case of flooding – and increasing our understanding of the ways in which different spaces and sub-populations have different levels of vulnerability and resilience; and have different capacities to build resilience, to respond and to work together. These differences are key for this research and its concern with inequalities.<sup>22</sup> In turn there are governance and policy aspects to this, as the data can help to direct resources to where they might be most needed, and help to develop or maintain social resilience in ways that are inclusive.

This approach enabled us to have some broad orientation to aid selection of neighbourhoods which are at medium to high risk of flooding and with contrasting profiles of social resilience. To assess social resilience indicators, we used UK census geographies which generate neighbourhood level statistics according to 'output areas'. These areas were introduced in 2001 as the lowest geographical level at which census estimates are provided. They are designed to have similar population sizes and to be as socially homogenous as possible, the intention being to enable indices such as Indices of Multiple Deprivation (IMD).<sup>23</sup> These output areas may straddle an electoral ward/division or parish boundary. We used lower super output area (LSOA) data (see Table 2.3).

**Table 2.3 Lower Super Output Areas (LSOAs)**

Geography	Minimum population	Maximum population	Minimum number of households	Maximum number of households
LSOA	1000	3000	400	1200

Source: Office of National Statistics (ONS)<sup>24</sup>

### Methodological difficulties in sample selection and operationalising social resilience indicators

The selection process as described so far sets out the process and mechanics involved, but there were difficulties in using the flooding data and operationalising the social resilience indicators for research purposes. A key issue was that we were using existing datasets compiled for very different purposes than we were using them for the purposes of our research. For example, the EA flood maps are very clear about being generic and provided for planning purposes, and that more detailed tests may be required for local plans. The

<sup>22</sup> Cutter et al. (2008) develop the DROP model of disaster resilience which focuses on vulnerability and resilience. This is an early articulation of the community resilience indicators this research is using to aid sample selection.

<sup>23</sup> <<https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>>

<sup>24</sup> <<https://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeography#super-output-area-soa>>

NaFRA mapping is the result of general country-wide modelling for policy purposes rather than being nuanced for localities (see above).

For the purposes of this study the publicly available flood zone maps gave a general indication of which County and District Councils would be worth considering for the sample and which electoral wards are at risk of flooding. More specific neighbourhood data are more difficult to secure, especially at the level of granularity required to assess which LSOAs are at risk of flooding.

Using the publicly available data proved time consuming and in many respects time wasting. The NaFRA mapping had to be matched up with LSOA boundaries (see below), then the properties at risk were identified on the maps as coloured dots, and the dots had to be counted within the LSOA boundaries to ascertain the number of properties at risk. However, it became clear that the dots are very indistinct regarding location. In some respects, this is intentional as identification of a property at high risk of flooding could decrease its market value and confidentiality might encourage greater reporting. This raises a host of issues about how reliable self-reporting of flooding is, and about who is privileged in the buying process, but equally generic zoning may decrease the value of properties that are not at risk.

Quite late into the first year of research I was able to secure some more nuanced data about which roads in the LSOAs I was considering are at risk of flooding (but not which properties). In one district it became clear that the data collated by the researchers using publicly available data were far removed from the more nuanced data I had received. This caused us to drop a potentially interesting LSOA which would have offered a stark contrast with other selected sites with respect to social resilience data. This was because the EA flooding figures revealed that our first-choice site had relatively few residential properties at risk of flooding. Another LSOA was therefore selected which had a greater number of properties at risk of flooding, but which did not offer as great a contrast with respect to social resilience.

A second issue was the variability and incommensurability of geographical boundaries. One issue we immediately encountered was that the geographies used for flooding and social resilience indicators vary, and there are difficulties in mapping the LSOA boundaries onto flood maps. The policy purposes for which these datasets were compiled did not include mapping flooding areas with areas of small-scale census data. These issues also arose with respect to securing some of the data for the social resilience indicators. Generally, LSOA level data were available for most of the social resilience and economic resilience indicators. This is not surprising as these are the data collected for census purposes.

The exceptions were 'communication capacity' indicators which are available at postcode level from Ofcom, and Single sector employment dependence data which are collected by the census but only at Ward level. Communication capacity data are available but for different levels of spatial organisation and from a variety of different sources. ONS data for place attachment (net migration to areas over the past 5 years) are available at local authority level. Political engagement data (percentage of voter participation) are available from the Electoral Commission at constituency level and at Ward level for local elections.



A third issue was the unavailability of some data. Social capital data (number of community, voluntary and religious organisations in the area), mitigation, and social connectivity data (information about the number of flood action or community resilience groups in an area), are unavailable. This lack of data is an issue encountered by numerous other projects attempting to use social resilience indicators (Forrest et al., 2014). It is telling which data are available, and which are deemed insufficiently important to warrant collation. No data are publicly available for the institutional resilience and infrastructure resilience (housing style, shelter capacity and recovery evacuation centres) indicators, which is interesting in its own right. Insurance data are regarded as proprietorial and are not even shared with governance agencies. Mitigation data such as the proportion of the population signed up for flood alerts, the number of flood wardens, and previous disaster experience (number of previous floods) are all data one might expect to be readily at hand and the fact that they are neither publicly available nor apparently easily secured by request speaks volumes about the sorts of data local governance officials regard as important.

Another limitation is the age of the data we have available. The census data were collected in the last UK census in March 2011, the OfCom broadband postcode level data are from 2013,<sup>25</sup> and the Electoral Commission voter turnout figures are for 2017.<sup>26</sup> One issue arising from this is the accuracy of these data for the present day. This is a limitation we had to maintain awareness of throughout the project. Table 2.4 (below) gives details of the sources of data we used for the resilience indicators.

**Table 2.4 Resilience variables and data availability**

Variable and rationale	Indicators	Effect on resilience	Data availability	Unit	Data source
<b>Social resilience</b>					
Educational equity: educational deprivation increases vulnerability	% of population with a Level 4 Qualification and above.	Positive	Y	LSOA and above	Census
Age: older people may be more vulnerable.	% of population over 65	Negative	Y	LSOA and above	Census
Transportation access: access to private transport increases mobility	% of population with a car or van	Positive	Y	LSOA and above	Census (Nomis)
Communication capacity: access to high speed internet improves access to warning system	% of homes with broadband	Positive	Y	Postcode	Ofcom (2013)
Language competency: communities with a higher proportion of the	% speaking English as a first language	Positive	Y	LSOA and above	Census (Nomis)

<sup>25</sup> <<https://www.ofcom.org.uk/research-and-data/data/map-data/broadband-2013>>

<sup>26</sup> <<https://www.electoralcommission.org.uk/who-we-are-and-what-we-do/elections-and-referendums/past-elections-and-referendums/uk-general-elections>>

population having English as a second language are more vulnerable					
Special need: disability and long term health problems increase vulnerability	% of population with long-term health problem or disability	Negative	Y	LSOA and above	Census (Nomis)
<b>Economic resilience</b>					
Housing capital: home owners more likely to be able to access economic resources.	% home ownership	Positive	Y	LSOA and above	Census (Nomis)
Employment: usually associated with higher economic resources.	% economic active; % employed	Positive	Y	LSOA and above	Census (Nomis)
Income and equality: income deprivation is equivalent to low economic resources.	Indices of deprivation: % in the top 10% of income deprivation	Negative	Y	LSOA and above	Census (Nomis)
Single sector employment dependence: reliance for employment on sectors at risk of damage or disruption from flooding increases likelihood of disruption from flooding.	% employment in fishing, farming, forestry or extractive industries.	Negative	Y	Ward and above	Census (Nomis)
<b>Institutional resilience</b>					
Flood coverage: flood insurance reduces financial consequences of flooding.	% of houses covered by insurance for flooding	Positive	N		
Municipal services: emergency service provision reduces vulnerability.	Local Lead Flood Authority expenditure for emergency services	Positive	N		
Mitigation (1): flood preparedness (awareness) reduces vulnerability.	% of population signed up for flood alerts	Positive	Y	Flood warning zones converted into LSOA data	EA (internal dataset)
Mitigation (2): flood preparedness (existence of flood wardens) increases capacity to respond.	Number of flood wardens in area of influence	Positive	N	Incomplete and inconsistent local data	EA
Previous disaster experience: Increases	Number of previous floods	Positive	N	Locally collected	EA

resilience (preparedness) but is affected by the amount of flood damage	in x years affecting over 100 properties Flood damage per flood			data. No national dataset	
<b>Infrastructure resilience</b>					
Housing style: Temporary and mobile homes are less resilient.	% of housing units that are not bungalows or mobile homes	Positive	N		
Shelter capacity: availability of temporary accommodation makes it easier to re-house flooded people	Units of accommodation available for homeless people	Positive	N		
Recovery: evacuation centres provide a safe place for people to go	Number of designated evacuation centres	Positive	N		
<b>Community capital</b>					
Place attachment: migration over short term is associated with reduced sense of belonging.	Net migration to area of influence over past 5 years	Negative	Y	Local authority level	ONS
Political engagement: Increases a community's ability to influence decisions and access resources	% voter participation in elections	Positive	Y	Constituency level (Ward level turnouts also available for local elections)	Electoral Commission
Social capital – civic involvement: organisations increase the networks of relationships and support.	Number of community/voluntary/religious organisations in area of influence	Positive	N		
Broadband coverage: increases community's ability to access information and local on-line groups.	% of households with access to super and ultra-fast fixed broadband	Positive	Y	Available at Output Area, postcode, and local authority level	Ofcom Connected Nations 2018 report
Mitigation and social connectivity: community engagement in flood action groups increases	Number of flood action groups or community resilience	Positive	N		

ability to respond to flooding.	groups in area of influence				
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An important contextual detail is that the EA was very keen to pay greater attention to social resilience data and wanting to incorporate indicators of social resilience into their planning. The social science team of the EA was also much involved in trying to establish workable indicators. I worked closely with them to establish a simplified version of the social resilience indicators needed to help orient sample selection, and to provide a possible basis for collecting some longitudinal and impact data in the future. This qualitative based research complemented the quantitative desk-based work the EA was undertaking.

### The sample areas

Consideration of spatial flooding led to the selection of one County Council area at risk of flooding and within that two District Council areas (A and B) with residential properties at risk of flooding. In District A<sup>27</sup> we considered five areas at risk of flooding according to Ward level data and then analysed NaFRA maps for these areas to find the LSOAs most at risk. In District B we considered four areas following the same process. We simultaneously examined the social resilience indicators for each of the LSOAs under consideration.

The local EA team was important in terms of supplying the NaFRA data and for its detailed knowledge of the area. A major decision which had to be taken was whether to focus on areas which had recently experienced flooding, or those deemed to be at high risk but which had not recently experienced any major flooding. The two local authority areas selected represent very different and contrasting scenarios.

District A had a history of flooding, but it had not had a major flood since 1960s. The defences built for a 1:40 year flood risk probability had recently undergone major improvement, so the risk had decreased to 1:100. The EA has done lot of work in the authority to educate the public about the risks, and in some LSOAs in the authority there are active flood groups.

District B has multiple flood risks and is partially protected by a dam. There has been no major flooding in either of the selected LSOAs within District B for the past 40 years although there is routinely some localised minor flooding. It is an area where the EA would like to improve the flooding defences and District Council B has also signalled a desire to improve flooding resilience. But at the time of the research these were aspirations rather than firm proposals.

The decision to include areas at high risk of flooding but not recently exposed to a realisation of the risk was taken after much consideration, including discussions with the regional EA officers. Making this decision distinguished the research from much other social science research on flooding and social resilience which has tended to occur after a flooding event (see Chapter 1). It also potentially offered the opportunity in District B to consider a situation

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<sup>27</sup> The exact locations of the research sites are confidential.

where there had been no recent sustained EA activity to raise flooding awareness, but where there were plans for this to happen soon. It therefore offered the opportunity to establish a baseline of interest with the possibility of returning later to see if interest had increased as the risk and plans were being more publicly discussed.

In District A, two LSOAs were selected for inclusion in the research, which I have termed LSOA 1 and LSOA 2. There were other LSOAs with more residential properties at risk, but the two selected provided a good contrast regarding social resilience indicators. Two town sites (LSOA 3 and LSOA 4) were selected within District B. LSOA 3 is in a former village which has grown into a residential town for commuters. LSOA 4 is in a market town which is the largest town in District B.

The following three charts show the resilience indicators for which we have data. LSOAs 1 and 2 in District A are shown in Chart 2.1;<sup>28</sup> LSOAs 3 and 4 in District B in Chart 2.2; and Chart 2.3 shows comparative data for selected resilience indicators. Chart 2.3 does not include the indicators for English as a main language and single sector employment as these were very similar for each sample LSOA. Chart 2.3 also excludes the 'place attachment' indicator which is very similar for three of the sample LSOAs but different for LSOA 2 which has much higher levels of migration and a relatively more transitory population, so we would expect a lower sense of belonging in this area than the others.

The *social resilience* indicators suggest that, overall, all four sample areas would be expected to be resilient, although there are differences across indicators and across sample areas. More than 75 per cent of the population is under 65 years of age in all the sample areas, with LSOA 2 having an especially young population, with 95 per cent being under the age of 65. Similarly, all the sample LSOAs show a large proportion of the population having low levels of long term health needs (especially in LSOAs 1 and 2); and high levels of communication capacity and car or van ownership (although LSOA 4 had markedly lower broadband access than the rest of the sample areas, and LSOA 2 the lowest car or van ownership). By contrast, none of the sample areas had a high level of educational qualifications – LSOA 2 had a relatively higher percentage of more highly qualified people than the rest of the sample, but even in LSOA 2 only 34 per cent of the population had a Level 4 or above qualification.

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<sup>28</sup> All the numbers in the tables in this Chapter have been rounded up or down to the nearest whole number.

Chart 2.1: Resilience indicators District A

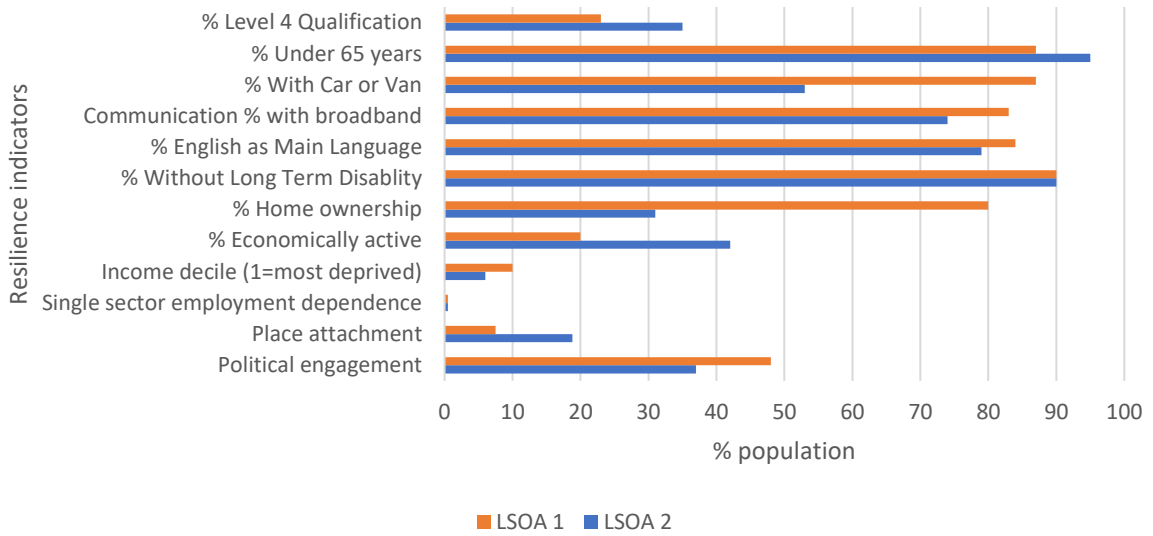


Chart 2.2: Resilience indicators District B

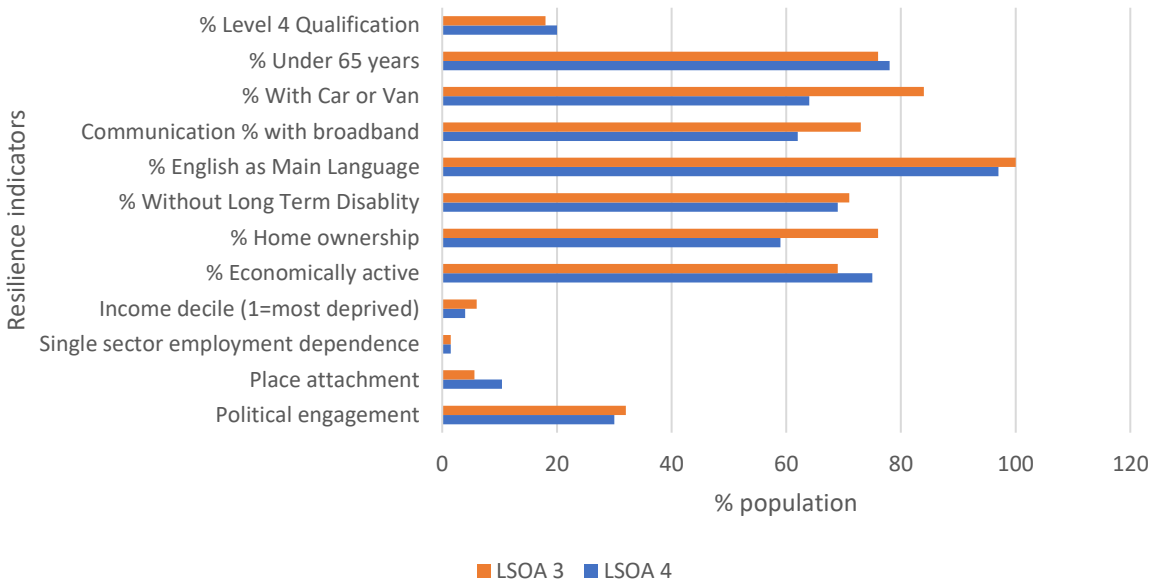
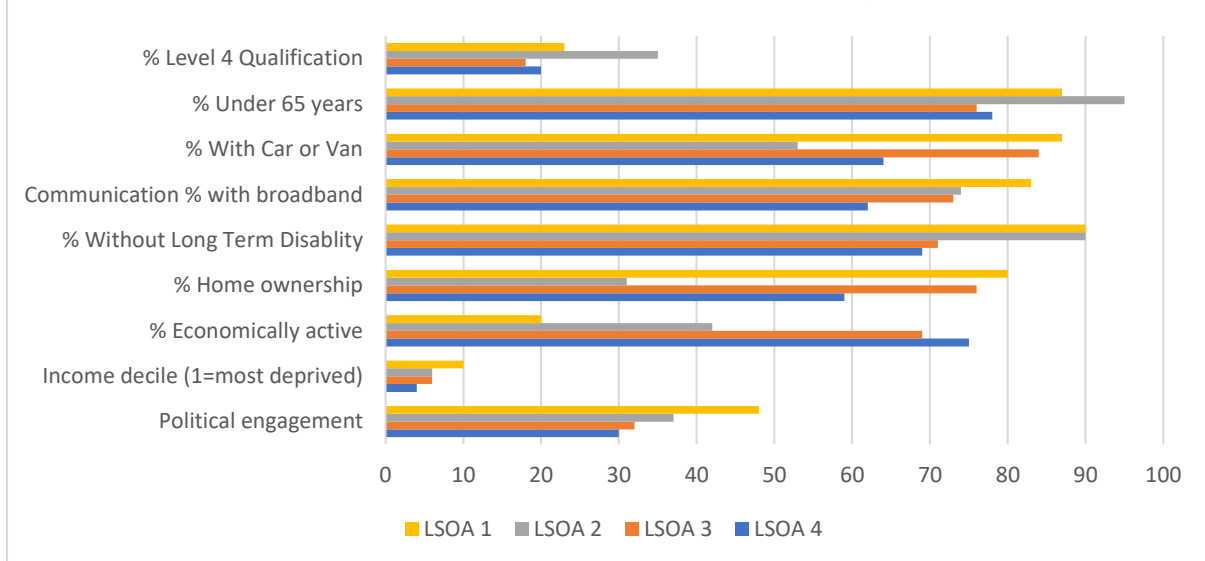


Chart 2.3: Selected resilience indicators sample LSOAs



The *economic resilience* indicators for which we have data vary considerably across the four sample areas. The data suggest that LSOA 1 should be the most resilient of the sample areas, due to its relatively high level of home ownership and being in a relatively high income decile. However, the percentage of the population showing as ‘economically active’ is markedly lower in LSOA 1 than in the rest of the sample. This low percentage, and that for LSOA 2, is partly explained by high student populations in these sample areas, as those in full time education are counted by the census as ‘economically inactive’. The small percentage who are economically active in LSOA 1 appear to be much higher earners than in the rest of the sample areas, as they are in the highest income decile in the sample and have the highest percentage of home ownership. LSOA 2 is the second lowest in terms of the percentage of the population who are economically active, double that of LSOA 1 but still markedly below LSOAs 3 and 4. LSOA 2 also has the lowest percentage owning their own home – it has high levels of rented accommodation, rented by students and low income workers. LSOA 3 is in the middle of the sample with respect to income decile, and has the second highest percentage economically active and the second highest home ownership. LSOA 3 is less economically active yet in a higher income decile than LSOA 4, which is relatively deprived compared to the other sample LSOAs. Indeed, LSOA 4 is almost the mirror image of LSOA 1, in having the highest percentage of the population who are economically active but with the lowest income decile within the sample and the second lowest percentage for home ownership.

We do not have data for Institutional and Infrastructure indicators and have data for just two indicators for Community Capital. Place attachment is stronger for LSOAs 1, 3 and 4 but weak for LSOA 2, where a higher proportion of the population is transitory and do not know the area well. The other community capital indicator we have data for is political engagement. Voting figures for all the sample sites are below 50 per cent, and so would suggest a relatively low level of community capital resilience, although they are noticeably higher in LSOA 1 than in the other sample areas.

Overall, based on the available data, it appears that LSOA 1 should be the most resilient of the sample areas, with relatively strong indicators for social, economic and community capital resilience indicators. The indicators suggest that LSOA 4 should be the least resilient area, with relatively weak scores for social, economic and community capital indicators. This is consistent with Table 2.5, which shows the relative ranking of the sample LSOAs according to IMD data. LSOA 1 is the most affluent and LSOAs 2 and 4 the most deprived. However, although LSOAs 2 and 4 are both ranked in the fourth IMD decile, LSOA 4 is ranked 1000 places below LSOA 2, making it the most deprived of our sample areas.

**Table 2.5 Sample site IMD deciles**

LSOA	Relative deprivation level within the sample (where 1 is the most deprived)	IMD decile (where 1 is the most deprived 10% of LSOAs)
1	4 – Least deprived LSOA in the sample.	9
2	2	4
3	3	6
4	1 – Most deprived LSOA in the sample	4

Source: IMD 2019, <<https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>>

**Table 2.6 Number of residential properties at risk of flooding in sample LSOAs**

Sample site	Number of residential properties at risk of flooding			
	High risk	Medium risk	Low risk	Total
LSOA 1	276	94	7	377
LSOA 2	10	347	137	494
LSOA 3	26	171	54	251
LSOA 4	108	364	165	637

Table 2.6 gives details of the number of residential properties at risk of flooding in each of the sample sites. Across all risk categories LSOA 4 has the most residential properties at risk of flooding, and it also has the most falling within the high and medium risk categories. LSOA 1 has the most high risk properties and LSOA 3 the least number of properties at risk, although 197 residential properties are at high/medium risk of flooding in LSOA 3.

A final factor we should consider is that the governance structures in place for Districts A and B are slightly different, which may have implications for resilience and willingness to participate. Both selected sites in District A fall under the same second tier of government (a City Council), and there is no third tier of government in this area. This contrasts with District B where District Council B is the second tier of local government with some flooding responsibilities, but there are also third tiers of local government for LSOAs 3 and 4 which also have different Town Councils. Town Council do not have any responsibilities for flooding, but they do represent a layer of government which is – theoretically at least – closer to the local population (see Chapter 4).



### *Interviews with local governance representatives and survey of those living within the sample areas*

Two forms of data collection took place in the sample LSOAs. First, I interviewed representatives from the local governance regimes including those from the local EA offices, the local Lead Flood Authorities, local councils and a local charity. This part of the data collection is discussed in Chapter 4.

The second and main research activity in these areas was a survey of those living in residential properties at risk of flooding in the selected LSOAs. Considerable time was spent compiling and piloting a questionnaire for this survey (see Appendix A). An important component was to include questions which enabled us to collect data on the social and economic resilience indicators we used to guide sample selection. Accordingly, the questionnaire started with basic household questions about country of birth; the main language spoken at home; educational level; employment; accommodation; household ages; transport; communication; health problems/disability; and the length of time members of the household had been living in the area.

Data were also collected relating to community capital indicators. These included questions about residents' perceptions of 'community life' and the local neighbourhood, including questions about their sense of belonging to the neighbourhood, and their participation in local life including volunteering and civic engagement. Where possible tried and tested questions from previous surveys were used, for example from the Community Life Survey<sup>29</sup> and the Citizenship Survey.<sup>30</sup> These sections of the questionnaire allowed us to consider the resilience characteristics of our respondents and how they compared with the official resilience indicator data.

The questions on flooding issues asked respondents about their experience of flooding; awareness of flooding risks; and any household flood preparation/defences, including physical defences and fiscal ones such as insurance, grants and subsidies. The questionnaire sought to discover their knowledge of flooding protection in the local area; who to contact in the event of a flooding event; and opportunities to participate in local flood risk management and resilience efforts and their willingness to do so.

The final sections of the questionnaire asked respondents their views on several flooding issues such as issues of responsibility, decision making about local flooding risks including building on floodplains, and what levels of flood risk would prompt them to act with respect to their property.

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[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/567536/CL1617\\_Web\\_questionnaire\\_v3.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/567536/CL1617_Web_questionnaire_v3.pdf)

<sup>30</sup>

<https://webarchive.nationalarchives.gov.uk/ukgwa/20120919132719/http://www.communities.gov.uk/documents/statistics/pdf/1284311.pdf>

*Sampling within the selected LSOAs* involved examining the available flooding data to identify which roads appeared to have residential properties with a high or medium risk of flooding, and then either physically walking or google streetwalking these roads to identify the properties at risk of flooding.<sup>31</sup> We focused on properties at high and medium risk of flooding and prioritised those at high risk for inclusion in the sample. Letters were prepared inviting participation in the survey, initially entitled 'Engaging with Local Communities About Risk and Resilience' but this was soon changed to 'Engaging with Local Communities About Flooding' when it became clear that mention of flooding resonated better with potential participants than risk and resilience. Participants were offered the choice of completing the questionnaire online or using a FREEPOST envelope to request a hard copy of the questionnaire.

Letters were prepared for each of the addresses in the sample and we initially trialled a small proportion by post and hand delivery. None of the letters we posted received a response, so we dropped this mode of delivery. The rest of the approaches to residences in the sample were made by researchers who knocked on each door. If the resident was in, they were invited to participate in the survey and if they agreed were offered a hard copy of the questionnaire with a FREEPOST envelope or given details of how to complete the survey online. If the resident was out, they were left the letter of invitation. Careful records were kept of the actions taken. Confidentiality was maintained throughout using unique reference numbers which allowed a central record to be kept that tracked the responses. Visits were made to residences at different times of day to account for variable working patterns and follow-up visits made to residences where there was no response some 6 to 8 weeks after the initial visit. If the resident declined to participate researchers tried to establish the reasons for this and these data are detailed in Chapter 5.

### *Difficulties in conducting the research*

We encountered several difficulties in collecting the empirical data for this research. Resourcing was an issue. We had a small grant from the London School of Economics which enabled preparation of the online and hard copies of the questionnaire, the FREEPOST envelopes, and research assistance. Professional interviewers would have been costly but when we approached them we discovered that they were mainly oriented to the commercial market and were not interested in this type of research unless they had full control of the questionnaire design and analysis. Moreover, they correctly anticipated that there would be difficulties in securing a positive response when the survey would take more than a few minutes to complete and when no financial incentives were available to encourage participants. We also discovered that the online questionnaire proved too difficult for some participants, and several were returned empty as they had not saved the questionnaire correctly.

The political and social context at the time of the survey also proved problematic. The approaches for the survey were made during May to September 2019, which coincided with a period of some political upheaval around the UK Government's Brexit policies. In May 2019 there were local elections where the Conservative Party in power experienced

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<sup>31</sup> Some streets, for example, had variable inclines so some houses would be at a lower level and thus more vulnerable to flooding.

considerable losses, which led in July 2019 to a change in the leadership of the Conservative Party. The new Prime Minister resolved a speedy and decisive withdrawal of the UK from the European Union (EU).<sup>32</sup> The politics around these events led to some disillusionment among voters. A number of those we approached for interviews and working locally said that anything to do with any government policy would not be of interest to them. These issues also affected local political interest in the research (see Chapter 4) and in March 2020 the possibilities of further interviews became much more complicated by the lockdown associated with the COVID-19 pandemic.

The low levels of response we received do of course limit the research, but they also offer some important insights into attempts to build social resilience in areas at risk of flooding. These insights will be discussed in subsequent chapters.

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<sup>32</sup> In order to secure Parliamentary support for this the Prime Minister called a snap General Election in December 2019 and won a landslide victory. The UK left the EU on 31 January 2020.

### 3 UK flooding policy and resilience

UK flooding policy came to prominence in 2007–2008 following widespread flooding in England and Wales in June 2007 with 55,000 properties flooded, 500,000 people without water and electricity, 13 deaths, and an insurance bill running into several billion pounds. This flooding led to the establishment of the Pitt Review, the objectives being to understand why the flooding was so extensive, to learn lessons, and to make recommendations. The resulting 420-page report, *Learning lessons from the 2007 floods* (Pitt, 2008), was very thorough, with 92 recommendations to enhance the protection of communities from flooding. It marked a turning point in flood governance in the UK.

While the Review was firmly rooted in the risk-based approaches which had come to dominate UK environmental policy in the 1990s, it incorporated elements of resilience perspectives in its approach to the investigation, conclusions and recommendations. It thereby gave greater impetus and weight to resilience discussions which were emerging as important in wider and global discussions about the environment and disaster management.

This Chapter examines the Pitt Review, its conceptualisation of resilience approaches, and how this informed UK flooding policy over the next decade, through to 2018–2019, the period when we were collecting data for this research project.

#### Pitt Review 2008

##### *Terms of reference*

The Pitt Review's terms of reference stated that:

The Review should be wide-ranging and consider all available evidence on the flooding that occurred in England during June and July 2007, its impacts and what this means for the future. It should hear from those involved at the local, regional and national level, including the public, their elected representatives, public organisations, businesses, the farming community and professional associations (Pitt, 2008: 424)

Resilience is mentioned in the remit with respect to the physical resilience of dams. The Review was also intended to be inclusive in encouraging submissions from the public as well as organisations.<sup>33</sup> But risk was the major focus of the Review, with prominence given to considerations of flood risk management, to the vulnerability of critical infrastructures, emergency responses, and to planning and recovery. The importance of understanding flooding risks better is a key theme, in particular 'Knowing where and when it will flood'. The Review does not assume that all flood risks can be predicted and managed, but rather that

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<sup>33</sup> The Review took evidence from a wide variety of sources including 129 organisations from central and local government; 43 Local Resilience Forums and 28 emergency services; 32 Utilities and Critical Infrastructure organisations; 41 businesses; 28 community groups and 14 voluntary organisations; 32 university research organisations; the media; 36 international submissions; and 246 individual submissions (Pitt, 2008: Appendix D).

this could be done more accurately, and that this would enable better preparations ahead of flooding.

### *Risk and risk mitigation*

Risk is defined in the usual way as ‘the likelihood of somewhere being flooded’ and ‘the potential impact of the flooding’ (Pitt, 2008: 39). The Review had its own Science and Engineering Panel to provide advice and challenge (Pitt, 2008: Annex C). The report emphasises the need to improve the science and technology of weather forecasting and the modelling of different types of flooding; and the need to integrate data from forecasting, modelling and mapping, and the sharing of information between the different organisations involved (Pitt, 2008: Chapter 4).

The purpose of the risk-based approaches discussed by the Review are to inform what actions governments and others can take to mitigate the risks and impacts of flooding, and to inform the prioritisation of how and where to use limited resources. The concept of mitigation implies that disasters are inevitable, as does the emphasis on planning for contingency and recovery (Pitt, 2008: 108). A chapter is devoted to discussing ‘tolerable risk’ with respect to critical infrastructures (Pitt, 2008: Chapter 15). The approach is a classic risk-based approach denoting the importance of proportionate standards and consistency (Pitt, 2008: 247), but also setting out some of the difficulties and limitations involved. For example, the Review discusses the complexity of risk assessments, especially ones which consider the interdependencies of different critical infrastructure sectors. It further outlines some of the tensions associated with risk-based approaches. It includes several ‘reminders’ that it is not possible to anticipate all risks, adding that it is not ‘practical or economic ... to protect all assets against all risks’ (Pitt, 2008: 273). Major considerations of the Review are the costs involved and the centrality of having accurate information to inform risk approaches and decision making (Pitt, 2008: Chapter 27; see also Hutter and Lloyd-Bostock, 2017).

A key message of the Review is that it may be possible to reduce substantially the damage which may be caused by flooding through forward planning, such as risk identification, mitigation strategies, and pre-disaster emergency and recovery planning (see also Balamir, 2002; Hutter, 2009). The Review discusses pre-event risk strategies. Risk avoidance programmes focus primarily on land use policies, where the Review advocates stronger planning strategies and decisions, most especially with respect to not allowing building on floodplains (Pitt, 2008: Chapter 5). Risk minimisation strategies are discussed at length, for example building controls, which could be encouraged or even mandated; property level resistance with respect to new builds and retrofits; and flood defences. Risk information is viewed as a basis for prioritising funding to build capacity and capability.

The Review recognises that risk strategies need to be long term and shared. It considers physical defences from sandbags and other temporary physical defences; the maintenance of water courses and drainage; and building defences to protect against flooding from rivers and the sea (Pitt, 2008: Chapter 7). It also discusses risk sharing, in particular through insurance (Pitt, 2008: Chapter 9). The Review considers the experiences of those in the 2007 floods and makes recommendations for wider insurance provision and greater self-regulation of the industry.

The Review acknowledges that flooding defences represent a more 'traditional' approach (Pitt, 2008: 105). It also recognises the uncertainty that can be associated with flooding, for example the impacts of climate change, and the lack of incentives to commit to longer term projects. These are seen as 'barriers and limitations to adaptations' (Pitt, 2008: 31). It is perhaps partly for these reasons that the Review advocates resilience strategies and a general move to 'softer approaches' (Pitt, 2007: 18).

### *Resilience*

Resilience is not as prominent in the Review as risk,<sup>34</sup> but elements of resilience thinking are clearly present. The 2007 floods are presented as evidence of vulnerability to 'surprises' and 'disturbances', with major impacts on individuals, households and agriculture (Pitt, 2008: 7). There is an emphasis on maintaining continuity, especially of critical infrastructure services and businesses, and on recovery, which the Review considers to be a core element of resilience:

A resilient organisation is one that is still able to achieve its core objectives in the face of adversity. This means not only reducing the size and frequency of crises (by identifying and managing vulnerabilities in advance), but also improving the ability and speed of the organisation to manage crises effectively when they occur (Pitt, 2008: 274).

The move towards resilience is explained in terms of a recognition that it is only possible to decrease rather eliminate the risks of flooding (Pitt, 2008: 240).

There are several dimensions to the conceptualisation and delivery of resilience in the Review. There is a strong emphasis on physical resilience, most particularly with respect to critical infrastructures and maintaining essential supplies and services. The Review observes that consideration of the resilience of critical infrastructures is well established regarding security threats, but this did not extend to natural hazards and this needed to be remedied (Pitt, 2008: 240).

Community and personal resilience are the subject of a dedicated chapter where resilience is defined as '... withstanding the consequences of an incident; being aware of risks; acting to mitigate them; and responding effectively when the risks materialise' (Pitt, 2008: 349). Resilience in this context is portrayed as a matter of shared responsibility, with governments (national and local) using the skills of the community and working with 'members of the public'. Their responsibilities refer to stockpiling supplies in case of flooding; protecting property from flooding; and for businesses ensuring business continuity planning is in place (Pitt, 2008: 350 ff). The Review uses the terms 'individuals', 'communities' and 'publics' almost interchangeably, with no real conceptualisation of what is meant by the different terms. Communities seem to be conceived of in terms of locality and proximity to each other (a village, ward or housing estate) rather than as a social entity. The emphasis is on

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<sup>34</sup> Risk is mentioned 1,414 times in the Report, and resilience 416 times.

initiatives that are co-opted, facilitated and led by local governments, rather than on bottom-up initiatives.

The Review regards systematic planning at national and local levels as being integral to delivering resilience. There is a high degree of overlap here with the risk management strategies the Review advocates, supporting Macrae's (2010) assertion that the two approaches often coincide and overlap. The Review discusses how issues of efficiency have trumped resilience in the utility sectors with a resultant loss of redundancy and recommends changes, possibly through regulation (Pitt, 2008: Chapter 16). Notions of redundancy are standard in risk management approaches but the Review links this to resilience-oriented approaches in terms of planning assumptions needing to 'expect the unexpected' (Pitt, 2008: 283). The Review discusses this in terms of using different thresholds in risk assessments, rather than thinking about totally unexpected events and the more flexible approaches which resilience approaches would also encompass.

The example of dams and reservoirs is illustrative of the way that the Review combines classic risk management approaches with some movement towards resilience, occupying the territory where the two approaches overlap. In this context the Review discusses classic risk-based approaches and how they could be improved. It also discusses the importance of improving public engagement: '... involving the community in local planning increases awareness and lessens the risk of fatalities and damage' (Pitt, 2008: 306). Participative regulation has been a growing trend in the UK over the past decades and the Review is a good example of this. It sees resilience primarily as a basis for action, as a process requiring social collaboration and a balancing of risk and resources. While its emphasis is on the resilience of physical infrastructures it is also concerned about community resilience and the health and wellbeing of individuals.

### *Responsibility and leadership*

Fundamental to delivering both risk and resilience flooding strategies is taking responsibility for the issue and working together. The Review identifies 'unclear ownership and responsibilities' as leading to inaction on flooding (Pitt, 2008: xvii). It places the weight of responsibility with national and local governments, but sharing is a strong theme of the Review. It repeatedly stresses the importance of sharing and shared responsibility; sharing information; and shared funding. It urges cooperation at all levels from planning to recovery. Responsibility is placed on both the public and private sectors, including governments, regulators, infrastructure and utility companies, the insurance industry, and the emergency services. Responsibility is also placed on households and individuals.

In some respects the Review could be seen as paternalistic. The importance of leadership is stressed and this is typically top-down leadership. For example, responsibility is placed on the Government and insurers to increase the public's awareness of flood risks (Pitt, 2008: xxii). Education is seen as an important route for securing the buy-in of the public to take action to minimise flood risk and responsibility for this is seen to lie with central government and the Environment Agency. The Review does discuss the different ways in which information can be imparted and the varying ways in which information may be understood



by the public. The Review advocates risk education in schools and public education and information initiatives (Pitt, 2008: Chapter 20).

The Review also places high importance on leadership from local government, while acknowledging the conflicts that might be encountered at this level, particularly around having the necessary capabilities and resources and planning decisions where there may be tensions between the need for housing and building on floodplains (Pitt, 2008: xvii). But local councils are favoured because they are 'democratically accountable' and operate at the 'community level' (Pitt, 2008: xvi).

The Review details different forms of contact during an emergency, explaining that different people respond differently to different forms of communication, including telephone warnings, door to door calls, more personalised warnings, and clear public information through the media (Pitt, 2008: Chapters 10 and 12). The responsibilities to inform the public and facilitate their cooperation are again seen to be top down. Clear leadership is stressed during emergencies and during recovery, as is multi-level cooperation, both vertically from central to local government, and horizontally between different local agencies and organisations. The Review discusses Regional and Local Resilience Forums, which are multi-agency forums including planners and responders, and regards these as important for facilitating cooperation between the different agencies before and during crises.

### *Community action*

The Review's discussion of leadership from local government leads towards more participative aspects of resilience. It strongly encourages the Government to facilitate local communities to 'promote innovative schemes' and this includes them helping to fund these schemes (Pitt, 2008: 116). There is an underlying view that communities do inevitably organise to help themselves but this could be more effective if formally channelled (Pitt, 2008: 353).

The Review comments on the 'considerable potential' of community action which was demonstrated during the 2007 floods when communities were 'pulling together' (Pitt, 2008: xxxiv). A chapter of the Review is devoted partially to discussion of community resilience, which is defined as 'the ability of a local community to prepare for emergencies and to respond and recover from them' (Pitt, 2008: 457; see also Chapter 24). Related to this is the use of volunteers, including organisations such as the Red Cross, Neighbourhood Watch, and local flood wardens, whose local knowledge is seen to be invaluable during the flooding and recovery stages (Pitt, 2008: Chapter 11). These initiatives are not seen in classic resilience terms as bottom-up initiatives. Instead, they are seen as being led from the top. Indeed, the Review discusses a variety of legal and insurance difficulties in accepting local volunteers, and suggestions are made about how to deal with these (see below).

### *Recovery*

One key question in the resilience literature is what sort of society is envisaged post recovery. The Review differentiates 'normalisation' (returning affected areas to their previous condition) from 'regeneration' (taking the opportunity for long term economic development) (Pitt, 2008: xli). It stresses that recovery is a long term process and that the objectives



should be pre-planned. Its focus is on the ability to survive and bounce back, to adapt rather than to control. Moreover, it observes that while some regeneration programmes do exist most local authorities are aiming for normalisation. The Review identifies two main obstacles to regeneration, namely funding and local authorities opting for the more readily and quickly achievable option of normalisation. The Review regards this as a missed opportunity:

... there is the opportunity to aspire to transformation and revitalisation. Transformation can be physical, social and economic. It can be achieved through building new homes or commercial buildings as well as through raising aspirations, improving skills and improving the environment whilst introducing new people and dynamism to an area (Pitt, 2008: 397).

However, apart from identifying the opportunity for regeneration the Review is not especially aspirational. It is inegalitarian in its approach and stresses the importance of expertise and top-down management and direction.

## Reponses to the Pitt Review

### *Government response*

The Government welcomed and accepted the Review. It continued the top-down tenor of the Pitt Review:

Sir Michael has rightly put the needs of ordinary people at the heart of his Review. It identified six themes covering what people need:

- Knowing when and where it will flood;
- Improved planning and reducing the risk of flooding and its impact;
- Being rescued and cared for in an emergency;
- Maintaining power and water supplies and protecting essential services;
- Better advice and helping people to protect their families and homes; and
- Staying healthy and speeding up recovery (DEFRA, 2008: 2).

The Government response generally took resilience to refer to the physical resilience of essential services and property, or discussed it with reference to Local Resilience Forums. It discussed the wider community with reference to the Review's Recommendation 70 that 'The Government should establish a programme to support and encourage individuals and communities to be better prepared and more self-reliant during emergencies, allowing the authorities to focus on those areas and people in greatest need'.

The Government response was to organise three workshops to help them formulate a relevant 'Strategy and Action Plan'. These workshops attracted considerable interest from some 500 individuals and community organisations. The Government response set out a timetable for the Plan but made no commitments regarding funding (DEFRA, 2008: 104). It did however include voluntary organisations as 'resilience stakeholders' who could form part of a new National Resilience Forum (DEFRA, 2008: 123).

Governments followed through with progress reports under the Labour Government in 2009 and 2010, and a final Progress Review under the Coalition Government in 2012 (DEFRA, 2012). The final Progress Review detailed that of the original 92 Pitt Review recommendations, 89 had been either implemented or were on track whilst the rest had not been followed through. This was for several reasons, including the change of Government and running out of Parliamentary time for legislative change, a lack of resources, and a view that existing bodies could undertake some of the national coordination rather than specialist resilience or flooding organisations (DEFRA, 2012: 5ff).

Funding was provided for facilitating some resistance and resilience measures for households and essential services, and partnership funding was provided for flooding and coastal erosion (DEFRA, 2011). Steps were also taken to facilitate greater planning and coordination at national and local levels, stressing the work of Local Resilience Forums as in previous documents. Some of the regulatory recommendations in the Pitt Review were effectively watered down. For example, in response to Recommendation 11 that Building Regulations should be revised to ensure that all new or refurbished buildings in high flood-risk areas are flood-resistant or resilient, the Government responded it wanted to explore non-regulatory options (DEFRA, 2012: 17). Similarly, the Government was not prepared to enact new regulations requiring infrastructure companies to build in resilience (DEFRA, 2008: 38). Community resilience measures centred on increasing awareness and advice for householders and communities. For example, responses to Recommendation 70 comprised publishing a series of documents aimed at promoting individual and community awareness and involvement (DEFRA, 2012: 49).

The Risk and Regulation Advisory Council (RRAC) is one government organisation that responded to the Pitt Review with a more open bottom-up view of resilience. It was tasked with increasing public awareness. Like other publications the RRAC uses the terms 'public' and 'community' interchangeably (RRAC, 2009: 7). But it makes a strong pitch for valuing local knowledge as much as expert opinion:

... our research suggests that common sense, local knowledge and experience are frequently undervalued in responses to community risks, in comparison with the views of specialists brought in from outside who will likely be ignorant of local factors (RRAC, 2009: 17).

Some academic research on this topic stress the need to appraise critically all information, while observing that local knowledge is often not sought out or acknowledged when it might help (Wynne, 1996). The RRAC discusses the dangers of Governments taking too much responsibility for managing risk and thus reducing the responsibility and capacity of the community to act. It argues that community resilience has become more important given a shift in government flooding policy from prevention to risk management and mitigation (RRAC, 2009: 18). It urges engaging with the 'broad community' including members of the public. Part of the rationale here is that people in the community will more readily accept responsibility if they are involved.

The RRAC therefore tries to rebalance some of the top-down thinking in the Pitt Review by facilitating greater community participation within the formal structures (RRAC, 2009: 18ff). It discusses the need for sensible, honest and proportionate communication with the public concerning flood risks, and a shift in government policy from flood prevention to flood risk management (RRAC, 2009: 31). The RRAC was very aware that there may be a gap between public expectations of flood prevention and existing government policy. It stresses the importance of 'sustained awareness', 'mainstreaming', and 'interacting with your audience' (RRAC, 2009: 29).

### *Media*

The publication of the Pitt Review did not excite much interest in the UK national press. The specialist press was more interested, particularly the insurance press and eventually those responsible for implementing the recommendations of the Review, for example civil engineers and planners. The insurance press and national media focused their coverage more on the commissioning and publication of the Review and again following the Winter 2013-14 flooding in Southern England (see below).

The reporting in three prominent UK daily newspapers is illustrative. The *Guardian* referred to the final Review as 'sober'<sup>35</sup> especially when compared to the more 'dramatic' interim report which called for an equivalence between flood preparations and terrorism preparations.<sup>36</sup> The reporting focused on the 'urgent and fundamental changes' the Review demanded in adapting to flooding, linking this to the impact of climate change, and the call to give the charity sector a more prominent role in flood rescue. The reporting is mostly informational with little comment other than the 'sober' label. Later reporting discussed claims that the Review had been 'compromised' to the extent that it had not called for a building ban in areas vulnerable to flooding, and criticism of the Review for 'blaming' householders for not being sufficiently aware of the risks of flooding.<sup>37</sup>

The Review also attracted some *Guardian* references in later years in relation to subsequent flooding events and the announcement in the Queen's Speech in November 2009 of the Flood and Water Management Act which was prompted by the Review. These media reports are more critical of the Government reaction to the Review, with respect to their tardiness in acting around flood management and particularly because of reductions in flood spending.<sup>38</sup>

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<sup>35</sup> 'Sober flood report shows scale of task ahead', *Guardian*, 25 June 2008.

<https://www.theguardian.com/environment/2008/jun/25/flooding.weather2>

<sup>36</sup> 'Treat flood risk like terror threat, says report author', *Guardian*, 17 December 2007.

<https://www.theguardian.com/uk/2007/dec/17/weather.world>

<sup>37</sup> 'Flooding: Once more unto the breach', *Guardian*, 26 July 2008.

<https://www.theguardian.com/environment/2008/jul/26/flooding.pollution>

<sup>38</sup> See for example: 'Three melancholy exchanges about the Queen's speech', *Guardian*, 19

November 2009. <https://www.theguardian.com/politics/blog/2009/nov/19/queens-speech-monarchy-michael-white>; 'Britain under water: How the state responded', 25 November 2009.

<https://www.theguardian.com/commentisfree/2009/nov/25/michael-white-cumbria-flooding-labour>;

'Flood defences: not waving but drowning', 9 December 2010.

<https://www.theguardian.com/environment/damian-carrington-blog/2010/dec/09/flooding-defences-budget-cuts>;

'Residents face devastation with neither flood defences nor respite from the rain', 14 July 2012.

<https://www.theguardian.com/environment/2012/jul/14/residents-await-flood-defences>

The *Financial Times* website includes just four references to the Review, three of which focus on a lack of government spending to reassure business and insurers. An article published the day before the final Review discussed how full prevention against flooding is not possible but also criticised infrastructure companies for sacrificing redundancy in their systems in favour of cost cutting.<sup>39</sup>

The *Daily Mail*, like the previous two examples from the UK national press, was low key in its coverage of the Review findings. It too criticised government failures for the 2007 and subsequent floods and devoted space to discussing what households should be doing. Some of this reporting was verging on the sarcastic – ‘How to prepare for the next flood: Buy some rubber gloves and wet wipes’<sup>40</sup> – but there was also some focus on peoples’ lack of awareness and denial of the risks,<sup>41</sup> and on people taking responsibility alongside criticising governments for a lack of investment.<sup>42</sup>

The local and specialist press initially gave the Review a mixed reception. One headline for example read ‘UK Insurers Welcome Flood Report, With Reservations’,<sup>43</sup> the reservations being not about the Review but the preparedness of the Government to implement its recommendations. Others in the insurance industry criticised the shift in policy away from prevention towards mitigation, realising that this could potentially result in an increase in insurance claims.<sup>44</sup> Government failures to spend enough on flooding risks and to implement the Review recommendations were a persistent theme of the insurance press and also the engineering press.<sup>45</sup> The insurance industry made it clear that it did not see its role as ‘taking care of society as a whole’. Its view was that insurance is there to keep policyholders safe

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‘Flood area defences put on hold by government funding cuts’, 17 February 2014. <<https://www.theguardian.com/environment/2014/feb/16/flood-area-defences-funding-cuts>>.

<sup>39</sup> ‘Government lambasted on flood strategy’, *Financial Times*, 24 June 2008.

<<https://www.ft.com/content/6c9f0ce8-421f-11dd-a5e8-0000779fd2ac>>;

‘More heavy rain threatens clean-up efforts’, 9 September 2008.

<<https://www.ft.com/content/ffd0036a-7df6-11dd-bdbd-000077b07658>>;

‘Companies “must adapt” to climate change’, 4 August 2010. <<https://www.ft.com/content/11d14d34-9fe8-11df-8cc5-00144feabdc0>>

<sup>40</sup> ‘How to prepare for the next flood: Buy some rubber gloves and wet wipes’, *Daily Mail*, 17 December 2007. <<http://www.dailymail.co.uk/news/article-502768/How-prepare-flood-Buy-rubber-gloves-wet-wipes.html>>

<sup>41</sup> ‘Two million flood-danger residents ‘are not aware they are at risk’, *Daily Mail*, 17 December 2008. <<http://www.dailymail.co.uk/news/article-1096544/Two-million-flood-danger-residents-aware-risk.html>>

<sup>42</sup> ‘When will it end? After a weekend of 90mph winds and heavy rain, Britain braces for ANOTHER week of storms and more flooding’, *Daily Mail*, 9 February 2014.

<<http://www.dailymail.co.uk/news/article-2555047/UK-weather-After-weekend-80mph-winds-heavy-rain-Britain-braces-week-storms.html>>

<sup>43</sup> *Best’s Insurance News*, 26 June 2008.

<sup>44</sup> *Insurance Post*, 3 July 2008.

<sup>45</sup> For example, Stephen Hadrill, the Association of British Insurers’ (ABI) Director General, commented that ‘The insurance industry is helping tens of thousands of people affected by flooding this summer, but the Government has now failed to play its part. Millions of homeowners and businesses around the country have been let down by the Government’s failure to commit sufficient money to new and improved flood defences’ (*Insurance Newslink*, 9 October 2007). See also *New Civil Engineer*, 23 October 2008 and 29 November 2012; *Building*, 7 March 2014.

but it is up to governmental bodies to ensure that a solid infrastructure is in place: 'At the end of it, insurers are corporations trying to make a profit.'<sup>46</sup>

The question of responsibility was addressed by the insurance press. The insurance industry laid responsibility for handling flooding on central government, local authorities, businesses and critical infrastructure providers.<sup>47</sup> The need for the Government to take a lead became a theme in the insurance press over subsequent years.<sup>48</sup> But some in the industry saw the Review as an opportunity to generate and expand new markets, for example to stress the importance of insurance for business continuity<sup>49</sup> and the need for the industry to provide 'reasonably priced insurance for every demographic'.<sup>50</sup>

Complaints about government inaction regarding the implementation of the Review's recommendations continued to occupy media reporting for many years after its publication. This is one signal that the Review marked a major turning point in the UK's governance of flooding. It signalled the need for much stronger long term flood management at all levels of governance in the UK. It also marked a major change from flood prevention to risk management, and a shift from seeking solely technical and physical protection to giving responsibility and voice to a wider range of organisations and individuals. It thus moved towards a greater appreciation of the social elements of flooding and towards a space where risk management and resilience approaches start to overlap. The media picked up on these key points and to some limited extent touched on the normative and political issues raised by the extending of responsibility to wider groups.

### Pitt Review inspired initiatives: 2007 and beyond

The Pitt Review initiated a series of flood management initiatives. In 2010 the Flood and Water Management Act was enacted in response to the Review recommendation of a single coherent Act relating to flooding. The Act was also a response to climate change, hence the inclusion of water scarcity. Its provisions included obligations on all flood management authorities to cooperate and share information; to work towards sustainable development; and to adopt a risk-based approach to reservoir safety. Local authorities are required to keep a register of structures and features likely to have a significant effect on flood risk. Responsibilities are allocated between unitary authorities or county councils, district councils, the highway authorities and water and sewerage companies. Overall responsibility for flood management lies with DEFRA, with the Environment Agency having responsibility for a strategic overview.<sup>51</sup>

In 2011 DEFRA and the Environment Agency published their first national strategy for England (DEFRA and Environment Agency, 2011). This document, 'Understanding the risks,

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<sup>46</sup> *Post Magazine*, 7 February 2008.

<sup>47</sup> *Insurance Post*, 21 January 2008.

<sup>48</sup> For example, there were demands in 2010 for the Government to create a 'level playing field' for industry players (*Professional Broking*, 4 August 2010).

<sup>49</sup> *Insurance Post*, 31 January 2008.

<sup>50</sup> *Insurance Post*, 7 February 2008.

<sup>51</sup> <<https://www.gov.uk/guidance/flood-risk-management-information-for-flood-risk-management-authorities-asset-owners-and-local-authorities>>

empowering communities, building resilience: national flood and coastal erosion risk management strategy for England', is regarded as an important milestone in implementing the Review and in flood management in the UK. It provides 'an overarching framework for all risk management authorities to tackle flooding and coastal erosion in England' (DEFRA and Environment Agency, 2011: i). It also purports to put 'localism' at its centre and to 're-engage communities' in the governance of flooding and coastal erosion. The strategy is less top down than the Review and, in some respects, more flexible. It refers to communities 'informing' and 'influencing' long term approaches and the 'flexibility to reflect local circumstance' (DEFRA and Environment Agency, 2011: i).

The document discusses working 'in partnership' with communities, consulting them and their being represented in any local risk management partnerships (DEFRA and Environment Agency, 2011: 14). Indeed, the value of this is stressed, for example in facilitating public awareness and action, and in providing valuable local information (DEFRA and Environment Agency, 2011: 25 and 33). The strategy gives local authorities a greater leadership role and responsibilities and emphasises the need for funding to facilitate decision making and action at individual and community levels (DEFRA and Environment Agency, 2011: 3 and 13). However, all of this is discussed within the context of a national framework and funding, with an emphasis on shared funding between the public and private sectors at national and local levels (DEFRA and Environment Agency, 2011: 29). Indeed, giving communities a bigger say is seen to be 'in return' for greater local and private contributions (DEFRA and Environment Agency, 2011: 36). The document also gives greater weight to risk and risk management than to resilience.<sup>52</sup>

Another policy document resulting from the Review recommendations for a National Flood Emergency Framework was 'The national flood emergency framework for England', published in October 2013 (DEFRA et al., 2013). It addressed the Review's concerns about the need for greater cooperation and coordination between all tiers of government and responders, and set out a framework to inform civil contingencies planning, and to coordinate government sources of information and available tools such as Met Office weather warnings, rather than detailed operational guidance. The document addresses many of the concerns raised by the Review regarding multi-agency working, identifying the vulnerable and the health consequences of flooding. Local Resilience Forums are identified as 'the principal mechanism for multi-agency resilience work' (DEFRA et al., 2013: 18). Based on local police areas these are essentially locally based official civil protection bodies rather than anything more bottom up. 'Civil' and 'community' protection are used almost interchangeably in the document. Notions of resilience relate to national resilience initiatives that incorporate flooding, as urged by the Review.

One of the four main sections of the 2010–2015 government policy on emergency response planning (Cabinet Office 2015) addresses 'Building a resilient society', which involves:

- working with organisations and individuals from across the UK, including local responders, business, the voluntary sector, communities and individuals to equip

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<sup>52</sup> For example, the term resilience appears 19 times in the document, whereas risk is mentioned 522 times and risk management 152 times.

- them with the necessary skills and knowledge to become better prepared for, more resilient to, and better placed to recover from emergencies; and
- providing opportunities to share news, ideas and good practice, publications and practical guides.

This guidance very much accords with the Review’s deliberations.

The Review was generally seen to be an excellent document and policy documents relating to the Review were still being generated in the decade following the Review. However, many consider that the Government largely failed to implement the Review’s recommendations, and this criticism was intensified by subsequent flooding events in the UK.

### Flooding events in the UK post 2007

In the years following the Pitt Review the UK experienced further serious flooding events which brought more transport disruption, power cuts and sadly, more fatalities. Table 3.1 details some of these for the period 2008–2019, from the time of the Review to the time of data collection for this research.

**Table 3.1 Selected flooding events UK 2008–2019**

Year	Event	Details
2008	September	Morpeth floods. Flooding across the Midlands and northeast England. River Wansbeck bursts its banks causing damage to 995 properties costing £40 million.
2009	November	Strong winds and heavy rain across the United Kingdom with the worst flooding concentrated in Cumbria. 100 properties flooded in Cornwall. Travel disruption. Four people were killed as a direct result of the flooding.
2010	November	Mainline train route London – Penzance closed by flooding.
2012	April – July	The wettest April in 100 years, flooding across Britain and Ireland. The wettest beginning to June in 150 years, with flooding and extreme events occurring periodically throughout Britain and parts of Western Europe. Severe flooding around Aberystwyth, West Wales, in June, people evacuated from two holiday parks, with 150 people saved by lifeboats in 1.2–1.5 m of water. 28 June, heavy rain and large hailstorms in many areas in England. One man died from the storm. Transport disruption.
2013	October	Torrential rain and winds of up to 160 km/h hit the south of England and Wales. 600,000 homes were left without power, and 5 people killed. Transport disruption.
2013	December	East Coast sea surge. 7 homes lost to the sea; 1,400 homes flooded.



		10,000 people evacuated. 2 fatalities.
2013–2014	Winter Storms	Several winter storms culminated in serious coastal damage and widespread persistent flooding. Heaviest January rainfall in southern England since records began in 1910. Persistent flooding on the Somerset Levels with recurrent fluvial flooding in southern England. Coastal flooding and wave battering damage in exposed parts of Dorset, Devon and Cornwall. The main trainline between Exeter and Cornwall was washed away at Dawlish in February 2014. 7 fatalities. 1,700 properties flooded across England.
2015–2016	Winter storms	Storm Desmond. Flooding in Cumbria, southern Scotland and parts of Ireland. 16,000 properties flooded in England. Loss of 2,000 sheep and many cattle. 2 fatalities. Power cuts and transport disruption. Estimated £1.3 billion insured losses.
2016	November	Storm Angus. 2 fatalities. Travel disruption, power losses across the South, South West, Wales and Yorkshire.
2018	January  October	Storm Eleanor. Transport disruption, power cuts, flooding including South West, Wales, Ireland. Storm Callum. 2 fatalities. Flooding, power losses, transport disruption.
2019	August	Heavy rainfall caused serious damage to Toddbrook reservoir, Whaley Bridge, Derbyshire. 1,500 people evacuated as fears the dam would collapse.
2019	November	Severe flooding in South Yorkshire. Over 1,758 properties evacuated, 1,600 properties flooded, traffic disruption. Estimated insurance costs £110 million.

Sources: <[https://en.wikipedia.org/wiki/List\\_of\\_natural\\_disasters\\_in\\_Great\\_Britain\\_and\\_Ireland](https://en.wikipedia.org/wiki/List_of_natural_disasters_in_Great_Britain_and_Ireland)>  
<<http://www.metoffice.gov.uk/weather/learn-about/past-uk-weather-events>>

These events resulted in regional action plans. For example, the Somerset Rivers Authority 20 Year Flood Action Plan 2014–16 was published in the March following the 2013–14 floods. It was put together by a partnership of local and national organisations and involved communities affected by the floods. The plan makes it clear that it is not possible to prevent the flooding altogether – the objective is to manage the risks as much as possible and to



'increase resilience to flooding for families, agriculture, businesses, communities, and wildlife'.<sup>53</sup>

Similarly, the 2015–16 floods generated two action plans involving the Environment Agency, one for Cumbria and one for Calderdale. The Cumbria Flood Action Plan focused on five themes, one of which was the resilience of people and property. The target was to enhance the resilience and especially the preparedness of people and property by involving flood action groups and flood volunteers.<sup>54</sup> The Calderdale plan was initiated in January 2016 and has since been revised, in consultation with the Borough Council, local businesses and community and charity volunteers.<sup>55</sup> Much of the detail is about strengthening physical defences and resilient infrastructure, but there is also a section on community resilience, based on taking proactive steps and recovery plans to increase resilience. This involves the formation of flood action groups and volunteer registers:

A key message to remember in terms of resilience is that it begins with the individual; the householder; the business. When floods occur, the roads flood, emergency services have trouble getting to us and we are thrown onto our own resources. We need to make these as good as we can. The best person to understand your risk and what you can do about it, is you. Look at your home, think about flooding and what steps you can take to limit the impact of these events. Think about what you need to do if alarms sound and be prepared. Think about your neighbours, if they may need help in times of crisis, and talk to them. (Calderdale Flood Action Plan<sup>56</sup>)

This represents an example of the more bottom-up approaches to resilience discussed in much of the academic literature.

## National Flood Resilience Review 2016

The December 2015 floods and damage caused by Storm Desmond in the north of England prompted a national flood resilience review by the Environment Secretary.<sup>57</sup> This review was premised on the 'growing threat from more extreme weather events', with particular concern about climate change and how flood risk is calculated in the UK.<sup>58</sup> Its terms of reference were announced in January 2016 and focused on four main areas: updating climate modelling and stress testing the nation's resilience to flood risk; assessing the resilience of our important infrastructure like electricity substations; temporary defences; and the

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<sup>53</sup> <<http://www.somersetiversauthority.org.uk/flood-risk-work/flood-action-plan/>>

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<[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/533457/cumbria-flood-plan-overview.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/533457/cumbria-flood-plan-overview.pdf)>

<sup>55</sup> <<http://news.calderdale.gov.uk/revamped-long-term-action-plan-to-reduce-flood-risk-in-calderdale/>>

<sup>56</sup>

<[https://assets.publishing.service.gov.uk/media/5e45356a40f0b677c46325bb/2019\\_12\\_Calderdale\\_FAP\\_-\\_4th\\_Publication.pdf](https://assets.publishing.service.gov.uk/media/5e45356a40f0b677c46325bb/2019_12_Calderdale_FAP_-_4th_Publication.pdf)>

<sup>57</sup> The Review was undertaken by DEFRA, led by Oliver Letwin, the Chancellor of the Duchy of Cornwall, with a cross Government team including the Chief Scientist, Chief Executive of the Environment Agency, Department for Communities and Local Government, Department of Energy & Climate Change, and HM Treasury.

<sup>58</sup> <<https://www.gov.uk/government/news/a-country-more-flood-resilient>>

Government's future investment strategy (HM Government, 2016). In essence the review was interrogating the strategy implemented as a result of the Pitt Review (DEFRA and Environment Agency, 2011). The review was also intended to establish a 25-year plan.

The emphasis of the review was on physical resilience. The entire document contained only 15 references to 'community' and only a handful of these referred local communities. There were no references to participation. Indeed, a large part of the document was more focused on risk than on resilience,<sup>59</sup> and nowhere in the document was there a definition of what the review took resilience to mean. The review started with the subject of risk, reassessing river and sea flood risks by using extreme flood scenarios involving rainfall, tidal surges and river flow. Stress testing the Environment Agency's Extreme Flood Outlines<sup>60</sup> satisfied the review that there was 'a credible scientific basis' for their robustness for the decade (HM Government, 2016: 10).

The second objective of the review was to test the resilience of key local infrastructure assets, namely water, telecommunications, energy and medical facilities. The review concluded that oil and gas infrastructures were not vulnerable but in the other sectors, excluding health, they identified 530 sites vulnerable to flooding.<sup>61</sup> The task then was to consider how these sites could best be protected. The review considered temporary and permanent solutions and, like the Pitt Review before it, stressed the importance of coordination across and between sectors.

The review established deadlines and timetables for infrastructure companies, regulators and government departments to put these plans into effect. It is at this point that there is some recognition that the plans and resilience demand human input with an emphasis upon responders being aware of what resources are available and the need for Local Resilience Forums to be involved (HM Government, 2016: 23ff). There is little about local populations and communities other than their being seriously impacted when flooding deprives them of essential services and their homes are flooded. One short section discusses risk communication, awareness and education (HM Government, 2016: 27), but overall the review is very top down in its approach.

The review may have excluded any potentially interesting social science research on the effects of the 2015–16 floods by insisting that it would only consider evidence that had been 'published in a peer-reviewed journal or evidence that has been published elsewhere following an independent review process'<sup>62</sup> – any research on the social and personal effects of the floods would not have been collated and gone through the review process in this

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<sup>59</sup> There were 395 references to risk and just 88 to resilience in a document purporting to be about resilience.

<sup>60</sup> The extreme flood outline refers to areas with a 0.1% annual probability of flooding and is given for both river and tidal flooding.

[http://www.landmarkinfo.co.uk/corp/graphics/corp2/data\\_index\\_flood.pdf](http://www.landmarkinfo.co.uk/corp/graphics/corp2/data_index_flood.pdf)

<sup>61</sup> The focus was on infrastructure assets within the extreme flooding outline which, if flooded, would deprive thresholds of 10,000 and 25,000 people of essential services.

<sup>62</sup> <https://consult.defra.gov.uk/water-and-flood-risk-management/national-flood-resilience-review-call-for-evidence/>

timescale. Moreover, there is no indication that social science research was of interest to the review.

Responses to the National Flood Resilience Review welcomed its acknowledgement that climate change was increasing flooding in the UK and agreed with the need to ensure the resilience of the physical infrastructure, but were critical of its short term focus and urged a longer term strategy. The Committee on Climate Change, for example, criticised the review for its short termism and for failing to undertake ‘a more comprehensive assessment of the long-term measures that will need to be taken to make homes and communities more resilient to the flooding that will still occur even with flood defences in place’.<sup>63</sup> The review was criticised by farming groups and sections of the media for failing to pay more attention to agriculture, rural communities and food security.<sup>64</sup> A broader critique focused on the review’s general failure to consider the social and people aspects of resilience, for example, peoples’ awareness of flood risk, their ability to cope with flooding, and the impacts on businesses and vulnerable people.<sup>65</sup>

## Select Committee Report

One of the most damning critiques of the National Flood Resilience Review came from the House of Commons Environment, Food and Rural Affairs Select Committee’s *Report on Future Flood Prevention* which was published in October 2016 (House of Commons Environment, Food and Rural Affairs Committee, 2016). The Committee’s Inquiry was launched in January 2016 partly in response to the flooding of 2015–16 and evidence that there is likely to be a greater risk of flooding in the future. The Inquiry was tasked with considering how England can better prevent such flooding and improve communities’ resilience when it does flood. The Select Committee’s Report was highly critical of the National Flood Resilience Review.

The National Flood Resilience Review is credited with reducing some uncertainties about the parameters of flooding, while acknowledging that precise forecasting is not possible (House of Commons Environment, Food and Rural Affairs Committee, 2016: 17), but beyond this it is soundly criticised for its ‘limited solutions’, in particular for not tackling ‘fundamental structural problems’ in governance (House of Commons Environment, Food and Rural Affairs Committee, 2016: 3). The Committee was particularly critical of the review for failing to tackle the fragmentation and lack of joined up thinking and response in governance, an issue that was identified by the Pitt Review. The Committee urged ministers to ‘take a fresh look at the governance and delivery of flood risk management and develop plans for a

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<sup>63</sup> <<https://www.theccc.org.uk/2016/09/08/ccc-welcomes-national-flood-resilience-review-but-says-further-action-needed-to-address-uk-flood-risk/>>

See also <<http://www.lse.ac.uk/GranthamInstitute/news/response-to-the-uk-governments-national-flood-resilience-review/>>

<sup>64</sup> NFU <<https://www.nfuonline.com/news/press-centre/press-releases/national-flood-resilience-review-nfu-response/>>;

Royal Geographical Society with IBG <<https://21stcenturychallenges.org/2016/09/22/preparing-for-winter-floods-the-national-flood-resilience-review-september-2016/>>;

Farmers Weekly online <<https://www.fwi.co.uk/news/defra-flood-report-fails-recognise-farming>>;

<sup>65</sup> <<http://eva8.co.uk/blog/the-2016-national-flood-resilience-review-for-the-time-pressed-uk-flooding-what-you-need-to-know/>>

robust, long-term approach' and to undertake 'a root and branch review of national and local flood risk management' (House of Commons Environment, Food and Rural Affairs Committee, 2016: 29).

The Select Committee's Report proposed a new model which involved the creation of two new governance bodies: a National Floods Commissioner for England who would oversee and coordinate all flood risk management organisations in England and be responsible for overseeing the delivery of a national plan agreed with the Government; and Regional Flood and Coastal Boards at local level to coordinate five-year regional/catchment plans and report directly to the Commissioner and hold delivery bodies accountable. The model had two delivery bodies: at national level, an English Rivers and Coastal Authority; and at local level, Water and Drainage Companies (House of Commons Environment, Food and Rural Affairs Committee, 2016: 35).

We propose a radical alternative to the Government's National Flood Resilience Review's limited solutions to the current fragmented, inefficient and ineffective flood risk management arrangements ... Our proposals will deliver a far more holistic approach to flooding and water supply management, looking at catchments as a whole (Chair of the Committee).

The Report called for more government funding and greater consideration of 'short term costs' and 'longer term pay-offs' (House of Commons Environment, Food and Rural Affairs Committee, 2016: 37). It placed the onus on DEFRA and the Cabinet Office to respond with their proposals and plans for implementing its recommendations. The Report was about 'prevention' and 'protection', implying in its title that these are possible, but the substance of the Report was more cautious. It gave equal weight to risk management and resilience. Chapter 4 was devoted to 'improving resilience', noting the National Flood Resilience Review instruction to DEFRA to consider the balance between protection and resilience, and the importance of considering the increasing unpredictability of the location of flooding and our ability to prevent it (House of Commons Environment, Food and Rural Affairs Committee, 2016: 20 and 32).

The Select Committee's Report advocated trialling natural, sustainable and green risk management approaches (House of Commons Environment, Food and Rural Affairs Committee 2016: Chapter 2) and, as discussed above, was highly critical of the delivery of current risk management approaches. Resilience was seen as necessary because 'it is impossible to protect all properties from flooding at all times so the Government must improve help for communities and individuals to cope with and recover from flooding' (House of Commons Environment, Food and Rural Affairs Committee, 2016: 4). The Committee placed responsibility with government to help communities and individuals cope with and recover from flooding. But its notion of resilience does include up-front planning and operated in the space where risk management and resilience overlap in stressing the importance of preventative flooding measure.

Resilience was seen as a long term process, demanding social collaboration and balancing risk and resources. Better planning was required to resist flooding, decrease its impacts

when it does occur, and help communities recover (House of Commons Environment, Food and Rural Affairs Committee, 2016: 20). But the Report discussed resilience primarily with reference to the resilience of properties (House of Commons Environment, Food and Rural Affairs Committee, 2016: 21) – the resilience of communities was referred to, but mainly in terms of persuading people to insure their properties against the possibility of flooding (House of Commons Environment, Food and Rural Affairs Committee, 2016: 22 and 39). The term ‘community’, in line with many other reports, was not defined and was used loosely to refer to locality.

## Responses to the Select Committee Report

The Government responded to the National Flood Resilience Review in December 2016, noting the work done to date and committing to ‘work across government to deliver the recommendations’ (House of Commons Environment, Food and Rural Affairs Committee, 2017a: 1). However, it did not agree with or accept all recommendations. It accepted the catchment area physical risk management proposals but deferred on several of the recommendations on improving resilience and strategic governance. A common thread in the recommendations they rejected was a refusal to introduce new regulatory measures. These included, for example, the Select Committee’s recommendations for local planning authorities to publish an annual summary of planning decisions taken against EA advice; for new regulations to ensure a statutory liability on developers to meet the costs of flooding; and for amendments to building regulations to improve flood resilience in new buildings. In each case the Government preferred voluntary, non-binding measures and free market solutions. It also rejected the major governance changes proposed by the Select Committee, claiming that there was no need for change and asserting that current approaches had proven successful (House of Commons Environment, Food and Rural Affairs Committee, 2017a: 15).

The Select Committee expressed its disappointment with the Government response in January 2017 and described the Government’s justifications for not accepting the recommendations as ‘deficient’ (House of Commons Environment, Food and Rural Affairs Committee, 2017a: 3). It demanded a fuller response from DEFRA on each recommendation and an update by the end of 2017 on its progress in implementing the recommendations. The Select Committee reported on flooding again in July 2017 and repeated its call for a government response by the end of 2017: ‘We repeat our calls for implementation of our recommendations tackling the broad strategic and governance concerns raised in our Future flood prevention report’ (House of Commons Environment, Food and Rural Affairs Committee, 2017b: 5).

However, although DEFRA made several policy announcements from 2017 onwards (including DEFRA, 2021 and 2023), and the Environment Agency issued its National Flood and Coastal Erosion Risk Management Strategy for England in 2020 (Environment Agency, 2020b), the next Government response to the Select Committee was not until 2021 (House of Commons Environment, Food and Rural Affairs Committee, 2021).

## Discussion

This Chapter considers a period when UK approaches to flooding started to change. The Pitt Review represented a landmark in this respect. It was a very thorough review which considered the physical, social and personal impacts of major flooding. While the main emphasis of the Review is on risk approaches, elements of resilience thinking are in evidence. This is reflected in discussions of the inevitability of some flooding and the need for adaptation, continuity and recovery. Infrastructure resilience is important, but so too is community and personal resilience. Relative to some academic conceptualisations of resilience there is a paternalistic edge to the Review's approach to resilience which is about state-led leadership of the community rather than more bottom-up processes. Nevertheless, the Review marks a move away from purely technical approaches to flooding to a space where risk and resilience strategies overlap.

The Pitt Review was well received upon its publication and it spurred a number of initiatives in subsequent years, some of which were much more resilience-oriented than previous policies. But many of the Review's recommendations were not adopted and this became a major criticism of the Government, especially as a series of serious and damaging flooding events occurred in the following decade. These events prompted locally based action plans and eventually in 2016 the National Flood Resilience Review, which many regarded as a step backwards with its emphasis on technical approaches to flood policies, its short termism, and its lack of attention to broader social resilience issues.

### *Climate change*

Shifting attitudes to resilience are also related to climate change and the need for longer term resilient flooding approaches. The Pitt Review accepted the existence of climate change and regarded it as a major rationale for paying considerably greater attention to flooding. The Interim Review forcefully stressed the need for strong government leadership to act proactively and cost-effectively (Pitt, 2007: para 3.8). The final Review acknowledged that while there was no certainty that the 2007 floods were a direct result of climate change, climate change had the potential to cause these floods and worse (Pitt, 2008: Chapter 3) and that the seriousness of climate change and its potential impacts needed to be considered by governments and adapted to (Pitt, 2008: 16).

The urgency for a radical rethink of flooding linked to climate also figured as a theme in subsequent commentaries and responses to the Pitt Review, which universally accepted the relationship between climate change and changes in UK flooding. Some commentators responded with generic calls for action,<sup>66</sup> while others focused on the uncertainties surrounding the relationship between flooding and climate change, and the complexities and implications for flooding in the UK.<sup>67</sup>

The insurance press was clearly reflecting its readers' concerns about the implications for the industry, warning that climate change posed such a risk that 'the world insurance market

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<sup>66</sup> For example, *Farmers' Weekly*, 21 March 2008.

<sup>67</sup> For example, *New Civil Engineer*, 31 January 2008.



won't be able to cope with it'.<sup>68</sup> They called for stronger climate change legislation and government actions on adaptation. They also threatened the 'possibility that the world might start walking away from flood risk',<sup>69</sup> echoing Beck's (1999) warnings that such risks may be uninsurable. Yet the debate also reflected Ericson and Doyle's (2004) riposte to Beck that climate change might also bring 'the possibilities of creative solutions', for example, 'new business opportunities, clean technologies, infrastructure and biofuels'.

Climate change did move up the UK Government's agenda with the enactment in 2008 of the Climate Change Act which aimed to reduce UK greenhouse gases by 2050. The Act established a Climate Change Committee to ensure evidence-based emission targets and accountability of government. An Adaptation Sub-Committee was also created to advise on climate change risks and UK progress towards tackling them.<sup>70</sup> These moves to scrutinise Parliament have been credited with helping to keep climate issues and action on the political agenda.

However, criticisms have been expressed regarding the ability to hold government to account under the Climate Change Act, particularly without enforcement powers, concerns being raised about uneven buy-in across government departments and a lack of protection against backsliding (Fankhauser et al., 2018). The political sustainability of the Act has also been questioned, especially following the financial crisis which put pressure on public expenditure, including spending on implementing the Pitt Review (Lockwood, 2013).<sup>71</sup> This led to renewed calls for higher levels of investment. In June 2009 a former scientific advisor to the government warned that it would take three decades to decrease the effects of greenhouse gases and high levels of investment were necessary.<sup>72</sup>

Despite the apparent acceptance of climate change as a cause of flooding in the Pitt Review and these subsequent actions, there remained a reluctance to attribute many of the post-2007 flooding events to climate change. The UK Met Office was very cautious in its attribution of the 2014 storms, referring to 'exceptional weather' and explaining that caution should be exercised in relating this to climate change given the 'natural variability' in UK weather (Met Office and Centre for Ecology and Hydrology, 2014). The Met Office's Chief Scientist was less guarded – the *Independent* reported that Dame Julia Slingo said 'all the evidence' pointed to climate change as the cause, although there was not yet 'definitive proof'. The *Independent* observed: 'Her comments are the strongest link yet to be made by the Met Office, the UK's official weather service, between the bout of storms and climate change, and come after Prime Minister David Cameron remarked last month that he "very much suspects" a connection.'<sup>73</sup>

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<sup>68</sup> *Insurance Post*, 7 February 2008.

<sup>69</sup> *Insurance Post*, 7 February 2008.

<sup>70</sup> Committee on Climate Change <<https://www.theccc.org.uk/2009/05/12/chair-appointed-to-new-adaptation-sub-committee-to-ccc-12-may-2009/>>

<sup>71</sup> <<https://www.theguardian.com/science/2013/nov/26/the-climate-change-act-speaking-truth-to-power>> *Guardian*, 26 November 2013.

<sup>72</sup> *Independent*, 25 June 2009.

<sup>73</sup> <<https://www.independent.co.uk/news/uk/home-news/uk-weather-climate-change-to-blame-for-storms-hitting-britain-met-office-chief-scientist-warns-9118186.html>> *Independent*, 10 February 2014.

The Met Office's responses to the 2015 storms and flooding followed a similar pattern, again referring to 'exceptional' weather conditions (Met Office, 2015). Meanwhile academic meteorologists were suggesting a stronger, albeit not definitive link. One group of UK researchers wrote:

While it is very challenging to identify and attribute long-term trends in flooding, the extreme variability seen in the early twenty-first century, coupled with an increasing confidence in event attribution studies, strengthens the argument that we are seeing emerging evidence of anthropogenic warming on high flow regimes in the UK (Barker et al., 2016).<sup>74</sup>

As with the 2015 flooding events, politicians were readier to attribute events to climate change with the Labour leader, Environment Secretary and Energy Secretary all stating that the flooding events were 'consistent with' climate change.<sup>75</sup>

The National Flood Resilience Review considered the evidence for a relationship between climate change and recent flooding events in the UK and concluded that the evidence was 'limited' and that it was more important to focus on natural variability (HM Government, 2016: Annex 2). It accepted that:

... signals of a role for climate change in recent extreme daily rainfall events are emerging, but the inherent natural variability in the UK's climate means that it will probably be some time before a definitive answer on longer period (e.g. monthly and seasonal) accumulations will be obtained (HM Government, 2016: 32).

Critics of the National Flood Resilience Review took a more definitive stance. The Committee on Climate Change, for example, called for a longer term strategy on the basis that: 'Further flood events on the scale seen last winter can be expected, and the situation is set to get worse with climate change.'<sup>76</sup> Meanwhile, the Select Committee Report on Future Flood Prevention was very much premised on accepting climate change as a fact and one that is related to 'the more frequent, more intense storms' in the UK (House of Commons Environment, Food and Rural Affairs Committee, 2016: 3, 5).

The caution exhibited in linking these flooding events to climate change does not mean that climate change is being denied in the UK. The Climate Change Act and its associated committees, while subject to criticism, are premised on an acceptance of climate change and the need to act to adapt to them. The Climate Change Committee has been much readier to relate the flooding incidents discussed in this chapter to climate change than the official

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<sup>74</sup> See also Otto et al. (2017).

<sup>75</sup> <<http://www.telegraph.co.uk/news/weather/12038704/Storm-Desmond-as-it-happened-on-Monday-December-7.html>> *Telegraph*, 7 December 2015.  
<<http://www.independent.co.uk/news/uk/politics/storm-desmond-energy-secretary-amber-rudd-admits-floods-part-of-a-wider-trend-due-to-climate-change-a6771896.html>> *Independent*, 13 December 2015;  
<<http://www.express.co.uk/news/weather/624185/Weekend-weather-forecast-flood-alert-UK-months-rain-48-hours>> *Express*, 7 December 2015.

<sup>76</sup> Climate Change Committee <<https://www.theccc.org.uk/2016/09/08/ccc-welcomes-national-flood-resilience-review-but-says-further-action-needed-to-address-uk-flood-risk/>>



reviews these events prompted.<sup>77</sup> A prominent theme in all these discussions is the uncertainty surrounding climate change and its effects, and therefore what can and cannot be attributed to climate change. This is at the heart of debates about appropriate strategies and the roles of risk regulation and resilience.

### *Regulation and incentives*

The role of regulation in UK flooding policy debates is another area where the Government attracted major criticism in the wake of the flooding events of the early 21<sup>st</sup> century. The Government was heavily criticised for its failure to sanction any additional regulatory interventions because of the floods. The Pitt Review recommended a variety of government interventions, some which were enacted but were generally considered to not be sufficiently robust, and others which were not followed through at all. This was picked up in the commentaries on the Review for many years following its publication.

The lack of controls over building on floodplains and building regulations was a recurrent theme in the discussions. An article in *Engineering* was critical of the lack of standards in 2012,<sup>78</sup> sentiments echoed by leading experts in *Building* two years later.<sup>79</sup> The utilities journal *Utility Week* was also strongly critical about the lack of controls, observing that planning authorities had allowed the building of 38,000 homes on floodplains between 2001 and 2011.<sup>80</sup> An underlying concern in many of these discussions was that without education and regulation there was little incentive for businesses or individuals to act to protect or insure their properties.<sup>81</sup> The insurance magazine *Insurance Post* quotes one insurance representative as saying 'A few sandbags at the door won't hold back the North Sea.'<sup>82</sup> The article went on to urge for legislation to stop building on floodplains, improved building codes, and greater awareness of the risks.

The other main concern about a lack of regulation centred on failures to follow through on the Pitt Review's recommendations on sustainable drainage systems (SUDS). The *New Civil Engineer* reported on an NGO Nature Check report that criticised the deregulatory agenda of a government seemingly unwilling to use its power to take stronger regulatory action against the water companies.<sup>83</sup> The magazine was similarly critical two years later when it stated 'the Government has effectively destroyed the intention of the Act and Pitt's stipulation that SUDS should be used in new developments'.<sup>84</sup> This article, like many others, laid the blame at the door of the Government and DEFRA.

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<sup>77</sup> The Climate Change Committee related flooding and other severe weather events such as heatwaves to climate changes <<https://www.theccc.org.uk>>. The Climate Change Act 2008 requires a UK Climate Change Risk Assessment every five years. The evidence reports prepared by the Adaptation Sub Committee are published <<https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-climate-change-risk-assessment-2017/introduction-to-the-ccra/>>

<sup>78</sup> *Engineering*, 29 November 2012.

<sup>79</sup> *Building*, 7 March 2014.

<sup>80</sup> *Utility Week*, 17 February 2014.

<sup>81</sup> *Insurance Post*, 31 January 2008.

<sup>82</sup> *Insurance Post*, 7 February 2008.

<sup>83</sup> *New Civil Engineer*, 14 October 2011.

<sup>84</sup> *New Civil Engineer*, 17 February 2014.

Following extensive flooding in winter 2013–14 the criticism increased, and an article in *New Civil Engineer* accused DEFRA and local government of bowing to ‘vigorous lobbying developers’ to resist regulation<sup>85</sup> and to produce weak draft standards for SUDS. An article in *Building* reflected these concerns, arguing that if the Pitt Review’s recommendations had been implemented much of the damage caused in subsequent floods might have been avoided.<sup>86</sup> The article included interviews with leading experts who were critical of the Government’s deregulation of planning laws and building standards and the lack of coordination across departments and between different levels of government. There was a feeling that localism had been allowed to dominate to the detriment of more holistic approaches. *Horticulture Weekly* also joined the criticism, arguing that ‘We had 30 pages of standards that were going to be statutory, now it’s two large print A4 pages’ and deeming the legislation for SUDS that had been introduced to be ‘pathetic’.<sup>87</sup>

The National Flood Resilience Review (HM Government, 2016) did not discuss regulation or incentives but the Select Committee Report on Future Flood Prevention (House of Commons Environment, Food and Rural Affairs Committee, 2016) did. It recommended regulation to impose a statutory liability on developers to meet the costs of flooding where a development failed to comply with planning conditions (House of Commons Environment, Food and Rural Affairs Committee, 2016: 21). It also discussed the importance of incentivising householders to protect their own property through flood insurance (House of Commons Environment, Food and Rural Affairs Committee, 2016: 22–23). This was also seen as something insurers, in particular Flood Re, should be working hard to incentivise.

There is no evidence that this failure to enact the regulatory recommendations of the Pitt Review were related to a commitment to resilience strategies, rather they are explained by a strong governmental commitment to deregulation. In considering regulatory and resilience strategies it is important to examine where each has most to contribute to the desired objectives. The Pitt Review and the Select Committee Report clearly identified areas where they thought government interventions were appropriate and would help to prevent future flooding or mitigate its effects. The deregulatory debate is partly about the role of the state relative to other organisations and groups in society. Issues of who should take responsibility for flooding run through the heart of recent flooding debates, and this is considered in the next Chapter.

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<sup>85</sup> *New Civil Engineer*, 17 February 2014.

<sup>86</sup> *Building*, 7 March 2014.

<sup>87</sup> *Horticulture Weekly*, October 2014.

## 4 The governance of flooding in the UK: issues of scale and responsibility

The formal arrangements for the governance of flooding in the UK are complicated. They cover various flood management authorities at the national, regional and local levels of government and extend beyond the state to the economic and civil spheres. The rhetoric is one of multi-level governance and enhancing resilience but, as we have seen in previous chapters, there is still a strong hierarchical tone to much of the policy. So, while there is an apparent nod to embracing local voluntary organisations, the ‘community’ and citizens, the nature of that participation remains unclear. In this Chapter we will detail the formal governance arrangements for flooding in England and introduce the governance arrangements in place in the research areas. This will provide the context of the empirical study which seeks to ascertain residents’ awareness of the flood risks and the governance systems in place to manage these risks. The latter part of the Chapter will incorporate data from interviews with those involved in flood governance in the sample areas.

### Flooding governance in the UK

The UK has a system of multi-level governance in place for flooding. This reflects various trends in government and governance. For example, it reflects a move to devolution and decentralisation which purports, according to localism philosophies, to give greater power to regional and local governments and facilitate greater responsiveness to local needs and conditions. It also signals a move from government to governance, whereby organisations and actors in the economic and civil sphere become part of the policy making and implementation apparatus. Also, as we have seen in Chapter 3, it is a partial step to facilitating resilience by including civil society. Some view these developments positively as empowering civil society. A more critical perspective, represented by governmentality theorists, is that an underlying rationale of these moves is to outsource central government responsibilities to local governments, economic organisations and civil society for fiscal reasons (see Chapter 1).

In the UK, central government sets the legislative framework with respect to flood risk and response. The Flood and Water Management Act 2010 sets out the formal governance arrangements for flooding. Its provisions include a duty on all flood management authorities to cooperate and share information; to work towards sustainable development; and to adopt a risk-based approach to reservoir safety (see Chapter 3). Regionally, Scotland, Wales and Northern Ireland have devolved administrations and their own flooding authorities, for example the Welsh Government and Natural Resources Wales (NRW); the Scottish Parliament and Scottish Environmental Protection Agency; and the Northern Ireland Assembly. England does not have a devolved authority – for our sample areas the relevant national agencies for flooding are the Department for Environment, Food & Rural Affairs (DEFRA) and the Environment Agency (EA).

DEFRA was created in 2001 following the BSE vCJD crisis (Hutter and Lloyd-Bostock, 2017). It is a government department with responsibility for ‘... safeguarding our natural

environment, supporting our world-leading food and farming industry, and sustaining a thriving rural economy. Our broad remit means we play a major role in people's day-to-day life, from the food we eat, and the air we breathe, to the water we drink'.<sup>88</sup> DEFRA has overall responsibility for policy on flood and coastal erosion risk management, and also provides funds for risk management authorities through grants to the EA and local government.<sup>89</sup> 'Better protection against floods' is cited in its 2017–2018 Annual Report and Accounts (DEFRA, 2018a: 6) as one of its impact objectives, alongside protection from other environmental and animal and food related hazards. Evidence of activity in this area is taken to be the number of additional properties protected against flooding in the year and the number of flood defence schemes supported (DEFRA, 2018a: 15).

The EA is an executive non-departmental public body which is sponsored by DEFRA.<sup>90</sup> The EA was created in 1996 as a super agency, encompassing the work of several national and local regulatory authorities with the aim of developing a more integrated approach to protecting the environment from pollution and other hazards. It was established by the Environment Act 1995 which gives it statutory duties and powers. Its remit covers regulating major industry and waste; treatment of contaminated land; water quality and resources; fisheries; inland river, estuary and harbour navigations; conservation and ecology; responsibility for managing the risk of flooding from main rivers, reservoirs, estuaries and the sea; and issuing flood warnings.<sup>91</sup>

The EA is responsible for taking a strategic overview of the management of all sources of flooding and coastal erosion. It provides evidence and advice to government and other organisations responsible for flood management. The Agency's 2017–18 Annual Report denotes flood and coastal erosion risk management as one of its three main business areas and measures its success in these areas according to reductions in the risk of flooding to households; maintaining their flood and coastal risk management assets at or above the target condition; and their incident response capability (Environment Agency, 2018: 14). The EA has three Executive Directors, one of whom is responsible for Flood and Coastal Risk Management, one for Environment and Business, and one for Local Operations. Its headquarters is in Bristol, and it also has a London office and 14 area offices.

At the local government level flooding responsibilities lie with Lead Local Flood Authorities (LLFAs). These are either county councils or unitary authorities depending upon the local administrative arrangements in place (see Figure 1). In two-tier structures responsibilities for local governance and services are shared between County Councils and District Councils.<sup>92</sup> County Councils typically cover education, transport, planning, fire and public safety, social care, libraries, waste management and trading standards. District, Borough and City Councils tend to cover rubbish collection, recycling, Council Tax collections, and housing

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<sup>88</sup> <<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/about>>

<sup>89</sup> The responsibilities are explained in: <<https://www.gov.uk/guidance/flood-risk-management-information-for-flood-risk-management-authorities-asset-owners-and-local-authorities>>

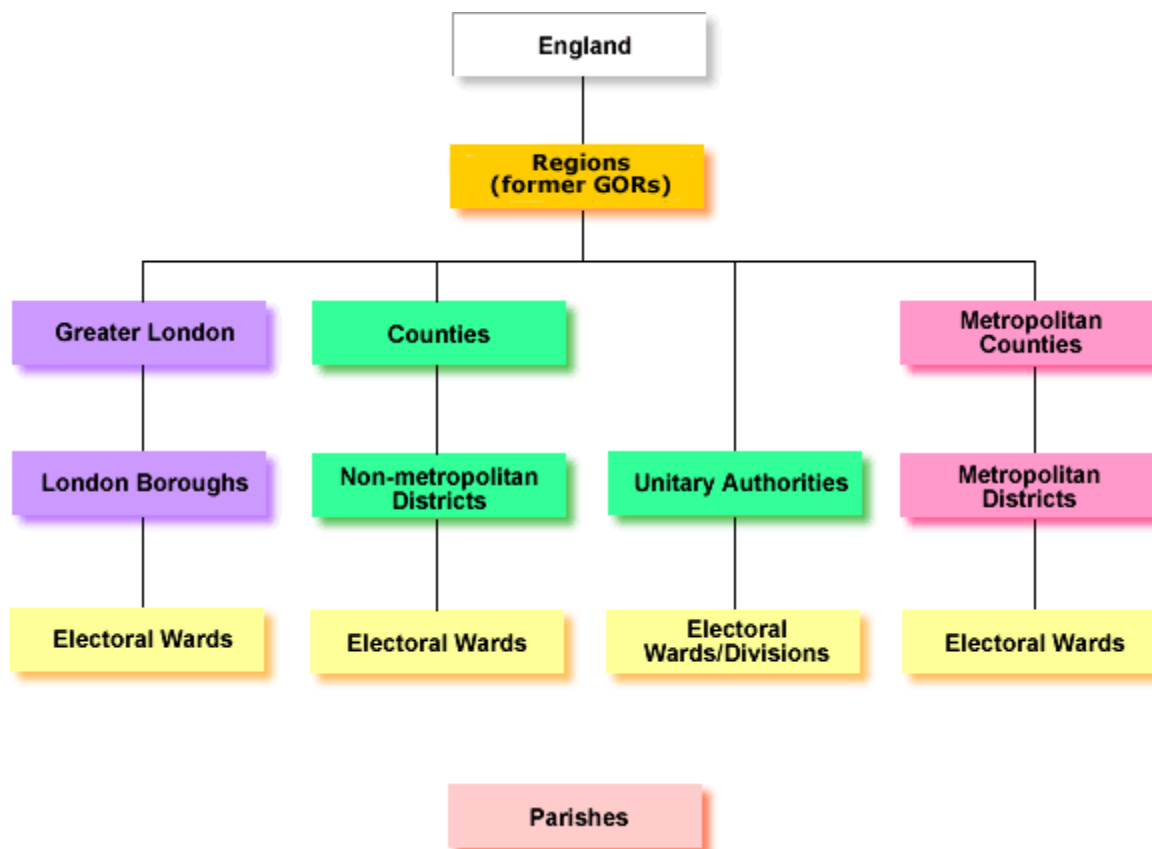
<sup>90</sup> DEFRA's relationship with the EA is set out in DEFRA (2017).

<sup>91</sup> <<https://www.gov.uk/government/organisations/environment-agency/about>>

<sup>92</sup> In 2018 there were 27 county councils and 201 district, borough or city councils in England <<https://www.local.gov.uk/about/what-local-government>>

planning applications. Single tier unitary authorities cover small cities, larger towns and smaller counties where the unitary authority may be the County Council or possibly a District Council and the unitary authority is typically the sole service provider.<sup>93</sup>

**Figure 4.1 Local government administrative structure in England**



Source: Office for National Statistics (ONS)<sup>94</sup>

This research focused on two-tier authorities where the County Council was the LLFA. Under the legislation these lead authorities are responsible for coordinating flood risk management in their area. This includes the management of flooding from surface water, groundwater and ordinary watercourses. Lead authorities are also required to keep a register of structures and features likely to have a significant effect on flood risk.<sup>95</sup> They should also have in place plans for emergencies such as flooding events. District Councils are responsible for the risk management of minor watercourses in conjunction with the Lead Local Authority. In coastal areas District Councils also act as the coastal risk management authority. District Councils are often the local planning authority and as such they are responsible for Local Development Plans and Planning Committees which decide on planning applications. There is a direct connection here with the local population who can comment on Neighbourhood

<sup>93</sup> Unitary authorities in 2018 included 56 unitary councils, 33 London boroughs, and 36 metropolitan boroughs. See <<https://www.gov.uk/understand-how-your-council-works>>

<sup>94</sup> <<https://www.ons.gov.uk/methodology/geography/ukgeographies/administrativegeography/england>>

<sup>95</sup> <<https://www.gov.uk/government/publications/designation-of-structures-and-features-for-flood-and-coastal-erosion-risk-management-purposes-information-note--2>>

Plans, often through Town or Parish Councils which constitute the first level of government and are intended to provide a democratic voice for local populations.<sup>96</sup>

In addition to central and local government authorities, several other public organisations have flood risk management responsibilities under the 2010 legislation. Internal Drainage Boards are independent public bodies which are responsible for water level management in low lying areas of the country.<sup>97</sup> The Highway Authorities are responsible for providing and managing highway drainage and roadside ditches. Highway England is responsible for motorways and major trunk roads and the local authorities or national park authorities for other roads. Water and sewerage companies are responsible for managing the risks of flooding from water and foul or combined sewer systems providing drainage from buildings and yards.

There is a duty in the Flood and Water Management Act 2010 for all these different authorities to follow the Pitt Review's recommendation that they cooperate and work together. DEFRA and the EA issue national guidance for other flood management authorities, for example, technical guidance on how to appraise flood risk and the risks to people.<sup>98</sup> The EA produces toolkits to help local flood authorities fulfil their flood management responsibilities.<sup>99</sup> The EA's area structure provides a key link to working with LLFAs. This includes membership of the 12 Regional Flood and Coastal Committees (RFCCs) whose task is to ensure that there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines. These Committees are established by the EA under the Flood and Water Management Act 2010. They are intended to encourage efficient, targeted and risk-based investment in flood and coastal erosion risk management that represents value for money and benefits local communities; and to provide a link between the EA, LLFAs, other risk management authorities, and other relevant bodies, to build understanding of flood and coastal erosion risks in their region.<sup>100</sup>

In addition to these governmental organisations and utility companies there are also statutory responsibilities for riparian landowners, namely those who own land next to a watercourse or own land with a water course running through or beneath it. These owners have responsibilities for maintaining rivers, streams and ditches on or near their property and for protecting their property from flooding. The EA again provides guidance on these responsibilities.<sup>101</sup>

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<sup>96</sup> Parish councillors are democratically elected and it is estimated that approximately a third of the population in England has a Town/Parish Council <<https://www.gov.uk/government/get-involved/take-part/set-up-a-town-or-parish-council>>

<sup>97</sup> <[https://www.ada.org.uk/member\\_type/idbs/](https://www.ada.org.uk/member_type/idbs/)>

<sup>98</sup> <<https://www.gov.uk/guidance/flood-risk-management-information-for-flood-risk-management-authorities-asset-owners-and-local-authorities>>

<sup>99</sup> For example:

<[https://assets.publishing.service.gov.uk/media/6033bfae8fa8f54326ac0c43/framework\\_and\\_tools\\_for\\_local\\_flood\\_risk\\_assessment\\_technical\\_report.pdf](https://assets.publishing.service.gov.uk/media/6033bfae8fa8f54326ac0c43/framework_and_tools_for_local_flood_risk_assessment_technical_report.pdf)>

<sup>100</sup> <<https://www.gov.uk/government/organisations/environment-agency/about>>

<sup>101</sup> <<https://www.gov.uk/guidance/owning-a-watercourse>>

### *The local level and civil society*

As is clear from the first part of this Chapter, central government and its agencies generate policies and guidance for lower levels of government, who in turn have duties to deliver flood risk assessments and management. These outline such matters as roles and responsibilities, strategies, action plans and increasing community resilience and awareness. In doing so they may embrace a wider range of local organisations. Some of these have a statutory basis. For example, the Civil Contingencies Act 2004 creates a national framework for civil protection in the UK. Membership covers the two categories of responders specified by the Act: category 1 responders (the emergency services, local authorities, health organisations, and the EA), and category 2 responders (the utilities, transport companies, Strategic Health Authorities, and the Health and Safety Executive).

These organisations all have membership of Local Resilience Forums (LRFs), which are multi-agency forums with responsibilities to plan, prepare and communicate emergency plans at a local level (Cabinet Office, 2013b). However, these are not legal entities, something criticised by a House of Lords Select Committee Report on *Preparing for Extreme Risks* which recommended that these forums should be statutory and that their purpose and duties should be clarified (House of Lords Select Committee on Risk Assessment and Risk Planning, 2021: para 119).

LLFAs may voluntarily facilitate other cross-sectoral forums, for example, county wide flood and water management groups comprising local authorities, water companies, the EA, and transport authorities and companies. Community resilience forums have also been established in some areas, especially in areas which were in receipt of funding from the Flood Resilience Community Pathfinders Scheme, launched by DEFRA in 2012 to help develop 'innovative community level projects' to improve the community's overall resilience to flooding.<sup>102</sup> Thirteen projects were funded and the evaluation identified a number of longstanding improvements in resilience capacity, including these voluntary community resilience forums (Twigger-Ross et al., 2014: 186).

Civil sector organisations and individuals do not have statutory responsibilities in the formal flood governance structures, their participation is voluntary. However, the statutory authorities are encouraged to collaborate with charities and voluntary organisations. The Civil Contingencies Act 2004 stresses the benefits of the voluntary sector playing a 'supporting role' in emergency situations (Cabinet Office, 2011). Indeed, there is an obligation upon Category 1 responders to engage the voluntary sector during the planning process (Cabinet Office, 2011: Chapter 14 para 14.6) and upon local authorities to provide business continuity advice to voluntary organisations involved in emergency situations (Cabinet Office, 2011: Chapter 14 para 14.8). Cabinet Office advice specifies 'Building individual and policy maker resilience' as one area where voluntary sector activities could be

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<sup>102</sup> <<https://www.local.gov.uk/topics/severe-weather/flooding/paying-flood-and-coastal-erosion-risk/flood-resilience-community>>



helpful. The emphasis with respect to the voluntary sector is upon their supporting role, the need for formal engagement, and that training and engagement is vital at the local level.<sup>103</sup> The reference document for LRFs states:

The UK approach to resilience is based upon the principle of subsidiarity, where decisions and responsibilities should rest at the lowest appropriate level, with collaboration and co-ordination at the highest level necessary (Cabinet Office, 2013b: 12).

The 'lowest appropriate level' is taken to be LRFs. Among the partners cited are individual residents and community groups and the document encourages LRFs to 'enhance community resilience' through events and involving them in training and exercises. But this is entirely voluntary – there is no legal requirement for LRFs to involve the community. The emphasis in the document is upon the LRFs 'serving' the community (Cabinet Office, 2013b: para 4), for example by 'minimising the economic effects of emergencies' (Cabinet Office, 2013b: para 58) and enabling and supporting their recovery (Cabinet Office, 2013b: para 123), but the tone is very top down.

Households and individual citizens (and local businesses) can take steps to mitigate the effects of flooding. For example, they may sign up for flood alerts, take out insurance offering flood protection, or invest in physical defences (see below). They may also participate in consultations relating to flooding, or join civil society action groups, such as Greenpeace or local groups lobbying about specific local issues, but all these actions are entirely voluntary.

#### *The economic sector and funding flood risk and resilience schemes*

Water and sewerage companies have statutory responsibilities with respect to flooding. Local businesses, like households, can participate voluntarily in the flood governance system and take responsibility for their own premises and belongings. The other major economic player in flood management is the insurance sector, which provides flood insurance for households and businesses.

There has been a series of agreements between the government and the insurance industry over many decades, the latest being Flood Re which is a scheme to offer affordable home insurance to those living in flood risk areas.<sup>104</sup> Flood Re was the result of three years of negotiation between the government and the insurance industry and was created by the Water Act 2014. It is owned and run by the private sector and is accountable to Parliament. It is a flood reinsurance scheme whereby high risk flood properties are cross-subsidised by a levy on standard household insurance. Insurance companies can cede high risk properties to the Flood Re reinsurance pool (Surminski, 2018). The scheme does have some significant exclusions, for example, houses built after 1 April 2009 and business properties, including

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[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/308687/Voluntary\\_Sector\\_Engagement\\_Guidance\\_Note\\_\\_Apr\\_14\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/308687/Voluntary_Sector_Engagement_Guidance_Note__Apr_14_.pdf)

<sup>104</sup> <https://www.floodre.co.uk/about-us/#:~:text=Flood%20Re%20is%20a%20re,action%20to%20reduce%20flood%20risk>



houses let out by residential landlords. Moreover, the scheme which came into operation in 2016 is time limited, the intention being to run it for 25 years whereupon a 'smooth transition' is expected to be achieved to risk reflective pricing. An expectation in all of this is that there will be greater awareness of flood risks and their mitigation by 2041.

Some commentators see the Flood Re scheme as a shift in responsibilities from the state to the individual. Pennington-Rowse and Priest (2014), for example, discern a shift from flood risk management decisions being taken by professionals at the national level (with the burden falling on the general taxpayer) to becoming the responsibility of at-risk property owners and those paying general insurance premiums. With respect to this research, Flood Re is, of course, operational and relevant. There is no provision in the Flood Re scheme for the government formally being the insurer of last resort should Flood Re fail or become overburdened. There is, however, an expectation that the government will invest in flood defences. Indeed, there have been some tensions between the insurance industry and the government over whether the government is making sufficient investment in this respect (Surminski, 2018: 44).

Central government and taxpayers play an economic role in flood risk management in a variety of ways. Central government funds capital projects and the maintenance of existing infrastructure, primarily through DEFRA which directs most of this money to the EA. The EA can also raise money through local levies on local authorities and Internal Drainage Boards (DEFRA, 2022). The EA effectively manages government investments to reduce flood risk and coastal erosion in England. It uses these resources to directly fund flood risk management projects and their maintenance, for example through the upgrading and maintenance of national flood defences and infrastructure and water management schemes (DEFRA, 2021). These involve paying attention to the wider natural environment and enhancing community resilience (HM Government, 2020).

The EA also uses government investments to finance grants to local authorities for flood risk management projects. One route for this is partnership funding, whereby local authorities can apply for grants in the expectation that local communities can secure a proportion of the required funds themselves.<sup>105</sup> Local authorities can also use their general funding to pay for flood risk management works on watercourses. The National Flood Resilience Review estimated that in 2014–15 central government funded 90 per cent of flood risk management activities in England, while local levies funded 4 per cent and partnership funding constituted 6 per cent (HM Government, 2016: 112–13).<sup>106</sup>

The levels of funding available for flood risk management are partially reactive, as major flooding events have led to increases in investment. Major flooding events have been cited as the reason for an increase in the overall funding available for flooding and coastal erosion risk management. For example, in July 2021 the Government announced a doubling in government investment in flood and coastal erosion risk management funding, following a

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<sup>105</sup> Partnership funding for FCERM projects <<https://www.gov.uk/guidance/partnership-funding-for-fcerm-projects>>

<sup>106</sup> In 2014–15, this represented £623 million from central government; £24 million from local levies; and £43 million from partnership funding.

series of serious floods in 2019 and early 2020. Part of the funding response to these floods was the Flood and Coastal Resilience Innovation Programme<sup>107</sup> which was aimed at the community level and was described by the EA as part of its resolve to ‘work with local communities to identify the best combination of measures that tackle the unique risks experienced in specific places’ rather than operate a top-down approach.<sup>108</sup>

Major flooding events can also lead to very targeted additional funds such as the Property Level Resilience Grants made available after major flooding events to enable high risk properties that have been flooded to prepare for any future flooding by incorporating property resistance and resilience measures and, if this fails, to aid a speedy recovery. These grants are centrally funded but administered by local councils.<sup>109</sup> Local authority funds and local levy funding can also facilitate resilience grants at the community level, for example, to help finance flood protection equipment or to produce local emergency plans. Typically, local resilience or flood groups can apply for such funding as can town or parish councils.

Let us now turn to consider the local governance arrangements for flooding in our sample areas and the views of those we interviewed from the formal governance organisations.

### Research sample: degree of Council interest and awareness

The research focused on two-tier authorities where the County Council is the Lead Local Flood Authority. Within the County Council area, Districts A and B both have a second tier District Council. District B also had Town Councils (see Chapter 2). Both Districts fall within the jurisdiction of the same EA area office which includes staff involved in community and voluntary sector engagement, flood risk, incident management, and warning services.

I interviewed staff from the EA’s Flood Risk Management team including resilience staff. I also interviewed a representative from a charity to whom the EA outsourced some of its ground level resilience work. At the local government level, interviewees included specialist staff with responsibilities for flood management at County Council and District Council levels, and council staff with knowledge of the local communities and businesses. I also approached councillors representing the wards within which the sample LSOAs were situated, and councillors with responsibilities for flooding in each area.

Table 4.1 details those I interviewed: data from these interviews are included in this and subsequent chapters.

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<sup>107</sup> <[Flood and coastal resilience innovation programme - GOV.UK \(www.gov.uk\)](#)>

<sup>108</sup> <<https://environmentagency.blog.gov.uk/2021/03/29/launching-the-flood-and-coastal-resilience-innovation-programme/>>

<sup>109</sup> <[Government extends £5,000 grant scheme for flood-hit homes - GOV.UK \(www.gov.uk\)](#)>

**Table 4.1 Governance staff and councillor interviews**

Organisation	Meeting	Email response
<b>Local EA office</b>	5	0
<b>County Council Executive</b>	2	0
<b>District A Council</b>		
Executive	3	1
Councillors	1	3
<b>District B Council</b>		
Executive	3	2
Councillors	1	0
<b>LSOA 3 Town Council</b>		
Executive	2	0
Councillors	1	1
<b>LSOA 4 Town Council</b>		
Executive	1	1
Councillors	4	0
<b>Local charity</b>	1	0
<b>TOTAL</b>	<b>24</b>	<b>8</b>

I had hoped to interview more local government staff and a selection of District Councillors but circumstances made this very difficult, particularly as many of the interviews I did secure took many months to set up. Some of those I approached did reply and offered explanations for declining a meeting, typically that I should speak to more specialist staff: one member of the executive suggested I talk to his deputy, who would have 'a far better appreciation of the issues'. Another referred me to his principal engineer as his experience of flooding in the area was limited. Similarly, one councillor described himself as 'a backbencher' and suggested I speak with a relevant portfolio holder.

These explanations resonate with the literature on risk management where risk managers are seen to be purveyors of risk information rather than risk management being a responsibility held by all (Power, 2005). They also reveal that flood management did not appear to be a high priority for these respondents. For example, a District A councillor declined to be interviewed saying that he had 'no knowledge about flooding issues and no idea of the views of his local community on flooding'. He explained that no resident had contacted him about flooding in the seven years he had been on the council, his view being that this was because there was no risk. Yet this councillor represented an area at high risk of flooding. But these respondents did at least respond, while others failed to respond at all despite follow-up emails.<sup>110</sup> Unfortunately this included the councillor with portfolio for flooding in District A who ignored all requests to meet despite being contacted by council staff in support of my request.

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<sup>110</sup> One councillor from LSOA 3 replied and refused an interview. Three councillors from District A, one from LSOA 3 and one from LSOA 4 did not respond to repeated emails. One member of the Executive in LSOA 3 and one from LSOA 4 did not respond to repeated requests to meet.

The wider political context at the time of data gathering was not helpful and there were some indications that this had affected councillor responses (see Chapter 2). For example, one councillor who indicated he would arrange an interview after the election withdrew afterwards without explanation and another was stepping down at the election because of the unpleasant political climate. Undoubtedly, those I approached were very pressed for time, but despite this some of those I did interview went to extraordinary lengths to make themselves available. Those in full-time work very generously took time out between their working day and councillor activities (not to mention family life) to meet with me. Others were retired and some were in poor health but again made themselves available.

In District A Council staff were particularly helpful, but only one councillor agreed to meet. In District B LSOA 3 the Town Council had a very active and committed administrative staff but local people indicated that this is not matched by many of the elected councillors. The area struggles to find people prepared to stand as councillors. Notably, the then Mayor in LSOA 3 ignored numerous requests to meet despite being on relevant committees within the town, district and county councils. In LSOA 4 the Town Council staff were preoccupied with a major development project and the Town Clerk always responded to emails but referred me to others, yet the District and Town Councillors were the most responsive in the sample. The EA staff were very helpful, as were the County Council staff.

It is perhaps not surprising that those who agreed to be interviewed were very aware of the flood risks in the sample LSOAs and very committed to managing the risks and increasing local awareness of them. Perceptions of council interest in flooding varied. Interviewees gave examples of councils from across the region who did not want to engage because they did not want to admit to the flooding risks, while other councils publicised the risks and sought help with engagement. Perceptions of District A and B's councils were that they had an interest in climate change, but not an interest which appreciated its relationship with flooding. Neither District Council was perceived to have flooding high on its list of priorities, although some of those connected to the councils had a detailed knowledge of the risks and were keen to raise awareness.

Interviewees suggested various reasons for the difficulties in gaining District and Town Councils' attention. First, it had been a long time since there had been a major flooding event in these areas. District A had not experienced major flooding in the town since the 1960s, but there had been recent major flooding on the edge of the town affecting major transport links. This had led to a major flooding scheme which was in progress at the time of the research and involved an upgrading of the flood defences for the town. District B does experience regular localised flooding, including surface water flooding proximate to LSOA 4 in the months we were interviewing. But District B had not experienced any major flooding since the late 1970s when there was serious flooding in the town centre. This had led to the construction of a dam to protect the area.

Second, defence schemes were believed to provide protection against flooding, so there was no need for local councillors with flood protection portfolios to be especially proactive: '... they feel protected by the flood schemes so this is not on their radar'. Nevertheless, those in District B with concerns about the flood risk were partly motivated by concerns

about the reliability of the defence dam in place. One interviewee feared that those in District B were 'taking comfort' from the 1980s flood schemes and had 'a false sense of security' that they are protected by them – they had little appreciation that flood schemes can fail and this dam had come very close to overtopping.

Third, there were tensions between flood management and housing and town redevelopment plans. This was particularly an issue in District B which had ambitious housing targets and redevelopment and regeneration plans for the town centre in LSOA 4. One interviewee observed that the Town Council had 'other priorities than flooding'. Another felt that the Council and its administration would not listen to concerns which may be an obstacle to their redevelopment plans. This involved an element of denial – 'people do not like to think about bad things happening – if you don't think about them they won't happen'.

A recurring issue in the interviews was the tension councils face between housing demands and building on floodplains. This was partly a historic problem: '20 years ago flooding was not on the agenda so there is a lot of housing on the floodplains'. But it is also of high contemporary relevance and this was especially so in LSOA 3 where interviewees perceived current building on the floodplains as a major issue but one where their views were repeatedly overturned by higher authorities and on appeal. Other concerns in all the sample areas were about drains not being cleared, leading to surface water problems. In District B there were worries as some flood risk areas contained housing specifically for the elderly. An interviewee from LSOA 4 explained that there is a higher than average vulnerable population in the centre of the town, with many living in unfit accommodation who would have difficulties in evacuating if flooded.

### Interviewees' perceptions of local population's interest and awareness of flood risk

Those with regional responsibilities for flooding hoped that the population in District A would be aware of the risk of flooding, in part through their insurance companies, and because of the major and highly visible flood scheme in progress. They were however aware that this could also lead to complacency in some people: '... if people see a scheme going in they often think they are less at risk'. In other cases there will be ignorance and denial: '... people don't generally like being told they are at risk of flooding ... there's a bit of an attitude that if they don't know about it then it can't really affect them'. Regionally based interviewees also expected that the transient student population may have a patchy understanding as they are only living in the area for a few years and living in rented accommodation.

The expectations for levels of awareness and interest in District B were that most of the population would be ignorant of the risks. In part this is because there had been no recent flooding and in part because of the social characteristics of the area. One interviewee familiar with District B explained that in the areas at risk of flooding in LSOAs 3 and 4 there was no community hub, and he was not sure how aware the occupants would be of the risks as they do not meet up and discuss these issues. Previous attempts to generate interest in a flood plan for LSOA 4 had failed because of a lack of interest in the Town Council and amongst the local population. Regional and local interviewees suspected that most of those

living in District B would be unaware of the flood defences in place to protect them, for example the dam built after serious flooding several decades previously. Again, there was a fear that those who did know about the dam might feel that there was nothing to worry about.

Interviewees at District and Town levels were also doubtful that the local populations would be knowledgeable or even aware of the risks of flooding. Many living in LSOAs 1, 2 and 4 were in rented accommodation. They were poorly represented in our sample responses, which may be an indication of lack of interest. There was also a concern among interviewees that there was a high turnover of population in the rented accommodation sector and information about the flooding risk may have been lost. Knowledge of the last major flooding events in these Districts would also have been lost. There were also worries that peoples' horizons are short term, the focus being on next week rather than the probability of flooding which is unknown by many and understood by fewer. Likewise, their concerns are likely to be about surface water and drainage flooding rather than fluvial flooding or the risks of flood defences overtopping – these bigger risk events were thought to be unappreciated by local residents.

Most of the councillors interviewed had not been approached by constituents with respect to flooding, although there were a few exceptions in LSOA 4 where there were conflicting views about how much the local population understands. For example, two interviewees commented on the visibility of the river running through LSOA 4, one thought that residents would see the water level going up and down and would appreciate that there is a flood risk. Another interviewee did not think that the implications of a high water level are necessarily understood:

... people see the river going up and down through the centre of the town and might think it's a bit high today, but beyond that they wouldn't think about it. It's not seen as much of an issue as 'on paper' it should be.

There was no certainty that residents in District B interpreted localised flooding as a risk to them even when residents regularly have sandbags outside their properties. One interviewee remarked 'These people would be surprised to know that they live in a high risk area.' Indeed, some local interviewees were very concerned that there was a lack of knowledge and awareness in the local population about the flood risk, the risk of the flood defences failing, and that in future decades climate change will increase the risk: '... they don't realise that these things outlive their usefulness, events overtake them'. This is underscored by the fact that some of the interviews and questionnaires were completed whilst a highly publicised evacuation of 1,500 people was taking place in Whaley Bridge in the north of England over fears of a dam collapse.<sup>111</sup> This did not seem to heighten awareness of the risks in District B, perhaps because the dam in that district is less visible and proximate to the town than was the case in Whaley Bridge. Indeed, some flood governance personnel suspected that many residents would not even be aware of its existence.

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<sup>111</sup> Whaley Bridge dam collapse <<https://www.bbc.co.uk/news/uk-england-derbyshire-49189955>> BBC News, 1 August 2019 and Whaley Bridge dam crisis <<https://www.bbc.co.uk/news/uk-england-derbyshire-49189955>> 1 August 2020.

## Views on resilience and its prospects: interview data

Many of the issues raised in the interviews with governance officials and councillors were summed up in an interview with a LSOA 4 interviewee who recalled attending meetings about a resilience forum – there was talk of setting up an emergency plan, they started working on it, but it ‘came to a halt’. The reasons for this were other demands which were regarded by the Council as more important than flooding; a belief that they could rely on higher governance authorities to deal with flooding issues; and resourcing, where there simply were not enough staff to draft an emergency plan.

A major issue in the interviews with flood governance personnel was the complex division of responsibilities for flooding discussed earlier in this Chapter. Council staff were concerned about the division of responsibilities between the different authorities and varying standards of protection, one citing the water board which works to a lower level of protection, namely to a 1:30 standard. Interviewees felt that the complexities led to confusion and conflicts of interest with suspicions that lower level authorities were having to pick up responsibilities which higher level authorities had not attended to. A recurring example of this was responsibilities for clearing and maintaining drains and culverts which is done relatively infrequently and many believed had led to an increased risk of flooding in Districts A and B. District and Town Councillors felt that the County Council was in effect shifting responsibility to them through their infrequent maintenance, forcing District and Town Councils to clean drains in their areas to prevent flooding.

Conversely, lower level councils were felt to opt out of taking responsibility for other matters such as flood plans, expecting this to be handled by higher level councils. This, it was explained, could become very political where the different level Councils were of different political persuasions. There were also some concerns that decisions were led not by evidence but by popularity and worries about media reporting. Communication was also raised as an issue. One council employee observed that the division of responsibilities is very difficult to convey to the public. Another employee highlighted the need for communication between the different organisations holding responsibilities to ensure that they worked together to promote resilience.

The academic governmentality literature on resilience cautions that resilience can be viewed as an attempt by governments at all levels to shift responsibilities downwards to lower levels of organisation and ultimately to the voluntary sector and the public. This view was expressed in the interviews. One interviewee suggested that there was a danger of co-option being interpreted as replacement so the authorities could abrogate their responsibilities. One reason they might do this relates to another theme in the interviews, namely resourcing issues at all organisational levels, from the national to local. This was partly seen to account for poor communication and a lack of responsiveness between agencies. It also led to councils having additional demands placed upon them without the commensurate extra resources. Indeed, staff talked of cuts in relevant areas, particularly if they were not a statutory requirement. One interviewee spoke of previously having a council official dedicated to flooding, but now these responsibilities had been rolled into other roles. There



was a view that more should be made of the economic and indirect benefits of flood awareness and protection, so that resilience issues would have a much higher profile and informed choices could be made.

Finance was clearly an issue and exacerbated tensions between economic and risk management and resilience considerations. One interviewee thought that these tensions were writ large in terms of what he termed the 'retreat management strategy' whereby climate change and rising sea levels meant that the economic case for physical resilience and risk management is diminishing and we are having to embrace the social effects, in particular the potential loss of community, as coastal residences become uninhabitable. This respondent was thinking in the long term, while others were concerned that local councils might be more focused on the short term and wanting to redevelop town centres and increase housing regardless of the flood risk (see above).

Planning was certainly an issue. This was partly in terms of the legacy of pre-Pitt Review planning decisions which were less sensitive to flooding risks than post-Pitt Review decision making. One official explained that where buildings currently exist it is difficult to refuse planning permissions, but it may well be that betterment with respect to flood protection can be argued for. However, a second set of concerns with respect to planning was that local decisions were overturned at a national level for political and economic reasons and this clearly caused enormous frustration in each of the sample areas.

Another respect in which the tensions generated by flooding issues had an impact on planning were the available data on areas at risk of flooding which denote the general areas at risk of flooding but not the specifics. Moreover, there were concerns about accuracy as the EA maps were partly reliant on people reporting flooding to them and it is known that many are reluctant to do this as they do not want their property to be officially recorded as flood prone. Conversely the EA do not publish such specific data to encourage reporting and maintain confidentiality. Local councils were therefore having to commission their own hydrology models when considering major developments.

## Discussion

There are arguments for and against multi-level governance. The advantages resonate with the arguments in favour of resilience, for example tapping into local needs and circumstances and using lay knowledge from the local population (Wynne, 1996). In the case of flooding this might, for example, be knowledge about local areas that have historically flooded but in this case climate change is changing the extent and whereabouts of flooding so these arguments may have less purchase than they once did. But other forms of local knowledge remain highly relevant, such as the location of vulnerable members of the population and personnel who live locally and can react quickly. Moreover, involving the local population can increase the support given to decisions, and there is some evidence that local communities and personnel may have greater capacity to self-organise and to ensure compliance than central top-down organisations.<sup>112</sup>

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<sup>112</sup> See Newig and Fritsch (2009) for a summary of the arguments for and against multi-level governance.



Others argue that local areas do not have the necessary expertise that can be provided centrally. In some respects, the governance arrangement for flood management in the UK mitigates this by involving central and local organisations. The framework and legislation are set centrally and the implementation and some policy and strategy decisions are taken locally. DEFRA and the EA offer a fair amount of guidance. There are also cross-cutting forums focused on emergencies and comprising specialists from the EA for flooding and representatives from LLFAs, local government and a range of other emergency related organisations. However, this can generate a complex mesh of organisations and responsibilities which our interviews show can confuse those within the system and the local population.

Local flooding governance is spatially organised within specified geographical jurisdictions. For example, Local Resilience Forums (LRFs) are organised according to police areas. But the administrative jurisdictions for each of the different participants do not necessarily coincide with EA regional offices, local councils and each of the emergency services, because these may have different administrative boundaries. Some commentators argue that such fragmentation can weaken governance by creating tensions between different levels of government (Wälti, 2004: 602), or generating multiple 'clearance' and 'veto' points (Newig and Fritsch, 2009: 202). However, Newig and Fritsch's (2009) statistical analysis of case studies found that just two sets of hypotheses they had generated from the literature were of statistical significance: one of these was that highly polycentric governance systems yielded higher environmental outputs than monocentric governance. They speculate that this may be because any delays in implementation are likely to be challenged.

There are difficulties in the English system which have been highlighted in this Chapter and in government reports. The 2018 Multi-Agency Flood Plan Review focused on LRFs having in place robust plans to respond to flooding and considered the process from drafting the plans to their implementation and recovery (DEFRA and Environment Agency, 2018: para 2). The lack of coherent boundaries between the different agencies involved in LRFs, as outlined above, was found to be an obstacle to their efficient working (DEFRA and Environment Agency, 2018: para 3.2), and there was confusion about the complex division of responsibilities and accountability between the various agencies (DEFRA and Environment Agency, 2018: para 15.2).

A House of Lords Inquiry into preparations for extreme risks was also concerned about the need for greater clarity about LRF duties which they noted had changed over time (House of Lords Select Committee on Risk Assessment and Risk Planning, 2021: para 119). Responsibilities for surface water and drainage are another area of misunderstanding and frustration mentioned in the multi-agency report (DEFRA and Environment Agency, 2018: para 18.3) and by several interviewees in this research. This was the subject of an independent review in October 2019, which made recommendations to try to improve the clarity of responsibilities (DEFRA, 2020a).

Additional difficulties resulting from the complexities of the formal governance system centre on inadequate communication and coordination issues. The House of Commons

Environmental Audit Committee raised concerns about this in their 2016 Report, *Flooding: Cooperation across Government*, commenting that witnesses had called for 'improvements in communication and collaboration between key organisations involved in or affected by flooding' (House of Commons Environmental Audit Committee, 2016: para 20). These problems afflicted those agencies within LRFs and communication and collaboration between LRFs and central government. The House of Lords Select Committee on Risk Assessment and Risk Planning (2021: para 124ff) also raised concerns about LRFs not having sufficient contact with the Civil Contingencies Secretariat, with communication being 'one directional', that is, top down.

The economic costs of flooding governance are relevant to decision making. One argument is that if the costs of flooding decisions are borne locally then this might diminish support for any proposed expenditure (Newig and Fritsch, 2009: 201). In the case of flooding this argument is partially mitigated in England by partnership funding (Wälti, 2004). However, the House of Commons Environmental Audit Committee 2016 Report noted that '... 85% of this funding is still expected to come from the public sector, which is subject to significant resource constraints, and only 15% from the private sector' (House of Commons Environmental Audit Committee, 2016: para 55). The Committee considered this to be a 'risky approach' which increased the uncertainty for local communities about future levels of flood protection.

Local authorities in England have suffered severe cuts to their funding, leading to difficulties with their implementation capacity. The Multi-Agency Flood Plan Review found considerable inconsistencies between LRFs (DEFRA and Environment Agency, 2018: para 3.3) and identified several reasons for this, including the personalities and leadership involved and the availability of resources. Resource cuts to local authorities and the emergency services were a recurring theme of the Review which also noted large variations in the extent of these cuts across the country, and in some areas serious reductions in specialist resilience and flooding staff (DEFRA and Environment Agency, 2018: para 3.9). These points were also mentioned by some of our interviewees, especially in District A. They were also raised by the House of Lords 2021 Report, which noted that while expectations on LRFs had increased this had not been matched by increased funding (House of Lords Select Committee on Risk Assessment and Risk Planning, 2021: para 126).

The National Audit Office (NAO) estimated in 2018 that there had been a 49.1 per cent reduction in government funding to local authorities between 2010–11 and 2017–18, and a 28.6 per cent reduction in their spending power during this period (National Audit Office, 2018: 4). This necessarily had an impact on local authority staffing levels. The NAO estimated a reduction of 21 per cent in local authority staffing between 2010–11 and 2016–17 (National Audit Office, 2017: 44). Moreover, central government increased the statutory duties on local authorities during this period, most particularly with respect to public health and social care, and there was a growth in demand for key services, such as adult and children's social care and homelessness, which further increased the financial pressures on local authorities (National Audit Office, 2018: 7). Institute for Government figures suggest that one of the losers in these cuts has been local emergency planning, which was 35 per cent lower in 2018–19 in real terms than in 2009–10 (Institute for Government, 2020: 31).

EA resources remained fairly constant over the research period. They employ the largest number of staff funded by DEFRA<sup>113</sup> and within the EA, Flood and Coastal Erosion Risk Management (FCERM) commands the highest proportion of funding.<sup>114</sup> However, the EA's 2018–19 and 2019–20 Annual Reports both include insufficient funding to meet statutory obligations as a risk (Environment Agency, 2019: 18 and 2020a: 39). While the overall levels of FCERM staff have remained steady it is notable that the number of staff working in communities as specialist flood engagement staff (Flood Risk Engagement Advisors) is very low: there were 1.5 such staff in the EA area (one of 14 across England) in which our sample areas were located. If this was representative of staff across the 14 EA areas then just 21 of the EA's 9,133 staff were working in these specialist roles. This resonates with the 2018 Multi-Agency Report which observed that in contrast to local authority funding central government spending on flooding had 'risen substantially' (DEFRA and Environment Agency, 2018: para 10.1). It further noted that most of this funding was devoted to capital projects and relatively very little to emergency planning and response, and urged that the balance between the two be 'critically examined' (DEFRA and Environment Agency, 2018: para 10.3 and para 10.8).

The governance structure for flooding in England is risk-led with estimations of risk determining priorities with respect to funding and major investments at a national level. Responsibilities are cascaded down to local government level. While there are duties to consult local communities, we have seen that there is no obligation to include them in decision making and their participation in consultations and flood risk management and resilience is entirely voluntary and seen as 'supporting' the formal organisations involved. Likewise, the formal flood governance system assumes a voluntary role for householders and businesses. It is therefore more of a top-down system than one which sets out to actively incorporate civil society in any significant way. Nevertheless, there are some efforts to enhance resilience at the local level, especially through grants and financial partnership structures, although how extensively these reach down to community and household levels in part depends upon on the efforts of the LLFAs and Local Resilience Forums.

There are some indications that there are moves to shift greater responsibility to individuals. The Flood Re scheme is premised on this, with an expectation that individuals will have greater awareness of flood risk and its mitigation by the end of the scheme. This raises issues relating to inequality (see Chapter 7), and to the ways in which insurance can incentivise greater risk awareness and action to mitigate flood risk. The insurance industry evidence to the House of Commons Environmental Audit Committee urged those in the governance system to do more to 'raise greater awareness of flood risk within local communities and incentivise resilience action in local and neighbouring communities' (House of Commons Environmental Audit Committee, 2016: para 20).

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<sup>113</sup> In 2018–19, the EA employed 9,133 staff of DEFRA's 24,842 staff (National Audit Office, 2019).

<sup>114</sup> In 2018–19, the net expenditure on FCERM was £800 million out of total EA net expenditure of £952.7 million. FCERM staff costs accounted for £204.6 million, while the largest category of FCERM expenditure was capital works at £313.1 million (Environment Agency, 2019: 74).

Local flood governance staff and councillors representing our sample areas were sceptical that their local populations were fully aware of the flood risk in their area. Certainly, flooding was not a topic that generated a lot of response from some of the councillors we approached, suggesting that it may not have been an issue that exercised their constituents. We turn to these issues in the next Chapter which examines what the local populations in our research sample knew about the flood risks in their locality, the actions they took in response to any awareness of the flood risk, and their willingness to participate in flood related initiatives.

## 5 Local populations and flooding

The literature on social resilience suggests that resilience should be enhanced by 'institutional resilience' indicators such as flood preparedness, including an awareness of the possibility of flooding, the proportion of the population signed up for flood alerts, and the proportion with flood insurance. It further suggests that previous flooding experience should strengthen institutional resilience (see Cutter et al., 2008 and 2010; Fielding et al., 2007; Twigger-Ross et al., 2014). Infrastructure resilience indicators also assume that the type of housing the local population occupies influences their resilience, for example, that those living in bungalows and mobile homes are less resilient (see Chapter 2). In this Chapter we turn to what can we learn about the levels of awareness and interest in flood risk among householders in our sample.

The UK has several online resources about flooding for householders. The Gov.UK central government website materials on 'Flooding and Coastal Change' detail how to find out if your property is at risk of flooding by accessing flood risk maps or requesting the flooding history of your property.<sup>115</sup> There is information about current flood warnings, the imminent and long term risks of flooding, and details about how to sign up to receive flood warnings when your property is at imminent risk of flooding. Sections of the website advise on how to prepare your property for a flood and what to do during and after a flood, including the advice that 'Whilst you can never eliminate the risk of flooding, protecting your property can be a key part of helping to reduce the impact of flooding on your home or business'.<sup>116</sup> The website also provides links to charitable and commercial sources of help and products, for example, a link to the National Flood Forum (a charity to help, support and represent people at risk of flooding) which can offer property protection advice,<sup>117</sup> and links to suppliers of property level protection equipment.<sup>118</sup>

The website also includes a section on insurance, giving details of advice offered by the National Flood Forum, advice on finding an insurance broker, and links to the Flood Re joint government and insurance industry scheme to help those living in flood risk areas to secure 'affordable' insurance.<sup>119</sup> Part of the site details information services for those living in areas that may be about to be flooded: flood warnings, contacting the local council about the availability of sandbags, and travel information sites. Advice is provided about who to contact during a flood.<sup>120</sup> A series of leaflets is available, for example, a 24-page leaflet provides 'practical advice' about *What to do before, during and after a flood*.<sup>121</sup> The National Flood

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<sup>115</sup> <<https://www.gov.uk/guidance/flood-risk-and-coastal-change>>

<sup>116</sup> <<http://bluepages.org.uk/protecting-my-property/>>

<sup>117</sup> <<https://nationalfloodforum.org.uk/about-flooding/reducing-your-risk/property-protection-advisor/>>

<sup>118</sup> <<http://bluepages.org.uk/protecting-my-property/>>

<sup>119</sup> <<https://www.gov.uk/prepare-for-flooding/get-insurance>; <https://www.floodre.co.uk/how-flood-re-works/>>

<sup>120</sup> <<https://www.gov.uk/help-during-flood>>; <<https://www.gov.uk/report-flood-cause>>

<sup>121</sup>

<[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/403213/LIT\\_5216.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/403213/LIT_5216.pdf)>

Forum and local councils also provide information and advice for those living in flood risk areas. Given this wealth of information we wanted to know how aware and proactive our LSOA residents are with respect to flooding and whether this had led them to act to mitigate the effects of any possible future flooding.

### Awareness of flood risks

The first indicator we had of the levels of awareness and interest in flooding issues within the sample LSOAs were the responses to our attempts to survey the local population. Table 5.1 details these responses. Only 8 per cent of those approached responded with a completed questionnaire. At one level this was not a complete surprise given the levels of interest shown by Council staff and especially councillors in these areas (see Chapter 4). As one official observed, the lack of interest among councillors reflected the lack of concern among those they represent.

We knew that face-to-face contact should increase the probability of response. However, despite door knocking at various times of the day and repeat visits it was not possible to speak personally to 60 per cent of those we approached. 14 per cent who were spoken to declined to participate, and another 19 per cent accessed the questionnaire but failed to return it.

**Table 5.1 Response rates to resident surveys in sample LSOAs**

LSOA	Number of properties invited to participate <sup>122</sup>	No response <sup>123</sup>	Refused	Failed to complete questionnaire <sup>124</sup>	Replied
LSOA 1	81	60	5	10	6
LSOA 2	181	108	20	39	14
LSOA 3	139	71	28	28	12
LSOA 4	210	125	31	37	17
<b>TOTAL</b>	<b>611</b>	<b>364</b>	<b>84</b>	<b>114</b>	<b>49 (46 completed questionnaires)<sup>125</sup></b>

When researchers made repeat visits to the non-response households in the sample, they asked those who answered their doors and declined to participate if they would mind saying why. The most cited explanations focused on apathy or disinterest, and on disbelief or denial that flooding was an issue for them. For example, apathy and disinterest were expressed in comments such as: ‘I can’t be asked’; ‘Haven’t gotten around to it’; ‘I’m not interested and lazy’; ‘Can’t be bothered’. In another example, the resident did not feel that it was their responsibility: ‘My kids will have to sort out flooding not me’.

<sup>122</sup> We have excluded from this count properties which were vacant or displayed ‘no cold caller’ signs when researchers were door knocking.

<sup>123</sup> These are properties where no one was in when researchers visited, and envelopes were left but no response was forthcoming.

<sup>124</sup> Properties where people said they would complete the questionnaire online or requested hard copies, but failed to complete them.

<sup>125</sup> Three respondents in LSOA 2 returned empty online questionnaires as they did not realise that they had not saved them correctly. The data detailed in this and subsequent chapters are based on the 46 completed questionnaires.

Disbelief and denial that flooding was an issue figured in comments such as:

We've been here 10 years and never flooded: the defences will keep us safe.

Lots of defences put in the past few years, so hopefully no flooding like the 1960s again.

I've lived here 23 years and never flooded.

Not worth it as no flooding will happen.

In one case researchers were told by a resident that flooding was not an issue for his household, even though the front garden was full of sandbags and the property was a high risk one. Miscellaneous other explanations included being too poorly to participate; having just moved in so too soon to respond; and in two cases, finding the questionnaire too long.

Previous research has found that topic interest influences participation in research on flooding (Waite et al., 2017). It has also discerned that people tend to underestimate the risk of flooding which may be a high risk, low frequency event. Some of the reasons for this are reflected in the above comments and will be developed through this Chapter. The response rates are disappointing, and those who did respond were therefore too few to be taken as representative of their LSOA, but they do provide us with valuable data and insights about the levels of interest in, and attitudes to, flooding in our sample areas.

## Participant responses: personal awareness and experiences

### *Awareness of flooding risk*

All of those we surveyed lived in neighbourhoods at risk of flooding and most of them in properties at high or medium risk of flooding (see Chapter 2). 72 per cent of respondents were aware of a flood risk in their area, and a slightly lower percentage (61 per cent) were aware of there being a risk to their own residence. These figures are higher than those in the EA public flood survey in 2013–14, where 54 per cent of the respondents at high or medium risk of flooding were aware of the risk of flooding (Environment Agency, 2014: 12). In our sample, awareness of the risks was highest among those who had lived in the areas for 5 years or more. 71 per cent of respondents living in the sample LSOAs for 5 years or more were aware of the risks of flooding, although the length of time residents had lived in the area was no guarantee that they would be aware of the risks of flooding. 29 per cent who had lived in the area for 5 years or more were unaware of the risks. Indeed, eight of these had lived in one sample area for over a decade and four of these were especially vulnerable as they lived in mobile homes.<sup>126</sup>

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<sup>126</sup> Eight of our sample lived in mobile homes, half were aware of the flood risk and half unaware. They all lived in LSOA 3.

There were also differences between areas: those living in LSOA 4 were the most aware of the risks and those in LSOA 3 the least aware.<sup>127</sup> These responses resonate with other research on flood awareness. For example, flood experience, the length of time in residence in an area, and the location of where people lived have all been found to be significantly related to awareness of flood risk (Burningham et al., 2008; Lechowska, 2018). There were some variations. For example, some studies suggest that those in rented accommodation are less aware of flooding. Very few in our survey lived in rented property, but those who did rent were more or less equally divided in their awareness or lack of awareness of the flood risk.<sup>128</sup> The literature is divided about the influence of education and age. In our sample, 8 respondents had no formal education yet all were aware of the flood risks. Half of those who were aware of the flood risk were 65 or older, which contrasts with the Burningham et al. (2008) study where age did not feature as important.

Respondents' sources of information about the risk of flooding varied. Some learned of the risk when they bought their property, either through legal searches, mortgage surveys or when they applied for insurance. Other residents became aware of the flooding risk through council pamphlets, for example, information from the council about what to do if flooding happens, or through council or Environment Agency (EA) information online. When asked 'Have you heard of the Environment Agency?', 91 per cent said that they had heard of the EA. The EA's public flood survey found that 95 per cent of respondents had heard of the EA (Environment Agency, 2014: 69).

Some had direct past experience of flooding or had heard about previous flooding through hearsay: an LSOA 4 resident responded that it is 'Well known historical flooding not too far away'. An LSOA 1 resident similarly commented: 'There was significant flooding in [District A] in the 1960s, my street was at least 3 feet deep. I'm very near the river and although significant flood defence work has been and is being done, we can't assume we are risk-free.'

Others, however, felt more protected by flood defences:

I have been told by a neighbour that [...] Street was flooded sometime in the 1960s. Since then flood defences have been built (LSOA 1 resident).

We live very close to a river, when we purchased the property the survey covered that risk and flood defence work has been taking place for nearly 3 years opposite our house (LSOA 2 resident).

In 1979 the whole of [LSOA 4] was flooded – as result a 'flood prevention dam' was built which holds back excess water until the river level drops. This seems to be very effective.

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<sup>127</sup> Awareness of neighbourhood flood risk was 88 per cent in LSOA 4 and 42 per cent in LSOA 3; awareness of property risk was 76 per cent in LSOA 4 and 33 per cent in LSOA 3. Awareness of neighbourhood flood risk was 83 per cent in LSOA 1 and 73 per cent in LSOA 2; awareness of flood risk to property was 67 per cent in LSOA 1 and 64 per cent in LSOA 2.

<sup>128</sup> Just 9 respondents lived in rented accommodation: 4 were aware of the risks and 5 were not.



Some residents felt the risk was low because of the geography of their property: 'When we took out our mortgage and our home insurance, we were told that due to the proximity to the river, we were potentially a flood risk. I think it's a low risk as our house is about 5 feet up (higher than) the road' (LSOA 2 resident). Others believed that the online information indicated that their properties were at risk only in 'exceptional circumstances' (LSOA 3 resident), or that the boundaries indicated that their property '... is just outside the indicative floodplain for this area' (LSOA 2 resident).

Similar responses have been found in other UK studies of flood awareness. Burningham et al. (2008: 228ff) found that some of their respondents knew of the flood risk to the local area but not to their property. In some cases, these respondents questioned their risk status on the grounds that the flood maps were indistinct or wrong because of the position of their homes. Certainly, there are difficulties with the flood maps (see Chapter 3) and also with understandings of flood maps and risk metrics, but there is also some evidence of risk denial. An important question is therefore how many of those who claimed to be aware of the risks acted on this knowledge and can we discern any explanations for their reactions?

### *Household flood preparedness*

The literature suggests that perceptions of flood risk are often much higher than the levels of preventative action taken to mitigate the risks (Harries, 2008; Wachinger et al., 2013). To assess levels of institutional resilience among our respondents we asked them about several indicators of flood mitigation and preparedness, starting with questions about whether they had registered for flood warnings. These are telephone, email or text alerts sent by the EA if a property is at immediate risk of flooding.<sup>129</sup> 48 per cent said that they had registered for flood alerts.<sup>130</sup> The majority of these were from LSOA 4, where 88 per cent were registered. This compares with just 1 of 12 respondents having registered in LSOA 3, and 37 per cent of those responding in LSOAs 1 and 2. The majority of those registered for warnings received warning through text alerts (68 per cent), while 41 per cent mentioned their landline and 32 per cent emails (nine respondents received alerts through multiple routes).

We asked respondents if they knew where to obtain information about flood warnings and alerts. Interestingly, the highest proportion claiming to know were from LSOA 3 (64 per cent) who were the respondents least using the system. Respondents from this LSOA also claimed to be aware of the EA's flood warning system (64 per cent). If they were truly aware of these warning systems, it suggests that they did not perceive themselves to be at risk and in need of warnings, perhaps echoing the comments of disbelief and denial of those declining to participate in the survey (see above). District A respondents were the least knowledgeable of where to obtain information about flood alerts (75 per cent did not know). Flood plans are a more sophisticated, but still not financially costly form of preparedness for flooding. The Gov.UK site offers a template for a personal plan, which comprises useful telephone numbers – for example, for flood warnings and utility companies – and a list of actions that need attending to such as moving items, having a flood kit ready, and informing

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<sup>129</sup> <<https://www.gov.uk/sign-up-for-flood-warnings>>

<sup>130</sup> The EA's 2013–14 public flood survey found a lower percentage of respondents registering for flood warnings, at just 37 per cent (Environment Agency, 2014: 25).

relatives.<sup>131</sup> Eight respondents said that they had such a plan, five of these living in LSOA 4.<sup>132</sup> Clearly the large majority did not have such a plan and 95 per cent were unaware of any community flood plans.<sup>133</sup> Two respondents from District B claimed to be aware of a community plan, but this District had no such plans in force.

The survey asked who respondents would report property flooding to, should they be unfortunate enough to experience it. Just one respondent said s/he would report to no one, the rest of the sample indicating that they would report to multiple organisations, the most frequently mentioned being insurance companies (71 per cent), the local council (55 per cent) or District Council (27 per cent), the EA (40 per cent), the fire brigade (35 per cent), and the police (9 per cent). Others separately identified their landlord or landlady as the appropriate person to contact (9 per cent).

At the time of a flood the contact points depend upon the type of flooding and its location. For example, the emergency services should be called if there is a threat to life; road flooding should be reported to the local highway authority; flooding from sewers and water pipes to the water companies; and sandbag requests to the local District or Parish Councils, who may also set up rest and evacuation centres in the event of a flood. Meanwhile, the Lead Local Flood Authority will have plans in place to respond to emergencies and the EA will oversee operating flood defences. In the aftermath of a flood insurance companies should be contacted and utility companies to check on the safety of using electricity, gas, and water supplies.<sup>134</sup> From the perspective of the local resident this advice is arguably quite confusing. For example, the source of the flooding may not be apparent to them. Moreover, the plans depend upon residents being aware not only of the flood risk to their locality and property but also of the plans in place and the multiple agencies involved.

### *Property level protection*

Property level protection (PLP) is an important indicator of mitigation and preparedness. Property level resistance is concerned with reducing the risk of flood water entering a property, and property level resilience is about reducing the impact of flooding which has entered a building.<sup>135</sup> When asked if they have flood defences at their property, 86 per cent said they did not.<sup>136</sup> All except one who did have defences were from LSOA 4. They had various defences in place: four had sandbags; two had flood gates; and two had replaced wooden floors with concrete floors. One couple was responsible for replies in all these categories – they had experienced serious and repeated flooding (see below) and had also installed flood alarms, waterproofed walls, modified their kitchen and plugs, and built a flood wall. One resident in LSOA 3 lived in a mobile home and had ensured the floor level was a minimum of 18 inches above the surrounding ground level. These findings are consistent

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<sup>131</sup> <<https://www.gov.uk/government/publications/personal-flood-plan>>

<sup>132</sup> This is well below the 34 per cent having a flood plan in the EA's public flood survey 2013–14 (Environment Agency, 2014: 21).

<sup>133</sup> <<https://www.gov.uk/government/publications/flood-plan-guidance-for-communities-and-groups>>

<sup>134</sup> <<https://nationalfloodforum.org.uk/about-flooding/recovering/what-should-i-do/>>

<sup>135</sup> <<https://nationalfloodforum.org.uk/about-flooding/reducing-your-risk/protecting-your-property/>>

<sup>136</sup> This compares to 21 per cent in the EA's public flood survey 2013–14 who had bought flood protection products (Environment Agency, 2014).

with previous research. For example, Soane et al. (2010) found that most of their sample had no flood protection.

PLP can be costly depending upon the level and sophistication of the protection purchased. This may be one reason why so few households in the sample had installed PLP (Wachinger et al., 2013). There are, however, government grants and subsidies to help with the costs of installing physical flood defences. For example, local authorities may have grants for property level resilience works and central government has also provided recovery grants for those who have suffered flooding and resilience grants to help make properties more resilient.<sup>137</sup> Respondents were asked if they knew of any Government/Council grants/subsidies to help them protect their home from flooding. 96 per cent were unaware of these grants and just one respondent had applied for and secured a grant. One explanation for this may be that many of these grants are only available to those whose properties have already flooded, not for those whose properties are at risk of flooding. Indeed, one local authority official interviewed identified this as a deficiency.

### *Insurance*

Flood insurance is an important form of mitigation which reduces the financial consequences of flooding. It is, however, a contentious measure given that it can be very expensive to purchase and is therefore regressive (see Chapter 7). In the UK, Flood Re has been put in place to try to mitigate these effects (see Chapter 4), but flood insurance is nevertheless relatively costly for some households (DEFRA, 2018b). The survey included several questions about insurance, including a general question asking if respondents currently have property insurance and/or contents insurance and if so, whether these policies covered flooding. The majority did have insurance, with contents insurance being held by a few more residents (89 per cent) than property insurance (86 per cent), which is not surprising given that the sample included rental properties where property insurance would be the owner's responsibility.

Half of the respondents said that they did not have insurance against flooding. When asked their reasons for not having flood insurance, five replied that they did not believe that they were at risk of flooding; one explained: 'I consider my property at low risk of flooding since the local flood relief scheme was installed after the 1978 flood'; and another: 'It never crossed our minds that flooding insurance would be something we would need.' Another resident expressed distrust of insurance companies: 'These companies seem to be able to "move the goal posts" when it suits them.' Another did not believe that insurance companies would provide cover for flooding 'Insurance companies will not cover for flooding'. The response rates are too low to attribute too much to differences across the sample areas, but it is interesting that LSOA 4 respondents were the most likely to have flood cover (59 per cent) as this is the LSOA with the highest levels of awareness of flooding risks. LSOA 2 respondents were the least likely to have flood insurance (27 per cent) and the area with the highest level of uncertainty (55 per cent did not know).

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<sup>137</sup><https://www.ageuk.org.uk/worcesteranddistrict/about-us/latest-news/articles/2020/flood-support-funding/>

### *Flood defences*

Physical flood defences are the most common form of resilience strategy used by the authorities (see Chapter 3) and the survey asked if respondents knew of any existing or proposed flood defences in their local area. Overall, 63 per cent claimed to be aware of flood defences, with this awareness especially high in LSOAs 1 (83 per cent) and 2 (91 per cent), compared to just 17 per cent aware in LSOA 3 and 71 per cent in LSOA 4. The higher awareness in District A (LSOAs 1 and 2) is not surprising as a great deal of flood defence work has been done in this area, with major schemes being undertaken at the time of the interviews. There had been flood defence work in District B but this was 40 years previously. These results are interesting, especially when taken together with the finding (above) that those in District A were least likely to invest in PLP and least likely to have personal flood plans. The evidence of other research is that where people believe that local flood defences will protect them, they are less prepared to invest in personal preparedness (Cologna et al., 2017; Wachinger et al., 2013). Such views may have encouraged previous flood risk management policies that emphasised physical resilience measures (Deeming and Fordham, 2012).

Governments are of course most likely to invest in flood defence programmes where there has been experience of flooding. Previous experience of flooding has been identified as a factor that could also increase household and individual resilience and preparedness for flooding, although the evidence is that while risk perception and experience of flooding increases the likelihood of flood preparedness, this is not necessarily the case. Indeed, Wachinger et al.'s (2013) literature review noted that some authors found that this is 'seldom' the case. They conceive of this as a risk perception paradox given that 'it is assumed that high risk perception will lead to personal preparedness and ... risk mitigation behaviour' (Wachinger et al., 2013: 1049).

### *Impact of previous flooding*

Only nine respondents replied that their property had been previously affected by flooding: two in LSOA 1 and seven in LSOA 4. Neither of the respondents in LSOA 1 had personally been resident at the time of the flooding so they were uncertain about the details of the flooding. One referred to historic 1960 flooding and the other to more recent 2019 flooding. The flooding had affected the inside and outside of one property and the garden of the other property. One knew nothing about insurance cover, the other said that their understanding was that a straightforward claim had been made to an insurance company. Apart from this the respondents did not know any other details of the flooding.

Six of the respondents who had experienced flooding in LSOA 4 had been resident at the time of the flooding, and one had not. They referred to historic flooding in the 1970s and 1980s and in one case to more recent, repeated flooding. All except one had experienced flooding in their gardens and five had experienced flooding inside their properties. The duration of the flooding ranged from one hour to two days; one respondent reported that there had been flooding inside their property for 16 hours at a depth of 70 centimetres and in the garden for 24-48 hours. Three had received warning of the flooding and four had received help from official sources such as the local council and the EA, from charities such as the Salvation Army, and from neighbours. The clean-up took from between one day and 3

months and in one case necessitated a move to temporary accommodation. One respondent had no insurance at the time of the flooding, three had property and contents insurance, and three gave no details. Of those with insurance two claimed and one did not. One reported that their experience of claiming was 'A bit hit and miss. I suppose because it was the whole of (LSOA 4) it was a bit overwhelming for the authorities etc.'

It is difficult with such small numbers to discern any clear effects of previous flooding on the propensity to act to mitigate the effects of flooding. All except one of the nine respondents who had experienced previous flooding received flood warnings; four had flood defences and each of these had directly experienced flooding; and seven had insurance cover for flooding. One respondent without flooding insurance cover had directly experienced flooding and explained the decision as 'I consider my property at low risk of flooding since the local flood relief scheme was installed after the 1978 flood.' Another respondent who did have insurance cover was less trusting of the flood protections in place: 'The town has been flooded at least twice before the dam was built in the 1970s. It has not flooded since but has come close.'

The research literature suggests that the propensity to act may be affected by the extent of the damage caused by previous flooding. Seven respondents knew of previous floodwater inside their properties, and four of these had experienced this directly. Three out of these respondents had installed flood defences and three had flood plans, whereas across the sample as a whole only six had flood defences and eight had flood plans, suggesting that flooding experience, especially direct experience, did appear to increase the propensity to act. These findings reflect those of a DEFRA study (DEFRA, 2018b: 55) which found that those who have been flooded are significantly more likely to install PLP than those who have not experienced flooding (see also Environment Agency, 2014: 22; and Soane et al., 2010). The reasons for this are likely to be related to the realisation of the full extent of the damage that flooding can cause.

### *Health*

The Pitt Review highlighted the negative health effects that can result from flooding. It commissioned qualitative research to consider the health effects of the floods and the performance of the insurance industry. It detailed the fear, stress and sense of helplessness generated by the loss of power supplies, transport and communication; the scarcity of drinking water; and the damage caused to homes – the smell, infestations and physical damage. These in turn caused health effects from damp living conditions and contamination. The health effects were physical, psychosocial and psychological, and in some cases, they were long term, affecting individuals and family relationships (Pitt, 2008: Chapter 25). Health problems were further exacerbated by flooding-related financial difficulties. These were caused by the additional expenses of replacing lost belongings, cleaning up and repair, and in some cases the costs of temporary accommodation (Pitt, 2008: 384). Communities also suffered ill-effects as community resources were damaged, although one of the rare positive effects of the flooding was a greater sense of community. Many of the recommendations of the Pitt Review related to addressing the causes of this suffering. It is also highly probable that these personal and social impacts facilitated the greater social awareness and moves towards resilience in the Review.

Since the Pitt Review there has been a growing appreciation of the detrimental mental and physical effects of flooding. In 2012 the Health Protection Agency reviewed 48 international papers on the effects of flooding on mental health (Stanke et al., 2012). They found that flooding can affect all age ranges and result in a variety of mental health illnesses. Distress is common, especially in the short term, and it can cause or exacerbate conditions such as depression, increased substance use and abuse, and post-traumatic stress disorder (see also Fernandez et al., 2015). Stanke et al. (2012) nevertheless concluded that ‘Most people who are affected by flooding are remarkably resilient’ and a ‘smaller proportion’ require specialist mental health services. Of particular relevance for this research is the finding that ‘Most people’s psychosocial needs are met through their close relationships with their families, friends and communities.’ (Stanke et al., 2012). A policy recommendation of the review was to use a multi-sector approach which involves the community as ‘the best way to promote well-being and recovery’ (Stanke et al., 2012), by promoting the social cohesion of communities and families before a flood and restoring it as soon as possible afterwards.

Several studies have found that the degree of impact and loss associated with flooding are correlated with its negative effects on mental health. Fernandez et al. (2015) found that the flood level in the house, evacuation, financial loss, and difficulties in claiming insurance all contributed to the mental health effects of flooding. A UK study of the effects of evacuation on mental health one year after the 2013–14 floods in England found that evacuation was associated with higher reported levels of mental health symptoms (Munro et al., 2017). It also found that there appeared to be some relationship between the severity of the mental health effects and the severity of the flooding. Another study by Public Health England (2020) used the same dataset and considered the effects on those whose properties were flooded and those whose properties were not flooded but whose lives were disrupted, for example, with respect to transport, work, education, and access to healthcare. This research found ill-effects in both groups and suggested that ‘the mental health impacts of flooding are prolonged and extend beyond just those who are flooded’ (Waite et al., 2017).

Policy makers in the UK have certainly become more sensitised to the potential health effects of flooding. The Gov.UK site, for example, includes information for first responders advising them of the effects of flooding on mental health.<sup>138</sup> It warns that the experience of flooding is a cause of stress and so too, may be the experience of cleaning up and recovery. The site offers advice on how responders can help and that ‘Restoring communications and keeping families together are key to reducing suffering and promoting recovery from flooding’.

One couple interviewed in this research lived in District B and had experienced repeated flooding since they moved to their property twenty years previously. They had installed flood defences around and within their property at some considerable cost to themselves. They estimated that they had spent some £50,000 and had received a £5,000 grant towards the cost. They had signed up for flood warnings which they described as ‘brilliant’, not least because they had found them to be reliable and felt confident that if they had not had a

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<sup>138</sup> <<https://www.gov.uk/government/publications/flooding-and-health-advice-for-frontline-responders>>



warning, they could sleep without worrying about an unexpected flood. This echoes the message of the research discussed above.

The distress caused by their flooding experiences is reflected in the amount of time they had invested in researching the causes of their flooding and the extensive correspondence they had engaged in with the authorities. They were in dispute with the local authorities and the EA over the causes of the flooding, which they believed had been exacerbated by nearby flood defences. Their distress was intensified by their perception that the authorities were not interested in their case or willing to take their explanations seriously.<sup>139</sup> They had undertaken hydrology courses, kept extensive files detailing the flooding, and written to different levels of government and governance numerous times over the course of the last two decades. They had managed to obtain insurance since the Flood Re scheme but apparently the premiums were very high, and they would have to pay an excess of £30,000. Their case conveyed something of the anguish flooding can cause over and beyond the very real everyday practical difficulties it can incur: ‘... everything gets covered in silt and it’s from our sceptic tank and everyone else’s ... it’s not a next day mop up ...’<sup>140</sup>

### Participant responses: related issues

The data we have reported on so far in this Chapter relate to respondents’ personal awareness and experiences of flooding in their neighbourhood. We also asked them for their views and opinions on a variety of flooding related issues. Some of these related to their understandings of risk and what would prompt them to take action to mitigate the risk of flooding. We know that generally risk metrics are poorly understood, even by experts (Handmer and Proudley, 2007; Kahneman et al., 1982), so if they are aware of the risk is their understanding such that they would act upon it? Moreover, who do they think should be responsible for acting to mitigate flood risks, and what are their views about more contentious issues such as the trade-offs between flood risk and housing needs?

#### *Risk and responsibilities*

The risks of properties being flooded are classified in different ways. The survey explained the various levels of risk<sup>141</sup> and then asked ‘If the risk of flooding in your area was 1:30 (i.e. a 3.3 per cent chance of flooding during any given year, which is classified as high risk) would you expect the Government or local council to do anything to decrease this risk? 91 per cent of respondents replied that they would expect the authorities to act: 63 per cent expected both central and local government to act; 28 per cent separately identified local government; and 7 per cent cited central government. Respondents were then asked if they would do anything if there was a 1:30 risk of flooding: 82 per cent answered that they would.

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<sup>139</sup> During the interview they expressed their frustration that ‘everything is blamed on global warming, it is used as a “get out of jail free” card’ – not to dispute that there is global warming, but because they believed that the authorities used it as an excuse not to deal with their problems.

<sup>140</sup> See Mort et al. (2018) and Walker et al. (2011) for discussion of the experience of being flooded.

<sup>141</sup> High risk is classified as a chance of flooding of greater than 1 in 30 (i.e. a 3.3 per cent chance of flooding in any given year); Medium risk is a chance of flooding of between 1 in 30 (3.3 per cent) and 1 in 100 (1 per cent); and Low risk is a chance of flooding of between 1 in 100 (1 per cent) and 1 in 1,000 (0.1 per cent).

There was therefore a strong view that responsibilities for action were shared between the authorities, most particularly the local authority, and themselves as residents. Five of those who would not act had different reasons for their response: two would not know what to do; one did not think it would be cost effective for individuals to take action; one felt that it was not possible to do anything as the residence was a mobile home; and one felt that they were already well covered and need not do anymore.

Those who would act in response to a flood risk of 1:30 mentioned various things they would do. The most frequently cited action (13) would be to seek out more information or ask for advice: 'Pay more attention to flood alerts, look at modifications to my property, purchase sandbags.' Physical flood defences were mentioned by nine respondents, including flood barriers, waterproofing walls, and raising electrical sockets, but the most common was sandbags. However, this raised concerns for one respondent: 'Somehow have to organise sandbags – even though I have nowhere to keep them and because of health problems would not be able to move them in an emergency.' Five respondents would consider more radical actions such as moving to a new house or leaving the area. Just two mentioned looking at their insurance cover; and two would speak to their landlord or landlady: 'Speak to my landlady – up to her'; 'Contact landlady and ask her if there's anything she can do to prevent the property from flooding.' Just one mentioned collective action 'I would campaign for better flood defences.

In practice, many of those included in the sample were already living in properties with a 1:30 level of flood risk. Given how few had protected their properties it suggests that at least some were genuinely unaware of the risks they faced. Indeed, one wrote that they were not aware of the flood risk until they filled in the survey. Another wrote: 'I feel the local and county councils are doing reasonably well in preventing floods, and my home is not directly affected, as it is not on the indicative floodplain.'

### *Affordable insurance*

We asked respondents whether the Government should make it mandatory for insurance companies to provide affordable insurance for those at risk of flooding. 91 per cent of those responding agreed (see also Chapter 7). Some believed that insurance companies had a responsibility to provide this insurance, reflecting arguments that they should not be able to 'pick and choose' which risks they cover. Other respondents focused more on the responsibilities of government and saw them as having a responsibility to insist on the mandatory availability of affordable insurance. A key argument here was that government responsibility is associated with their permitting building on floodplains:

Because not only has the Government allowed lots of home to be built in vulnerable areas, but as we've seen in recent times, climate change is causing flooding to occur in unexpected places. If people are allowed or encouraged to live somewhere the insurance should be available. I have been declined insurance by some companies for this address.

People are increasingly at risk of flooding through no fault of their own, due to over development in the area, climate change, under-funded local authorities and the consequences of the under-funding, such as poor drainage maintenance.



Because it's fair that if they let people build there, they should help make them safe to live in them.

Those not in favour of the mandatory availability of insurance focused on similar issues to those in favour, but from a different perspective. For example, one raised a concern about moral hazard, that providing insurance would encourage building on floodplains. Others felt that there are more efficient ways of financing flood damage and that the Government should pursue these:

National and/or local taxation are more controllable and rational ways of financing such public works.

I think they would just set the premiums at an unaffordable level. They are a business after all, not charities. A central government fund for release in emergencies seems more useful.

Interestingly the sentiments here are that the responsibility lies with the Government to help flood victims and there should be some provision from the public purse. One felt that it was unfair to target insurance companies:

It's neither their fault nor responsibility. They attributed blame to an incompetent EA, who does not insist that Planning Departments should turn down all applications for building on flood-risk land.

### *Building on floodplains*

Building on floodplains is a highly contentious issue. Planning regulations in the UK allow local councils to permit building on land at high risk of flooding.<sup>142</sup> Indeed many thousands of houses have been built on floodplains. The reasons for this focus on the need for a ready supply of new houses, so there is a tension between housing supply and flood risk, exacerbated by the fact that this housing arguably contributes to the flood risk.<sup>143</sup> Both the EA and the Committee on Climate Change<sup>144</sup> have cautioned against the practice, but still it continues.

We asked respondents if they thought that local councils should allow developers to build on floodplains. 76 per cent (35 respondents) were against these developments; five thought it depended on local circumstances; three did not know; and just two felt building on floodplains should be permitted. Feelings against building on floodplains were strongest in LSOA 3 (10/12 replied a definite no) and LSOA 4 (15/17 replied a definite no), where building on floodplains has been a local issue. Respondents in both LSOAs in District A were

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<sup>142</sup> The EA is a statutory planning advisor to local planning authorities. Its advice is not mandatory. Between 1 April 2020 and 31 March 2021, 97.1 per cent of all planning decisions were in line with EA advice on flood risk. The EA publishes a list of all applications where they have lodged initial objections on flood risk grounds. See Environment Agency (2022d: 5.1).

<sup>143</sup> See, for example, <[Policy of building homes on flood plains to be reviewed | Planning policy | The Guardian](#)> *Guardian*, 12 March 2020.

<sup>144</sup> <<https://www.theccc.org.uk/2010/09/16/be-prepared-the-uk-should-act-now-to-adapt-to-climate-change/>> Climate Change Committee, 16 September 2010.

less certain, although the majority were against building on floodplains. The most common objections centred on the risks these developments posed to people and their property:

It makes no sense. Why put those households at risk? Build somewhere else .... It puts people at risk and will increase the risk of flooding.

It's a ticking time bomb waiting to go off. There have been too many houses built too close to rivers/streams and on floodplains. Global warming will result in increased sea levels and flash flooding.

There was also a concern that in approving these developments '... risk is not effectively measured or communicated to home buyers'. Seven respondents expressed the view that it is common sense not to build on floodplains:

If the council and developers know a place is a floodplain then common sense says don't build on it and risk families, houses, contents and lives.

To build new houses on known floodplains is both stupid and irresponsible – and is usually only done for a quick profit.

Overdevelopment was a worry, as was the prioritisation of profit over safety:

No, it's crazy to allow building on floodplains. Greedy developers should be stopped. If flooding occurred after development, would they cough up or help in any way? No, they wouldn't.

There are almost always more viable alternative sites for development, but often profit is prioritised over sensible planning.

Those who were less definitive in their opposition responded that council decisions should depend on circumstances. Their explanations centred on the level of risk posed and whether it could be reduced by developers.

It depends on the frequency and seriousness of the flooding involved – if it is a very low risk it should be considered.

As long as developers have adequate preventative measures in place.

If the risk can be dramatically reduced and it won't just leave the tenants at the new homes with a 'ticking time bomb' whenever the flood hits, then why not?

Housing needed but developers could put in place flood defences around properties, changing layout of development to minimise damage from flooding.

Yes, if they are willing to build higher defences against the rivers/streams and make an effort to contact those renting the building/new home owners about their flood risk and insurance before they move in/buy.

The survey included a question about the longer term effects of building on floodplains, specifically: 'If the developer is given permission to build on a floodplain and the properties subsequently flood who should be responsible for paying for the cost of clean-up and recovery?'. Most of those responding thought that there should be shared responsibility for flood recovery costs to residences. 77 per cent (33 respondents) of those answering the question thought that property developers should pay, especially those in LSOA 3 where there have been major concerns about new estates being built in areas that are at a known risk of flooding. The local council was cited by 15 of those answering this question and central government by just eight. Two additional organisations were mentioned, namely insurance companies and the EA, the argument being that they should be included if they had given permission for the development. This reinforced the overriding message from the survey that those seen as responsible for giving permission and undertaking the building should pay:

The council for giving them permission, the developer for building.

If developers rapidly build student accommodation blocks next to the river and there is flooding in them, they should pay. However, why are the council giving planning permission for so many of these huge buildings?

Property developer together with the authority that sanctioned the development, for example the local planning department and the Environment Agency.

I believe it is wrong to expect homeowners or renters to have to pay for any preventive measures if their house has been built in a high risk zone. The council and property developers are accountable for that. It is also wrong to have renters pay for insurance to the property (apart from contents insurance) as they do not own the building.

Some respondents held central government responsible for not giving local councils and the EA the powers to refuse new developments on land at risk of flooding:

National government does nothing to help [counties] with flood prevention ....

Planning departments need more stringent regulation in general, but especially with regard to developments at risk of flooding or likely to increase the likelihood of flooding.

Householders were considered to hold some responsibility by just three respondents. One explained that householders should not be exempted from responsibility because '... they were all responsible for building/buying houses on floodplains'. It is not clear here whether this logic would have been applied to anyone buying or renting a property in an area at risk of flooding.

### *Surface water flooding*

The final question we asked was included to see how people responded to measures which would allow councils to stop householders paving over gardens to prevent surface water flooding. Concerns about impermeable hard surfaces replacing front gardens and

contributing to surface water flooding led to new legislation in 2008 requiring planning permission for impermeable driveways of greater than 5 square metres.<sup>145</sup> 53 per cent of our respondents agreed that councils should have this power; 27 per cent were unsure and 20 per cent disagreed. It is interesting that although most respondents agreed to regulation, it was a much lower percentage in favour than in the other examples where regulation would affect other organisations rather than them personally.

## Discussion

This research found very low levels of interest in flooding issues among households living in medium and high risk flood areas. The large majority invited to participate in the survey either ignored or declined the request. Some of those who declined the request indicated their lack of interest was because this is a topic they did not find relevant to them.

Of those who did respond, the majority (72 per cent) were aware that flooding is an issue in their area. 28 per cent were not aware of the flood risk to the area and 41 per cent were unaware of the risk to their own property. If these percentages held for the general population living in areas of medium and high risk flooding, we are looking at a substantial number of households across the country ignorant of the flood risk they live with. Indeed, the numbers who are unaware of flood risk may be higher than indicated by these percentages if there was an element of self-selection among respondents, with residents who were aware of a flood risk being more likely to participate in the survey.

In line with other research, although most of our respondents had some awareness of the flooding risk in their area very few of them acted to mitigate the potential effects of flooding. In some cases, the inaction is explained by a lack of awareness of the risk, or a lack of information about the severity or location of the risk. The flood data available to the public can be indistinct. Moreover some may find the data which are available difficult to understand. It may also be that there are few visual clues of the risks. For example, in District A there is a major river running through LSOAs 1 and 2 and this was referred to by several of our sample. In District B the flood risks in LSOA 3 are less immediately evident and this is the LSOA where awareness of the flood risk was lowest. The risks in LSOA 3 relate to a tidal river and a series of water courses (streams and leats) that can be subject to flash flooding, especially if not kept clear of debris, while the town is partially protected by a dam which has been subject to slight overtopping.

We also found evidence of respondents discounting or denying the flood risks (see also Burningham et al., 2008). We found this in the explanations offered for not participating in the research, or as explanations of why respondents had not taken out insurance or not taken other steps to mitigate the risks. In some cases the denial was related to a fear of financial consequences. Other research has found similar behaviour. Walker et al.'s (2011) study of Hull following a flooding event heard accounts of people who did not admit to being flooded: the elderly not wanting the upheaval and anxiety of remedial work and moving out of their homes; concerns about landlords increasing rents or losing tenancy rights; and

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<sup>145</sup> <<https://www.gov.uk/government/publications/permeable-surfacing-of-front-gardens-guidance>> Gov.UK, 13 May 2009.

concerns about increasing insurance premiums. A review of flooding and insurance found a reluctance to claim because of increasing difficulties of sale or increasing insurance premiums (Blanc 2020: 34). These findings echo the views of a respondent who had been flooded by surface water: 'We dare not claim on insurance as they then place us in a flood area which is stupid seeing we are nowhere near a river, stream etc. but if you claim for flood you are moved into a risk zone.'

Some respondents were aware that there was a flood risk to the area but believed that they were sufficiently protected by official flood schemes not to have to act themselves. Such views feature in reasons for not participating in the research, not having physical flood defences, and not having insurance. Other studies have discerned similar responses in post-flooding situations and relate them to issues of trust and responsibility. At one level there may be trust in the protection offered by the state and local authorities (Wachinger et al., 2013). Indeed, such a view may be encouraged by politicians and officials, a position some authors criticise for offering false security (Cologna et al., 2017). The flood risk zones are calculated on the assumption that any flood defences fail, but this calculation may not be understood by many people. Moreover, residents may not appreciate that flood defences can fail, although this is an important aspect of the resilience message.

At another level, issues of responsibility are involved. Wachinger et al. (2013) observe that individuals may not understand the implications of the 'rolling back of the state' and still believe that they can trust the state to take responsibility. In this respect our respondents were a little different in that when they were asked about their views on flooding and responsibility the majority did believe that there should be shared responsibility between the authorities and themselves to mitigate risks. They also believed that governments had responsibilities to the public when permitting building developments in areas of flood risk, such as floodplains, and beyond this in ensuring the availability of affordable insurance. Indeed, there was a belief that insurance companies and property developers should hold responsibilities.

Of course, the authorities cannot protect everyone from flooding, and this is likely to be increasingly the case as sea levels rise and the climate change has more severe impacts on weather events. The EA has argued this case in recent years, hence the growing emphasis on resilience rather than resistance (see Chapter 3). The effects of climate change were mentioned by a few of our respondents, particularly in relation to permission being given to build in flood risk areas, and the responsibility of governments to ensure the availability of affordable insurance. Some expressed cynicism that climate change is used by the authorities as a reason for failing to protect them in the event of flooding or is in danger of being used as an excuse to do nothing.

The research evidence is that individuals do not readily relate climate change to their own situations. For example, if they have previously experienced minor floods, they may find it hard to envisage the larger floods that may be caused by climate change (Cologna et al., 2017). However, there is some evidence that extreme weather events can be 'focusing events', which make climate change effects 'more imaginable', particularly for those directly affected (Capstick et al., 2015). Most of the respondents in this research had not directly

experienced flooding, although it was noticeable that those who had acted to mitigate the effects of flooding were more likely to have experienced some degree of flooding whether it be in their property or their gardens. However, the experience of being flooded does not necessarily prompt action.

In this research and in previous research socio-economic explanations of inaction are in evidence. For example, financial and knowledge capacity explain why some households do not act to mitigate the risk of flooding – they simply do not know what to do, where to find out what to do, and in some cases they cannot afford the solutions. Several of the respondents in this study recognised that they were ignorant of what to do, and who to ask, in the event of their living in a high risk area and stated that they would actively seek out this information if it was necessary to do so. Of course, many of those in the survey did live in areas with a 1:30 level of risk and had not acted, suggesting that they were either unaware of the risk or had not acted on their proposed intentions. Some lacked the financial capability to do anything. These issues are exemplified by the subject of insurance where issues of affordability are prominent in the wider literature (see Chapter 7). People in this category of the ‘risk perception paradox’ may be aware of their flood risk but are unaware of how to mitigate it and/or cannot afford the solutions.

Another explanation of why those who are aware of the risk fail to act on this information is that other risks take priority. Wachinger et al. (2013: 1054) explain that they may prioritise other risks which they consider as more serious or more imminent, particularly those associated with daily life. This was starkly exemplified by one of the local councillors in the research who emphasised that there is a lot of deprivation in LSOA 4 and that putting food on the table would take priority over worrying about flooding (see Chapter 4). Alternatively, they may weigh the benefits of living in a flood risk area as outweighing the costs. Indeed this was the view of one couple in this research who had been repeatedly flooded, who said that they had not considered moving because they loved living in the area so much. We have seen in this Chapter that the experience of being flooded can be long lasting and quite devastating for some households. Indeed, this is one reason why discussions have paid greater attention to the importance of acting ahead of a flood to help build resilience. For example, in January 2020 (after the data for this research were collected), the EA launched a campaign to highlight the impact flood damage has on mental health.<sup>146</sup> It stressed how preparing for a flood, by signing up for flood alerts and preparing a bag of medicines and insurance documents, could reduce both the physical damage to property and the mental health impacts of flooding.

A variety of policy recommendations flow from the explanations for inaction in the face of flood risk. These will be discussed in greater detail in Chapter 8 but prominent among them is empowering individuals, households, and neighbourhoods to act. This is also a key element of resilience strategies, namely to empower populations through giving them a voice or imposing responsibilities on them to participate and act. We saw in Chapter 4 that opinions about the involvement of the local population varied within local government. In this Chapter we have seen evidence of variable awareness and interest in flooding issues. We

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<sup>146</sup> <<https://www.gov.uk/government/news/prepare-for-flooding-to-reduce-impacts-on-mental-health>> Gov.UK 21, January 2020.

now move on to consider how willing residents in our sample LSOAs are to participate and to act. In doing so we should remember that while most of the research literature on flooding in the UK has studied post-flooding situations, this research selected areas where there had been no major flooding for several decades, so the task of encouraging households to prepare for a possible flood is likely to be even more challenging.

## 6 Participation

Participation is a fundamental characteristic of social resilience strategies and is seen to be a key route to empowering and engaging local populations so that they become aware of flood risks, involved in their mitigation, and prepared to act should a flood event occur. The aim is to build the resilience of the local population so that they are better prepared and able to cope with untoward events. The emphasis is upon collective or 'community' resilience. It is therefore important to identify which characteristics may facilitate resilience (Patel et al., 2017). In this research we used Cutter et al.'s (2010) indicators of 'community capital' to determine what our survey reveals about the sense of community, place attachment and citizen participation in our sample LSOAs. This is focused on populations within small scale geographical areas at medium and high risk of flooding. But this is not a simple geographical definition of 'community', rather an approach that can facilitate the recognition of different types of social ties and networks within a geographical space, the emphasis being upon collective resilience (see Chapter 1).

The notion of 'community capital' is related to what others term 'social capital'. Indeed, Cutter et al. (2010: 3) consider that their community capital indicators represent three 'key dimensions of social capital', namely sense of community, place attachment, and citizen participation. Social capital is a contested term (Poortinga, 2006). Broadly it refers to the relationships between individuals and groups at personal, social and civic levels, covering issues of trust, engagement and cooperation. Putnam (2000) distinguishes three types of social capital: bonding social capital which exists between friends and family; bridging social capital which has looser social ties such as the ties built by social clubs and associations; and linking social capital which is hierarchical (vertical) and refers to relationships of trust between, for example, local people and those in positions of power such as officials and community representatives. Coates (2015) notes the importance of distinguishing between these types of social trust within networks and situations, where trust is vested more in the authority of the institution than the person.

These broad analytical distinctions should help to differentiate the sorts of social ties that might make a difference in attempts to enhance social resilience in a neighbourhood, and to identify how 'involvement and participation in groups can have positive consequences for the individual and the community' (Aldrich and Meyer, 2015: 256). The policy aim is to increase community resilience given the evidence that those who are more socially connected, and areas with higher community capital, tend to fare much better at times of crisis (Pitt, 2008; Trump et al., 2018: 3; Tierney, 2014; Twigger-Ross et al., 2014). But there is also some contrary evidence that there may be negative outcomes for community cohesion during and after a crisis (Erikson, 1994; Orts and Coglianese, 2007). Moreover, research indicates that different types of social capital may have differential impacts on community resilience, some positive and others negative (Trump et al., 2018: 13; see also Chapter 7).

The disaster literature is predominantly based on post-event research. There are few studies that examine the effects of risk events on community resilience over time (Coates, 2015;



Wickes et al., 2017). An exception is research undertaken by Forrest et al. (2018) in the UK before, during and after flooding in Yorkshire in 2015. They considered civil society contributions to flood resilience and discerned low levels of involvement in the ‘pre-flood phase’ and much greater interest and involvement in the aftermath of the flooding. However, this interest and involvement diminished over time, leading the researchers to question the sustainability of civil society participation in the longer term (Forrest et al., 2018: 432). Research such as this underlines the importance of seeing resilience as something that may change over the course of time and through the course of a disaster (Faulkner et al., 2018; Quinn et al., 2020).

Our survey will help to cast some light on the extent to which respondents in the sample LSOAs were socially connected to their neighbours and neighbourhood, and the extent of their looser social connections through their involvement on a voluntary basis with local groups and clubs. It also gives us some idea of their engagement with democratic processes and their trust in local councillors and governance regimes. But there is also an important temporal dimension to the survey. While our LSOAs are in high risk flooding areas, few in our sample had experienced flooding in recent years (see Chapter 5). So we are considering the state of social resilience in 2019–20, some distance from local memories of flooding and – if the flood probabilities are accurate – effectively in a ‘pre flooding’ phase for many in the population.

### Community capital indicators: the sample

Cutter et al. (2010) have four indicators of community capital: place attachment associated with a sense of belonging; social capital or civic involvement; political engagement; and mitigation and social connectivity, such as community engagement in flood action groups. The research questionnaire included tried and tested questions from the Community Life Survey, which is a household self-completion survey used by government, to evidence levels of social cohesion, community engagement and social action (see Chapter 2).<sup>147</sup> This Chapter includes the comparable national data alongside the survey results from our research.

#### *Place attachment*

The research survey included questions about respondents’ perceptions of ‘community life’ and the local neighbourhood, including questions about how long they had lived in the area and their sense of belonging to the neighbourhood. High levels of place attachment are taken to be positive indicators of community resilience (Faulkner et al., 2018). Our responses show that survey respondents tended to be longer term residents, with 72 per cent of the sample having lived in the LSOA for 5 years or more, and 59 per cent having lived in the LSOA for 10 years or more.<sup>148</sup> There was a marked difference between Districts

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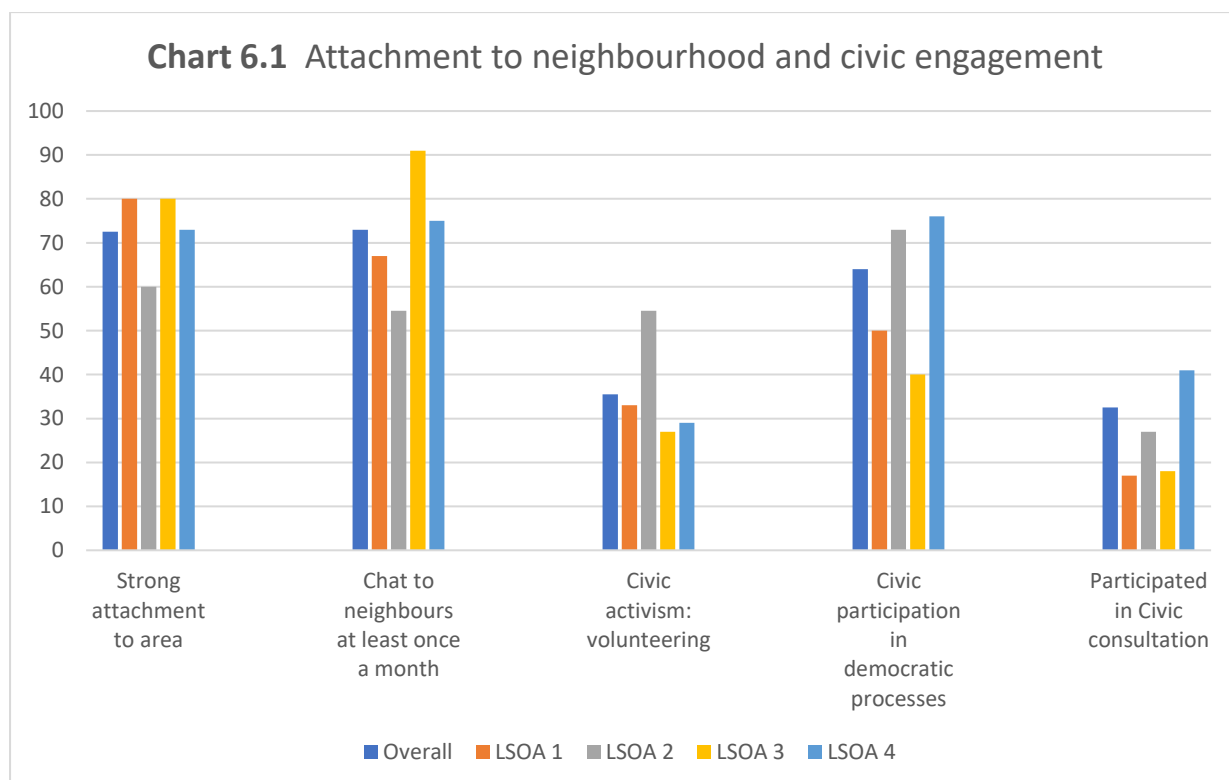
<sup>147</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/567536/CL1617\\_Web\\_questionnaire\\_v3.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/567536/CL1617_Web_questionnaire_v3.pdf)

<sup>148</sup> Five respondents did not answer the question about the length of time they had lived in the area: one in each of LSOAs 1, 2 and 4, and two in LSOA 3.

A and B, with 53 per cent of District A respondents and 83 per cent of District B respondents having lived in the area for 5 years or more.<sup>149</sup>

73 per cent of the sample felt that they ‘very strongly’ or ‘fairly strongly’ belong to their immediate neighbourhood. This is above the 63 per cent responding this way in the national Community Life Survey for 2019–20 (Department for Digital, Culture, Media & Sport, 2020). Respondents in LSOAs 1, 3 and 4 felt markedly more attached to the area than those in LSOA 2 (See Chart 6.1).<sup>150</sup> LSOA 2 was also an outlier with respect to interactions with neighbours – just 27 per cent of respondents from LSOA 2 spoke to their neighbours on a daily or weekly basis, rising to 55 per cent speaking at least once a month. This compares to the rest of the sample where the percentages speaking to neighbours at least once a month were 67 per cent in LSOA 1, 91 per cent in LSOA 3, and 75 per cent in LSOA 4. The overall percentage of sample respondents speaking to their neighbours at least once a month was 73 per cent, compared with 72 per cent in the national Community Life Survey for 2019–20.



The Community Life Surveys found differences in feelings of belonging to a neighbourhood and chatting to neighbours across different age groups.<sup>151</sup> These differences were also apparent in our survey, with 95 per cent of those aged 65 years and over feeling a sense of belonging, compared to 54 per cent in the under 65 years group. There was also a difference between the extent of interaction according to age, with 86 per cent of those aged

<sup>149</sup> LSOA 1: 50 per cent had lived in the area for 5 years or more; LSOA 2: 55 per cent; LSOA 3: 83 per cent; and LSOA 4: 82 per cent.

<sup>150</sup> LSOA 1: 80 per cent felt strongly they belonged; LSOA 2: 60 per cent; LSOA 3: 80 per cent; and LSOA 4: 73 per cent.

<sup>151</sup> <<https://www.gov.uk/government/statistics/community-life-survey-201920-neighbourhood-and-community/neighbourhood-and-community-community-life-survey-201920>>

65 years and over speaking to neighbours at least once a month, compared to 58 per cent of those under 65 years. Our sample also showed a strong relationship between age, length of time lived in the area, a sense of belonging, and interaction with neighbours.<sup>152</sup> The Community Life Surveys also discerned differences between those living in town and rural environments. None of our sample LSOAs were rural, but there were differences: District A is a large town and District B comprises two small towns.<sup>153</sup> We did find differences between the two districts, with those in District A markedly less likely to feel a sense of belonging or chat with their neighbours than those in District B.<sup>154</sup>

A survey question about levels of interaction with neighbours overlapped with issues of trust by asking respondents 'How comfortable would you be asking a neighbour to keep a set of keys to your home for emergencies, for example if you were locked out?'. Overall, the majority (57 per cent) would be happy with this arrangement although the figures are a little lower than for the previous questions. Those from LSOA 3 were the most comfortable (83 per cent), compared to 50 per cent in LSOA 1, 45 per cent in LSOA 2 and 47 per cent in LSOA 4. The Community Life Surveys do not report the responses for this question although they do report responses for a question about the percentage of adults who borrow things from and exchange favours with neighbours, which is 35 per cent for 2019–20. It also reports that 40 per cent of those in the national survey think people in their neighbourhood can be trusted. Our sample demonstrates higher levels of willingness to borrow and exchange favours than the national average, driven mostly by the high levels of interaction and trust in LSOA 3, which are well above the average for the country (the responses from the other three LSOAs are slightly above the average for the country).

The final question about respondents' sense of their neighbourhood asked to what extent they would agree or disagree that people in their neighbourhood pull together to improve the neighbourhood. Overall, the sample was slightly inclined to disagree, with 50 per cent disagreeing and 43 per cent agreeing.<sup>155</sup> This is at variance with the national figures, which found in 2019–20 that 59 per cent agreed that people in their neighbourhood pull together to improve the neighbourhood and 41 per cent disagreed. LSOA 3 respondents were close to the national average of 59 per cent agreeing, but the other LSOAs were well below this figure. These responses are particularly interesting as they may well have implications for the willingness of local populations to work together for flood resilience.

### *Civic engagement and political engagement: general*

Respondents were asked a series of questions about their involvement in the neighbourhood through voluntary work, engaging in democratic processes, and consultations. Many of the

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<sup>152</sup> All those aged 65 and over had lived in the area for 5 years or more, and 86 per cent of them for 10 years or more. For those living in the area for 5 years or more, 82 per cent felt they belonged to the area; and 86 per cent chatted with neighbours at least once a month.

<sup>153</sup> Distinctions made according to UK Parliament <<https://commonslibrary.parliament.uk/research-briefings/cbp-8322/> - :-:text=The classification is intended to,closely matches its population distribution.>

<sup>154</sup> 67 per cent of those in District A felt a sense of belonging, compared to 86 per cent in District B; 59 per cent of those in District A chatted to their neighbours at least once a month, compared to 78 per cent in District B.

<sup>155</sup> Those in agreement were: LSOA 1: 33 per cent; LSOA 2: 40 per cent; LSOA 3: 64 per cent; and LSOA 4: 35 per cent.

questions on this topic were adapted from the Community Life Survey, which asked generic questions about civic engagement and volunteering,<sup>156</sup> whereas our survey adapted some of these to focus specifically on flooding and other risks.

Questions about general civic participation started with a question about respondents engaging with local activities to help improve lives and solve problems in the local area, namely what has been their involvement on a voluntary basis in any groups, clubs or organisations during the previous 12 months. Overall, 35 per cent had volunteered in the previous 12 months, which is well below national levels of volunteering which stood at 64 per cent for 2019–20.<sup>157</sup> There were some differences between respondents from different LSOAs (see Chart 6.1). Volunteering was highest in LSOA 2 and lowest in LSOA 3.<sup>158</sup> The types of volunteering undertaken by those responding positively varied from charity fund raising, helping with youth groups, and hospital and prison visiting. In LSOAs 3 and 4, more volunteering was church based, reflecting the comments of a LSOA 4 local councillor who commented that the only real focus of community in the area was based around one church in the neighbourhood.

A question about general engagement in democratic processes found higher levels of participation. 59 per cent had engaged in at least one democratic process in the previous 12 months: contacting a local official such as a local councillor, MP or public official; attending a public meeting, rally or public demonstration; or signing a paper or online petition. This is well above the national figure of 41 per cent. Participation was especially high (above 70 per cent) in LSOA 2 and LSOA 4.<sup>159</sup> Those in LSOA 3 were the least likely to have engaged (only 20 per cent had participated). The most common form of participation was signing a petition (54 per cent), followed by contacting a local official (30 per cent), and attending a meeting (11 per cent). These acts of participation were infrequent for most of the sample: just seven respondents reported participating in democratic processes at least once a month, while others who participated did so less frequently.

Another form of civic engagement is taking part in a consultation about local services or problems in the local area. The majority in our sample had not been involved in a consultation in the previous 12 months (see Chart 6.1). But participation overall stood at 28 per cent of respondents, which is above the 21 per cent reported in the Community Life Survey for 2019–20. The most popular form of consultation was through completing a questionnaire (22 per cent). Just two respondents had attended a public meeting and one had been involved in a face-to-face or online group. Participation was highest in LSOA 4, with 41 per cent engaging with a consultation.

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<sup>156</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/962599/Community\\_Life\\_Online\\_and\\_Paper\\_Survey\\_Technical\\_Report\\_-\\_2019-20\\_V2.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/962599/Community_Life_Online_and_Paper_Survey_Technical_Report_-_2019-20_V2.pdf)

<sup>157</sup> <https://www.gov.uk/government/statistics/community-life-survey-201920-volunteering-and-charitable-giving>

<sup>158</sup> Levels of volunteering were: LSOA 1: 33 per cent; LSOA 2: 55 per cent; LSOA 3: 25 per cent; and LSOA 4: 29 per cent.

<sup>159</sup> Engagement in a democratic process: LSOA 1: 50 per cent; LSOA 2: 73 per cent; LSOA 3: 20 per cent; and LSOA 4: 76 per cent.

The other general question we asked was about political engagement in the last local elections. The large majority (87 per cent) had voted: 100 per cent in LSOAs 1 and 4; 80 per cent in LSOA 2; and 67 per cent in LSOA 3. Electoral Commission data show that 35 per cent of voters voted in the 2018 local elections, and 33 per cent in 2019.<sup>160</sup> Our sample is markedly above these figures and also above the General Election turnout figures for the UK in June 2017 (69 per cent turnout) and December 2019 (67 per cent). This suggests that those responding to our research survey were more politically engaged than the general population.

As noted in Chapter 5, some of our survey results reported in this Chapter, especially those relating to civic and political engagement, may reflect an element of self-selection among respondents, with residents who are more highly engaged also being more likely to participate in the survey.

### *Civic engagement: flooding and other risks*

The questionnaire focused next on how important respondents thought it was for people in the neighbourhood to become involved in decisions about flooding and other potential neighbourhood risks. This part of the questionnaire stressed that their views were important. It also explained:

One approach to areas prone to flooding is to build physical structures to try to prevent flooding but this is not always successful. Another additional approach is to encourage those living in neighbourhoods at risk to work together to decrease local vulnerability to flooding and the damage it can cause.

In response to a question about who is best placed to make decisions about local flooding and other risks, most respondents thought that it should be a shared responsibility, with 53 per cent saying that it should involve the local population. There was a clear belief that such decisions should have major local input, primarily through local government (84 per cent) mechanisms. The EA was also accorded a major role (80 per cent), as were the emergency services (51 per cent); both may be regarded as local to the extent that the main contact the local population will have had with these organisations will have been with local or regional offices. Central government (20 per cent) and insurers (7 per cent) were accorded a much more limited role.

While the large majority thought that local government should be involved in decisions about flooding, only 52 per cent of the sample trusted local council decisions about flooding. Trust was highest in District A (LSOAs 1 and 2) and lowest in District B (LSOAs 3 and 4).<sup>161</sup> This is interesting given that District A has a town council and District B a District as well as town councils, the latter being generally regarded as closer to the local population and better placed to reflect its views. Other research has found that the willingness of individuals to take responsibility and act is in part related to their perceptions of the fairness and scope of

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<sup>160</sup> Electoral Commission <<https://www.electoralcommission.org.uk/research-reports-and-data/our-reports-and-data-past-elections-and-referendums>>

<sup>161</sup> Trust in council decisions about flooding: LSOA 1: 50 per cent; LSOA 2: 82 per cent; LSOA 3: 42 per cent; and LSOA 4: 41 per cent.

government responses to flooding and flood risks, with trust in government being an important factor (Adger et al., 2016).

In our sample the overwhelming majority (93 per cent) thought it was important to have local consultation and involvement in local decisions about flooding and other risks, and of these 59 per cent thought it very important. Only three respondents in the sample did not consider such consultation important, their reasoning being that there was not a flooding risk for them to be concerned about, and such decisions are best left to the experts:

As far as I am aware there isn't a need for it as our area doesn't have floods.

We have one of the very best flood protections, we trust it. People from other districts come to check it out.

Local people aren't necessarily experts. I'd rather know people who have input on these matters know what they're doing than know about the local area exclusively.

Those arguing for local consultation saw the issue very differently. For example, some believed that even with flood defences they were still at risk:

The dam has come close to overtopping on a few occasions, now the house building in the town on green field sites around the dam is alarming.

Concerns that new builds are exacerbating flood risks were mentioned by several respondents with respect to this question:

New building developments have unforeseen consequences regarding water flow, especially after heavy or sustained rainfall. Community interest in such potential problems will make it more likely that more robust analysis will be carried out before signing off on planning permission.

Not everyone was prepared to trust the 'experts'. Some, reflecting the academic literature (Wynne 1996), felt that local knowledge was invaluable to the decision making process:

Because if we have lived in the area for a long time we probably know the peculiarities on the area.

Often, it's the people who live/work in the area who know them the best.

Local information is most relevant to local decisions.

Local people have local knowledge to add to expert work. Local political representations must have a civic and democratic role to play, but within an overall national infrastructure plan. Thus, all levels must have influence in the planning process.

Other rationales reflected resilience thinking in terms of the need to be aware, to try to reduce the risk, and to be prepared if flooding does occur:

It's going to impact the locals so it makes sense for them to know them. Locals should understand.

The damage flooding can cause can be huge, it would be more sensible to reduce this risk than deal with it afterwards.

Because the more information one has the better they are able to cope with the situation.

So that needs can be anticipated and prepared for.

A recent flood threat in 2013 was very disorganised. Residents were ill-informed and sandbags were the only available protection and not delivered but collectable. A source of wet clay would have been helpful also for air bricks.

We need to know what action to take in the event of flooding.

Some envisaged difficulties given the lack of community:

As my home has now become a tiny permanent residence among a huge amount of student accommodation there is no real 'community feeling' here anymore. The students are just visitors so probably don't care or are too busy with their studies (LSOA 2 resident).

Only right to be involved, know what's happening in your area. I tried to set up a community group for general concerns here but no-one was interested and I can't do it all myself (LSOA 3 resident).

While respondents overwhelmingly believed that they should be consulted, they were not convinced that they are able personally to influence decisions about flooding and other risks: 22 per cent felt that they could personally influence decisions and 78 per cent disagreed. The Community Life Survey asked more generic questions about the importance of influencing decisions in the local area. In the 2019–20 survey 57 per cent responded that this is important, so our respondents clearly valued consultation much more than this. But our respondents mirrored the national data in terms of 22 per cent believing that they can influence decisions, with the national survey finding 27 per cent responded this way.

Respondents were asked how, if they wanted to influence flooding decisions, they would they do so. The EA was the single most likely point of contact (see Table 6.1), closely followed by local councillors and council officials. Taken together with those who would attend a local council meeting, local government was again regarded as the main point of contact. The propensity to contact a councillor was highest in LSOA 4 (69 per cent) compared to around 30 per cent in the other LSOAs. Those in LSOA 2 were most likely to contact a council official (55 per cent) compared to the rest of the sample (around 30 per cent). Civic activism in terms of organising a group or petition, or attending a public meeting, were suggested by only a small proportion of the sample. Only two said they would do



nothing and just one had ‘no idea’ what to do. Our data for the overall sample broadly reflect national data for a broader question about how to influence decisions in the local area.<sup>162</sup>

**Table 6.1 How respondents would try to influence local flooding decisions**

How to influence decisions	Number	Sample mentioning (%)
Contact the EA	23	52
Contact my local councillor	21	48
Contact the local council /a council official	19	43
Contact MP	16	36
Attend a public meeting	13	30
Attend a local council meeting	8	18
Contact local media or journalists	6	14
Organise action group or petition	5	11
Would not do anything	2	5
No idea	1	2

Total number of respondents: 44 (No response 2)

Our questions moved from beliefs about influencing decisions to the awareness of community initiatives around flooding and their own levels of participation. Only three respondents in the survey were aware of any community initiatives to reduce flooding in their area, and just four claimed to have heard of local flood wardens, local flood action groups or community resilience teams. Two LSOA 4 respondents had been involved in activities concerning flooding in their local area. One had contacted the Parliamentary Ombudsman about repeated flooding on their property and their concerns that the EA was not taking this seriously or acting to prevent it. The other positive response was someone who had signed a petition and been involved in discussions about flooding concerns.

These results are not entirely surprising as there is very little local community-based activity around flood risks in these areas. LSOAs 1 and 2 are in a large town where some neighbouring neighbourhoods are more actively involved with flooding issues. District B has few community-based initiatives around flooding and other risks. LSOA 4 does have community-based resilience wardens and one respondent had been involved in social action around flooding, but these activities were far from well known by others in the sample.

We asked respondents who had not been involved in any community initiatives if they would have liked to have been involved. Just 38 per cent of those who responded to this question would have been interested in being involved, the majority (62 per cent) would not have been interested. Most interest was shown by respondents in LSOA 2 (50 per cent interested) and the least interest by those in LSOA 3 (82 per cent not interested). We asked those who

<sup>162</sup> In the Community Life Survey 2019–20, 44 per cent would contact their councillor; 46 per cent would contact the local council/official; 22 per cent would attend a local council meeting; 38 per cent would contact their MP; 33 per cent would attend a public meeting; 16 per cent would organise a petition; and 14 per cent would contact the media.



were not interested why this was the case and presented them with a list of possible reasons. Only 26 people answered this question. Chart 6.2 details their responses. Sixteen did not believe they had the relevant attributes (skills, confidence or ability to make a difference); eleven had personal issues relating to age and disabilities; five did not feel strongly enough about flooding and risk; and four were not interested. Most respondents had never thought about participating so were perhaps open to persuasion. One respondent from LSOA 4 had been involved with Community Watch and a local 'snow watch' but had experienced 'too much hassle from some neighbours' so had stepped down. It is interesting that only one person responding to the question ticked 'Don't feel it's my responsibility'.



An important question with respect to social resilience is what might facilitate greater public engagement with flooding. The survey asked what might make it easier for respondents to influence decisions in the local area. Table 6.2 details their responses and it reveals that ignorance of the issues under consideration is the most cited explanation of non-participation. This is closely followed by council related issues, for example an expectation that the Council would communicate with them, not knowing who their local councillor is, and wanting ease of contact with them. These responses broadly reflect the national responses.<sup>163</sup>

Ease of communication online or in meetings does feature in our responses but fewer in our sample were concerned by the ability to give an opinion online or using email than respondents in the national Community Life Survey.<sup>164</sup> Lack of time has emerged in other research studies as an explanation for non-participation in community issues (Forrest et al., 2018; Twigger-Ross et al, 2014: 62). It also featured in our research with 32 per cent citing

<sup>163</sup> In the Community Life Survey 2019–20, 52 per cent would want the local council to contact them; 35 per cent would want to know who their councillor is; and 19 per cent would want ease of communication with their local councillor.

<sup>164</sup> The national figure for wanting to respond online was 45 per cent, compared to 29 per cent in our sample.

this as an obstacle to participation, but less prominently than in the Community Life Survey 2019–20 where 45 per cent cited this as an obstacle to participation.

**Table 6.2 Factors which would ease ability to influence decision making**

Factors which would ease ability to influence decision making	Number	Sample selecting factor (%)
If I knew what issues were being considered	27	66
If the local council got in touch with me	15	37
If I could give my opinion online /by email	12	29
More time	13	32
If I knew who my local councillor was	9	22
Involvement in online groups making local decisions	9	22
Nothing	7	17
Involvement in a group making local decisions (not online)	6	15
If it was easy to contact my local councillor	5	12

Total number of respondents: 41 (No response 5)

**Table 6.3 Best way to communicate with the local population**

Means of communication	Number	Sample selecting method (%)
Leaflets through doors	31	69
Local newspapers	23	51
Local programmes on TV / radio	22	49
Poster in local shops	20	44
Word of mouth/information from other people	17	38
Poster in doctor's surgery	16	36
Email	16	36
Poster on local noticeboards	14	31
Social media (Facebook, Twitter)	11	24
Parish councillors	7	16
Local workshops	6	13
Government publications	3	7
Other (stall in town centre)	1	2

Total number of respondents: 45 (No response 1)

Communication clearly emerges as an issue for our sample. When respondents were asked what the best ways are to communicate with the local community about issues such as flooding, their main preference was for hard copy communications, especially leaflets through their doors, newsprint and posters (see Table 6.3). Traditional media and forms of communication media were more popular than social media. This is in part related to the age of respondents: 48 per cent of our respondents were aged 65 years or over, and of these

just three selected social media and four selected emails as a means of communication. The majority in the 65 years or over age range opted for leaflets, local newspapers, local TV or radio, or posters in local shops, doctors' surgeries or noticeboards. The EA's public flood survey found that while the internet was the most popular source of information about flooding (70 per cent), those aged 55 years and over, and most especially those aged 75 years and over, were less likely to go online (Environment Agency, 2014: 60, 73).

## Discussion of survey results and interview data

The research used indicators of 'community capital' to give us some idea of the levels of place attachment and civic engagement in our sample respondents. Questions about neighbours give us some indication of bonding social capital, not a full account as we did not ask about family and friends. About two-thirds of respondents felt a sense of belonging to their neighbourhood and interacted fairly regularly with immediate neighbours. In this respect the sample reflects national data, but they appear to be below the national average with respect to levels of trust and any sense of the neighbourhood working together for improvements.

There seemed to be more a sense of neighbourhood than community in the sample. Those aged 65 years or over tended to feel more attached to the area, often because they had lived there for longer, but several did spontaneously explain that the sense of community had been lost. This was especially true of LSOA 2, where respondents' sense of belonging to the area was markedly lower than the rest of the sample. This reflects the area becoming increasingly occupied by the student population and the sense of community that some respondents felt used to be there being eroded. The most transient population living in LSOA 2, university students, failed to engage with the survey at all. We know from other studies that areas with transitory populations have lower social capital (see Chapter 5).

The large town within which LSOAs 1 and 2 are situated does have some areas with active flooding groups. Council interviewees noted that these areas tended to have a greater sense of community than our sample areas. Although council officers/councillors did not see a connection between the student population and flooding there was acknowledgement that there were tensions between the local and student populations which partly explained the lack of bonding social capital.<sup>165</sup> One respondent explained that while the Ward within which LSOA 2 is situated does have active groups: 'It comprises mainly long-standing residents and they tend to have a battle with the University.' But flooding is not an issue for these groups as they live in parts of the Ward that are not located in flood zones.

LSOA 3 respondents showed the greatest sense of belonging, interaction and trust, and hence appeared to have higher levels of bonding social capital than respondents from the other sample areas. More respondents in LSOA 3 believed that people in the neighbourhood pulled together than respondents from the other LSOAs. However, LSOA 3 respondents

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<sup>165</sup> These tensions related to late night disturbances, a lack of attention to issues such as rubbish collection, and whole streets have been taken over for student housing when there are waiting lists for council accommodation and homeless people. A lot of purpose-built student accommodation is being built across the town so this is highly visible.

scored lowest in terms of their voluntary participation in community life. This contrasts with LSOA 2 respondents who were the mirror image – their bridging social capital was the highest in the sample while their bonding social capital was the lowest.

Questions about civic engagement and volunteering give us insights into levels of bridging social capital, and questions about engagement with democratic processes provide data about linking social capital and respondents' trust in local governance personnel and organisations. Overall, respondents' interest in civic engagement was high. They believed that dealing with local flooding and other risks should be a shared responsibility involving the local population and that local consultation is important. However, they had a low awareness of local initiatives and little interest in being involved. Their levels of civic activism<sup>166</sup> were generally low. This very much mirrors the national figures for 2019–20, although our levels of civic participation and consultation are higher than the national average. Taking these forms of civic engagement as indicative of linking social capital we find that LSOA 3 respondents rank lowest in our survey sample, whereas LSOA 2 and 4 respondents are more actively involved.

District B local authority personnel found that 'getting people motivated can be difficult' and that those from LSOA 3 showed a particular 'lack of interest'. One respondent thought that people in the area 'moan a lot' but do not do anything, unless they can see that something affects them directly. So, for example, they would be more concerned about surface water running off a neighbour's garden than the risk of the nearby dam overtopping and this affecting the area. Interviewees were a little more positive about the social capital in LSOA 4. One councillor felt that there is a sense of community among some of the older established population in the town, but generally 'not a huge sense of community because of the high turnover of people'. There were no residential groups in the centre of the town, although some of the churches have community related activity, and one church in LSOA 4 was cited as having a lot of activities which draw in the local community.

There was a sense that towns and cities are not as 'community minded' as villages, and that resilience would be much easier to organise in a village than a town: 'It's a whole different ball game'. Interviewees contrasted 'a big community spirit' in some villages with those of larger towns: 'In cities and large town areas, where is the community? It's easier in some of the smaller towns and villages as you have a community ... in cities and large towns we struggle to really engage ....' An important issue in this respect was raised by an EA interviewee who explained that one reason they struggle to generate interest in urban areas is because only small sections of the area are likely to be at risk of flooding, whereas in more rural areas an entire village might be affected by flooding.

Trust in governance institutions was not especially high in the sample and this was especially true of District B, which is the district with the most local representation in the form

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<sup>166</sup> The Community Life Survey measures civic activism as involvement in activities in the local community such as being a local councillor, school governor, volunteer special constable or magistrate; and involvement (in person or online) in decision making groups in the local area, for example, a group making decisions about local health or education services, a tenant's decision making group, or a group set up to tackle local crime problems or to regenerate the local area.

of town councils. There was a clear feeling among some of our sample that more needed to be done to include the local population, and a sense of disempowerment with respect to their ability to make a difference. One of our District B interviewees agreed with this, remarking that there is a problem with 'people in government not getting out and talking to people about what needs doing'. Many local council representatives we approached failed to respond to repeated requests to be interviewed (see Chapter 4). The refusals were not seen as at all extraordinary by those who did agree to be interviewed, and some thought that constituents are similarly ignored by some councillors. Nevertheless, when our survey respondents were asked how they would try to influence risk decisions, local government structures were cited as being the most important.

Very few respondents were prepared to be actively involved, replicating the apathy and disinterest reminiscent in other studies. These findings are supported by some of our interviews with governance officials and councillors. Many were not at all surprised by the lack of take-up of the survey: 'Welcome to XX, the apathy centre of the world. Not a lot I can say really as we also experience the same results whenever we try a survey or a meeting.' Other interviewees expressed similar views, some adding that participation is usually triggered 'when something happens and if it involves them'; and 'it's very much if it doesn't affect me then I'm not bothered about it'. A councillor from LSOA 4 in District B thought that this was part of the reason for low participation in the survey. He advised:

... door knocking is the best bet, if you arranged a meeting to meet about flooding there wouldn't be much of a response as people don't see it as a problem ... It's apathy, you've got about 4,500–5,000 people, of those you could probably say 500 are affected with anything, with flooding.

Another explanation of non-participation was a view that it is not their responsibility:

... in society in general there is this unfortunate thing that people expect other people to do things ... it's down to the council, the authorities to deal with things. People will not take ownership, there is a culture of finger pointing and they are looking for culprits and will not accept responsibility.

There is very much a feeling in the town centre that 'we pay our taxes, the council should do it', they don't see that they should.

These comments are at variance with the views about responsibility expressed in response to our survey where there was a strong feeling that everyone has a responsibility. But the comments do resonate with the low participation rates in the survey and the low levels of active participation discerned in our sample.

While collective efforts to prepare, cope with, and recover from major risk events have some distinct advantages this is not unequivocally the case. The social capital and disasters literature cautions that social capital of itself is not a guarantee of social resilience (Trump et al., 2018; Twigger-Ross et al., 2014). Trade-offs have been discerned between different types of social capital. Bonding social capital, for example, has been associated with some

negative effects such as problems of deference to leaders in the network at the expense of outsiders (Twigger-Ross et al., 2014: 38), and to uneven recovery across a community or neighbourhood (Trump et al., 2018: 15). Linking social capital can facilitate better communication between officials and a greater representation of the views of those in the area, but if there are significant bonding and linking forms of social capital and a lack of bridging social capital then this can lead to inequalities in access to officials (Trump et al., 2018: 14ff). Bridging and linking social capital have generally been found to lead to more equal benefits, although there are many ways in which social capital serves to reproduce inequalities (Bourdieu 1986; Trump et al., 2018; Twigger-Ross et al., 2014: 38–39).

If we read these findings across to our LSOAs the tentative indications are that the absence of a sense of community in LSOA 2 may well be mitigated by the higher levels of bridging capital. The greater task in terms of developing social resilience appears to be in LSOA 3 where bridging and linking social capital are low relative to the bonding social capital and relative to the other LSOAs. Interviewees from flood governance organisations gave examples of situations when bonding social capital had undermined efforts during and after floods. The examples given were from different flooding episodes but with similar scenarios, namely, that those evacuated from their homes did not go to the designated evacuation centres: ‘... people prefer to go to friends, relatives, pubs, a community feel, warmer and nicer than a sports hall with no facilities and a lot of people worrying’. This led to difficulties as they ‘lost’ a high proportion of people during the evacuation and were unsure of their whereabouts and safety.

There are certainly challenges in establishing and facilitating ‘community’ or ‘neighbourhood’ resilience and sustaining interest. Apathy and disinterest are major challenges. None of our LSOAs had suffered major flooding recently, so their non-participation in flooding activities is not so surprising. Indeed, Forrest et al. (2018) found low levels of interest even in areas which had flooded within the previous five years. Our data also show generally low levels of local engagement with our research and the respondents to our survey appear to be the most interested and highly motivated of those we invited to participate. Denial is a theme running through these discussions. Interviewees gave examples of towns where there has been reticence to accept that there is a flood risk, reflecting a denial of the risk and also not understanding the problem: ‘If flooding is not regular there is a belief it won’t happen again because our 1 in 100 event has happened now’. Several interviewees observed that people ‘don’t like bad news’ and it can be difficult to get their attention because of this.

‘Volunteer fatigue’ has been identified as an obstacle to participation. Forrest et al. (2018) use the term to refer to fatigue with respect to flooding events, but it is equally relevant to explain volunteering more generally, where often the same small group of people are prepared to participate. Council representatives from all areas observed that it is ‘the usual suspects’ who participate in everything. A District B councillor told me that some of the local population get involved but they are in the minority, and generally it is the same people who come forward to volunteer for things. As Twigger-Ross et al. (2014) identify: ‘For community engagement to be effective, it is important to recognise that community volunteers’ time is not unlimited; volunteering is not free, indeed it requires a great deal of financial and human investment ....’ Councillors recognised this as an obstacle to participation, for example

‘many of them are very busy with jobs and young families, they don’t have time to do these things.’

Another councillor did not think that the voluntary sector could or should be relied on as they cannot be available a lot of the time. He cited himself, explaining that he is not always available to open evacuation centres because he works and is not in the vicinity on a weekday. He was concerned about the sustainability issue identified in other research as well as issues of reliability. Another interviewee was worried that if a major flood did occur in District A then resilience groups and flood wardens would struggle to cope because of the magnitude and longevity of the effects.

One of the emergent difficulties of participation may be that it can be thankless and unrewarding. This was raised by several in this study and has been identified in other research where disagreements among residents exacerbated the difficulties of participation and representation, and revealed the presence of communities or interest groups rather than a ‘community’ with a similar identity of interest (Forrest et al., 2018). One of the councillors I interviewed was stepping down because of difficulties combining the role with work and home life but also because of the unpleasant politics which could be part of the role. Interviewees from Districts A and B spoke of their neighbourhoods in terms of a mix of heterogeneous groups rather than a ‘community’: one commented that the term ‘community’ is not applicable across the district, because there was great variation.

Relationships with local flooding authorities are important to participation. This research has also found that many respondents felt distant from their councils. Forrest et al. (2018: 432) found that some volunteers in their research stopped because they did not feel that they had ‘enough traction’ with the local authorities. The Multi-Agency Flood Plan Review in 2018 found wide variation in England regarding the inclusion of individuals, households, and voluntary organisations in community resilience efforts (DEFRA and Environment Agency, 2018: 29). In the best examples they found that local resilience forums, communities, local government, councillors and MPs had worked closely together, but in other cases they identified ‘general suspicion and a lack of trust between communities and their “officials”’ (DEFRA and Environment Agency, 2018: 30). Earlier research also discerned a disconnect between local resilience forums and local communities (Deeming, 2012: 29). These views were represented in my interviews with local councillors. While discussing a recent practice emergency plan, one expressed the view that local volunteers had frustrated the work of the emergency services.

Resilience certainly requires considerable effort to establish and maintain, and one theme in the interviews with officials and councillors was the difficulty in engaging the population:

If you have big events, drop ins, letter drops it is only those with ‘the time and desire’ who attend, it is difficult to engage the rest. Generally, those who aren’t interested are the ones who need to engage.

It is perhaps for this reason that those in flooding authorities and official resilience groups tend to focus their attention on councils. Interviewees explained:

The level of engagement is not what I would call traditional community engagement ... for example, a public meeting in a hall and get everyone along ... it means here parish councils.

They talk about the community but that is the language we fall into, it is not the community, by and large it's the town council. Where others are involved, they are likely to have had some connection with the authorities and worked there before.

In both Districts interviewees referred to a greater sense of solidarity among older established residents, and it was this group who were most responsive to our survey. Tensions were identified in both Districts, often between the older established residents and younger and more transient residents. Interviewees in District B cited one issue involving a proposed housing development in countryside near the town which had led to a great deal of activism. One Council employee remarked, 'in my 20 years ... I have never known a site be so unpopular ... voracious obscene comments, I have never seen before'. This campaign did not involve any flooding issues but it did demonstrate that some members of the local population were willing to participate and were capable of high levels of organisation and activism.

Inclusion is a major challenge, particularly considering inequalities which may render participation difficult. One explanation for the lack of participation may be that the population has other demands which take priority. A District B Councillor explained that there is a lot of deprivation and said that putting food on the table would take priority over worrying about flooding. We will discuss these issues in the next Chapter but it is important to recognise that these are not just issues of time and money but also of vulnerability. Age, illness and disability were cited by our sample as explanations of non-participation in community initiatives.

### Factors encouraging resilience groups

Our survey did indicate some possibilities to develop neighbourhood resilience in relation to flooding and other risks. For example, the reasons for not participating are largely a lack of confidence, and a belief that as local residents they did not have anything to contribute and were out of touch with what was going on. These are issues which could be addressed to form a basis for establishing greater neighbourhood resilience with respect to a range of risks, flooding included. There was a sense among the interviewees from resilience and governance positions that broadly framed resilience groups are more successful than ones focused solely on flooding. One reason for this is that, like much other research cited in this Chapter, unless there has been recent flooding there tends to be little public awareness, interest and participation in local flooding initiatives.

Considering a broader range of possible risks to the neighbourhood might stimulate greater interest and be of more general help to the neighbourhood. District A did have areas with active flooding groups and those with regional flooding and resilience responsibilities



discussed several areas with active flooding groups and flood wardens. Recent flooding was a factor in each of their examples.

Education was also important. Several interviewees discussed an area in District A which is particularly active and has flood wardens in place. They explained that there had been a lot of educational activity following flooding. This was driven by the EA and the County Council and involved resilience staff from these organisations, the local District Council, and a local charity connected to resilience work in the region. It included a public meeting to make people aware of the potential risks and what they could do. Representatives from flood action groups in the region were invited to speak. The event attracted some 50 to 60 people. One of the organisers explained:

.... there was some 'flood apathy and scepticism'. What helped turn people around was a lady from an adjacent area who had been flooded: she explained what it was like, the mess, disruption, effects on herself, family and community: she broke down in tears part way through and overall made a great impression on them.

Interviewees stressed the importance of changing attitudes and raising awareness and understanding of flood risk. One resilience officer believed that 'compelling evidence' was most effective, for example explaining the costs of flooding, historical evidence, and the modelling. Resilience staff in the governance structures trying to establish resilience groups usually begin with formal channels such as the local councils, at District, Town and Parish levels, then try to broaden to the community, to local people who are known to be interested and receptive. The presence of committed and highly motivated individuals was identified by interviewees as significant in areas where successful flood action groups exist: '... often a particular individual, one keen person with a real desire to do something, to motivate others'. Another interviewee commented: 'There are people in the community who are philanthropic and want to give something back, it is people like this who make the difference but they are non-existent in some communities.'

'Key' individuals with respect to flood action groups were seen to be very active, with a prior interest in flooding, knowledgeable about flooding, and motivated to act on behalf of the community. They also had high social capital and were able to draw in others and knew how to connect to relevant networks and connect to the relevant authorities. Finding these 'key people' was noted to be 'very difficult' in areas such as LSOA 2 where there is a transient population. The importance of 'key' individuals was underlined to one resilience officer when a local person who had been 'really key to getting volunteers trained up and ready to help' left and the action group dissolved. Several interviewees observed that key individuals often have some relevant expertise:

... very often it is former local authority employees who lead these things in the community because they are aware and they know what to do – the areas with resilience teams, community groups etc. tend to have a higher proportion of professional inhabitants compared to the more disadvantaged communities where there is not the know-how, not the people who understand the systems and how they work.

Referring to a resilience action group in a district neighbouring District A, one interviewee explained:

... it has its own resilience group of very good people, some have got flooding knowledge, engineering knowledge, they are getting our attention because they are well organised, have regular meetings, always inviting us ... they are setting the direction, because of that they are possibly getting our attention over others.

Affluence was identified by several interviewees as important in the establishment of flood action and resilience groups. Explaining why one area had a thriving flood action group, one interviewee said: 'this is an affluent community with the means and wherewithal to act'. A 'sense of community' was also deemed important – there were examples of areas which had flooded but efforts to generate interest and flood action groups were seen to have failed in part because there was no 'community feel' present. District A had put a lot of effort into initiatives to generate a greater sense of community in areas of the town. These are preventative in focus, trying to connect people to others with similar interests, to help deal with issues of social isolation. They fund 'community builders' to work in every Ward in the town: 'It is very bottom up and trying in a broad sense to increase social resilience – connecting people, combatting isolation, making things happen if the area wants it to.' LSOA 1 has not opted to be involved, while LSOA 2 is involved but this does not include anything relating to flooding.

The university in District A had also gone to some effort to encourage students to become active in the community, paying student officers to encourage volunteering with local charities and community forums. There is a Community Engagement Officer employed by the university who links in with various community forums, resident groups, etc. There has been a drive across the town to encourage students to introduce themselves to locals and for local groups to encourage students to join, to have street parties and events. Efforts such as these are not flood oriented, but they do provide a basis for undertaking flood and broader resilience work.

Resilience staff employed within the flood governance system have a challenging task. Their resources are limited and their ground level work is intensive. The EA has 14 area offices in England and the area in which the sample areas in this research were located had 1.5 Flood Risk Engagement Advisors plus some outsourcing of projects to a local charity devoted to community development work. These officers also worked with local resilience forums and council community engagement staff. A large part of their role is communication and as one observed 'resilience communication is a big problem'.

Interviewees remarked on the 'really low percentage return' to their mailings, something experienced in our own research. Other methods of communicating were preferred over letter drops, for example attending large scale face to face events in the local area such as school fetes, sporting events, open days, church events, nurseries and toddler groups. Several methods had been employed with respect to the student population in District A, such as using social media and communicating awareness campaigns through gyms and

the student union. Clearly such campaigns had to be repeated each year given the turnover of students. Another more costly method of demonstrating flood risks is modelling of a flood which can be used to engage local populations in what would happen if there was a flood in their area, but these can be very costly to construct and there can be a fee for each time the model is used.

The content of communications is very important. As one council representative pointed out 'There is a fine line between scaremongering and letting people know they are at risk.' A resilience worker explained:

My experience is that people do not buy into doom. 'Floods kill' doesn't necessarily help – it can be too much, too scary, there has to be a balance here. Better to promote an exciting vision. Presentation and language really matter.

The advice here is to stress the benefits of preparing in case of a flood, explaining the advantages so people do become aware, and want to know what they can do to secure the advantages of planning ahead. Similarly, thought needs to go into flood warnings so as not to scare and panic people: 'Flood warnings by phone can be scary – I imagine hearing it is difficult. It is very hard to pitch it right. You need to tell people what to do, for example, pack a bag.' Another resilience worker discussed the importance of terminology, using the example that not everyone understands what is meant by a dam or defence 'failing' because it has 'exceeded operational capacity'. Similarly, not everyone understands 'probability'.

## Discussion

This Chapter has revealed the challenges posed by participation as a core value of social resilience. While there was strong agreement in the survey that resilience with respect to flooding should be a shared responsibility involving local populations and that those affected should have a voice, very few respondents actively participated in their neighbourhood. This resonates with the EA's public flood survey where 60 per cent of respondents acknowledged they had responsibilities for taking action to prepare for flooding (Environment Agency, 2014: 31) but few had actively participated in flood related activities.<sup>167</sup> Our survey respondents broadly reflect national data with respect to their preparedness to participate in civic life, although there were differences between the sample LSOAs which are in part accounted for by varying patterns of social capital.

Awareness of flood risks and education about this again emerge as important, with some respondents wanting more information about the risks, resilience strategies and how to plan in case of a flood. However, the evidence is that social resilience initiatives can be difficult to establish without first-hand experience of flooding, and it can also be challenging to maintain interest and momentum. Themes of denial and not wanting to 'buy into doom' again emerge as significant, underlining the sensitivities which can be involved in social resilience work. But there are some indicators of areas that could be usefully developed to facilitate participation. For example, a high proportion of respondents believed that managing flood

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<sup>167</sup> 9 per cent had joined a community group and 12 per cent attended an event about flooding (Environment Agency, 2014: 21).

risk is a shared responsibility including them, and that they should be consulted. Respondents demonstrated relatively high engagement with consultations and democratic processes, if not with active participation. Moreover, the need for empowerment is emphasised by the high proportion who felt powerless to influence decision making.

There are, of course, broader policy questions about the nature and extent of participation by local residents. Survey respondents felt that their views and knowledge should be represented. Some had grave concerns about building on floodplains and the tensions between increasing the risk of flooding and the demand for more housing. Respondents did not see routes through local councillors and 'the usual suspects' to be entirely satisfactory, which may suggest that alternative more direct forms of representation also need exploring. Similarly, following the Pitt Review's encouragement of the co-production of flood risk knowledge, a variety of ways of incorporating residents' local flooding knowledge into risk maps and resilience planning has been advocated. This includes hybrid and diversified knowledge collection, incorporating local community information about flooding alongside other sources of information, and recognising that climate change will have altered and possibly extended historic patterns of flooding (Haughton et al., 2015).

The extent of residents' involvement in flooding resilience strategies is contentious. There were some concerns among interviewees, with one set of issues centring on the reliability and sustainability of residents' commitments and another concerned that this represents a shift in responsibilities, relieving the formal authorities of responsibilities which volunteers are expected to pick up. There are examples in the wider region within which our sample Districts are situated of successful social resilience efforts. Efforts to achieve something similar had been made in LSOA 4 previously without success and renewed efforts are pending.

DEFRA and the Environment Agency's 2018 *Multi-agency flood plan review* stressed the importance of including the community and volunteers and the crucial role of local resilience forums in taking the lead on this. It also called for clarity in community plans about what households, communities and businesses could usefully help with (DEFRA and Environment Agency, 2018: Section 17). Those with aspirational views for resilience would hope for an equal partnership between the authorities and the local population – the review did recognise that 'bottom up' efforts were the ideal, but it was also realistic in recognising that this does not always happen.

Local resilience staff were acutely aware of the challenges and opportunities and the intensive work this demands at a local level to raise awareness, interest and action and then sustain it. It is work that demands high levels of resources. One of the greatest challenges is inclusivity and embracing the interest of wider populations, and trying to address the inequalities of access, knowledge and power so that all are represented. The next Chapter discusses these social inequalities.

## 7 Flooding, social resilience and inequality

There has been growing evidence that a disproportionate number of communities exposed to flood risk are socio-economically deprived (Environment Agency, 2022a; Sayers et al., 2017). Moreover, there has been increasing appreciation that the inequalities attaching to environmental risks have serious social effects on individuals and neighbourhoods. This is an important part of the social resilience agenda. Consideration of inequalities has been integral to this research, where the sample includes areas at high to medium risk of flooding with different levels of social affluence/deprivation (see Chapter 2). This Chapter will examine issues of inequality with respect to our sample and how they relate to flooding and social resilience.

### Inequality and flooding

The Pitt Review (2008) recognised the deep inequalities attaching to environmental disasters. The Review uses the term ‘vulnerability’ to refer to the unequal impacts of flooding. Groups denoted as ‘vulnerable’ include the chronically sick, those with babies and young children, the disabled, elderly, those living alone, non-English speakers, and temporary residents such as the homeless, tenants and tourists (Pitt, 2008: xxv, 217, 333). The Review identifies these as the most likely vulnerable groups, although it is careful to point out that not everyone within them will be vulnerable, and that vulnerability changes so people may, for example, become sick and injured because of flooding. Attention is paid to the physical difficulties that many in these groups may encounter, for example, in securing water supplies and in accessing information when essential infrastructure services are unavailable. Recommendations are made to prepare better for these groups, for example, by collating data about the location of the most vulnerable, although it is acknowledged that there are data protection issues in obtaining and maintaining complete and up to date information.

The 2007 floods appear to be one impetus to the Civil Contingencies publication *People Who Are Vulnerable in a Crisis: Guidance for Emergency Planners and Responders* (Cabinet Office, 2008), which the Pitt Review refers to in making its recommendations. Both documents see the charity sector and local community as having an important role with respect to providing information about those who are vulnerable and helping them in an emergency. Pitt notes the evidence that communities helped the vulnerable in the 2007 floods and that the charity sector was invaluable, this being an obvious area for incorporating into planning and recovery in pursuit of resilience (Pitt, 2008:196ff).

The relationship between inequalities and flood risk had been on the EA’s horizons prior to the Pitt Review. For example, it commissioned research, published in 2003, on *Environmental Quality and Social Deprivation* which included flooding as a case study and was intended to ‘improve the Environment Agency’s understanding of the relationship between environmental quality and social deprivation to inform the Environment Agency’s policy position on environmental quality’ (Walker et al., 2003: para 1.1). This research

identified 'patterns of association between delineated floodplains and deprivation' (Walker et al., 2003: para 8.5), patterns which have been examined in further research on the distribution of flood risks in relation to areas of social deprivation and the social impacts of flooding. One such report found 'mounting evidence that environmental injustice is a real and substantive problem within the UK' (Environment Agency, 2006: para 1.1). This report also discerned 'clear inequalities in living at risk of flooding' and evidence of regional differences where disproportionate numbers of deprived people are at risk of flooding (Environment Agency, 2006: para 5.5). The 2022 update to the 2006 report (Environment Agency, 2022a) identified some improvements compared to the 2006 report but nevertheless found 'inequality in terms of social deprivation and flood risk exposure from all sources of flooding', with this being most pronounced in rural and coastal areas.

To some extent flood policy takes some of these findings into account. For example, in 2011 DEFRA revised its guidance for partnership funding for flood and coastal erosion risk management projects in England to include consideration of levels of deprivation as an assessment criterion in the allocation of funding (DEFRA, 2011). The rationale for the higher weighting for access to flood risk management funding was that 'households in these areas are less likely to be insured, can need more help than others to recover after a flood, and may be less able to contribute' (DEFRA, 2011: 3). In 2020 DEFRA updated the partnership funding scheme to take into account the potential health costs of flooding and coastal erosion, again taking another step towards considering wider visions of resilience and social costs, although in this case not moulded to take into account differences in deprivation (Environment Agency, 2020c). However, as we saw in Chapter 4, there are concerns that deprived areas are disadvantaged in the partnership schemes because they have fewer resources available to partner with. Environment Agency (2022a) identified improvements in the number of households in the most deprived areas protected by new flood schemes during 2010–15, but noted a decline in 2016–19. So, although there were some successful outcomes in attempts to address flood risk in deprived areas, the overall rate of improvements was not sustained.

A *Big Issue* article in February 2022 stressed that flood risk and inequalities remain a serious problem. Visiting a flood-prone area and one of its 'most flood prone streets' the journalist observed that '... the houses are largely identical in build: two-storey, mid-terraced homes fronted by small concrete yards. Yet walking along the street ... I notice one key difference – some are fitted with steel flood doors, while others have none at all.'<sup>168</sup> The explanations focus on the differences between the rented and privately owned sectors and the ability of the latter to afford flood mitigation measures. The article notes that the available grants for flood resilience measures do not cover the full cost of protection for some properties: 'Some have a flood door on the front, but not on the back – which isn't much use if the water comes in through the back door.' Efforts to provide affordable insurance are also starkly discussed: 'The government's idea of affordable insurance is insurance that costs just a few hundred pounds instead of thousands. They need to wake up and smell the coffee because there are people who are struggling to put food on the table and hundreds is still out of reach for so many people.' These are the harsh realities underlying the issues discussed in this Chapter.

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<sup>168</sup> <<https://www.bigissue.com/news/environment/we-could-be-creating-flood-risk-ghettos-how-flooding-hits-the-uks-poorest-hardest/>> *Big Issue*, 17 February 2022.

## Flooding, deprivation and vulnerability

Studies of deprivation and flooding have encountered a wealth of methodological issues (see Chapter 2; Lindley et al., 2011; Sayers et al., 2017). Use of the terms ‘deprivation’ and ‘vulnerability’ has been debated, an important caution being that the two terms do not necessarily equate. For example, not everyone living in a deprived area is vulnerable, while some vulnerable people live in affluent areas (Environment Agency, 2006: 29). Indices of multiple deprivation (IMD) are useful proxies to the extent that some IMD characteristics coincide with factors indicating an individual/household with vulnerability in the face of floods. For example, there is evidence that awareness of flood risk is socially distributed (Environment Agency, 2006: para 4.2). This can lead in turn to an unequal distribution of signings for flood alerts, the installation of physical flood protection, and the purchase of financial insurance protection. These flood mitigation effects partly relate to financial inequalities such as income, home ownership and insurance cover. These factors also influence the ability to cope with floods and to recover from them. For example, issues of physical mobility and age can affect the ease of evacuation in the event of a flood and a person’s ability to support their own recovery afterwards (see Chapter 5).

It is also important to discuss individual and neighbourhood vulnerabilities, as local relationships and community capital characteristics are important in protecting individuals and neighbourhoods who are vulnerable to external events such as flooding (Lindley et al., 2011; Sayers et al., 2017). Some vulnerability and deprivation indicators intersect, for example, age, health and employment, and income and housing capital. It is also important to appreciate that vulnerabilities can change. For example, health status and physical mobility may change before or during a flood, hence the need to have up to date information but also to be flexible and open to changing circumstances. Local knowledge and the local population can be important in identifying and locating vulnerable individuals (see Chapter 4).

In selecting the sample areas for this research, we used IMD data to provide an indication of levels of individual vulnerability, such as how well individuals might be expected to prepare, cope with, and recover from flooding according to social and economic resilience characteristics. We also considered neighbourhood/community indicators such as institutional, infrastructure and cultural capital indicators. The literature suggests that these varying personal and neighbourhood characteristics influence social resilience (see Chapter 2).

## Research sample and findings

None of the research sample areas fall within the lowest levels of social deprivation in England (as defined by the IMD 2<sup>nd</sup> decile) but there were important differences between them: LSOA 1 was in the 9<sup>th</sup> decile and so was relatively affluent; LSOA 3 sat mid-way at the 6<sup>th</sup> decile; and LSOAs 2 and 4 fell into the 4<sup>th</sup> decile. LSOA 4 was the least affluent of our sample areas, standing 1,000 places below LSOA 2 in the IMD rankings. As we saw in Chapters 2 and 4, the levels of interest in the survey were low so we now consider the profiles of those who did respond and compare them with the social resilience indicators for their LSOA.

*Profile of respondents – social, economic and community resilience and inequalities*

Table 7.1 details the profiles of our respondents against the resilience characteristics used in the sample selection (Chapter 2).

Two points should be noted about the survey data. First, whereas Chapter 2 reported available data for each of the four sample areas as a whole, the survey data reported on this Chapter (and in Chapters 5 and 6) relate only to those who responded to the survey. Second, as noted in Chapters 5 and 6, there is a possibility that there is an element of self-selection in the residents choosing to participate in our survey, which could have an impact on some of the resilience indicators at the level of the survey respondents.

*Social resilience indicators* in Table 7.1 shows that the 46 respondents were strong across four criteria that are expected to be positively related to resilience, namely language competency, communication capacity, transport capacity and the absence of long term health problems/disability. The first three of these were especially strong, with all having English as their first language, most having access to some means of communication<sup>169</sup> and 71 per cent owning a car or van. 33 per cent of the sample had long term health problems or a disability.

The age and education indicators suggested a lower level of social resilience. Just over half of the households represented in the sample included those who by virtue of their age might be regarded as vulnerable: 12 per cent had children; and 48 per cent included someone aged 65 years or over (half of whom were aged 75 years or over). 43 per cent of the respondents lived alone, while 48 per cent lived in a household of two adults, and 10 per cent of households comprised three or more people. Educational equity is measured by the percentage with a Level 4 qualification or above:<sup>170</sup> 40 per cent of our sample had qualifications at this level, with marked differences within the sample (see below).

*Economic resilience* indicators relate to home ownership, employment, and income. Our sample emerged as positively related to resilience for the first of these, and negatively related for the second and third. 74 per cent of respondents owned their own home and 26 per cent rented. Property ownership is assumed to be positively correlated with resilience, based on the argument that home owners are more likely to be able to access economic resources. Overall employment indicators suggested lower levels of resilience, with 44 per cent of respondents in employment and 41 per cent wholly retired. The rest were sick or disabled and unable to work, or in full-time education, or looking after the home full-time. None of the respondents were employed in sectors at risk of damage and disruption from flooding.

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<sup>169</sup> 91 per cent had a mobile phone; 82 per cent had internet access; and 78 per cent had a landline.

<sup>170</sup> <<https://www.gov.uk/what-different-qualification-levels-mean/list-of-qualification-levels>>



**Table 7.1 Research sample resilience indicators**

Variable	Indicator	Expected effect on resilience (Table 2.1, Chapter 2)	Respondents to each question (%)
<b>SOCIAL RESILIENCE</b>			
Age	% under 17 and over 65 years	Negative	59
Language competency	% speaking English as first language	Positive	100
Education	% with a Level 4 Qualification or above.	Positive	40
	% with no formal qualifications	Negative	19
Transportation access	% with a car or van	Positive	71
Communication capacity	% of homes with broadband	Positive	83
Special needs	% with long-term health problem or disability	Negative	33
<b>ECONOMIC RESILIENCE</b>			
Housing capital	% home ownership	Positive	74
	% rented	Negative	26
Employment	% economic active	Positive	44
	% retired	Negative	41
Income	% below national average wage	Negative	57
<b>INSTITUTIONAL RESILIENCE</b>			
Flood coverage	% of houses covered by insurance for flooding	Positive	50
Flood preparedness	% signed up for flood alerts	Positive	45
	% with physical flood defences	Positive	14
Previous disaster experience	% of property experienced flooding	Positive	20
<b>INFRASTRUCTURE RESILIENCE</b>			
Housing style	% of housing units that are bungalows or mobile homes	Negative	18
<b>COMMUNITY CAPITAL</b>			
Place attachment	% lived in the area for less than 5 years	Negative	19
Political engagement	% voter participation in elections	Positive	64

Resilience is assumed to be positively related to income. 73 per cent of those who responded to the survey question about income<sup>171</sup> fell into lower income brackets (less than £27,299<sup>172</sup>), with one-third of these having a disposable income of £12,748 or below. 27 per cent had an annual disposable income of between £27,300 and £65,525. There are also some apparently contradictory indicators, with high levels of property ownership among respondents with low disposable incomes – this is explained by some low income respondents being retired or living in low value housing.

Many of the less resilient respondents were handicapped by intersecting inequalities. For example, of the 14 per cent of respondents who lived alone, 72 per cent were elderly and 50 per cent had long-standing illnesses or disabilities. There were also intersections of economic vulnerability (low incomes and those living in rented accommodation) with the elderly and the disabled; of a lack of access to transport with the elderly, the disabled, and those living alone,<sup>173</sup> and of low educational levels with those living alone and the elderly.<sup>174</sup>

*Community capital indicators* are discussed in Chapter 6, where we found that survey respondents tended to be longer term residents with 72 per cent of the sample having lived in the sample LSOA area for 5 years or more and 59 per cent for 10 years or more. Similarly, political engagement was high, with 87 per cent having voted in a recent election. So their community capital indicators were high, which is generally associated with stronger resilience.

## Comparisons across LSOAs

### *Comparisons within our sample*

The small number of respondents in each LSOA makes comparison difficult, but it can be noted that in accordance with the general IMD data, *social resilience* indicators were stronger among those from District A (LSOAs 1 and 2) than District B (LSOAs 3 and 4). District A respondents generally showed stronger expected resilience in terms of age, household composition and (a lack of) long-standing illness than those from District B, which had a higher proportion falling into the elderly category.<sup>175</sup> LSOA 4 respondents were generally the most vulnerable in our sample according to these social resilience indicators. LSOA 2 respondents showed the strongest education indicator – 73 per cent had Level 4

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<sup>171</sup> Nine respondents declined to answer the question about annual disposable income.

<sup>172</sup> In the financial year ending 2017 the UK median disposable household income was £27,300.

<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householddisposableincomeandinequality/financialyearending2017> This figure was used when constructing the survey. In 2019, when respondents completed the survey, the median household disposable income in the UK was £29,600, based on estimates from the Office for National Statistics Living Costs and Food Survey

<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householddisposableincomeandinequality/financialyearending2019>

<sup>173</sup> Of the 29 per cent of respondents with a lack to transport, 46 per cent were elderly, 46 per cent had long term illnesses or disabilities, and 38 per cent lived alone.

<sup>174</sup> 81 per cent of those living alone had an educational level below level 4, and of these 62 per cent were also elderly.

<sup>175</sup> 75 per cent of respondents in LSOA 3 and 47 per cent in LSOA 4 were over 65 years old.

qualifications or above, compared with 36 per cent in LSOA 4, 33 per cent on LSOA 1, and just 9 per cent in LSOA 3.

*Economic resilience* indicators followed a similar pattern. The highest levels of employment were in District A, most particularly LSOA 2 where 80 per cent of those responding were employed. Retired respondents were particularly well represented in District B, most particularly in LSOA 3 where 70 per cent responding to this question were retired. LSOA 2 had the highest percentage (44 per cent) of respondents earning above median disposable income, while those in LSOA 3 were the least well-off respondents. Home ownership was more variable. It was high in LSOA 2 (70 per cent of respondents), LSOA 3 (80 per cent) and LSOA 4 (80 per cent), but low in LSOA 1 (17 per cent). It is perhaps surprising that home ownership was so high in LSOA 3, which had the respondents with the lowest disposable incomes, but this is partly explained by most of those owning their own home being retired and having lower disposable incomes.

The one *infrastructure resilience* indicator we have data for, namely housing style, shows that many of the respondents owning their homes in LSOA 3 lived in mobile homes that are considerably cheaper than most conventional houses<sup>176</sup> and are also less resilient with respect to flooding. In LSOAs 1, 2 and 4, most respondents lived in terraced houses.<sup>177</sup> In LSOA 2, where incomes were generally higher, 70 per cent of the respondents owned their own properties.

*Community capital* indicators suggest a high level of resilience across all the sample areas. 60 per cent of respondents in LSOAs 1 and 2 had lived in the area for longer than 5 years. The figures for LSOAs 3 and 4 were even higher, with all those responding in LSOA 3, and 88 per cent in LSOA 4 having lived in the area for 5 years or more. Political engagement in these areas was also high: all those responding in LSOAs 1 and 4 had voted in the last election, 82 per cent in LSOA 2, and 73 per cent in LSOA 3.

Although caution needs to be exercised given the small number of respondents from each sample area, the broad picture is that the social, economic and infrastructure resilience indicators were mostly stronger in District A than District B. Community capital was high in all areas, with District B being markedly higher with respect to place attachment.

#### *Comparisons between our sample and general LSOA data*

Table 7.2 compares the expected effects on resilience of the indicators for our research sample respondents against the expectations we had when selecting the sample (see Chapter 2) using the available data for the LSOA as a whole. Differences are highlighted in yellow.

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<sup>176</sup> Average house prices in the area were approximately £245,000; terraced houses averaged £176,000, and mobile homes £138,000.

<sup>177</sup> 80 per cent of respondents from LSOA 1 lived in a terraced house; 100 per cent from LSOA 2; and 81 per cent from LSOA 4.

**Table 7.2 Expected indicator effects on resilience: comparison of LSOA indicator expectations with the research sample respondents**

Indicator	Expected effect on resilience							
	LSOA 1		LSOA 2		LSOA 3		LSOA 4	
	Expected	Respondents	Expected	Respondents	Expected	Respondents	Expected	Respondents
<b>SOCIAL RESILIENCE</b>								
Age	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Language competency	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive
Education	Negative	Negative	Negative	Positive	Negative	Negative	Negative	Negative
Transportation access	Positive	Negative	Positive	Positive	Positive	Positive	Positive	Positive
Communication capacity	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive
Special needs	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive
<b>ECONOMIC RESILIENCE</b>								
Housing	Positive	Negative	Negative	Positive	Positive	Positive	Positive	Positive
Employment	Negative	Negative	Negative	Positive	Positive	Negative	Positive	Negative
Income	Positive	Negative	Negative	Negative	Positive	Negative	Negative	Negative
<b>COMMUNITY CAPITAL</b>								
Place attachment	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive
Political engagement	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive

The general LSOA data indicated that LSOA 1 was the most affluent and expected to be the most resilient LSOA in the sample. However, none of the LSOA 1 sample respondents were affluent or high income earners, despite being more economically active than the general LSOA figures indicate.<sup>178</sup> While the LSOA data reveal high levels of home ownership (80 per cent), only 25 per cent of respondents from LSOA 1 owned their own home. The responses from LSOA 1 also indicated that our sample was less socially resilient with respect to age, access to transport and health than the general data for LSOA 1.<sup>179</sup> They had about the same access to communication (83 per cent) and were more educated.<sup>180</sup>

LSOA 2 respondents were much older than the overall LSOA figures<sup>181</sup> and also in poorer health,<sup>182</sup> but they were more socially resilient than the overall LSOA figures with respect to their access to transport and broadband.<sup>183</sup> They were also more highly educated.<sup>184</sup> Their economic resilience indicators were also higher than the general data for the area with respect to home ownership and employment.<sup>185</sup> Their income levels were comparable with the general data.

The low level of responses from students living in LSOAs 1 and 2 accounts for some of the differences between our respondents and the overall LSOA data. For example, it explains the low proportion of respondents living in rented accommodation in these areas, and helps to explain our LSOA 2 respondents having higher disposable income and property ownership levels than the overall data would suggest.

LSOA 3 respondents were socially resilient with respect to access to transport and communication.<sup>186</sup> However, the sample was older, in poorer health and less educated than the overall LSOA figures.<sup>187</sup> Economic resilience data for LSOA 3 show that respondents reflected the general data with regards to home ownership, but included a much lower

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<sup>178</sup> 60 per cent of respondents in LSOA 1 earned below the national average and 40 per cent were economically active.

<sup>179</sup> All of the respondents in LSOA 1 who answered a question about their age were aged 65 or over; only 33 per cent of respondents on LSOA 1 had access to transport; and 33 per cent were in poor health or disabled (compared to 10 per cent of the overall LSOA).

<sup>180</sup> 33 per cent of LSOA 1 respondents were educated to level 4 and above, compared to 23 per cent of the overall LSOA.

<sup>181</sup> 57 per cent of our LSOA 2 sample were aged 65 or above, compared to 6 per cent in the overall LSOA data.

<sup>182</sup> 27 per cent were in poor health or disabled, compared to 10 per cent in the overall LSOA data.

<sup>183</sup> 64 per cent owned their own transport and 91 per cent had broadband, compared to 53 per cent and 74 per cent respectively in the overall LSOA data.

<sup>184</sup> 73 per cent were educated to level 4 or above, compared to 35 per cent in the overall LSOA data.

<sup>185</sup> 70 per cent owned their own home, compared to 31 per cent in the overall LSOA data. 80 per cent were economically active, compared to 42 per cent in the overall LSOA data.

<sup>186</sup> 90 per cent had access to transport, compared to 84 per cent in the overall LSOA data. 91 per cent had broadband, compared to 73 per cent in the overall LSOA data.

<sup>187</sup> 89 per cent were aged 65 or over, compared to 24 per cent in the overall LSOA data. 40 per cent reported ill-health, compared to 26 per cent in the overall LSOA data. 9 per cent were educated to level 4 or above, compared to 18 per cent in the overall LSOA data.

percentage of those who were economically active and a higher percentage earning below average income.<sup>188</sup>

LSOA 4 was the most deprived of our sample areas according to general LSOA data. Our respondents were older than the general LSOA figures but the proportion with ill-health reflected the general data.<sup>189</sup> Our respondents showed stronger indicators than the social resilience indicators for the LSOA across education, access to transport and communication indicators.<sup>190</sup> With respect to the economic resilience indicators, the LSOA 4 respondents showed stronger indicators than the general LSOA data on home ownership, but weaker indicators on employment, and comparable with respect to disposable income.<sup>191</sup>

Our sample is generally out of line with the overall data for each LSOA. Our sample of respondents is generally older, less economically active (except in LSOA 2), and had lower income than the overall data for the sample LSOAs. This is especially true of LSOA 1 respondents, where the indicators imply considerably less resilience than the LSOA data suggested, particularly with respect to the economic resilience indicators. Far from being the most affluent in the sample, these respondents appear to be among the least well off.

In all the LSOAs the respondents showed stronger resilience indicators than the overall data for each LSOA with respect to the two community capital indicators. The overall LSOA data for all four sample areas showed low place attachment and political engagement, whereas our sample respondents in all four areas showed a high level of political engagement and a high proportion of people who had lived in the area for 5 years or longer. This may offer an insight into why they were sufficiently interested to participate in the research – as noted in Chapters 5 and 6, there may be an element of self-selection among those choosing to respond.

## Findings

### *Awareness*

Overall, we found depressingly low levels of interest in flooding risks among the sample LSOAs. Many of those who did respond were relatively older and less affluent than their overall LSOA profiles. Our data suggest a greater awareness of flooding among those who are generally regarded as being relatively vulnerable and in positions of relative inequality with respect to age, illness, and type of accommodation. This may be because they had time to complete the questionnaire, but this was seldom given as a reason for not completing it

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<sup>188</sup> 76 per cent owned their home, compared to 80 per cent in the overall LSOA data. Only 10 per cent were economically active, compared to 69 per cent in the overall LSOA data. 70 per cent were retired. All those who responded to a question about income earned below the average in the overall LSOA data.

<sup>189</sup> 89 per cent of our sample were aged 65 or over, compared to 22 per cent in the overall LSOA data, and 35 per cent reported ill-health, in line with 31 per cent in the overall LSOA data.

<sup>190</sup> 43 per cent were educated to level 4 and above, compared to 20 per cent in the overall LSOA data and 76 per cent owned their own transport, compared to 64 per cent in the overall LSOA data. Additionally, 76 per cent had access to broadband, compared to 64 per cent in the overall LSOA data.

<sup>191</sup> 80 per cent owned their homes, compared to 59 per cent in the overall LSOA data. Some 43 per cent were employed, compared to 75 per cent in the overall LSOA data and 71 per cent earned below the average income in the overall LSOA data.

(see Chapter 2). It is more likely to be because the vulnerable group included more elderly people who can remember historic floods in the area. A governance official we interviewed expected awareness to depend upon whether residents had ‘memories’ of flooding in the area. Half of those aware of the risk of flooding in the area or their property were aged 65 years or above.

The EA’s 2013–14 public flood survey discerned age-related differences in flood risk awareness, with older people more likely to agree that they would experience flooding in the next five years (Environment Agency, 2014: 34). This may relate partly to life stage and the older population being more likely to feel at risk.<sup>192</sup> In our sample, there appeared to be a strong link between those who claimed to be aware of the flood risk and the length of time they had lived in the area: 71 per cent who were aware of the risk had lived in the area for at least 5 years.

Conversely, there was little interest from the transient populations living in District A. LSOAs 1 and 2 have a high student population, yet only one respondent in each area was in full-time education, suggesting that this transient population is less resilient in terms of its awareness of flood risk. We made considerable efforts to bring the survey to the attention of students living in LSOAs 1 and 2, talking to students living in university accommodation and houses in multi-occupation. One might have expected that some might have been interested in the subject matter, but still their responses remained low. LSOA 4 also has a significant rental market and high turnover – a local governance representative commented on the relatively high levels of deprivation in the area and the difficulties many would encounter evacuating in the event of flooding.

There was remarkably little representation of high income earners in the sample, this being especially notable in District A and LSOA 1, which was the most affluent area we sampled. One explanation for this could be that a higher proportion of the affluent residents are living in areas unaffected by the flooding. This would include those living on higher ground within LSOAs 1 and 2 who we would not have sampled as their properties are not associated with any flood risk; one local did comment ‘the rich man in his castle on the hill and the poor man next to the river’. In the sample LSOAs the properties in the flood risk areas were mobile homes, terraced houses or blocks of flats.

Another possible explanation for the apparent lack of interest among the more affluent residents in our sample LSOAs is that those with higher incomes were better prepared for flooding and may worry less about the effects of flooding as they can afford replacement goods and are better protected by insurance (Lechowska, 2018: 1349). The EA public flood survey found that those in the higher social grades were more likely to consider themselves at risk of flooding, more likely to prepare for floods, and had greater knowledge of the EA than those in the lower social grades (Environment Agency, 2014: 15, 22, 53).

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<sup>192</sup> The EA survey found that those with children are more likely to feel at risk (Environment Agency, 2014: 73). Our sample included only five respondents with children – three were aware of the flooding risk to the area and one was aware of the risk to their property.

The literature suggests that education bolsters resilience. Of the 16 respondents in our sample with a bachelor's degree or above, 14 were aware of the risks in their area. These 14 represent 41 per cent of those who were aware of the risks. Another driver of awareness was the length of time that respondents had lived in the area: of the eight respondents in the sample with no formal qualifications, five were aware of the risks, all were over 75 years old, and all had lived in the area for 10 years or longer.<sup>193</sup>

The responses also suggest a link between flood risk awareness and home ownership – a higher proportion of home owners responded to the survey and 79 per cent of them were aware of the flood risks, compared to 50 per cent of those renting, although caution should be exercised here as the numbers renting (10) is so small. Again, these findings resonate with the EA's public flood survey which suggests that renters are less prepared for floods than owner occupiers (Environment Agency, 2014: 74). The literature also suggests that the type of housing appears significant.

### *Mitigation*

As we saw in Chapter 5, there is a difference between being aware of flood risks and doing something about them. Only 48 per cent of our respondents signed up for flood warnings. Those aged 65 years and older were more likely to have signed up than those aged under 65.<sup>194</sup> While this may be contrary to expectations, the figures for property ownership were in accord with literature expectations: 61 per cent of property owners had registered for flood warnings compared to 50 per cent of those renting. Six of the nine who had previously experienced flooding were over 65 years old and all had signed up for flood warnings; one under 65 who had experienced flooding also signed up for warnings unlike the remaining two who had experienced flooding but had not signed up.

Most of our respondents (86 per cent) did not have physical flood defences and there was no apparent relationship between the six who did have defences and inequality characteristics, except that they were all owner occupiers. This is at variance with some other work which found that the exceptions in their sample who did have flood protection tended to be younger, more educated, and higher earners, who perceived the risk as serious (Soane et al., 2010). The inability to afford property level protection was noted by governance officials interviewed for the research. One official told me about a visit to a fairly affluent area where pockets of poverty were revealed by an exercise they had when alarms were sounded and people were asked to put in place their property level protection (PLP) guards – some did not have these so officials knocked on their doors and it transpired that the residents could not afford the guards and were instead reliant on sandbags. In these circumstances help is offered with respect to information about grants, but these are not always available, for example if the property has not been previously flooded, or if the scheme is not deemed cost effective at a neighbourhood level.

Insurance is perhaps the most discussed of flood mitigation issues related to inequalities. The Pitt Review (2008) discussed socio-economic differences primarily with respect to the financial impact of flooding. Key here is the issue of insurance, with Pitt Review data echoing

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<sup>193</sup> Three of these were from LSOA 3, and two from LSOA 4.

<sup>194</sup> 50 per cent aged 65 and older registered for flood alerts, compared to 42 per cent aged under 65.



academic discussions of the regressive nature of insurance. The Review found that 'barely one quarter' of those in the 2007 floods were insured and that low income groups were the most likely to be uninsured (DEFRA, 2008: 145). This in turn meant that they were the least likely to be able to recover from flooding and were therefore exposed to higher risks of health and related negative impacts. Issues of financial inclusion were relevant and the Review discusses barriers to the uptake of home insurance, especially among low income groups and those in social housing. It made recommendations to facilitate greater uptake of insurance among these groups.

Affording insurance was not the only financial difficulty encountered by the low income groups. The Pitt Review also found that when the government did act as 'insurer of last resort', for example, through the provision of Flood Recovery grants, there were difficulties in these funds finding their way to those most in need. Part of the difficulty related to knowledge of what financial aid was available and how to secure it. Governance officials remarked that the more affluent were most likely to apply for grants for flood mitigation and were most knowledgeable with respect to insurance matters (see also DEFRA, 2008: 150ff).

We saw in Chapter 5 that most of our respondents had insurance of some kind, but 38 per cent of those responding to this question did not know if their insurance included flood cover. Of the 18 respondents who either did not have, or did not know if they had, flood insurance, 11 were on low incomes and 8 were also elderly. We cannot be certain, but this may indicate the regressive effects of the cost of flood insurance. Indeed, these findings resonate with those of the independent review into flood insurance in Doncaster in November 2019 (Blanc, 2020). It found that 97 per cent of owner occupiers had buildings or contents insurance, but 6 per cent were not covered for flooding. This contrasted with most tenants who were 'poorly protected', with just 45 per cent having contents insurance, 11 per cent of whom did not have cover for flooding. The review highlighted the regressive effects of insurance manifested in the differences between owner-occupiers who tended to be older and more affluent, and tenants who tended to be younger and on lower incomes. It raised concerns about tenant awareness of the flood risk, landlord responsibilities for insurance, the availability of information, and more generally the affordability of insurance.

An earlier study by DEFRA into the *Availability and affordability of insurance for households* found that 3 per cent of households in their survey of those living in areas of flood risk were not insured for reasons of affordability, and fewer than 1 per cent for reasons of unavailability (DEFRA, 2018b: 58). This was reflected in the reasons given for those without insurance, namely the cost of premiums; the hassle of getting insurance; and in a minority of cases the view that the risk did not warrant the cost of insurance (DEFRA, 2018b: 29).

The issue of insurance costs did not emerge in response to questions about insurance cover. For example, the cost of insurance was not cited as a reason for not insuring. But when we asked respondents if the government should make it mandatory for insurance companies to provide affordable insurance for those at risk of flooding, it became clearer that the costs of insurance are a concern: 91 per cent of those responding thought it should be mandatory for affordable insurance to be available. The cost of insurance was the main reason for the 'yes' responses to this question. Several mentioned the high costs of

insurance and their own struggles to afford it: 'My house insurance is extremely expensive but have no choice but to pay'; 'Being on a limited income, insurance costs are rising each year'. Others were concerned that insurance is unaffordable for some and that there is a moral obligation to provide affordable insurance:

Insurance companies should make their insurance affordable for anyone, regardless of risk, but should make more of an effort to contact those who are at a high risk.

Insurance companies should not be able to just 'opt out' of providing cover – if there is a serious risk this should be reflected in the premium, but owner should have the option. Too many insurance organisations only want premiums – and no responsibility.

Some made more nuanced arguments, linking the premiums to the ability to pay as reflected in property values: 'Because not everyone can afford high insurance premiums just because they live close to a river although it should be based on property value to ensure those that need it most benefit from it'. Indeed, one respondent believed that the reverse was true: 'Often these houses are cheaper but then they are penalised by the insurance company.' Several felt that insurance companies are disingenuous and failed to consider local government resilience defences when calculating premiums:

Although (District A) has spent millions of pounds over the past 8 years on constructing flood defences over the river, I still find it difficult to get a reasonable quote for home/contents insurance as this address is still on their books as being a 'Flood Area' – why don't these companies get up to date information! Also, I couldn't get information on what my flood risk is from my local authority. My insurance is high.

Others believed that insurance companies used flooding as a reason not to pay out:

Why should people pay insurance all their lives; when and if houses flood through no fault of theirs, the insurance companies wriggle out of paying so householders lose their homes and belongings.

There is evidence that having insurance can mitigate the psychological impacts of flooding: not having insurance increases the stress and mental health effects and so can dealing with insurance issues after flooding (Mulchandani et al., 2019). A 2020 campaign by the EA to highlight the impact of flooding on mental health emphasised the increased susceptibility of those without insurance to the 'financial shock' of flooding. The campaign noted that 'low-income households are eight times more likely to live in tidal floodplains than more affluent households, but 61% of low-income renters do not have home contents insurance'.<sup>195</sup>

Also important in the UK context has been awareness of the Flood Re scheme (DEFRA, 2018b) and poor understandings of insurance cover (Blanc, 2020). As we saw in Chapter 5, inequalities span knowledge capacity as well as financial capacity. Sometimes this is

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<sup>195</sup> <<https://www.gov.uk/government/news/prepare-for-flooding-to-reduce-impacts-on-mental-health>>

because an individual or household's level of deprivation is such that their priorities focus on finding and affording necessities in the next days and weeks rather than researching and affording flood mitigation measures for a future uncertain date. Governance officials we interviewed commented on this and how residents' horizons could be very short term and focused on providing the necessities to live on a daily basis.

### *Community capital*

Community capital indicators give us a sense of the extent to which there is a feeling of 'community' in an area and the levels of participation in local activities and organisations. The expectation is that those who have lived in an area longer are likely to participate more and thus increase neighbourhood resilience (see Chapter 3). As we saw in Chapter 6, our sample had high levels of place attachment, with 72 per cent being long term residents, and most also had a strong sense of belonging to the area. This is especially true of those aged 65 years and over, 86 per cent of whom felt that they belonged to their immediate neighbourhood and 90 per cent who chatted to their neighbours at least once a month. The percentage of those under 65 years of age who had a sense of belonging and chatted to neighbours at least once a month was lower<sup>196</sup> but still positively related to community resilience. All the respondents aged 65 years and over had lived in the area for 5 years or more.

However, despite these high place attachment indicators and levels of interaction, only 38 per cent in this age group felt that people in their neighbourhood pulled together to improve the neighbourhood. This is reinforced by the low levels of volunteering in the sample. Employment status appears to influence the propensity to volunteer - 58 per cent of the volunteers were employed and 42 per cent retired. This represents 41 per cent of employed respondents volunteering and 31 per cent of retired respondents. The explanation for this does not appear to be straightforwardly age related as voluntary participation was equally divided between those under and over 65 years old.<sup>197</sup> Undoubtedly health related issues may have prevented some from volunteering, but a quarter of those volunteering did have long term health issues. There does not appear to be any strong differences in propensity to volunteer that are explained by inequalities.

Local governance staff we spoke to reflected on the difficulties of engaging transient populations. They noted that there are active community groups in District A, but they tend to be of long-standing residents and not in areas affected by flooding. LSOAs 1 and 2 had a high proportion of students and a small proportion of longer term residents who were not present in sufficient numbers to encourage longer term participation. Similarly, in District B's LSOA 4, officials commented that the high turnover of residents in rented accommodation helped to explain the lack of a sense of community and local engagement. It was also observed that some of these residents are poor and that participation tends to be higher in more affluent areas, particularly those with a higher proportion of professional inhabitants, where people understand the systems and how they work (Chapter 6).

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<sup>196</sup> 62 per cent felt that they belonged to the area, and 58 per cent spoke a neighbour at least once a month.

<sup>197</sup> 50 per cent of those volunteering were under 65 and 50 per cent 65 and older; 33 per cent of under 65s in the sample volunteered, 36 per cent of those who had retired in the sample volunteered.

Participation in democratic processes such as contacting democratic representatives, attending public meetings or signing petitions, was relatively high in the sample<sup>198</sup> (Chapter 6), but there were differences in participation according to several social and economic characteristics. For example, the propensity to participate was higher for those under 65 years of age.<sup>199</sup> There were marked differences with respect to educational inequalities, with 58 per cent of those engaging having an educational level of 4 and above. Indeed 88 per cent of those educated to this level in the sample had engaged with democratic processes. Employment was also significant, with those in employment being much more inclined to engage.<sup>200</sup> A separate question about participation in consultations about local services or problems in the local area was responded to positively by just 20 per cent of the sample.

The sample's political engagement was very different, with 89 per cent having voted in the last election. While this may be seen as an indicator of a community's ability to influence decisions, 78 per cent of respondents did not think that they are personally able to influence decisions. Their trust in local politicians was relatively limited, with 52 per cent indicating that they did trust their local councils, 35 per cent expressing distrust, and the rest unable to decide (Chapter 6).

These findings indicate some issues with respect to inequalities and inclusion. This resonates with the wider literature. For example, Twigger-Ross et al. (2014) found that characteristics such as education levels can influence an individual's ability to access information to prepare for flooding. Moreover, those groups and communities with less social capital and capacity to participate may be disadvantaged in terms of representation and inclusion in resilience decision making (Forrest et al., 2018: 433).

## Discussion

Inequalities may affect the ability of individuals, households and neighbourhoods to prepare, cope with, and recover from flooding, which can in turn exacerbate existing inequalities. But the patterns of inequality are not necessarily straightforward. While some social resilience characteristics such as age and ill-health may reduce the capacity of individuals to act, the data we have suggest that those who might be considered less resilient, in part because of their relative deprivation, demonstrated the most interest and awareness in flood risk issues in their locality.

We have a group of respondents who are particularly vulnerable because of intersections of negative indicators relating to age, education, employment, and income. It is interesting that these individuals responded to the survey, which may be in part because they could remember and had experience of flooding in the area and so had greater awareness of the

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<sup>198</sup> 59 per cent responded positively.

<sup>199</sup> 55 per cent of those under 65 years had engaged with democratic processes, compared to 42 per cent of those 65 and over.

<sup>200</sup> 54 per cent of those who participated were employed, and 35 per cent retired, and 71 per cent of those in employment in the sample engaged, compared to 50 per cent of those who were wholly retired.

flood risks. Nevertheless, institutional resilience indicators suggest that their inequalities manifest themselves with respect to variables demanding expenditure, notably expenditure on insurance and physical flood defences. The sample of respondents is particularly compromised by low incomes, in some cases very low incomes.

While government schemes are in place to help with the cost of flood mitigation, they do not necessarily cover the full cost of the protection. The Flood Re scheme represents a step towards more affordable flood insurance, but it is still beyond the means of the poorest. Moreover, accessing and negotiating government schemes requires know-how and some of our sample, like many others, had difficulties in knowing how to access information and help. To some extent place attachment characteristics did contribute to knowledge capacity within households where residents had lived in the areas for five years or more, in some cases considerably longer. Although this heightened their awareness of the flood risk, their ability to mitigate the risks was in some cases limited.

The community capital indicators for our respondents reveal them to be more inclined to 'community' than the general LSOA data suggest, largely because there is such a high proportion of longer term residents. They felt a sense of belonging, but this was not matched by a sense that they lived in neighbourhoods that 'pulled together'. In District A there was a real sense of a loss of community, perhaps most marked in LSOA 2 with high levels of migration and a transitory population who did not engage with our research or with their neighbourhood. Flood governance officials were concerned by the transitory population, particularly the high turnover of the student population. This posed problems in terms of updating flood warnings and a population which did not engage locally. Several commented that more stable populations were most likely to participate. This reflects other research which found that individuals are more likely to take flood risk management action if they have a strong attachment to their neighbourhood, are comfortable with talking to their neighbours, and are in neighbourhoods with strong social networks and active citizens (Cheshire, 2015; Mishra et al., 2010; Twigger-Ross et al., 2014).

Civic engagement varied more along some lines of inequality, with those who are younger, employed and more highly educated engaging more than their older, retired and less educated counterparts. This resonates with the wider literature and raises issues about inclusion and representation (Forrest et al., 2018). Responses to questions about participation in community initiatives found that 62 per cent were not interested and some of their explanations relate to inequalities (Chapter 6). For example, some concern inequalities of knowledge and skills, in particular a lack of confidence that they had anything useful to contribute. Others cited vulnerability factors such as their age and illness as obstacles to participation.

Time was also a factor and one mentioned by several councillors and officials. They commented that some families are too busy with work and childcare to participate. One councillor was very sceptical about relying on people in the voluntary sector partly for this reason, commenting that there is no guarantee that volunteers will be available or nearby when flood work is needed. The exception here may be the retired population – we found 42 per cent of those volunteering were retired. Several of the governance officials interviewed

commented on the importance of retired officials in establishing and sustaining active flood groups in other areas. Others commented on the importance of local people who are committed and motivated to help others and observed that if key motivators move out of an area then community engagement can fall apart very quickly.

It is notable that those responding to our survey were politically more active – as measured by the percentage participating in elections – than the general data for their LSOA or indeed national data. High political engagement is seen as a means of the community influencing decisions, but many in the research did not feel that they are able to personally influence decision making at a neighbourhood level. Yet there are important flood related issues to be addressed, for example political decisions about building on floodplains (DEFRA and Environment Agency, 2011: para 4.2). Academics have criticised planning decisions which allow property development in flood prone areas, as did many of those we interviewed (see Chapter 5). Sayers et al. (2017) found that floodplain development was relatively high in vulnerable areas and Rözer and Surminski (2021) estimated that 120,000 new homes were built on floodplains during 2008–18 and that a disproportionate number of these new builds were in disadvantaged neighbourhoods. They are among commentators who argue that this is especially concerning as there is an urgent need to consider future flood patterns which will be affected by climate change - a higher proportion of these new builds are likely to fall into the higher risk categories over their lifetime.

These findings are concerning, especially when greater emphasis is being placed on extending responsibilities for flood mitigation to all levels of society including the local population (Forrest et al., 2020). The so-called 'responsibilisation' agenda is not one which many respondents disagreed with to the extent that most felt that responsibilities for flood related issues should be shared. However, it is clear from this and other research that some of the reasons for not turning these beliefs into action are related to unequal capacities to act. Forrest et al. (2020) stress the importance of policy makers taking into account differences in socio-spatial vulnerability and the mismatch which can occur between responsibility and capacity. This raises issues about the cost and funding of flood defences, mitigation and adaptation, including insurance.

## 8 Conclusion

This research has examined the emergence of notions of social resilience in UK flooding policy, and the definition and practice of resilience strategies at a local level. It has discussed the extent to which conceptualisations of, and commitments to, resilience embrace the social dimensions of resilience, and what we can learn from the cases we examined about social resilience approaches and the challenges they present. This study is but one example, in one country at one moment in time, but it does give us some partial insights into governance approaches which are much discussed but under-researched. This concluding Chapter considers what we can learn about social resilience from this research, how it is conceived, and the issues and difficulties that may be encountered in translating the ideas into action.

Chapter 1 mapped out some broad characteristics of social resilience approaches and their related implementation challenges. The first part of this concluding Chapter considers these characteristics alongside our research findings and the policy changes that have occurred since data collection for this research. The second part of this Chapter considers the policy implications of these findings. It is important to keep in mind that this research focused on sample areas which had not experienced serious flooding for decades, but all were locations which are at high risk of flooding. This contrasts with many empirical studies of flooding which have researched local areas immediately after a major flooding event. There were several reasons for this decision, one being that it is representative of many areas at risk of serious flooding in the UK, which do not necessarily experience repeated flooding over a short time span but are assessed as having an annual chance of flooding of greater than 1 in 30 (3.3 per cent).

The few studies that do consider both pre- and post-event flooding suggest that awareness changes over time, and that awareness of and concern about flooding diminishes over time (Forrest et al., 2018). This research should therefore throw some light on the challenges of social resilience approaches in this context. As climate change alters patterns of flooding many additional areas of the country will become susceptible to the risk of flooding and other 'natural' catastrophes. So, the research is examining scenarios which are likely to become a major task for governance regimes, namely increasing the resilience of populations that are at high risk of flooding but unfamiliar with the realisation of these risks.

### Social resilience

#### *Uncertainty*

A key characteristic of resilience approaches is that they are premised on uncertainty. They acknowledge that it is not possible to predict and attribute meaningful probabilities to all events, so we need to be prepared for unexpected events. Resilience approaches accept that things will go wrong and we need to adapt to take account of this, that it is no longer possible to control nature and prevent the occurrence of all adverse events.

In the UK the Pitt Review (2008) into flooding signalled uncertainty as an issue for flood governance. While the Review was primarily risk oriented it acknowledged vulnerability to ‘surprises’ and the need for new approaches, including resilience approaches which are designed for continuity and recovery (Chapter 3). Indeed, the Review saw such approaches as especially pertinent because of the likely effects of climate change on the patterns and incidence of flooding. As we saw in Chapter 3, there was some hesitation in the years following the Review to fully attribute weather events to climate change. There is also evidence that following the Climate Change Act 2008 greater emphasis was still being given to mitigation, with adaptation developing at a much slower pace (Fankhauser et al., 2018; Climate Change Committee, 2019).

More recently there has been greater movement towards acknowledging the current and prospective impacts of climate change, and towards an increased emphasis on adaptation to flood risks. EA adaptation reports and speeches are illustrative of these changes. EA adaptation reports under the Climate Change Act 2008 have become more ready to acknowledge that it is impossible to entirely prevent natural disasters, that we need to be prepared for ‘atypical shocks’, and that ‘significant climate impacts’ are inevitable. The 2016 Report included a section on ‘Understanding uncertainties’ and emphasised the importance of flexible plans and approaches (Environment Agency, 2016: 38).

The speeches and news briefings of senior EA staff have also become much more direct, with an increasing emphasis on preparing for the worst and having recovery plans in place for unpreventable weather-related events. An example is a speech by the Chief Executive of the EA in February 2020. This followed Storms Ciara and Dennis which led to extensive flooding, power losses, major transport disruption and fatalities, with clean-up costs in excess of £360 million and insurance costs estimated at £214 million. In his speech the Chief Executive emphasised the advantages of physical flood defences but also acknowledged that they could fail ‘as the climate emergency brings more extreme weather’.<sup>201</sup> He stated the need for a ‘twin-tracked approach’ involving physical defences and making communities more resilient.

The speech paid less attention to community resilience than physical defences. However, the February storms had underscored the limitations of some physical defences and this was emphasised by the EA’s Executive Director of Local Operations who cautioned against ‘the myth of protection’, and gave a stark warning about rising sea levels and the need for ‘difficult conversations’ which may involve some people moving inland.<sup>202</sup> He stressed the importance of thinking long term and acknowledging the gravity of climate change impacts. This greater sense of urgency was also present when the Chair of the EA issued a press release accompanying the publication of the Agency’s third adaptation report under the Climate Change Act (Environment Agency, 2021a). The press release was entitled ‘Adapt or

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<sup>201</sup> <<https://www.gov.uk/government/speeches/defusing-the-weather-bomb-the-future-of-flood-defence>>

<sup>202</sup> <<https://www.bbc.co.uk/news/science-environment-51283716#:~:text=Coastal%20communities%20face%20%22serious%20questions,of%20floods%20and%20coastal%20management.>> BBC News, 14 February 2020.



die',<sup>203</sup> highlighting the importance of adaptation actions for everyone, while the different scenarios in the report underlined the uncertainties about what the effects of climate change might be.

These shifts in emphasis reflect an acceptance of climate change. They signal that events such as flooding will be inevitable and they start to communicate more explicitly the uncertainties involved in flood governance. Indeed, the EA's *National Flood and Coastal Erosion Risk Management Strategy for England* (2020b: 52) refers to 'climate uncertainty' and explains: 'It is often easier to plan for one scenario of future climate but much more difficult to plan for a range'. These themes run through national and transnational debates and publications. The UK's Climate Change Committee refers to 'deep uncertainty' regarding the scale of climate change and like many other national and international publications uses the term 'uncertainty ranges' alongside more conventional probability estimates.<sup>204</sup> In part, this language reflects concerns that the language of uncertainty might undermine the science and trust in scientists. Opinion on this is divided, but the key point here relates to the importance of how these messages are communicated.<sup>205</sup> The importance of communication is stressed by the Intergovernmental Panel on Climate Change (IPCC) which provides guidance notes to its authors on how to deal with and communicate uncertainties, warning that language affects interpretation and should be 'calibrated' (IPCC, 2018).

In our research the local governments responsible for the sample areas were concerned about climate change and sustainability. At the time of data collection, the main concern of these local governments related to net zero targets and setting and achieving lower carbon emissions through less energy consumption. There was not a lot of evidence at the time that flooding was related to climate change efforts. However, in the years following the data collection for this research there was much greater recognition of the importance of climate adaptation in the sample areas, and a committee at County Council level initiated work in which the increased risks of flooding became prominent. At the time of data collection, a minority of local government and council respondents acknowledged the uncertainties relating to climate change and the effects on flooding. Some sample LSOA respondents did raise issues of climate change, not directly relating them to uncertainty, but to concerns about building on floodplains. Very few related uncertainty and climate change to their own risk of flooding.

### *Resilience*

The Pitt Review (2008) marked the point at which resilience thinking started to be taken seriously alongside risk management approaches to flooding. The primary orientation in the Review was still risk-based and physical resilience was more prominent than social resilience. Nevertheless, community and personal resilience were signalled as relevant and important. This was not immediately recognised in government responses which focused on physical resilience, this still being the case some eight years later when the *National Resilience Review* (HM Government, 2016) almost exclusively took resilience to mean physical resilience. But there was an undercurrent following the Review of more attention

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<sup>203</sup> <<https://www.gov.uk/government/news/adapt-or-die-says-environment-agency>> 13 October 2021.

<sup>204</sup> See for example Climate Change Committee (2021); and IPCC (2007).

<sup>205</sup> See for example Howe et al. (2019); Hausfather and Peters (2020); and Lawrence et al. (2020).

being paid to people, with a focus on preparing for flooding, surviving floods, and bouncing back afterwards. There was also an aspiration in the Review that building back offered the opportunity to be transformative (Chapter 3).

The Pitt Review recognised that resilience involved long term thinking, was a basis for action, and a process which required collaboration. An important aspect of the Review was flooding governance being a shared responsibility between national and local governments, economic and civil sectors, and householders. But governments were expected to take the lead and particular attention was paid to the role of local resilience governance. These recommendations perhaps received more attention from government because they resonated with more general moves to outsource and devolve central government responsibilities (Chapter 3).

Legislative and policy reforms following the Pitt Review strengthened multi-level governance regimes. There was, however, a strongly hierarchical tone to policy making and an emphasis on a top-down governance system which cascaded responsibilities from central government to its agencies and local government. At the local level there are a myriad of cross-sector forums, few of which are statutory. There are also no statutory responsibilities concerning the participation of civil sector organisations and individuals in the governance regime – their inclusion is recommended but not obligatory, something subsequent inquiries have criticised (Chapter 4).

Since data collection for this research was completed there has been more emphasis on social resilience in policy documents, partly in line with the greater willingness to acknowledge climate uncertainties and the inevitability of flooding. The urgency of engaging communities and businesses and raising their awareness of the risks of flooding and other climate change risks has been emphasised by the Climate Change Committee (2019; 2021) and EA documents have increasingly reflected the importance of the community.

For example, the EA's third adaptation report (Environment Agency, 2021a) stresses resilience and discusses the 'community' much more than its previous report (Environment Agency, 2016). In 2016 there were 48 references to resilience, most of them referring to physical resilience, although there was some discussion of raising the awareness of businesses and reference to organisational resilience. 'Community' was mentioned just three times. This contrasts with the 2021 adaptation report, where the 77 references to resilience present a much more holistic approach to resilience than its predecessor. 'Community' is mentioned 17 times, some references referring to business, investment and academic communities, and a theme in the report is the resilience of social communities and societal resilience. The emphasis in the 2021 report is on living with the risk of flooding and hence 'a shift towards flood resilience approaches' (Environment Agency, 2021a: 9). The 2021 report considers the impact of the failure of physical - infrastructure and ecosystem - resilience measures, including the impact of flooding on the health and wellbeing of communities. The report pledges greater community engagement, helping to facilitate community adaptation and promoting a 'people centred' approach, while stressing the interdependencies in tackling the risks between the formal authorities and other economic and civil actors.

The 2021 adaptation report was published a year after the EA's *National flood and coastal erosion risk management strategy for England* (Environment Agency, 2020b). The strategy looks forward to the year 2100 and is focused on 'climate resilient places', resilient infrastructures, and 'A nation ready to respond and adapt to flooding and coastal change' (Environment Agency, 2020b: 8). The last ambition involves 'Ensuring local people understand their risk to flooding and coastal change, and know their responsibilities and how to take action.' The emphasis on joint responsibilities runs through the document, with risk management authorities being mentioned alongside economic sector organisations, civil society groups, landowners, householders, and community action groups (Environment Agency, 2020b: 17). The strategy is premised on the need for greater flood awareness and action and the community is seen to play a role in terms of raising awareness, forming local flood groups and 'helping the risk management authorities' (Environment Agency, 2020b: 48, 96). The term 'help' indicates a subsidiary role for these groups, but the document also quotes the Multi-Agency Flood Plan Review (DEFRA and Environment Agency, 2018) in stressing the importance of community involvement. It acknowledges the challenges of this task, including the importance of sensitive communication and engagement (Environment Agency, 2020b: 98).

Another development in recent years has been an emphasis on 'bouncing back better'. However, this has been pitched at the level of householders and the insurance industry. For example, the EA's *Flood and coastal erosion risk management strategy roadmap to 2026* (Environment Agency, 2022b) encourages property owners to install property level resilience measures and if flooded to 'build back better'. The roadmap states that the EA will work with the insurance industry through Flood Re to phase in schemes to promote this. Flood Re launched its Build Back Better scheme in April 2022, providing property owners who have been flooded with up to £10,000 over and above their repair costs if they install property resilience measures.<sup>206</sup> But, as with the Property Flood Resilience grants scheme, this is only open to those who have been flooded, not to those who are at high risk of flooding but have not yet experienced flooding.

### *Multi-level governance*

The challenges presented by the multi-level governance system centre on cooperation between the various parties involved in governance who may have differing understandings of their responsibilities and objectives with respect to flooding, and may also have varying levels of commitment to social resilience approaches. This research found high levels of interest among those in the governance system with responsibilities for flooding, whereas those occupying more generic executive positions tended to see this as the responsibility of specialist personnel. Except for a few highly motivated councillors, the topic of flooding did not command a lot of interest from councillors. It was not on their horizons unless it was part of their portfolio or a concern of their constituents, and for most neither seemed to be the case (Chapter 4).

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<sup>206</sup> <[Build Back Better - a world leading approach to protecting UK homes against the risk of flooding - Flood Expo 2022 \(thefloodexpo.co.uk\)](https://www.thefloodexpo.co.uk/)>

Several issues with the governance system were identified in the interviews with those associated with the governance system. One was the division of labour and responsibilities. Some found the system confusing and complex and were concerned that it is especially bewildering for those at risk of flooding. There were also concerns that the combination of complexities and very limited resources sometimes led to buck-passing, with different parts of the system assuming that some tasks were the responsibility of other organisations, leading to the danger that no one took responsibility. Also related to resourcing issues were the tensions between the financial costs and time commitment demanded by flood protection and other priorities such as urban regeneration and redevelopment, this being a particular concern at local government level. One area of evident tension was between the demand for housing and building on floodplains, a topic which also raised serious concerns among the research survey respondents (Chapter 6).

Social resilience approaches ideally involve the participation of civil society organisations and members of the local population. The general view among those in the governance system was positive to the extent that there were efforts in place to increase the awareness of the local population regarding the risks of flooding and, if possible, to involve them. However, raising awareness and securing interest required resources and these were limited. It was acknowledged that there were some excellent flood action groups and flood wardens in the area, but these were far from the norm. A minority of those we interviewed were concerned about the extension of responsibilities to civil society and the general population, but their reasons for this differed. Some took a governmentality perspective and worried that this represented a shifting of responsibility and costs away from central government and onto individual householders. Others took the view that flooding governance should be the preserve of the experts and professionals and that local organisations and individuals should not and could not always be relied upon.

The participatory ambitions of social resilience approaches present several challenges. A prerequisite is an awareness among populations at risk that flooding is a risk for them. For those who are aware there then needs to be a preparedness to act on this information with respect to their household situation, and ideally to further the resilience of their neighbourhood through participation in resilience activities. Local government officials and councillors did not expect high awareness among the populations at risk of flooding in their areas. Our survey confirmed their suspicions.

Those who responded to our survey were likely to be those most aware of the flood risk and motivated to respond. But even among this group, over 25 per cent were unaware of the risk to the area and 41 per cent were unaware of the risk to their property. Even fewer had acted to mitigate the risk. Some denied the flood risk, others felt protected by flood defences, some prioritised other risks, and others did not have the financial capacity or knowledge of how to act. Those who had acted had experienced flooding but not everyone who had experienced flooding acted to mitigate the risks. Our sample respondents believed that flooding protection is a shared responsibility between the authorities and themselves. These findings are in line with other studies (Chapter 5).

The sample respondents tended to be longer term residents, the majority of whom felt attached to their immediate neighbourhoods. However, several remarked on the loss of community, so 'neighbourhood' may capture their sense of attachment better than 'community'. Their civic participation was well below national levels but their engagement with democratic processes and political engagement through voting was higher than the national averages. While over half of the sample thought it important that local populations are involved in flooding decisions and governance, very few felt personally empowered to influence decisions. Involvement in any community flooding initiatives was low in our sample and interest in becoming involved was also minimal. Indeed, trust in governance authorities was generally low, with just under half of respondents not trusting their local council.

Respondents felt disconnected from the authorities including their local representatives, but clearly still felt that contacting local council officials, councillors and the EA was the route to their being able to influence decisions. Other research has found similar disconnects, as did DEFRA and the Environment Agency's *Multi-Agency Flood Plan Review* (Chapter 6). These issues indicate ways to try to increase participation and increase resilience. They also underline the challenges involved with respect to apathy, awareness, communication and trust, challenges which demand high levels of resources and commitment to gain and sustain interest.

### *Inequality*

There is a well established relationship between inequality and living in flood prone areas. Inequalities can influence where you live, where flood-prone building developments are built, and the ability of these neighbourhoods and those living within them to prepare, cope with and recover from floods (Chapter 7). The Pitt Review (2008) recognised this issue and some policy interventions since then have led to some improvements, but these are limited and the issue is still a major cause of concern. The Climate Change Committee (2021) identified 'Addressing inequalities' as one of its principles of good adaptation, referring to current and intergenerational inequalities. This assessment raises concerns about the distributional effects of climate change and the exacerbation of existing inequalities. These concerns are echoed in the Environment Agency's (2021a) third adaptation report, which pays some attention to being sensitive to environmental inequalities and ensuring that all groups are prepared for the impacts of climate change. For example, it refers to the health effects of climate change, especially heat, on vulnerable people.

Aspirational versions of resilience envisage more egalitarian and democratic governance processes with greater participation and inclusion in decision making and the implementation of flood governance policies. They also focus on equal outcomes and giving voice to the vulnerable. This research reinforces the message of other research that patterns of inequality and their relationship with flooding are complex. A group of respondents in this research who would be classed as vulnerable by virtue of their age, education, employment and income demonstrated awareness of the risk of flooding in their area. This is partly because they were longer term residents in the area with relatively high community capital. But the research sample also included many whose vulnerabilities did have an adverse impact on their ability to prepare, cope with, and recover from flooding. For example, low incomes affected the ability of some to afford insurance and property level resilience

measures; while low understandings of the risks, a lack of confidence that they could contribute by participating, and health issues adversely affected participation and the willingness to consider participating. Some cited age as a constraining factor to participation, although just over 40 per cent of the those who did volunteer were retired. Overall, there was little evidence in the research that the more aspirational ambitions of some resilience thinking were being met.

Our interview data indicate that participation in flood groups is often related to affluence and knowledge obtained, for example, through previous employment in local government or flood related jobs. Also relevant was a sense of community, with interviewees observing that transient populations in their areas were especially difficult to communicate with. Some interviewees were acutely aware that many living in high risk flood areas were preoccupied with other more immediate concerns and priorities rather than the risk of flooding at some time in the future. Such findings underline that there are still sections of the population for whom the affordability of insurance is a difficulty, and who remain under the radar of schemes to incentivise householders to manage their flood risk (Chapter 7).

An important challenge is identifying communities with low resilience so resources can be directed to areas of need. This research used an adaptation of Cutter et al.'s (2010) disaster resilience indicators, adapted for UK use (See Chapter 2). These 'community resilience indicators' relate to five areas of societal resilience, namely social, economic, institutional, infrastructure, and community capital. What we do not know is which indicators best represent the social resilience of a neighbourhood, which are most important in promoting and measuring social resilience and how these issues might vary in different social contexts, for example, different national and cultural contexts and varying regional, urban and rural settings.

## Policy implications

### *Uncertainty*

One policy response to uncertainty is the use of uncertainty ranges in climate change discussions (see above). Working with these poses policy challenges for those at all levels of governance. The EA's *National Flood and Coastal Erosion Risk Management Strategy for England* acknowledges that planning for a range of scenarios is difficult, particularly given the need '... to enable investment in suitable resilience actions at the points when they will provide maximum benefit' (Environment Agency, 2020b: 52). The document advocates an adaptation pathways approach to manage the uncertainties. This involves identifying pathways for different scenarios and being responsive to up-to-date climate change science, changes to the environment, and investment opportunities. It is a long term approach, seeing resilience as a process and one which is collaborative involving the EA, local governance personnel and representatives from local businesses and publics. Indeed, the same document emphasises the importance of local people and partners being 'at the heart of making local choices' about how to tailor resilience actions to specific places (Environment Agency, 2020b: 47; see also Environment Agency, 2021b).

The strategy calls for flexibility in the definition of 'place' regarding scale and characteristics, stating that local people should determine how place is defined. For example, this may accord with administrative boundaries or align with existing flood risk plans (Environment Agency, 2020b: 26). Implementing this strategy is challenging and demands high levels of cooperation (see below). It means having in place social and political systems and institutions which can cope with change and adapt to changing circumstances (Ebbesson, 2010). Facilitating the necessary levels of flexibility to monitor the science, environmental changes and local opinion, and to adapt pathways as necessary, requires enhanced levels of cooperation between those in the multi-level governance system. It underlines the need for long term and regular interaction to foster the levels of communication and trust necessary to cooperate in determining definitions of place and when a change of pathway is appropriate.

There are some synergies between risk-based and resilience approaches, such as using the available scientific data to help set priorities, but there are important differences between the two approaches (Hutter, 2017). These differences include the greater emphasis in resilience approaches on the participation and inclusivity of those potentially affected by flood risk, and considerations which ideally go beyond cost-benefit economics. For example, resilience approaches consider system effects rather than focusing on specific risks, and notably consider the social impacts of the risks and any mitigation or adaptation actions.

### *Social resilience*

A key policy ambition to establish social resilience with respect to flooding is ensuring that those in the flood governance system understand the importance of social resilience and increase the awareness of local populations about their flood risk. Increasing the awareness of the authorities to social resilience is important because of the uncertainties involved and because attempts to increase the social resilience of the population in part depends on the willingness of the authorities to incorporate civil society groups and representatives of the wider population into flood governance. Central and local governments need to have the political will to support such participation and facilitate it (Hutter, 2017). We have found that this is not always forthcoming and even where governments do see greater openness as desirable, implementation can pose major difficulties. Success in greater inclusion of the vulnerable, disadvantaged and representatives of the wider community partly depends on the capacity of local government to work with those at risk. It requires resources and sensitivity to the distribution of power and the ability of local government to work with neighbouring and central governments (Satterwaite, 2017).

### *Awareness and communication*

Increasing the awareness of local populations to their flood risk is a vital first step to encouraging participation in flood governance. There is much discussion in the literature about risk communication to increase awareness of flood risk and what can be done to improve responses to flood risk. In the context of social resilience and inclusivity, the importance of taking an approach which acknowledges different vulnerabilities, needs and varying audiences is stressed (Environment Agency, 2009 and 2015; McEwen et al., 2018; Patel et al., 2017). The modes of communication need to be tailored to different groups according to, for example, their age and therefore differentiated for children, young people



and the elderly (Environment Agency, 2022a: 26; Mort et al., 2018; Walkling and Haworth, 2020). This research found a preference for traditional hard copy forms of communication in addition to social media, reflecting the age profiles of those responding to our survey (Chapter 6).

It is also important to recognise that communication is two-way (Soane et al., 2010). Indeed, the strong recommendations are for the co-production of communications, including the involvement of children and those with vulnerabilities (McEwen et al., 2018; Mort et al., 2018; Rollason et al., 2018). Research involving lay participants has reinforced the message that the content and presentation of communications has an impact on perceptions of risk. For example, flood risks that are presented as probabilities are generally not well understood. Some research has suggested that flood risks expressed in terms of their cumulative rather than annual probability increase the perception of risk (Strathie et al., 2017). The design of flood maps also influences perceptions, with attention being paid to the use of colour and finer grained maps which give people a better understanding of the flood risk in their streets (Rollason et al., 2018; Strathie et al., 2017). These suggestions resonate with the findings of this research where flood risks were often misunderstood and flood maps proved unhelpful, both to us as researchers and to some local government officials.

### *Engagement*

One of the difficulties in communicating flood risks is that they refer to a possible future situation (Environment Agency, 2015). This research, like others, found that those who had already experienced flooding tended to have a greater awareness of their flood risk. Where this is not the case, issues of trust regarding those who deliver flood risk messages are important (Environment Agency, 2015; Wachinger et al., 2013). This is partly why co-production is advocated and why social resilience approaches are longer term processes that cultivate relationships between different parts of the governance system, including non-state organisations and individuals.

Developing social capital is part of this process and in this respect, research post-COVID 19 has some interesting findings that are pertinent to other types of disaster, flooding included. For example, these studies present evidence that areas where there had been investment in social cohesion at the local level fared better during and after the pandemic (Abrams et al., 2021; McCabe et al., 2020). Local government support was important as a facilitator rather than as a micro manager of social cohesion initiatives (Mulgan et al., 2021). Trust was generally greater with respect to local politics and local government than at the national level (Abrams et al., 2021). There is also evidence that those who volunteered benefitted in terms of greater personal resilience, and that areas with higher levels of volunteering were more socially cohesive and resilient (Abrams et al., 2021). This research suggests that investment in social cohesion schemes is valuable.

Another route for trying to increase engagement and participation has been experimenting with different forms and platforms of engagement such as stakeholder forums and citizen juries, although attention needs to be paid to issues of fairness, representation and the role played by those who do participate (Jones and Irwin, 2010). Stakeholder dialogues about environmental issues at community level have had some success in China. Wang (2017)



discerned positive effects such as greater participation, greater awareness of environmental matters, increased levels of trust between stakeholders, and some environmental improvements. These benefits suggest such experimentation could be worthwhile. However, they demand resources and the capacity to experiment with new forms of governance (Holley and Sofronova, 2017).

DEFRA launched its Flood Resilience Community Pathfinder scheme in 2012. It funded 13 'innovative' community projects for two years, in areas at significant risk of flooding. The evaluation of the scheme noted how unusual it is for the funding focus to be on people and communities and stated that '... much was achieved in the areas of community engagement, flood volunteering and governance' (Twigger-Ross et al., 2014: 193). Key achievements included raising awareness of the flood risk; building social capital; significant improvements with regard to knowledge, tools and skills for improving community resilience; stimulating multi-agency meetings; and acting as a catalyst for new flood groups and networks. Again, this underscores the value of such experimental schemes.

As noted in Chapter 4, the flood and coastal resilience innovation programme<sup>207</sup> also includes some funding for 'building community and voluntary sector capacity to respond and recover', as part of local physical resilience projects.

### *Empowerment*

Implicit in social resilience approaches is that populations and individuals need to take on greater responsibility for flood management with respect to working with, or as part of, the local flood governance system, and to take action to protect themselves and their property. This research sample mostly accepted shared responsibility but did not feel that they had any agency, so did not think that they could influence decisions and play a role in issues such as flood governance. Previous research has found that awareness of flood risk is necessary but not sufficient to lead to action, and that a sense of agency and responsibility is also important (Soane et al., 2010; Twigger-Ross et al., 2014). Empowering people to act is therefore crucially important and a valuable first step is respecting their input, giving people the confidence to believe that they do have agency. Other research findings have found that one route to increasing personal agency is through dialogue and engaging the public to participate (Environment Agency, 2015; Wachinger et al, 2013).

An additional advantage of engagement and participation is that they can increase trust in the authorities, which as we have seen is vital in facilitating resilience approaches and one which again was highlighted by our research. An important aspect of people's perceptions of trust and inclusiveness relates to leadership. Kwok et al. (2016: 205) found that local leaders can help promote an environment of inclusiveness and trust that lays the foundation for collective action. An essential ingredient here is that there is clarity about leadership and roles within the multi-level governance system (Patel et al., 2017), and that resources are devoted to building trust at a local and individual level (DEFRA and Environment Agency, 2018: para 17.8).

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<sup>207</sup> <<https://engageenvironmentagency.uk.engagementhq.com/innovation-programme>>

### *Resources and inequality*

Another reason for inaction despite awareness of flood risks is a lack of resources at all levels of the governance system including local government and households. We have seen in this research that cuts in local authority budgets have affected priorities and the resources available for flood governance (Chapter 4; see also Twigger-Ross et al., 2014: 9). The resources dedicated by the EA to community level resilience work are also very limited, especially relative to the flood capital investment programme. Following governmentality arguments, and the shifting of some responsibilities from governments to individuals, we might expect greater effort to recruit non-state organisations and individuals into the flood management effort, but we have not seen any evidence of such moves in this research. A lack of resources may be one reason for this. As we can see from the above discussion on participation and inclusion, resources and dedicated personnel from the formal system are required to increase awareness, reach out and cultivate relationships, and develop the trust necessary to facilitate greater participation, especially among more marginal groups. The Multi-Agency Flood Plan Review recommended strengthened links with the voluntary and charity sectors and greater investment in community initiatives (DEFRA and Environment Agency, 2018).

At neighbourhood, household and individual levels, inequalities and resources are significant in a variety of respects. A high proportion of occupants of flood-prone properties are socially disadvantaged and many of these properties are built, and are still being built, on floodplains (Chapter 7). The Climate Change Committee (2021: 125ff) advocates steering development away from current flood areas and planning for climate change by, for example, taking into account that ‘the spatial shift in flood zones as a result of climate change will result in more homes built over the last decade ending up in higher flood zones over their lifetime’ (Climate Change Committee, 2021: 128). In addition to improved land use planning, there is a need for buildings in flood risk prone areas to include property level protection (PLP). For new builds this could be aided by strengthened building regulations (Bonfield, 2016; House of Commons Environment, Food and Rural Affairs Committee Report on Future Flood Prevention, 2016: 21), although their enforcement and an assessment of their resilience would be needed to ensure that they were meeting the requirements (Rözer and Surminski, 2021). In the case of existing buildings, the availability of funding for PLP varies, with some poorer neighbourhoods unable to secure the partnership funding required to help with flood protection, and property owners not having the resources to install PLP themselves.

The relatively poor take up of PLP has been a matter of concern (Bonfield, 2016; Climate Change Committee, 2021: 138ff). Much discussion about how to improve the uptake of PLP focuses on those who can afford it, convincing them of the need for PLP, and the provision of information about what is available and that it is cost-effective to install PLP (Soane et al., 2010; Wachinger et al., 2013: 1060). The Bonfield (2016) action plan proposed regulatory approaches to provide reassurance that work is done to a high standard. This included certification schemes for PLP products, and certification and training for professionals involved in recommending, installing and checking PLP.

The insurance industry is seen as one route to incentivising householders to install PLP through, for example, lower premiums for those with PLP, or through build back better schemes (Blanc, 2020; Bonfield, 2016; House of Commons Environment, Food and Rural Affairs Committee, 2016). There are, however, several issues that need addressing to increase the effectiveness of this route. One centres on issues of trust, as was raised by some of our research respondents (Chapter 5). The Blanc Report (2020: 45) also found that mistrust and misunderstanding of insurance is commonly cited as a barrier to take-up of insurance. This partly relates to difficulties in understanding insurance but also to worries about the management of claims by the industry.

Another major concern is the affordability of insurance. Flood Re is intended to ensure that people at risk of flooding can access affordable insurance, but as we can see from this research some at risk either do not know about the scheme or are unable to afford the premiums. The Blanc Report (2020) highlighted the regressive effects of insurance and raised concerns about tenant awareness of the flood risk and landlord responsibilities for insurance and information. The report recommended more information for tenants and generally more information about the value of insurance for those at risk. But it also recognised, as this research found, that there are those for whom even Flood Re insurance is difficult to afford. One policy response is to ensure that grants and recovery finances are particularly targeted to economically deprived areas.

It should also be noted that that Flood Re is time limited and longer term solutions will need to be considered to help mitigate the inequalities involved with respect to insurance. Examining what other countries do may be helpful. For example, it could be made mandatory for insurance companies to provide insurance for natural disaster situations – in France insurance companies are required to offer catastrophe insurance that is bundled with property insurance. The government delineates the areas covered and finances the reinsurance of the programme. The programme offers decreasing compensation to those in high risk areas, encouraging relocation or the adoption of loss-reduction measures (Hutter, 2009).

Some of the UK's Pathfinder projects included additional information about insurance and negotiations with brokers to try to reduce premiums, but they encountered difficulties. More successful was the incorporation of PLP provision into projects – seven projects focused on PLP provision, some including free surveys and installation especially for those who are vulnerable and living in high flood risk areas (Twigger-Ross et al., 2014). Innovative projects such as these suggest possible policy options.

### *Participation*

Resourcing issues and inequalities also beset participation (Chapter 7). As Kwok et al. (2016) explain, the relationship between social and economic resilience is mutually reinforcing. For example, a lack of mobility and access to financial capital may also impede access to social networks and participation. This has led some to advocate that governments should provide support to ensure that marginalised actors are given a voice in decision making (Lane and Corbett, 2005). Moreover, volunteering can demand a lot of time and financing, so to successfully engage all stakeholders as volunteer partners requires

funding to be commensurate with their time scarcity and financial needs. Without this, those with the least time and resources to spare will not participate (Lane and Corbett, 2005). The call here is for investment to facilitate a longer term intervention to promote social resilience (Patel et al., 2017).

### *Sustainability*

A major challenge underlying much risk and resilience work is sustainability. Securing awareness and participation are the initial challenges, but maintaining them over the long term is equally challenging (Djalante et al., 2011; Holley, 2009). Maintaining interest and 'keeping the message fresh' can be especially demanding where communities are transient and changing. If an area has not experienced recent flooding, does not fully appreciate the flood risk, and has low resources, then other issues may well take priority for both local authorities and local populations. It is partly for these reasons, and for reasons of sustainability, that incorporating flooding into more generic resilience work is recommended (Twigger-Ross et al., 2014: 83).

Research on the long term societal impacts of COVID-19 found that community led responses were vitally important and that those entering the pandemic with a social infrastructure of capacity and communication between government, community organisations and the public were best placed to respond to the pandemic (British Academy, 2021: 91). But establishing and maintaining such an infrastructure is time consuming. Capacities vary across neighbourhoods (Forrest et al., 2018), and assessing the differing and perhaps changing needs and capacities of each demands adequate resourcing.

The Pathfinder projects highlighted the importance of 'dedicated, skilled and experienced community engagement officers' who could adopt a flexible approach to different localities (Twigger-Ross et al., 2014: 63ff). We interviewed such personnel but they are scarce in numbers and resources. Regular dedicated funding is vital to support this work within the formal governance system, the charity sector and the local population. Indeed, one of the tensions in having generic resilience personnel is that volunteers could be overworked. Some compensation for volunteers may help here, and facilitate widening the pool of volunteers across all groups.

### *Regulation and resilience*

The uncertainty, flexibility and adaptation associated with resilience approaches pose challenges for risk-based systems to the extent that they may be at odds with the certainty and predictability of law (Pederson, 2017). This is not to say that laws and regulations cannot be used to help facilitate resilience approaches (Holley and Sofronova, 2017). For example, where there is a reluctance to be inclusive the law could potentially facilitate greater rights of participation and representation, although views on how effective these might be are divided (see Hutter 2017: Chapter 11). The law could also be framed to secure greater rights of legal representation (Curran, 2017; Ituarte-Lima, 2017). Indeed, regulation can be a major tool for challenging environmental injustices, but only if the regulator is able and prepared to take on powerful interests and class actions.

Planning laws and building regulations could be strengthened to improve property level resilience, and assurance schemes and standards could be introduced with respect to flood protection products and their installation. More radical measures might include mandatory flood insurance. Resilience approaches can offer opportunities to rethink how the law and regulation can best be used in environmental governance. They also present opportunities to be transformative, to build back better, and to centre some of the ethical dilemmas inherent in flood governance.

Our understandings of social resilience are still in their infancy. The relationships between the different areas of social resilience are not fully understood. Nor are the interrelationships between practices which appear to enhance social resilience, for example building confidence among the different partners in flood governance and the local population, and giving the local population a sense of agency. There is a pressing need for social science indicators to inform policy, to enable assessment of the needs and capacities of different neighbourhoods, and to track changes of these needs and capacities.

A major difficulty encountered in this research was securing reliable and up to date data for each of the indicators of social resilience, a problem encountered by other research into measuring social resilience (Environment Agency, 2022c; Hutter and Bailey, 2022), and evaluations of progress towards mitigation and adaptation to climate change (Climate Change Committee, 2019: 30ff). We are some distance from the ideal of having a set of workable social resilience indicators, which can be used at the local level to include the perspectives of local communities, so they reflect the priorities of community members in preparing for, responding to, and recovering from disasters (Kwok et al., 2016: 207).

Social resilience approaches are long term processes which demand cultivating and facilitating. They are becoming ever more significant as we become increasingly exposed to the effects of climate change and its impact on flooding. More neighbourhoods will become exposed to the risk of flooding and like those in this research, many will be oblivious to their increased risk without some intensive work to increase awareness and buy-in to flood governance. This is especially important as it is increasingly apparent that physical resilience is not enough and that flood governance needs to invest in complementary physical and social resilience strategies. Moreover, these need to be inclusive and take into account the more vulnerable in society who are so often most exposed to the risk of flooding and other climate-related risks such as heatwaves.

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**LSE** THE LONDON SCHOOL  
OF ECONOMICS AND  
POLITICAL SCIENCE ■

# Engaging with Local Communities About Risk and Resilience

Self-Completion Research Questionnaire

# Introduction

## What is this questionnaire for?

This questionnaire is for an academic research project. The aim is to further our understanding of neighbourhood risk and resilience policies and practices and to help to promote better and more user-friendly ways of national and local organizations engaging with local communities about potential risks.

The results from this research will also allow academics to gain insights which will be written up in a series of academic and practitioner publications. Copies of these publications will be publicly available and will feed into local and national policy making.

## What do you have to do?

Please answer the questions in this questionnaire. To do this you put a tick in the box provided or write a few lines in the box provided. Remember this is not a test and there are no right or wrong answers! We are interested in what you as an individual think. We encourage you to be as honest as you can. When you have completed the questionnaire please put it straight into the pre-paid addressed envelope we've provided and put it in the post.

## Who are we?

We are academic researchers which means that we have to be unbiased, independent and do not represent any commercial interests. We work for the London School of Economics and Political Science which is part of the University of London. [www.lse.ac.uk](http://www.lse.ac.uk)

## Confidentiality

**We must emphasise that all individual responses will be treated as confidential.** We assure you that we will not disclose any of your contact details or identifiable responses to anyone. You do not have to write your name or contact details on this questionnaire, this is optional at the end of the questionnaire.

If you have any questions at all you may contact Professor Hutter at the London School of Economics and Political Science. Tel: 020 7955 7287 or email: [LSE.ResilienceProject@lse.ac.uk](mailto:LSE.ResilienceProject@lse.ac.uk)

Please use the freepost envelope provided – no stamp needed – to return completed copies of this questionnaire to Professor Hutter.

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## Section 1 Basic information

These questions are basic questions about you and your household. Please tick the relevant boxes or add the reply on the dotted lines. Please remember the replies are confidential.

1 Which town or city do you live in?

2 Which road do you live in?

3 Are you:

- a Male  01  
b Female  02

4 What is your country of birth?

- a UK  01  
a Other (please specify in the box below)  02

5 What is the main language you speak at home?

- a English  01  
b Other (please specify in the box below)  02

6 What is your highest Educational Achievement?

**Tick one box only**

- a GCSE/O-level/CSE or equivalent  01  
b Vocational qualifications (=NVQ1+2) or equivalent  02  
c A level or equivalent (=NVQ3) or equivalent  03  
d Bachelor Degree or equivalent (=NVQ4) or equivalent  04  
e Masters/PhD or equivalent  05  
f No formal qualifications  06  
g Other (please specify in the box below)  07

7 Employment Status: Are you:

Tick one box only

- a An employee in a full-time job (31 hours or more per week)  01
- b An employee in a part time job (Less than 31 hours per week)  02
- c Self-Employed (full or part-time)  03
- d In full time education at school, college or university  04
- e Unemployed and available for work  05
- f Permanently sick or disabled  06
- g Wholly retired from work  07
- h Looking after the home  08
- i Doing something else (please specify in the box below)  09

8 What is your annual household disposable income (after adjusting for taxes and benefits):

Tick one box only

- a Above £65, 524  01
- b Between £65, 523 and £27, 299  02
- c Between £27, 300 and £12, 748  03
- d Below £12, 748  04

9 Do you live in accommodation:

Tick one box only

- a Owned with a mortgage or loan  01
- b Owned outright  02
- c Other owned  03
- d Rented from Council  04
- e Rented from a Housing Association or another Registered Social Landlord  05
- f Rented from a private landlord  06
- g Other rented or living here rent free  07
- h Part rent and part mortgage (shared ownership)  08
- i Other (please specify in the box below)  09

10 What type of accommodation do you live in?

**Tick one box only**

- a Detached house  01
- b Terraced house  02
- c Bungalow  03
- d Flat  04
- e Mobile home  05
- f Caravan  06

11 How many adults live in your household?

- a One  01
- b Two  02
- c Three and above  03

12 Do any of your household members fall into the following age groups?

**Please tick any boxes that apply**

- a Aged 65 to 74  01
- b Aged 75 or over  02

13 How many children under 17 live in your household?

**Tick one box only**

- a None  01
- b One  02
- c Two  03
- d Three and above  04

14 What are the ages of the children?

**Please tick any boxes that apply**

- a Aged 4 and under  01
- b Aged 5 -10  02
- c Aged 11- 17  03
- d Not applicable  04

15 Do you own a car?

- a Yes  01
- b No  02

16 Does your household have access to:

**Please tick any boxes that apply**

- a Landline telephone  01
- b Satellite telephone  02
- a Mobile phone  03
- a The internet  04
- a None of these  05
- a Other (please specify in the box below)  06

17 Do you or anyone in your household have any long-standing illness, disability or infirmity which limits your/their activities in any way?

- a Yes  01
- b No  02

## Section 2

The next series of questions are about your neighbourhood.

18 How long have you lived in the area?

**Tick one box only**

- a Less than 12 months  01
- b 12 months but less than 5 years  02
- c 5 years but less than 10 years  03
- d 10 years or more  04

19 How strongly do you feel you belong to your immediate neighbourhood? Please think of the area within a few minutes walking distance from your home.

**Tick one box only**

- a Very strongly  01
- b Fairly strongly  02
- c Not very strongly  03
- d Not at all strongly  04



20 How often do you chat to your neighbours, more than to just say hello?

Tick one box only

- a On most days  01
- b Once or twice a week  02
- c Once or twice a month  03
- a Less than once a month  04
- b Never  05

21 How comfortable would you be asking a neighbour to keep a set of keys to your home for emergencies, for example if you were locked out?

Tick one box only

- a Very comfortable  01
- b Fairly comfortable  02
- c Fairly uncomfortable  03
- d Very uncomfortable  04

22 To what extent would you agree or disagree that people in your neighbourhood pull together to improve the neighbourhood?

Tick one box only

- a Definitely agree  01
- b Tend to agree  02
- c Tend to disagree  03
- d Definitely disagree  04
- e Nothing needs improving  05

23 Have you been involved on a voluntary basis (ie, not as part of your job or organised through your employer) in any groups, clubs or organisations during the last 12 months?

This might include, for example, local clubs (eg, youth or children's clubs, sports, groups for older people), charities, local political or religious organizations, citizens groups (eg, the Women's Institute (WI), or Rotary Club), community or neighbourhood groups (eg, Neighbourhood Watch, local pressure groups, Resident's associations), justice groups (eg, legal advice centres, victim support, magistrates), trade union activity, or supporting fairs and fundraising for schools.

- a Yes  01
- b No  02

IF YES which activities have you been involved in?

24 In the last 12 months, have you:

**Please tick any boxes that apply**

- a Contacted a local official such as a local councillor, MP, government official, mayor, or public official working for the local council (Please do not include any contact for personal reasons eg, housing repairs or contact through work)  01
- b Attended a public meeting or rally, taken part in a public demonstration or protest  02
- c Signed a paper petition or an online/e-petition  03
- d None of these  04

25 And over the last 12 months, how often have you done all of the things you've just mentioned?

**Tick one box only**

- a At least once a week  01
- a Less than once a week but at least once a month  02
- a Less often than once a month  03
- a Not applicable  04

26 In the last 12 months have you taken part in a consultation about local services or problems in your local area through any of these ways?

**Please tick any boxes that apply**

- a Completing a paper or online questionnaire  01
- b Attending a public meeting  02
- c Being involved in a face-to-face or online group  03
- d None of these  04

27 Did you vote in the last local government election?

- a Yes  01
- a No  02
- a Not eligible to vote  03

### Section 3

This section is about your experience of and views about flooding. Please answer these questions even if you are not entirely sure they are relevant. *Your* views are important to us.

28 Are you aware of any flood risks in your neighbourhood?

- a Yes  01
- b No  02

29 Do you know if your property is at risk of flooding?

- a Yes  01
- a No  02

30 IF YES you do know your property is at risk of flooding, where did you get your information from?

31 Are you registered to receive Flood Warnings?

- a Yes  01  
b No  02

IF YES

32 How do you receive these warnings?

- a Landline  01  
b Text  02  
c E-mail  03

IF NO

33 Do you know where to get information about flood warnings and alerts?

- a Yes  01  
b No  02

34 Have you heard of the Environment Agency?

- a Yes  01  
b No  02

35 Are you aware of Environment Agency flood warnings/Floodline?

- a Yes  01  
b No  02

### Your experience of flooding

36 Has your property ever been affected by flooding?

- a Yes  01  
b No  02

IF NO PLEASE GO TO QUESTION 51

**IF YES you have experienced flooding**

37 What was the date of flooding?

38 What was the duration of flooding?

39 Did the flooding affect outside areas of your property? Eg, gardens, driveway etc

- a Yes  01
- b No  02

40 Did you have flooding inside your property?

- a Yes  01
- b No  02

**IF YES**

41 Did you receive a warning prior to water entering your house?

- a Yes  01
- b No  02

42 To the best of your knowledge did the water come from:

**Please tick any boxes that apply**

- a A drain, gully or sewer cover  01
- b Surface water/overland flow  02
- c Other  03

(NB if the water had an odour it probably came out from a drain, gully or sewer cover)

43 Did you receive any help during the flooding event?

- a Yes  01
- b No  02

44 If YES who from?

45 How long did the clean-up take?

46 Did you have to move to new accommodation temporarily?

- a Yes  01  
b No  02

47 At the time you were flooded did you have insurance which covered flooding?

Please tick any boxes that apply

- a Property insurance  01  
b Contents insurance  02  
c Property and contents insurance  03  
d No insurance  04  
e Don't know  05

48 If YES you did have insurance, did you claim when you were flooded?

- a Yes  01  
b No  02

49 If YES you did claim, how was your experience of claiming?

50 Has your experience of flooding increased or decreased or made no change to your likelihood of insuring against floods?

- a Increased  01  
b Decreased  02  
c No change  03

51 Do you have any flood defences in place at your property?

- a Yes  01
- b No  02

52 If YES

Please tick any boxes that apply

- a Sandbags  01
- b Flood alarms  02
- c Flood gates  03
- d Flood resistant doors  04
- e Waterproof external walls  05
- f Non-return valves  06
- g Airbrick modification  07
- h Raised kitchen appliances above likely flood level  08
- i Moved electrics and service meters above likely flood level  09
- j Replaced chipboard kitchen/bathroom units with plastic units  10
- k Replaced timber floors with solid concrete  11
- l Other (please specify in the box below)  12

53 Do you currently have property insurance?

- a Yes  01
- b No  02
- c Don't know  03

54 Do you currently have contents insurance?

- a Yes  01
- b No  02
- c Don't know  03

55 IF YES you do have insurance – does the insurance cover flooding?

- a Yes  01
- b No  02
- c Don't know  03

56 IF NO you do not have insurance which covers flooding, is this because

Please tick any boxes that apply

- a You are not at risk of flooding  01
- b It is too expensive  02
- c It is too complicated to understand the policies and premiums  03
- d I am relying on the government to fund me in the event of flooding  04
- e Other (please specify in the box below)  05

57 Do you know of any Government/Council grants/subsidies to help you protect your home from flooding?  
(eg, Property Resilience Grant)

- a Yes  01
- b No  02

58 If YES have you ever applied/received such a grant?

- a Yes  01
- b No  02

59 If YES you have applied, what was the outcome?

- a Received the grant  01
- b Application was turned down  02
- c Other (please specify in the box below)  03

60 Do you have a personal or household flood plan?

- a Yes  01
- b No  02

61 Do you know of any community flood plans?

- a Yes  01
- b No  02



62 If your property flooded who would you report it to?

Please tick any boxes that apply

- a Devon County Council  01
- b Local Council  02
- c Environment Agency  03
- d Fire brigade  04
- e Police  05
- f Water company  06
- g Insurance company  07
- h No one  08
- i Other (please specify in the box below)  09

63 Do you know of any existing or proposed flood defences in the local area?

- a Yes  01
- b No  02

## Section 4

This section asks you questions about how important you think it is for people in your neighbourhood to become involved in flooding issues and other potential neighbourhood risks. Please answer these questions even if you do not think they are relevant. There are no right or wrong answers, it is *your* views that are important here.

One approach to areas prone to flooding is to build physical structures to try to prevent flooding but this is not always successful. Another additional approach is to encourage those living in neighbourhoods at risk to work together to decrease local vulnerability to flooding and the damage it can cause.

64 How important do you think it is to have local consultation and involvement in local decisions about flooding and other risks?

Tick one box only

- a Very important  01
- b Quite important  02
- c Not very important  03
- d Not at all important  04

Please can you briefly tell us the reasons for your answer?

65 To what extent do you agree or disagree that you *personally* can influence decisions about flood and other risks affecting your local area?

Tick one box only

- a Definitely agree  01
- b Tend to agree  02
- c Tend to disagree  03
- d Definitely disagree  04

66 Are you aware of any community-based initiatives to reduce flooding in your area?

- a Yes  01
- b No  02

67 Have you heard of any of the following?

Please tick any boxes that apply

- a Flood Wardens  01
- b Local Flood Action Groups  02
- c Community Resilience Teams  03
- d None of these  04

68 In the last 12 months, have you been involved in any activities concerning flooding in your local area? This might include, for example, becoming a Flood Warden, participating in a discussion on this issue (online or in person), helping to raise awareness locally, or signing a petition.

- a Yes  01
- b No  02

If YES which activities have you been involved in?

69 If YES you were involved, how did you find out how to get involved?

Please tick any boxes that are relevant

- a I was the person/one of the people who started the action  01
- b I was asked to get involved by someone else  02
- c I saw a leaflet/poster/flyer  03
- d I read about it in the local newspaper  04
- e Via a local community/neighbourhood<sup>o</sup>resident's group  05
- f Via an online forum or social network site  06
- g Other (please specify in the box below)  07

70 If NO you were not involved in any of these activities, would you like to have been involved?

- a Yes  01
- b No  02

71 IF NO you wouldn't like to have been involved, why is this?

Please tick any boxes that apply

- a I don't have time  01
- b I do other voluntary activities  02
- c Have never thought about it  03
- d Would not know how to get involved  04
- e Due to illness or disability  05
- f Don't feel it's my responsibility  06
- g Do not feel I could make a difference  07
- h Don't have the right skills  08
- i Not confident enough  09
- j Don't know people in my area well enough  10
- k Don't feel strongly enough about the issue  11
- l Just not interested  12
- m Other reason (please specify in the box below)  13

72 Who do you think is best placed to make decisions about local flooding and other risks?

Please tick any boxes that apply

- a Central government  01
- b Local government  02
- c Environment Agency  03
- d Emergency services  04
- e Local population  05
- f Insurers  06
- g Other (please specify in the box below)  07

73 Do you trust your local council's flooding decisions?

Tick one box only

- a A lot  01
- b A fair amount  02
- c Not very much  03
- d Other (please specify in the box below)  04

74 If you wanted to influence decisions about flooding and other risks in your local area how would you go about it?

Please tick any boxes that apply

- e Contact the local council/a council official  01
- f Contact my local councillor  02
- g Contact my MP  03
- h Contact the Environment Agency  04
- i Organise a petition  05
- j Attend a local council meeting  06
- k Attend a public meeting  07
- l Contact local media or journalists  08
- m Organise a group (eg, campaign/action group)  09
- n Wouldn't do anything  10
- o Other (please specify in the box below)  11

75 Which, if any, of these might make it easier for you to influence decisions in your local area?

Please tick any boxes that apply

- |   |   |                          |    |
|---|---|--------------------------|----|
| a | If I had more time  | <input type="checkbox"/> | 01 |
| b | If the local council got in touch with me   | <input type="checkbox"/> | 02 |
| c | If I could give my opinion online/by email  | <input type="checkbox"/> | 03 |
| d | If I knew what issues were being considered   | <input type="checkbox"/> | 04 |
| e | If it was easy to contact my local councillor   | <input type="checkbox"/> | 05 |
| f | If I knew who my local councillor was   | <input type="checkbox"/> | 06 |
| g | If I could get involved in a group (not online) making decisions about issues affecting my local area/neighbourhood | <input type="checkbox"/> | 07 |
| h | If I could get involved in an online group making decisions about issues affecting my local area/neighbourhood      | <input type="checkbox"/> | 08 |
| i | Nothing   | <input type="checkbox"/> | 09 |
| j | Something else (please specify in the box below)  | <input type="checkbox"/> | 10 |

76 What are the best ways to communicate with the local community about issues such as flooding?

Please tick any boxes that apply

- |   |   |                          |    |
|---|---|--------------------------|----|
| a | Local newspapers                            | <input type="checkbox"/> | 01 |
| b | Local programmes on TV/radio                | <input type="checkbox"/> | 02 |
| c | Government publications                     | <input type="checkbox"/> | 03 |
| d | Posters in                                  |                          |    |
|   | a. Local shops                              | <input type="checkbox"/> | 04 |
|   | b. Doctor's surgery                         | <input type="checkbox"/> | 05 |
|   | c. Local noticeboards                       | <input type="checkbox"/> | 06 |
| e | Leaflets through doors                      | <input type="checkbox"/> | 07 |
| f | E-mails                                     | <input type="checkbox"/> | 08 |
| g | Social media (Facebook, twitter)            | <input type="checkbox"/> | 09 |
| h | Local workshops                             | <input type="checkbox"/> | 10 |
| i | Parish Councillors                          | <input type="checkbox"/> | 11 |
| j | Word of mouth/Information from other people | <input type="checkbox"/> | 12 |
| k | Other (please specify in the box below)     | <input type="checkbox"/> | 13 |

## Section 5

Finally, I would like to ask you for your views on a few flooding issues. Please answer as many of these questions as you can. Your views are important to us.

The risks of properties being flooded are classified in different ways.

If there is a chance of flooding of greater than 1 in 30 (ie, a 3.3% chance of flooding in any given year) this is classified as **high risk**.

**Medium risk** is a chance of flooding of between 1 in 30 (3.3%) and 1 in 100 (1%)

**Low risk** is a chance of flooding of between 1 in 100 (1%) and 1 in 1000 (0.1%).

77 If the risk of flooding in your area was 1:30 (ie, a 3.3% chance of flooding during any given year which is classified as high risk) would you expect the government or local council to do anything to decrease this risk?

- a Yes  01
- b No  02

78 If YES which?

- a Government  01
- b Local council  02
- c Both  03
- d Other (please specify in the box below)  04

79 If NO, please can you explain why not?

80 Would you do anything if your property was at a 1:30 risk of flooding?

- a Yes  01
- b No  02

81 If YES what would you do?

82 If NO, please can you explain why not?

83 Do you think that the government should make it mandatory for insurance companies to provide affordable insurance for those at risk of flooding?

a Yes  01

b No  02

Please can you briefly explain the reasons for your answer?

84 Do you think that local councils should allow developers to build on flood plains (areas adjacent to streams/ rivers which experience flooding)?

a Yes  01

b No  02

c It depends  03

d Don't know  04

Please can you briefly explain the reasons for your answer?



85 If the developer is given permission to build on a flood plain and the properties subsequently flood who should be responsible for paying for the cost of clean-up and recovery?

Please tick only one box

- a Householder  01
- b Council  02
- c Government  03
- d Property developer  04
- e Other (please specify in the box below)  05

86 Do you think that local councils should be able to stop householders paving over their gardens in order to prevent surface water flooding?

- a Yes  01
- b No  02
- c Not sure  03

Thank you very much for your attention. If there are any further views or comments you want to make on these issues, please comment here.

END OF QUESTIONNAIRE

## Personal information page – optional

Thank you for taking the time to complete this questionnaire.

We may wish to follow up a cross-section of replies. If you are willing to be contacted again then please let us know your personal details below.

Please note that providing this information and agreeing to contact is entirely **voluntary** and any information will be treated as **confidential**.

### Title

Ms  Mrs  Mr

Other

### Your name

### Address

### Contact telephone number or email address

### Date

### Signature



THE LONDON SCHOOL  
OF ECONOMICS AND  
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