

Every time it rains

British Red Cross
research on flooding in the UK



#EveryTimeItRains
@RedCrossPolicy

Contents

Glossary	03
Foreword	06
Executive summary	07

1. Introduction	09
1.1 Objectives	10
1.2 Methods	11

2. Background	12
2.1 Types of flooding	14
2.2 The role of climate change in flooding	15
2.3 Examining current and future 'social flood risk' across the UK	16
2.4 Awareness and preparedness	20

3. Findings	22
3.1 Focus group locations	23
3.2 Awareness of flood risk	30
3.3 Preparedness for flooding	36
3.4 Impacts of flooding	42
3.5 Building resilience through community engagement	51

4. Conclusion and priorities for future action	55
---	-----------

Appendix A: Methodology	60
Acknowledgements	65
References	66

Glossary

Climate change	A large-scale, long-term shift in the planet's weather patterns and average temperatures. ¹
Coastal flooding	A type of flooding that occurs when seawater floods land that is usually dry. The most common causes of coastal flooding in the UK are storm surges in conjunction with high tides. ²
Environment Agency (EA)	A non-departmental public body sponsored by the United Kingdom government's Department for Environment, Food and Rural Affairs, with responsibilities relating to the protection and enhancement of the environment in England (and, until 2013, Wales).
Expected Annual Damages (EAD) – residential only	The annual 'average' direct economic damages, in monetary terms, taking account of defences. Combines the annual probability of a residential property being flooded and the associated direct economic damages. ³
Flash flooding	A type of flooding that occurs when rain falls so fast that the underlying ground cannot cope, or drain it away fast enough. Roads can become like rivers and if there is a lot of water, it can flood buildings and carry cars away. ⁴
Flood and Coastal Erosion Risk Management (FCERM)	The management of risks from flooding and coastal erosion. The term can be used to describe public sector policies and interventions, but also wider approaches to managing flood and coastal erosion risk.
Flood risk	A combination of the probability (likelihood) of an event happening and the consequences if it occurs. Flood risk depends on there being a source of flooding, such as a river, a route for the flood water to take (pathway), and something that is affected by the flood (receptor), such as a housing estate. ⁵
Flood warning / flood warning service	Warnings issued by government agencies and the Met Office to provide the public with advance notice of flooding and advice on what to do. In England, Scotland and Wales, individuals and businesses can sign up to receive free flood warnings at any time of day or night by phone, text or email.
Groundwater flooding	A type of flooding that can happen when the level of water within the rock or soil that makes up the land surface (known as the water table) rises. ⁶
Local authority area	The area within the boundaries of a local authority.
Local resilience forums (LRFs)	Multi-agency partnerships made up of representatives from local public services, including the emergency services, local authorities, the NHS, the Environment Agency, and others.
Lower Layer Super Output Areas (LSOAs)	Geographical units used to report small area statistical data. Units have a minimum population of 1,000 and a mean of 1,500.

Middle Layer Super Output Areas (MSOAs)	<p>Larger geographical units than LSOAs. Units have a minimum population of 5,000 and a mean of 7,500.</p>
Natural Resources Wales (NRW)	<p>Works with the Welsh government to ensure the environment and natural resources of Wales are sustainably maintained and used, now and in the future. It is a Welsh government sponsored body.</p>
Neighbourhood Flood Vulnerability Index (NFVI)	<p>Used to express the characteristics of a neighbourhood that influence the potential to experience a loss of wellbeing when exposed to a flood and over which flood management policy has limited or no control.⁷</p> <p>It considers five characteristics: susceptibility, ability to prepare, ability to respond, ability to recover and community support.</p> <p>The assessment of each characteristic is based upon one or more indicators (age, health, income, information use, local knowledge, property tenure, physical mobility, crime, housing characteristics, direct flood experience, service availability, and social networks) that are, in turn, based upon one or more supporting variables.⁹</p>
Property Flood Resilience (PFR) measures	<p>A term used to describe measures that reduce the risk of flood damage to a property, speed up recovery and help residents move back into their homes more quickly after flooding. These measures are installed in homes or businesses to make them less vulnerable to flooding.</p> <p>They include flood-resistance measures (to limit water entry to a property) and flood-recovery measures (to minimise damage when water finds its way in).⁹</p>
Property Flood Resilience (PFR) Scheme	<p>A grant scheme to enable homeowners in England to apply for up to £5,000 to carry out a property survey identifying the required resilience measures and to purchase the recommended measures (only available in the the aftermath of severe floods).¹⁰</p> <p>In Northern Ireland homeowners can apply to the Homeowner Flood Protection Grant for up to £10,000.</p>
Resilience	<p>The British Red Cross defines resilience as the ability of a person, community or organisation to prepare, adapt, and recover in the face of adversity or challenges, and maintain their wellbeing, connections and identity.¹¹</p> <p>Flood resilience can be defined as being prepared for, ready to respond to, and able to cope with, and recover from a flood event.¹²</p> <p>A further important element of flood resilience is the ability of people, places, and the environment to thrive and flourish in the context of flooding.¹³</p>
River / fluvial flooding	<p>A type of flooding that occurs when the capacity of a river's channel is exceeded as a result of intense or sustained rainfall across the catchment.¹⁴</p>
Scottish Environment Protection Agency (SEPA)	<p>Scotland's principal environmental regulator. It is responsible for protecting and improving Scotland's environment. It is an executive non-departmental public body of the Scottish government.</p>

Sewer flooding	A type of flooding that can occur as a result of overloaded sewers following heavy rainfall, or due to blockages caused by misuse of the sewer system (such as flushing unsuitable items down the toilet). ¹⁵
Social Flood Risk Index (SFRI) / Social flood risk	‘Social flood risk’ is a combination of the exposure, vulnerability and probability of flooding at a neighbourhood scale, and that’s what the SFRI measures. ¹⁶ SFRI helps identify areas where many vulnerable people, as defined by the NFVI, are exposed to flooding. ¹⁷
Surface water flooding	A type of flooding that occurs when the volume of rainfall is such that water cannot drain away through drainage systems or soak into the land, and instead flows over the land. Blocked drains and sewers can increase the risk of surface water flooding as the water has nowhere to go. ¹⁸
Super Output Areas (SOAs)	In Northern Ireland, SOAs are a geographic hierarchy designed to improve the reporting of small area statistics. They are the equivalent of Lower Layer Super Output Areas (LSOAs) in England and Wales, and Data Zones in Scotland. Units range in size from 381 to 5,832 people with an average size of around 2,100 people.
VCS	Voluntary and community sector



Foreword

Mike Adamson, Chief executive at British Red Cross

“I hate my house now. Every time it rains, I’m up in the night looking through the windows. I used to love the sound of rain and going to sleep at night, now I hate it. I hate everything about the area...I feel trapped.”

– Focus group participant, Rhondda Cynon Taf

Be honest – how many of us have considered the likelihood that we will be flooded out of our home? Have you thought about what you might do if a flood comes, what you would take, where you would go?

Most of us haven’t. Despite the fact that our polling showed around one in seven UK adults have experienced flooding to their homes, only one in five of us feel that our community or family would be prepared if a flood occurred. We can’t seem to face the fact that it happens, and the reality is it will happen more in the future. It is also striking how perceptions of what is important differ between those who have experienced a flood, and those who have not.

The British Red Cross responds to floods across the UK as part of our domestic emergency response work. We know the situation is getting worse, and that climate change is causing more frequent and intense extreme weather events now and into the future.¹⁹ We – communities, organisations and governments – need to be better prepared.

In February 2022, we saw storms Dudley, Eunice and Franklin. High winds and floods damaged homes and businesses, and resulted in the loss of lives. Summer 2021 saw flash flooding in London cause chaos as sewer systems overflowed and tube stations flooded, and temperatures soared during a heatwave. Severe winter flooding stretched from November 2019 to February 2020 and were closely followed by Storm Ciara and Dennis.

So what do we do? While we should continue to do all we can to reduce the future impact of extreme weather events, we have to recognise that people across the country are already experiencing its most devastating consequences – losing their homes, struggling financially, moving schools, missing their most sentimental belongings, and suffering poor physical and mental health. We must focus on supporting those communities most at risk to prepare and build resilience to help prevent climate emergencies becoming disasters.

The aim of this report is not just to ring the alarm – it is to understand and learn from people’s experiences of flooding in the UK, and to enable those who have been, and may in the future be, impacted most severely by flooding to have a say in developing solutions. If you take one thing from this report – consider the importance of community engagement for improving resilience to extreme weather events.

Strategic plans for dealing with flooding, at both a local and central level, need to be prioritised by decision makers. Flooding is one of the most severe climate hazards in the UK. These plans cannot be put on the backburner.

Data is improving all the time, not only on levels of flood risk, but also how this risk overlaps with other factors affecting people’s lives, such as health and infrastructure. We need to use this information not only within government and local authority level plans, but also to help communities and individuals understand who is most at risk, and empower them to prepare and take action. We should also use the insights of communities who know what it is like to be flooded, and what they wish they knew before. Nobody wants to find out after they’ve been flooded that they live in an area of high risk, or that if only they’d kept valuable documents or sentimental items upstairs, they’d still have them.

Imagine the difference if, in a year’s time, all of us knew our flood risk, knew where to get information, alerts, and had a plan of what we would do. Imagine if local authorities and government felt confident their plans were up-to-date and regularly reviewed to include new data, and consider risks relating to inequalities. Imagine if local government and agencies had roots into local communities to exchange information and build resilience.

This report does not pretend to have all the answers to the challenges posed by flooding in the UK. Indeed, measures such as increased investment in flood control infrastructure were beyond the scope of our research into resilience and preparedness at the community level. However, based on the views and testimony of people living in at-risk communities, this report does identify clear areas for action for everyone involved in improving community level resilience in the UK, from governments, to local communities and individual households.

Executive summary

Flooding poses a significant risk to people, communities, and the built environment with approximately 1.9 million people across the UK currently living in areas at significant risk from either river, coastal or surface water flooding. The number of people at risk could double as early as the 2050s.²⁰ Therefore, while it is critical to continue to take action to reduce the future risk of climate-related flooding, it is also critical that we act now to help communities and households adapt and prepare.

Flooding has devastating consequences for people, communities, and infrastructure across the UK. These can range from significant individual impacts on people's health, finances, and homelife to wider damage to the economy. In 2020, the total economic damage caused by flooding across the UK was £2 billion. By the 2080s, this could increase to as high as £3.9 billion.²¹

In this context, the purpose of this research is to learn from the perceptions and experiences of people living in communities which have been, or are likely to be, impacted most severely by flooding in the UK. The research also seeks to understand the views of experts and gauge wider public perceptions about flooding.

The report and its findings give voice to the experiences of people living in at-risk communities through identifying the key challenges they face. We suggest priorities for action that will ensure they are better prepared for, and can recover more quickly from, flooding in the future.

Key findings

- Awareness of flood risk among those living in areas that are at risk of, and highly vulnerable to, flooding is low.
- Awareness of how to access information on flood risk is low, but slightly higher among those who have previously experienced flooding.
- Ensuring adequate flood insurance is key to preparedness, but there are barriers preventing many people at risk from gaining cover.
- Many people – including those living in areas that are at risk of, and highly vulnerable to, flooding – are unaware of actions they can take to prepare.
- There is strong consensus among the public that responsibility for preparing for flooding should lie with national and local governments, rather than with individuals.
- Flooding can have a devastating effect on people's lives. The impacts are multiple and varied, and can interact with and exacerbate one another. Impacts include physical damage to homes and properties; loss of sentimental items; effects on mental and physical health; and disruption to family life and community cohesion.
- Establishing and improving community networks through participatory and place-based approaches can help build community resilience.
- Some measures to support awareness raising and preparedness have been successful, such as flood risk maps, education initiatives, and building community links with fire and rescue services, and should be considered for application at a wider scale.

Priorities for action

While information and awareness are essential for individuals and communities to be prepared for, respond to, and recover from floods, it is by no means all that is required. The relationship between awareness and preparedness in relation to flooding is complex. Finding solutions requires an understanding of the barriers faced by people in at-risk areas, particularly those living in high 'social flood risk' communities (which are at risk of, and highly vulnerable to, flooding – see section 2.3). It also requires strong and inclusive engagement with communities.

Based on the findings of this research, including the priorities highlighted by the people we spoke to living in at-risk and previously flooded communities, we have identified nine priorities for action for national and local governments across the UK.

Building awareness

- 1.** National and local governments across all 4 nations should prioritise increasing awareness of, and providing specific support to, high social flood risk areas.
- 2.** Local resilience forums and their devolved equivalents in areas that are at high risk of surface water flooding should take targeted action to improve preparedness, including promoting increased awareness of the risk within their areas.
- 3.** Each government should explore ways to improve the reach and effectiveness of early warning systems, particularly among those individuals and communities most at risk.
- 4.** Local authorities should explore ways to improve engagement with at-risk communities. This could include investment in specific roles, such as community development officers, who can engage with communities through community hubs and create the spaces and mechanisms for community participation and partnership working.

Improving preparedness

- 5.** National and local governments should work with local partners, including voluntary and community sector (VCS) organisations, and community groups, to increase awareness and uptake of property flood resilience (PFR) measures.

Reducing impact

- 6.** The UK Government should work with regulators and industry to ensure that adequate and affordable insurance against flood damage is available to every household, particularly those most at risk.
- 7.** National and local governments should ensure appropriate psychological support is available for those who experience negative mental health impacts due to flooding.

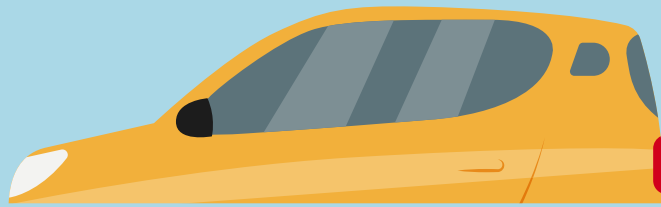
Supporting community resilience

- 8.** Local authorities should work with their communities to develop community led groups that have ready access to flooding experts and local decision makers.

Prioritising resilience building at a national level

- 9.** Key government resilience plans, including the National Resilience Strategy, should set out how to build institutional and infrastructure capacity and resilience across the UK to ensure a coordinated and comprehensive approach to preparing for and responding to emergencies, including floods.

1. Introduction



The British Red Cross has a long history of responding to flooding in the UK, by providing people with information, emergency financial support, shelter, food, and psychosocial support. We also support with the practicalities of recovering from a flood and give advice on how people can protect themselves before, during, and after a flooding emergency. Our crisis response services have supported up to 1,000 people a year whose lives have been affected by flooding.

The purpose of this research is to explore people's experiences and perceptions of flooding in the UK, and to enable those who have been, or are likely to be, impacted most severely by flooding to have a say in developing solutions to better deal with the challenges it poses.

1.1 Objectives

Through exploring the experiences of those who have been, and may in the future be, impacted most severely by flooding in the UK; the views of flooding and resilience experts; and public opinion (via a UK-wide poll), the research aimed to:

- understand people's experiences of flooding
- understand people's perceptions of personal risk and levels of preparedness
- identify people's information needs in a flooding emergency
- explore levels of resilience among vulnerable communities and identify strengths, weaknesses, barriers to, and opportunities for increasing, resilience
- bring together expert insight on the main challenges caused by, and solutions to, flooding in the UK, including examples of climate adaptation measures and community resilience programmes
- recommend priorities for action, informed by people with lived experience of flood risk and flooding, that will help build community preparedness and resilience.



1.2 Methods



Desk research

involving a review of existing evidence on flooding impact and climate risk across the UK, now and in the future.

Four in-person focus groups and three interviews with a total of 36 people living in local authority areas with the highest level of 'social flood risk' in the UK.

Two of the focus groups and the three interviews were with people who had previously experienced flooding (in Rhondda Cynon Taf and Hull). The other two focus groups comprised people living in high-risk areas (in Belfast and Glasgow) who had not experienced flooding themselves.

		Number of participants	Previous experience of flooding
Belfast, Northern Ireland	Focus group	9	No
Glasgow, Scotland	Focus group	10	No
Hull, England	Focus group	10	Yes
Rhondda Cynon Taf, Wales	Focus group	4	Yes
Rhondda Cynon Taf, Wales	one-to-one interview	3	Yes



12 expert interviews

with flooding and resilience professionals from a range of sectors across the UK, to gather insights, opinions, and advice on community resilience.



An online workshop with 10 people drawn from the focus groups

to discuss priorities for action (Glasgow – 3, Belfast – 2, Rhondda Cynon Taf – 1 and Hull – 4).



A nationally representative poll

of more than 2,000 UK adults.

The British Red Cross commissioned several research components to explore how individuals and communities can better prepare for and respond to current and future flood risks, and to identify good community resilience practices for those impacted by flooding.

The first stage was an evidence review that examined the risk of flooding in the UK now and in the future, and the likely impacts of future climate changes.

The focus group sessions and interviews were carried out in June and July. Then, in August 2022, a selection of focus group participants took part in a follow-up online workshop, where they discussed potential solutions and adaptations for flooding, and identified areas for action.

Finally, we commissioned a UK-wide poll to explore the themes emerging from the research, which ran in September and October 2022.

The priorities for action were informed by a combination of insights from the focus group and online workshop participants, the views of experts interviewed, the polling findings, and the expertise of British Red Cross operational and policy teams.

See Appendix A: Methodology for further details.

2. Background



This section sets out the findings from the desk research on flooding impact and climate risk across the UK, now and in the future. It provides the context for the research with community members and flooding and resilience experts in section 3.

Flooding is one of the most severe climate hazards in the UK,²² affecting significant numbers of people. Approximately 1.9 million people across the UK are currently living in areas at significant risk from either river, coastal or surface water flooding, this number could double as early as the 2050s.²³ The UK has experienced unprecedented rainfall events leading to serious flooding in recent years.²⁴ Experts predict the problem will get worse due to climate change.²⁵

Flooding can have severe consequences for people, communities, and infrastructure. Potential impacts include death or injury, damage to property, the loss and damage of possessions, disrupted access to public services, and loss of access to recreational and leisure facilities.²⁶ Physical health impacts are wide-ranging. They can include drowning, physical trauma, and skin and gut infections from exposure to contaminated water.²⁷

Research in England found that mental health impacts are even more common. While these impacts will usually be temporary, some

affected people may go on to develop severe psychological problems such as depression or post-traumatic stress disorder.²⁸

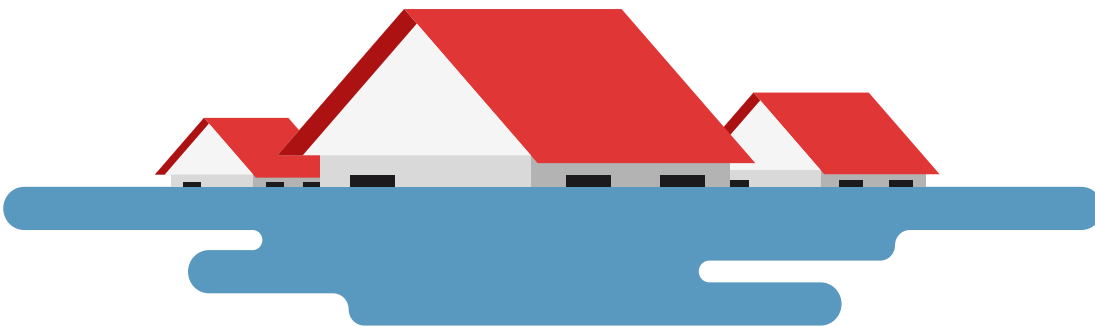
Exacerbating its mental health impacts, flooding can also damage relationships.²⁹ As communities work to recover from flooding, they can face disputes, struggles with bureaucracy and loss of support, all of which threaten their cohesiveness.³⁰

In 2020, the total economic damage caused by flooding across the UK was £2 billion. Of this, about £1.1 billion was caused by river flooding, £587 million by surface water flooding, £361 million by coastal flooding, and £54 million by groundwater flooding.³¹

Table 1, below, details the economic damage caused by flooding across each nation in the UK. It also shows the proportion of households and number of people exposed to frequent flooding (meaning 1 in 75 years or more, on average). There is a higher proportion of households exposed to frequent flooding in Wales than the rest of the UK.

Nation	Proportion of households exposed to frequent flooding	Number of people exposed to frequent flooding	Expected annual damages (EAD) from flooding
England	1 in 36	1,554,000	£1.3bn
Wales	1 in 21	148,000	£195m
Scotland	1 in 35	155,000	£324m
Northern Ireland	1 in 57	33,000	£111m

Table 1: Numbers affected and economic damages of flooding across UK nations³²



¹ There are 1,889,000 people, across all areas of the UK, exposed to significant flooding (meaning 1 in 75 years or more frequent, on average).

2.1 Types of flooding

There are many different types of flooding, each demanding different approaches and solutions (see Figure 1). The most common flood types are coastal, river, and surface water flooding. Around 578,000 people live in river floodplains; a further 126,000 are at risk from coastal flooding; and almost 1.2 million live in areas prone to surface water flooding.³³



Figure 1: Different types of flooding explained³⁴

2.2 The role of climate change in flooding

Scientists agree that climate change is likely to increase the probability and impact of all types of flooding in the UK. A warmer atmosphere can hold more moisture, which has the potential to increase rainfall intensity, and therefore the risk of flooding.³⁵ The most recent decade (2011-2020) has been on average four per cent wetter than 1981-2010, and nine per cent wetter than 1961-1990 across UK.³⁶

Climate change is also causing sea levels to rise, which increases the risk of coastal flooding around the UK.³⁷ Since the start of the 20th century, the mean sea level around the UK has risen by about 17 cm.³⁸

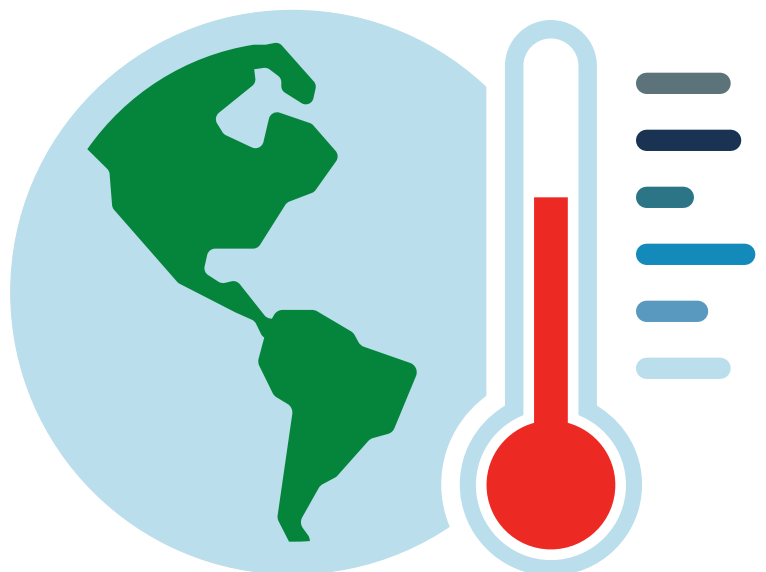
2°C and 4°C scenarios

Since it was formed in 1990, the Intergovernmental Panel on Climate Change has studied how Earth's climate could change in future, depending on how much more 'greenhouse gases' we emit. There are a wide range of possibilities, from very pessimistic to optimistic, based upon extensive data collection, modelling and analysis by thousands of scientists across the globe.

Climate futures are analysed using different scenarios for representing possible increases in the global mean temperature by 2100 compared to pre-industrial times.

A '2°C scenario' refers to a scenario in which the global mean temperature by 2100 is 2°C above that of pre-industrial times, which would lead to more flooding of all kinds in the UK. While a '4°C scenario' refers to an increase in global mean temperature by 2100 of 4°C from that of pre-industrial times. This more pessimistic view would see severe, more frequent and widespread flooding across the country.³⁹

By the 2080s, annual damages from flooding are expected to increase from £2 billion to as high as £3.9 billion.ⁱⁱ River flooding will remain the main cause of flood losses across the UK, but both coastal and surface water flood risks are likely to increase greatly. Groundwater floods are expected to increase, but will remain only a minor proportion of flood risk across the UK.⁴⁰



ⁱⁱ By the 2080s, annual damages from flooding are expected to increase to between £2.14 and £3.03 billion if global temperatures increase by 2°C, and to between £2.43 and £3.86 billion if the increase is 4°C.

2.3 Examining current and future 'social flood risk' across the UK

The Social Flood Risk Index (SFRI) is a measure used to identify areas with a large population of people who are socially vulnerable to flooding, referred to as 'social flood risk'.⁴¹

The SFRI was developed by Sayers and Partners for the Joseph Rowntree Foundation to better understand the relationship between social vulnerability and exposure to flood risk across different communities. Doing so enables 'a socially just (i.e. fair) approach to prioritising flood risk management efforts within national policy and funding structures'.⁴²

The SFRI takes into account:

- the probability of flooding in a given area
- the number of people who are likely to be affected (exposure)
- factors such as age, health and income, which are likely to affect an individual's or community's vulnerabilityⁱⁱⁱ to the effects of flooding.⁴³ See Figure 2.

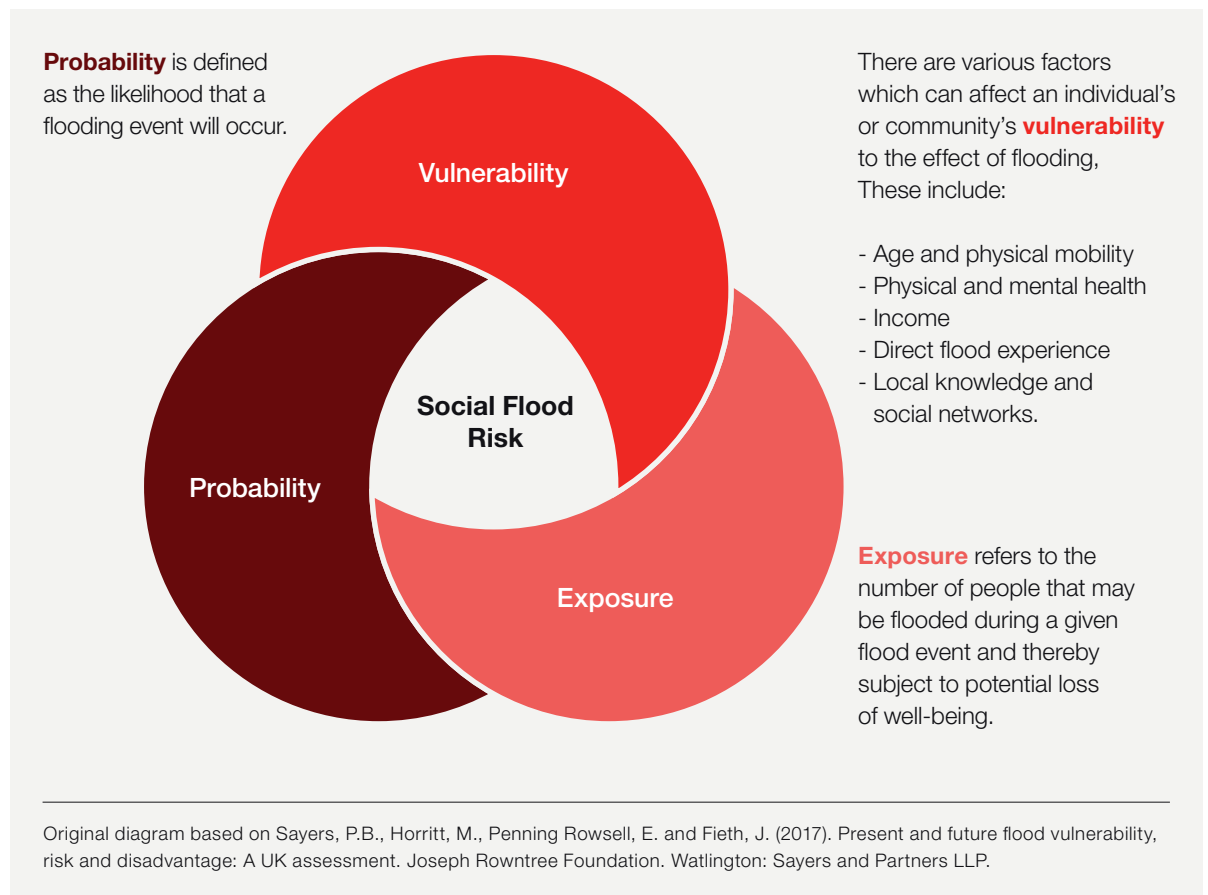


Figure 2: Social flood risk

ⁱⁱⁱ The measure of vulnerability is called the Neighbourhood Flood Vulnerability Index (NFVI) (see glossary).

2.3.1 Current social flood risk in the four nations

England

The largest cluster of high social flood risk in England is along the coastal areas and estuaries in the East Midlands. Smaller local clusters, affected primarily by river flooding, are urban areas in north-east England (Middlesbrough), Yorkshire and the

Humber (Hull), and more deprived neighbourhoods in London (east and north-east London, along the banks of the Thames and River Lea, and on the south bank of the Thames).⁴⁴ See Figure 3.

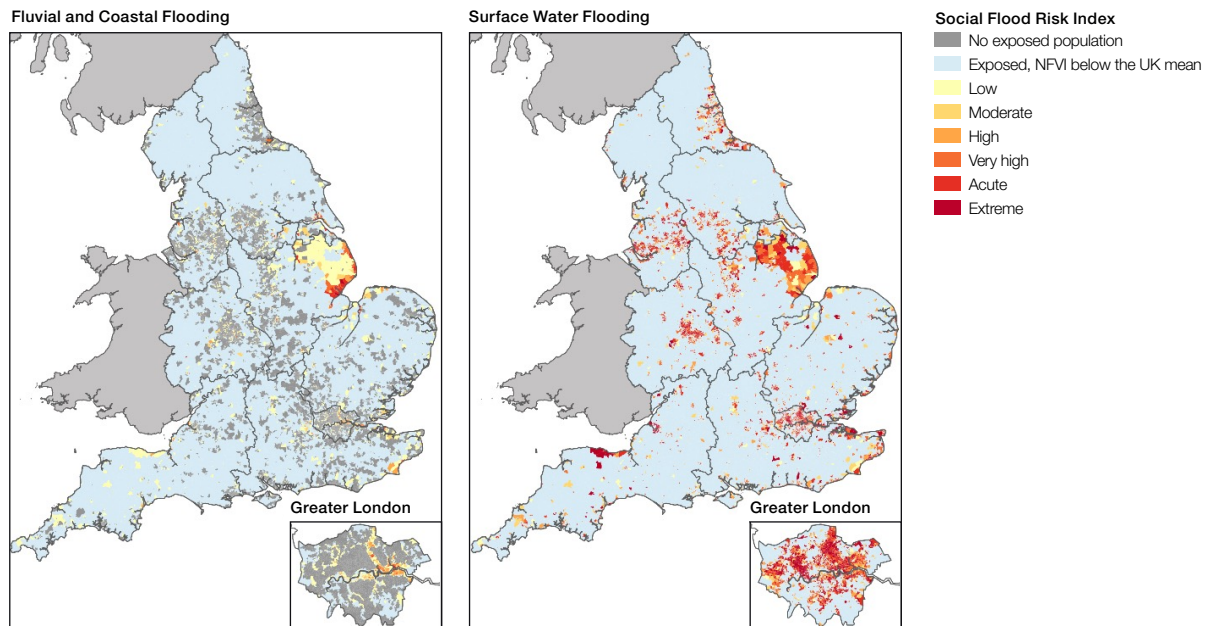


Figure 3: Social flood risk in England based on SFRI for fluvial and coastal flooding (left) and surface water flooding (right). Lower right corners show Greater London.⁴⁵

Wales

In Wales, the area between Cardiff and Swansea has high social flood risk to inland river flooding, while communities on the Isle of Anglesey are affected by both river and coastal flooding.

The Isle of Anglesey has the highest concentration of social flood risk in North Wales, while in South Wales the Rhondda Valley has the highest social flood risk.⁴⁶ See Figure 4.

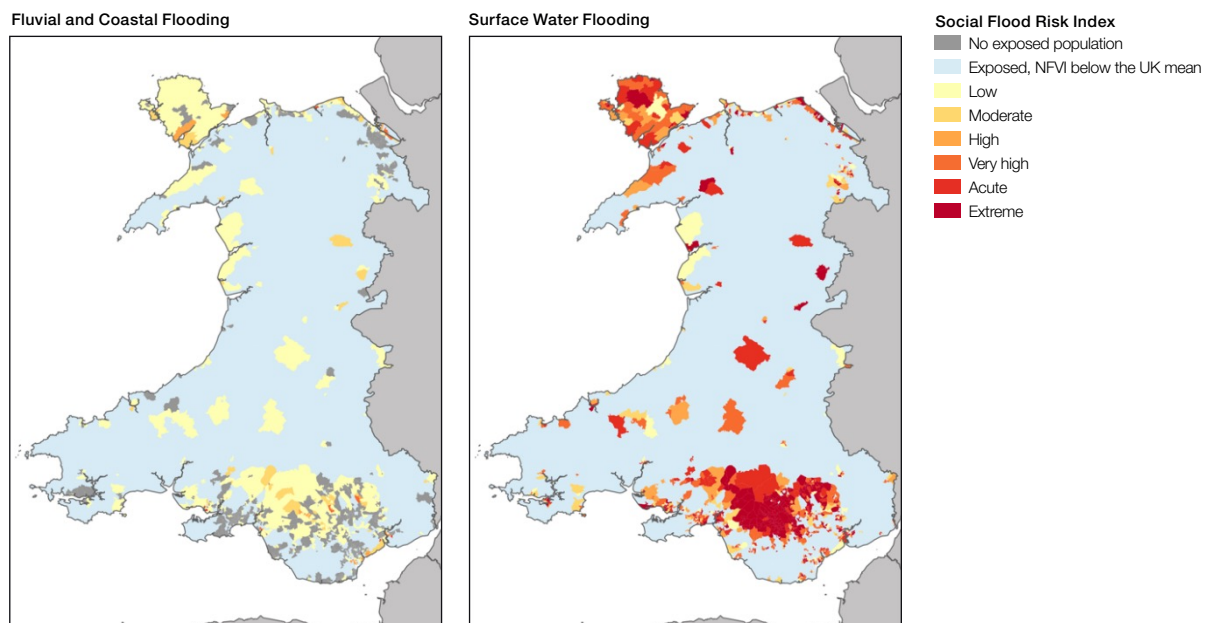


Figure 4: Social flood risk in Wales based on SFRI for fluvial and coastal flooding (left) and surface water flooding (right).⁴⁷

Scotland

Scotland currently has a low proportion of neighbourhoods with 'very high' to 'extreme' levels of social flood risk from river and coastal flooding.

Social vulnerability to flooding is mainly located in large urban areas such as Glasgow, Edinburgh, Dundee and Aberdeen. There are high concentrations of people living in vulnerable neighbourhoods on the flood plain in Scotland's central belt.⁴⁸ See Figure 5.

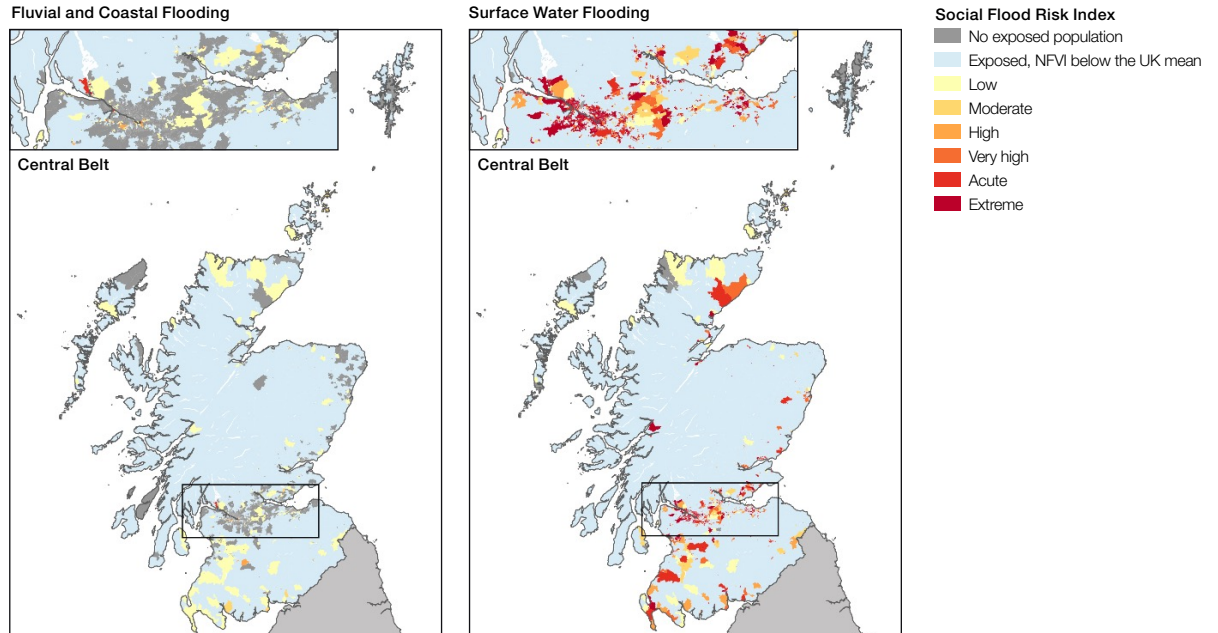
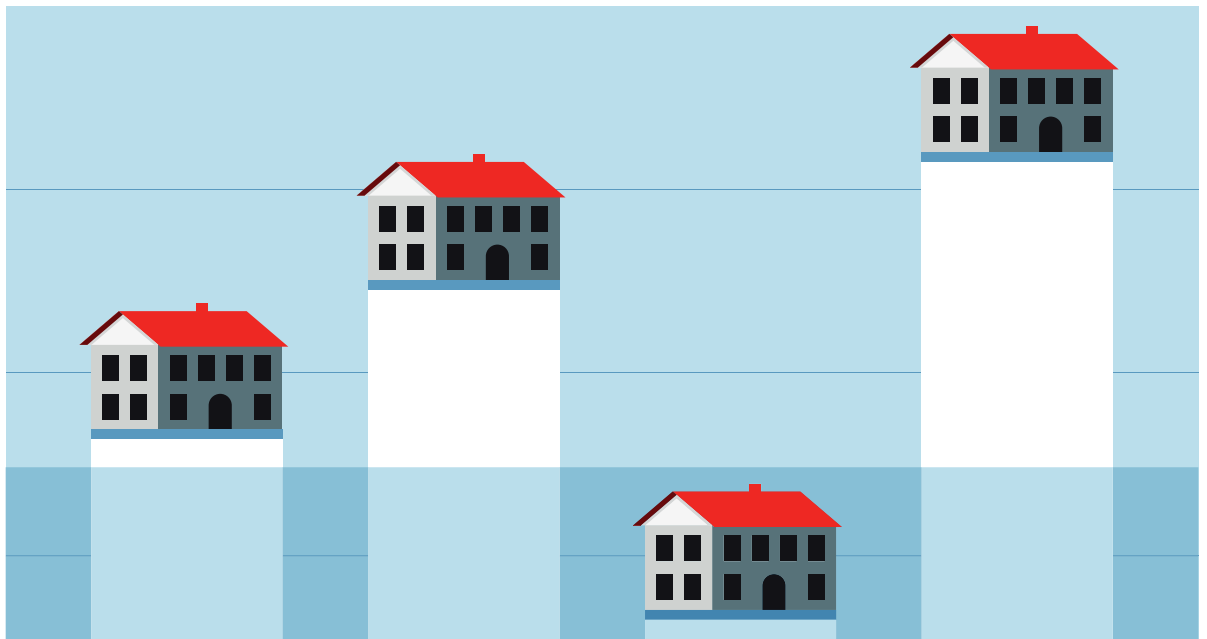


Figure 5: Social flood risk in Scotland based on SFRI for fluvial and coastal flooding (left) and surface water flooding (right). Top left corners show the Central Belt area in Scotland.⁴⁹

Northern Ireland^{iv}

Compared to other UK nations, Northern Ireland has a high concentration of people living in neighbourhoods that are vulnerable to flooding. An estimated 25 per cent of the population that is exposed to frequent flooding live in the five per cent of most vulnerable neighbourhoods (almost five times the UK average); the most significant disadvantage is seen in Belfast.



^{iv} There is no map of social flood risk in this section as comparable data for Northern Ireland was unavailable.

2.3.2 Local authority areas with highest future social flood risk

Figure 6, below, provides an overview of the 20 local authority areas across the four nations with the highest predicted social flood risk by the 2050s and 2080s for 2°C and 4°C scenarios. Considering all types of flooding, the local authority areas with the steepest projected increases in social flood risk (especially towards

the end of the century) are Rhondda Cynon Taf in Wales, Hull in England, Belfast in Northern Ireland and Glasgow in Scotland. These are the areas where the focus groups for this research took place. Compared to the top four local authority areas, increases in social flood risk in other areas are only moderate.⁵¹

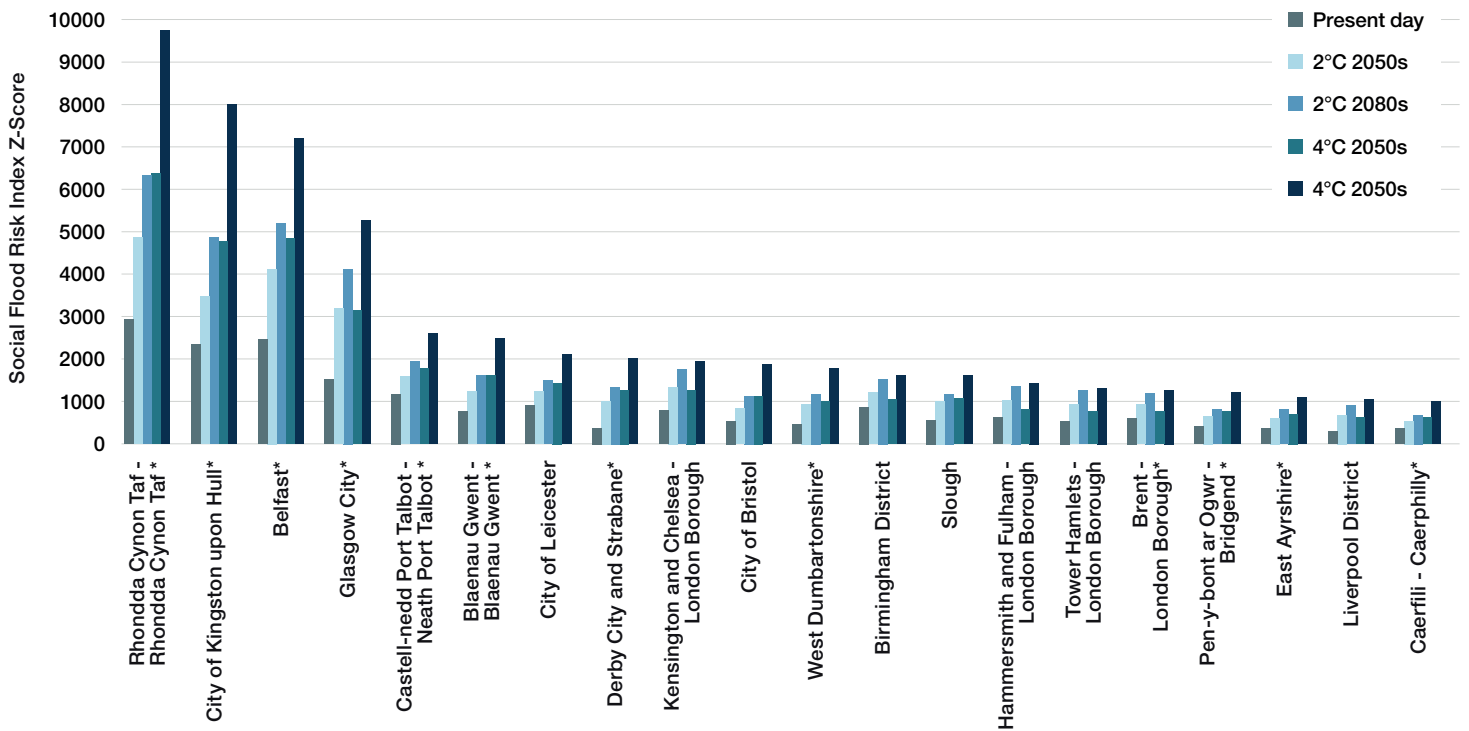


Figure 6: The 20 local authority areas with highest future social flood risk due to climate change. The analysis shows social flood risk for all types of flooding combined under a 2°C and a 4°C warming scenario for the 2050s and 2080s, but does not consider any population growth.⁵²

2.4 Awareness and preparedness

Awareness of flood risk is central to preparedness and resilience. While flood forecasting is well developed across most of the UK^v, the level of general flood risk awareness among the public is low.⁵³ See section 3.2.

One of the factors often found to increase awareness is direct flood experience⁵⁴, but the relationship is not linear. Many flood-affected householders have subsequently been found to be in denial about the likelihood of future floods or attribute floods to negligence or incompetence on the part of the authorities.⁵⁵ Other factors associated with awareness include social class and length of residency⁵⁶, creating a highly complex picture.

Importantly, awareness of flood risk does not, in itself, lead to actions to prepare for flooding or reduce damage. This is not a finding unique to the UK or to floods – it applies to other countries and other natural hazards.⁵⁷

2.4.1 Preparedness

Household preparedness revolves around three survival-focused actions:

- acquiring information about risk
- having an emergency plan to guide actions before, during, and after an emergency
- having supplies available to be able to survive a number of days without electricity, water, and food.⁵⁸

Resilience

The British Red Cross defines resilience as the ability of a person, community or organisation to prepare, adapt and recover in the face of adversity or challenges and to maintain wellbeing, connections and identity.⁵⁹

In the context of flooding, resilience concerns the ability of communities to reduce flood risks, be prepared for future floods, and respond to and recover from floods. It also involves the ability of people, places and the environment to thrive and flourish even in the face of flooding.⁶⁰



^v There is currently no flood warning service in Northern Ireland.

3 steps to preparedness in a flood

Knowing what to expect in the event of a flood and how to prepare can make you more resilient.

1. Get informed

Find out the level of flood risk in your area, and sign up to emergency alerts.



Download the **British Red Cross Emergency App** and sign up to emergency alerts for your area.



Check online for weather warnings and updates:

Met Office:
Warnings tracker and
Weather map.

Flood warnings and alerts:

England

Scotland

Wales

Flood risk data: Northern Ireland.

You can also speak to Floodline for advice on 0345 988 1188.



If there is a flood warning or alert in place in your area, let your neighbours know – especially those that are elderly or vulnerable.



Check your **home insurance policy**, as it is important to have adequate insurance in place. Make sure you have a policy that meets your coverage needs.



Floods can pose a danger to your health. **Learn first aid skills or take a course** to better prepare you for an emergency. Our **First Aid app** and **Baby and Child First Aid app** are free to download for simple and easy advice.

2. Make a plan

It is important that you and your loved ones know what to do in an emergency. A household plan sets out who does what in the event of a flood. You can:



Create an evacuation plan for your home and your pets.



Identify where you can stay in the event of a flood.



Assess your personal needs, and consider any medical or other requirements you have that will need to be met.



Create a list of people to contact or notify in the event of an emergency.



You may want to **consider what flood protection measures** you can install in your home.

3. Get a kit and prepare your home



Prepare an emergency kit in case you need to leave quickly. Your kit could contain: a mobile phone charger, emergency contact and support numbers, medication, drinking water, a change of clothes, and waterproof clothing.



Take photographs around your home. This may help with insurance claims.



Move sentimental and important items and documents, electrical equipment and expensive furniture upstairs.



Move vehicles to higher ground so they won't be caught in rising floodwater.



Locate where to turn off gas and electricity at the mains.

There is more information on how to prepare for floods available on the [British Red Cross website](#).

3. Findings



3.1 Focus group locations

This section introduces the four local authority areas across the UK where the focus group sessions took place: Rhondda Cynon Taf, City of Kingston upon Hull, Belfast, and Glasgow City. These local authority areas were selected for the research due to their high levels of current and future social flood risk. They are predicted to have the steepest increases in social flood risk by the 2050s and 2080s (under both a 2°C and 4°C scenario – see section 2.3.2). For each area, examples of flood response and recovery community initiatives and services are provided, as identified by research participants and through desk-based research.



3.1.1 Rhondda Cynon Taf, Wales

Focus group participants in Rhondda Cynon Taf had all previously experienced flooding to their homes in February 2020 after extreme rain during Storm Dennis. Approximately 1,500 properties were flooded, and there was extensive flooding of infrastructure including rail and highway networks, town centres, business parks, and leisure facilities. The impacts experienced across Rhondda Cynon Taf were caused by groundwater, surface water, and sewer flooding.⁶¹



Sources: Office for National Statistics licensed under the Open Government Licence v.3.0; Contains OS data © Crown copyright and database right 2022; GADM

Key flood grants and initiatives in the area

- **Tree Planting in Rhondda Cynon Taf** – An investment of £50,000 has been allocated to tree planting across Rhondda Cynon Taf as part of its commitment to tackle climate change and flood vulnerability. The initiative aims to help create a more resilient Wales as part of the Well-being of Future Generations Act.
- **Town Centre Flood Resilience Grant** – The grant provides support for small and medium-sized businesses that were badly hit by the 2020 floods following Storm Dennis. It will allow them to make changes to their properties to improve business resilience in dealing with similar weather events in the future.
- **Community Flood Recovery Grant** – Following Storm Dennis, the council provided hardship payments of £500 for residents and £1,000 for businesses that have suffered internal flood damage to their properties.

Flood warning systems and information services in Wales

The **Natural Resources for Wales (NRW)** website provides information on how to prepare for and respond to flooding:

- Welsh residents can **check their flood risk** on an interactive flood map of Wales, which shows three kinds of flood risk (river, surface and coastal) for a given year, and includes the effects of climate change.
- They can also sign up for flood warnings on the NRW website. There is also an option to report flooding incidents or risks.

Case study: Lori*, Rhondda Cynon Taf

Mother-of-three Lori lived in one of the 800 homes damaged by floods that devastated parts of the Rhondda in 2020. She remembers it like it was yesterday. Lori did not realise that the flood warning she had received was authentic and so went to bed after eating dinner.

“I had a phone call from a number I didn’t recognise [and] when I answered there was an automated message saying it was a ‘red flood alert’ and that I should press a button to get more information. I honestly thought it was a scam, so I hung up.”

Lori was later woken by a neighbour at around 3am the next morning and recalled how water had already started to run along the path outside her front door. Her and her 17-year-old son hurriedly packed a bag, but in the 20 minutes since Lori had been woken up, the flood water had risen drastically. The ground floor of her cottage was already submerged, her two pet dogs swimming in the hallway.

Lori and her son were able to get their pets out and into their car and drive to a friend’s house for the night. Lori couldn’t settle though – she was too worried about what was happening to her home.

“It was terrifying. There was torrential rain and I couldn’t stop thinking about what I was leaving behind. My whole world was in that house.”

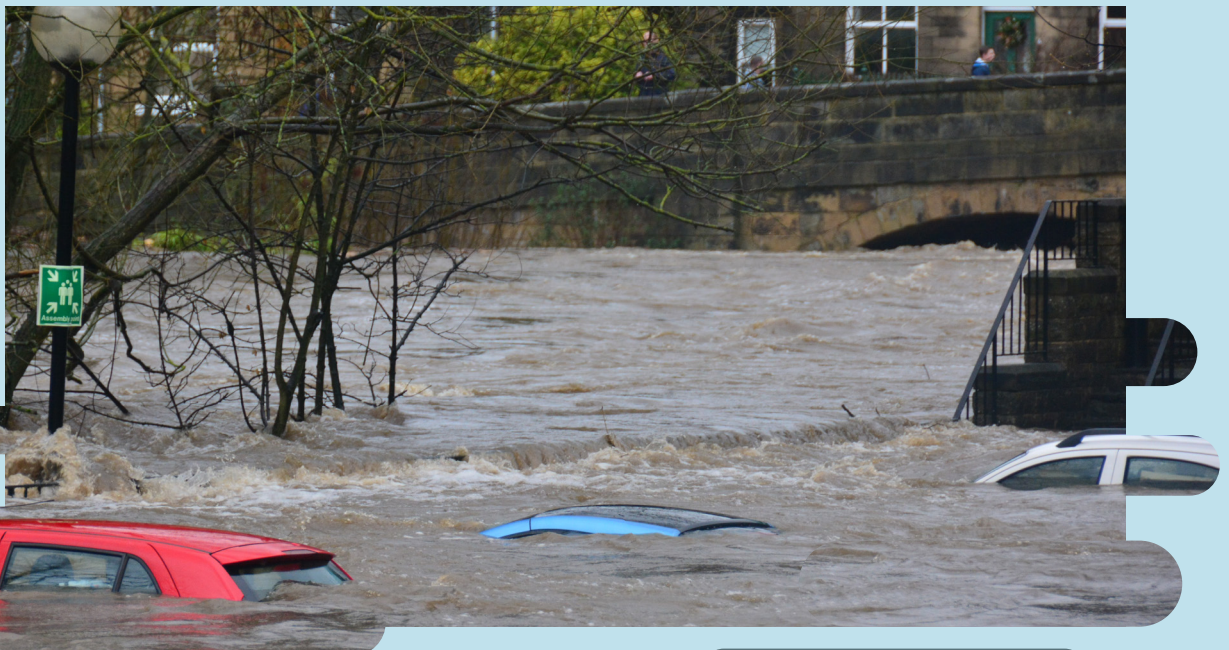
Luckily, Lori had insurance and was covered for flood damage to her property, but it still took several months before she could move back home. When she visited it a couple days after the flood, she saw that everything on the ground floor was wet and unsalvageable.

Lori recalled how the community response was immediate. Social media support groups were set up to connect people offering help with those that needed it most.

She has now been living back in her home for just over a year and admits that the ripple effects of the flood – such as the loss of important and sentimental items – have stayed with her.

Lori has now taken measures to prepare herself in case of another flood, such as keeping all her paperwork and important documents upstairs and downloading a flood app. These simple measures have helped give Lori some peace of mind, but that doesn’t stop her from worrying whenever there is heavy rain.

“I have an App on my phone that monitors rainfall and water levels in Wales,” she admits. “I check it even when I’m overseas on holiday. I don’t want to live in fear, but at least this way I can be better prepared if the worst happens again.”



*Not her real name

3.1.2 Hull, England

Focus group participants in Hull all previously experienced flooding to their homes in June 2007 as a result of exceptional rainfall. Over 8,600 households and 20,000 people were affected by the floods, with 6,300 people forced to live in temporary accommodation.⁶² Heavy rain on two days close together led to surface water flooding across the city.⁶³



Sources: Office for National Statistics licensed under the Open Government Licence v.3.0; Contains OS data © Crown copyright and database right 2022; GADM

Key flood groups and initiatives in the area

- **Living with Water partnership project** – A partnership between Yorkshire Water, Hull City Council, East Riding of Yorkshire Council, the Environment Agency, and the University of Hull. The 25-year project recognises that all those responsible for some part of the water system across Hull and the East Riding need to work together to build understanding about the threats and opportunities water brings to the region. This collaboration includes raising awareness of flood risk and mitigation measures among communities.
- **Mobilising Adaptation: Governance of Infrastructure through Co-Production (MAGIC)** – A 12-month pilot project that aims to evaluate a community-led approach to reducing flood risk, while providing opportunities for urban residents to improve their health and wellbeing, through better engagement with blue and green spaces.^{vi}
- **Floodmobile** – A mobile demonstration vehicle created to show homeowners and businesses what PFR measures are and how they work.

Flood warning systems and information services in England

The UK government's website, **GOV.UK**, offers information on preparing for flooding, what to do during a flood and where to get help:

- Users can put their postcode into the '**check the long-term flood risk for an area in England**' page to find out whether they are at low, medium or high risk of flooding from three kinds of flood risk (river, surface and coastal). They can also use two interactive maps, one for the risk of flooding from surface water, and one for the risk of flooding from rivers and the sea.
- In England, members of the public in at risk areas can sign up to receive flood warnings by phone, text or email if their home or business is at risk of flooding, via the GOV.UK website. People can also check for severe weather warnings on the Met Office website.

^{vi} These are natural, or semi-natural features that are strategically planned. Examples of green infrastructure are hedgerows, bushes, and ecological parks. Blue infrastructure can include ponds, artificial buffer basins or water courses.

3.1.3 Belfast, Northern Ireland

Focus group participants in Belfast had not previously experienced flooding, with many saying they would not feel prepared at all if a flood were to happen because they were not aware of living in a high flood risk area.

“(Flooding is) not something you think about ever, you don’t get any information about it”

– Focus group participant, Belfast



Sources: Office for National Statistics licensed under the Open Government Licence v.3.0; Contains OS data © Crown copyright and database right 2022; GADM

Key flood groups and initiatives in the area

- **Regional Community Resilience Group** – The group brings together multi-agency partner organisations from government, utilities, and the VCS across Northern Ireland to help local communities prepare for and respond to weather related emergencies. They produce a series of ‘getting weather ready’ newsletters to highlight important developments, enhance community resilience, and provide an opportunity for communities to share experiences.
- **Belfast Tidal Alleviation Scheme** – A £17 million project of permanent and temporary flood defences, representing a long-term approach to tidal flood risk management for Belfast.
- **Belfast Resilience Strategy** – In December 2020, Belfast launched its Resilience Strategy, which sets out 30 transformational programmes to change Belfast to an inclusive, zero emissions, climate-resilient economy within a generation.
- **Tree Planting in Belfast** – Belfast City Council is working with a range of partners in the city to plant one million native trees across Belfast by 2035, supporting climate adaptation.

Flood warning systems and information services in Northern Ireland

The Northern Ireland government website, **NI Direct** offers information on how to prepare for and respond to a flood:

- Northern Ireland residents can **check the risk of flooding in their area** on an interactive map of the country, which shows three kinds of flood risk (river, surface and coastal), both for the present day and with future climate change.
- There is no option to sign up for flood warnings in Northern Ireland. The advice is to listen to local weather, news and travel bulletins on radio and TV. People can also check for warnings of severe weather on the Met Office website.

3.1.4 Glasgow, Scotland

Focus group participants in Glasgow had not previously experienced flooding. Many echoed what participants from Belfast said – that they would not feel prepared for a flood because they were not even aware they lived in a high flood area.

“I don’t think of Glasgow at all when I think of flooding, I think of the north-east of England and places you see on the news. I don’t think that Glasgow could flood.”

– Focus group participant, Glasgow

“In general people think ‘it doesn’t really affect me’. But we should all be better prepared. I can’t help empathise now with the people it does affect.”

– Focus group participant, Glasgow



Sources: Office for National Statistics licensed under the Open Government Licence v.3.0; Contains OS data © Crown copyright and database right 2022; GADM

Key flood groups and initiatives in the area

- **Climate Ready Clyde** – A cross-sector initiative funded by 14 member organisations and supported by the Scottish government to create a shared vision, strategy, and action plan for adapting Glasgow City Region to climate change.
- **Sustainably Drain Glasgow** – The Metropolitan Glasgow Strategic Drainage Partnership (a collaboration of organisations involved with the operation of the sewerage and drainage network) is working to deliver schemes to “sustainably drain Glasgow”. These schemes will target areas across the city where rainfall adversely impacts communities. It will implement measures including raingardens, grassed channels, and shallow basins that mimic the way rainwater would be managed naturally.

Flood warning systems and information services in Scotland

The **Scottish Environment Protection Agency’s** (SEPA) website provides information on how to prepare for flooding and guidance on appropriate actions to take during, and after flooding:

- Users can check the **‘Flood Hazard and Flood Risk Information’** page for the risk of floods in their area. They can input their postcode and view an interactive flood map of Scotland, which shows three types of flood risk (river, surface and coastal), both for the present day and after allowing for future climate change.
- SEPA provides live flooding information on its website, including a live map indicating areas on flood alert and the telephone number for Floodline, a flood-warning and information service.
- Residents of Scotland can sign up for flood warnings via Floodline on the SEPA website. There is also an option to report incidents or the risk of flooding.

3.2 Awareness of flood risk

Key findings – awareness of flood risk

Awareness of flood risk among those living in areas that are at risk of, and highly vulnerable to, flooding is low

- Most focus group participants who had not experienced flooding were unaware that they lived in neighbourhoods that are, or will be, at risk of flooding. This was mirrored by the polling, which found that only one in four (25 per cent) UK adults living in high social flood risk areas have a good understanding of the flood risk in their area.
- Many focus group participants who had not previously experienced flooding believed that only those living near rivers or large bodies of water were at risk of flooding, highlighting a lack of awareness of surface water flooding.

Awareness of how to access information on flood risk is low, but slightly higher among those who have previously experienced flooding

- Awareness of flood warnings varied among focus group participants, but there were typically higher levels of awareness among those who had been flooded before.
- Knowledge of existing information and resources on flood risk was low among the majority of focus group participants, particularly those who had not experienced flooding previously. Echoing this, the polling revealed that only around one in five (21 per cent) UK adults know how to find out whether a flood is likely in their area (increasing to 31 per cent of those who have experienced flooding previously).



3.2.1 Awareness of flood risk areas

Awareness of flood risk is a vital first step towards being prepared for, and taking action in the event of, a flood. It is therefore central to community resilience. During the focus groups, participants were shown flood risk maps highlighting the highest social flood risk areas within their local authority^{vii} (based on SFRI data⁶⁴). They were prompted to reflect on and discuss the information presented.

Many participants in Hull and Rhondda Cynon Taf were surprised by which neighbourhoods in their local authority areas were identified on the map. They tended to assume that neighbourhoods that had flooded previously would be highest risk. Several participants in Rhondda Cynon Taf were sceptical about the map of high social flood risk neighbourhoods because their own neighbourhood was not included, even though they had experienced severe flooding in 2020.

Most focus group participants in Belfast and Glasgow were very surprised to find out that they lived in areas that are, or will be, at risk of flooding. Despite seeing the flooding of streets in their neighbourhoods, few participants in either city had associated this with the possibility of their homes being at risk of flooding.

Many participants who had not experienced flooding to their homes believed that only those living near rivers or large bodies of water are at risk of flooding, highlighting a lack of awareness of surface water flooding.

“It’s not on most of our radars unless you live near water.”
– Focus group participant, Glasgow



Polling insights: awareness of flood risk

- Only around one in four (27 per cent) UK adults say that they have a good understanding of the current flood risk to their home and area. The proportion is similar (25 per cent) for those living in high social flood risk areas.
- Awareness of flood risk is higher than average among homeowners (30 per cent) and higher still among those living in rural areas (37 per cent).
- Previous experience of flooding was not associated with an increased awareness of risk:
 - Around a sixth (15 per cent) of those who have previously experienced flooding don’t know whether they live in an area at high risk of flooding, compared to 12 per cent of those who have not experienced flooding.
 - The percentage of those claiming to have a good understanding of the current flood risk to their home and area was similar for those who had experienced flooding (29 per cent) and those who had not (26 per cent).

^{vii}Flood risk maps highlighted areas with the highest level of social flood risk, according to SFRI data on current and future risk (see Appendix A for a detailed explanation of how areas were identified). Focus group participants in Belfast and Glasgow all lived in areas identified on the maps. Focus group participants in Hull and Rhondda Cynon Taf had all previously experienced flooding to their homes but not all lived within areas identified on the maps.

3.2.2 Flood warning services

Flood warnings

The Environment Agency, Natural Resources Wales, and Scottish Environment Protection Agency constantly monitor rainfall, river levels and sea conditions to forecast the possibility of flooding in England, Wales and Scotland respectively.⁶⁵

They issue flood warnings when flooding is happening or about to happen, which provide information about the likelihood and severity of flooding in a particular area, including whether action needs to be taken. Flood warnings are not available in Northern Ireland, but the Met Office works with partners to raise awareness of weather events that may result in flooding impacts for people and property.⁶⁶

In England,⁶⁷ Scotland⁶⁸ and Wales⁶⁹, there are three types of warning: Flood Alert, Flood Warning and Severe Flood Warning.



Flood Alert

What it means

Flooding is possible.
Be prepared.



Flood Warning

What it means

Flooding is expected.
Immediate action required.



Severe Flood Warning

What it means

Severe flooding.
Danger to life.

People living in England, Scotland and Wales can sign up^{viii} to receive flood warnings by phone call, text message or email.⁷⁰

Awareness of flood warning services varied between groups, with those who had previously experienced flooding (in Hull and Rhondda Cynon Taf) showing greater awareness. Many of the participants in Glasgow^{ix} who had not experienced flooding previously were unaware of flood warning services; they felt that flood warnings would help prepare people in the event of a flood, but that more people needed to be aware that they are available.

In Hull, most participants were aware that flood warning services exist, and some reported receiving regular warnings since the 2007 floods. However, none of the participants recalled receiving flood warnings when the 2007 flood occurred.

“We’re on the phone list for warnings – if the river gets high, we get a phone call – but that night there was nothing.”

– Focus group participant, Hull

At the time the fieldwork took place, all of the Rhondda Cynon Taf participants reported that they were signed up to and receiving flood warnings, but not always consistently. Many had not received a flood warning prior to the 2020 flood. One participant reported that they had actively checked online for warnings at the time, but did not find any:

“My friend messaged me saying somewhere further downstream had flooded. That’s why I checked online. I went to bed because there was no flood warning.”

– Focus group participant, Rhondda Cynon Taf

^{viii} Flood warning services usually need to be subscribed to, however, auto-enrolment for telephone flood warning services has been in place in some parts of England and Wales since 2010.

^{ix} No comparison made with Belfast as flood warning services are not available in Northern Ireland.

Of those in Rhondda Cynon Taf who did receive flood warnings, many said that they came too late. The flooding in Rhondda Cynon Taf happened very quickly and came with great force, making it very difficult for residents to take precautionary action. One participant felt that warnings would not help them deal with a flood of this nature:

“Whatever you have done [to prepare], if that amount of water was coming through the Taff, nothing on this earth is going to stop it.”

– Focus group participant, Rhondda Cynon Taf

Beyond a lack of awareness of the existence of flood warning services, the research identified other potential barriers to their effectiveness. One issue that emerged was the effect of repeated flood warnings that are not followed by flooding. As stated above, some Hull participants reported receiving regular warnings since the 2007 floods, none of which had been followed by flooding. They said that as a result they had stopped paying attention to the warnings.

Many of the experts interviewed also recognised that when flooding repeatedly fails to materialise after flood warnings are issued, people can stop taking notice. Some experts explained that flood risk is difficult to forecast accurately due to the unpredictable nature of some types of flooding. They suggested that warnings could be more locally focused in order to improve their accuracy.

Another barrier which emerged was distrust in the legitimacy of the source of information. Several focus group participants reported that they did not trust flood warning information sent to their phones. One Rhondda Cynon Taf participant who had received a warning on the night of the 2020 flood gave the following account:

“At 10 or 11 o’clock at night, an unknown number called me and left a message about a flood warning... [It said] ‘call this number for info’. So I thought it was a scam.”

– Focus group participant, Rhondda Cynon Taf

Finally, the fact that flood warning services usually have to be subscribed to was raised as a barrier by both participants and experts. Participants who had not experienced flooding said they would need proactive information from the authorities (as opposed to information services they would need to sign up for) to alert them to the risk. They would also need the authorities to suggest actions they could take to prepare.



Polling insights: flood warnings

- Only around one in five (21 per cent) UK adults know how to find out whether a flood is likely in their area, increasing to almost one in three (31 per cent) of those who have experienced flooding.
- The preferred way to receive flood warnings among UK adults is by text message (SMS), with 44 per cent expressing a preference for this approach:
 - Text messages were the most popular method across all age groups, except for over-75s, whose most popular choice was television weather broadcasts.
 - The second most popular way to receive flood warnings across all age groups was via TV weather broadcasts (38 per cent) and then via email (25 per cent).
 - The least popular way was via telephone helpline, with only 7 per cent of UK adults expressing a preference for this approach.

3.2.3 Increasing awareness

Focus group participants agreed that people need to know what their level of flood risk is in order to prepare for flooding. The focus group discussions demonstrated how flood risk maps can stimulate conversations about individual risk. This was emphasised again in the online workshop:

“The maps are very important. First time I saw it was when I went to the focus group – I’d never seen it before, since then I’ve not stopped talking to people about it.”

– Online workshop participant, Glasgow

However, the findings suggest that if people feel that flood risk information does not reflect local conditions, they will have less trust in it.

Knowledge of existing information and resources on flood risk was low among the majority of participants, particularly those who had not experienced flooding previously. Existing resources were not known about or used by most participants, highlighting a communication gap. When shown the information available online, most focus group participants said they did not know it was there.^x

“Everyone sitting here sits in a flood area and no one knew this existed. Information and marketing is not very good here. The headlines [on the website] look good, but we don’t know it exists.”

– Focus group participant, Belfast

Focus group participants who had not previously experienced flooding expressed a need for more information about flood risk in general, and understanding which areas are affected and why. They felt that understanding the relevance and urgency of flood risk was necessary for communities to take action to become more resilient. Communication, about both the risk of flooding and the solutions and support available, was felt to be a key first step to building community resilience.

“[We need] information on the reasons for why your house is at flood risk. For example, is it because it’s close to a river? Because of the drains? So that you can be more prepared. If it’s due to local drainage then you can lobby a local government as a community... it means you can target your own actions.”

– Focus group participant, Belfast

Several interviewed experts highlighted the importance of education as a way of increasing awareness of flood risk. One described a successful initiative in which education and training on flood risk had been cascaded via community resilience groups:

“The communities are working together and helping themselves and talking to each other – particularly in [relation to] warnings and also recovery – it’s worked well with those communities.”

– Resilience expert, Northern Ireland Executive

Another expert described how, as a local council, they had actively engaged with local schools on flooding, which they felt was working well.

“The key is children, they are concerned about climate change, how it will affect them and houses they buy in the future. We go into schools, have a learning lab at a college where we throw water about – make it fun. Get them to create a flood plan. Would they know what to do in a flood?”

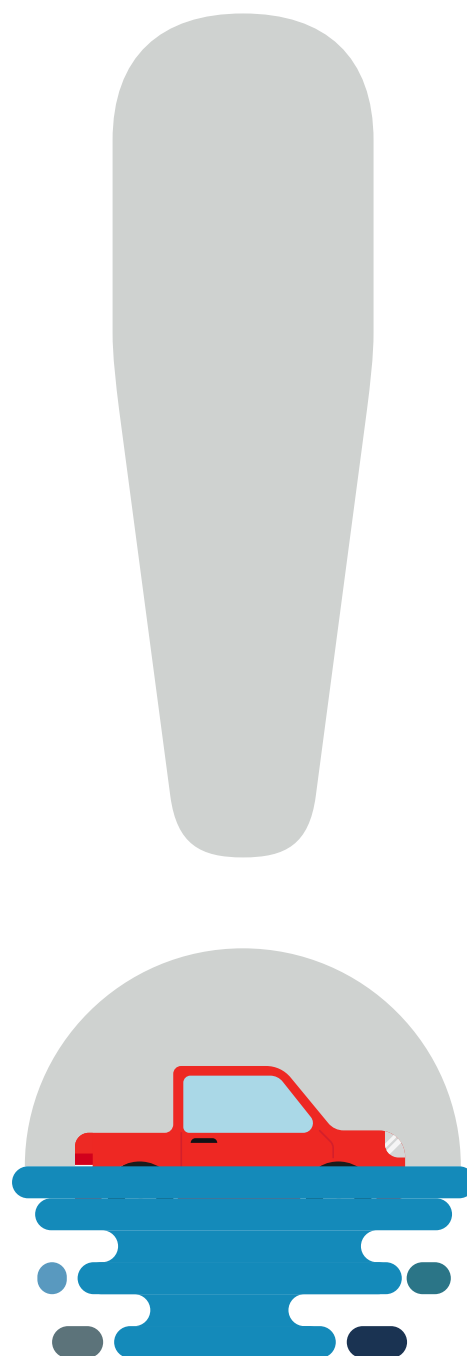
– Flood risk management expert, government agency, England

^xParticipants were given information sheets with regionally relevant flood warning information, such as how to check if they lived in high flood risk areas, and links to websites that provide flood-warning services and advice on how to prepare for and respond during flooding.

However, many experts also noted that awareness of flood risk does not necessarily lead to action. Several experts said that when people perceive someone else (for example, a local authority) to be responsible for managing flood risk, it can be a barrier to personal action (see also section 3.3.3). Two of the experts – a community flood resilience expert from a VCS organisation and a flood risk expert from a government agency – felt that the language and messaging around flood risk is not impactful enough. Another referred to the impact of social and economic factors:

“Awareness [of flood risk] does not necessarily lead to action, there needs to be other things in place, like strong community leaders, online community groups, active participation of the community. It’s harder to achieve in areas with a high turnover of population. Flood action groups are primarily made of people who are retired and have more time. So awareness leading to action hinges on the wider social and economic capital of a community.” – Flood risk management expert, government agency, England

Information at every stage of a flooding event – before, during, and in recovery – has to be accessible to the people who need it most. Both focus group participants and experts noted that different people choose to receive information in different ways. For example, people at risk of flooding reported wanting to receive information online, through TV or radio news channels, or via apps and social media. They generally felt that the authorities often do not tailor messages about flood risk to different audiences or use media accessible to older people or carers. The general opinion among focus group participants across all four nations was that government websites are often information-heavy and not user friendly.



3.3 Preparedness for flooding

Key findings – preparedness for flooding

Ensuring adequate flood insurance is key to preparedness, but there are barriers preventing many people at risk from gaining cover

- Focus group participants identified a number of barriers to insurance, including cost, difficulty in understanding insurance policies, and lack of awareness about living in high-risk areas.
- The polling suggests that financial barriers to insurance are widespread: one in seven UK adults (15 per cent) are without buildings or contents insurance. Of these, over half (53 per cent) put this down to affordability. Around one in five (22 per cent) of those living in high social flood risk areas are without insurance.

Many people – including those living in areas that are at risk of, and highly vulnerable to, flooding – are unaware of actions they can take to prepare

- Many focus group participants living in high-risk areas did not know how to prepare for a flood. This finding was supported by the polling, which revealed that only one in seven (14 per cent) UK adults know what to do to prepare for a flood. The proportion is similar for those living in high social flood risk areas (13 per cent).
- Focus group participants identified a lack of knowledge about how to prepare for flooding as a key barrier to preparedness. Similarly, the polling found that fewer than one in five (19 per cent) UK adults know where to access information about what to do before, during, and after a flood, dropping to around one in seven (15 per cent) of those living in high social flood risk areas.

There is strong consensus among the public that responsibility for preparing for flooding should lie with national and local governments, rather than with individuals

- Focus group participants across all areas felt that responsibility for preparing for flooding should lie mainly with national and local governments. Mirroring this, when asked who should be responsible for helping individuals and communities prepare for flooding to their homes, polling respondents ranked local councils first (61 per cent) and the UK government second (46 per cent).

As explained in the background section, preparedness is central to resilience and is characterised by a range of measures including accessing up-to-date information on flood risk, having adequate insurance cover, and taking practical actions to reduce the impact of flooding.

One of the experts interviewed explained how being prepared for the worst can help lessen the shock of flooding. They described preparedness as follows:

“It’s about equipping people – people having the skills, equipment, knowledge and putting it into practice. The ability to be ready for something and how to react to it in the best way possible to limit impacts on you and your livelihood.” – Community engagement and resilience expert, government agency, Wales

Participants in Glasgow and Belfast said that they would be wholly unprepared if a flood were to happen tomorrow. Most put this down to a lack of awareness of living in high flood risk areas (as explored in section 3.2.1). The research found that those who had experienced flooding (in Hull and Rhondda Cynon Taf) were better informed about flood insurance. They were also more aware of practical actions they could take to protect their homes and possessions.

3.3.1 Flood insurance

The most prominent theme to emerge from discussions with focus group participants on preparedness was insurance. All participants who had experienced flooding stressed the importance of at-risk households having adequate flood insurance^{xi}:

“Get insurance. My neighbours didn’t have insurance, they didn’t leave the property. They spent so much trying to dry it out... For us, once we had insurance sign off, the building work started straight away. For them, nothing was replaced.”

– Focus group participant, Rhondda Cynon Taf

Further discussion of the perceived importance of insurance among focus group participants can be found in section 3.4.1.

There was agreement among focus group participants that if people are unaware of living in high-risk areas, they are very unlikely to seek flooding insurance.

Another barrier identified was cost. Some focus group participants, as well as some of the experts interviewed, acknowledged that insurance can be seen as an unaffordable or unjustifiable extra expense, especially for those in low-income households.

Participants felt that it can be difficult to obtain flood insurance in high-risk areas. A few participants had personal experience of being denied flood insurance because their home was in a flood risk area.

Another obstacle is that people sometimes find it difficult to understand insurance policies, preventing them from taking out appropriate cover for flooding. Focus group participants repeatedly mentioned issues concerning a lack of understanding of their insurance cover.

“The information isn’t easily available – you have to sift through a lot of information to find the right information, and it’s difficult to find how much you are covered for; the policies are difficult to understand.”

– Online workshop participant, Hull

Focus group participants across all areas agreed that people at risk of flooding need help on how to access insurance, and clarity about what insurance covers and what the cost of insurance is. They said that all people in at-risk areas need support to get adequate cover. These findings were echoed in the expert interviews.

Navigating the insurance claim process after a flood was reported as a significant challenge by people who had previously experienced flooding, as well as being recognised by many of the experts. Participants across all focus groups felt that more information and support on making insurance claims and accessing financial support was needed to assist people with recovery after a flood.



Polling insights: home insurance

- One in seven people in the UK (15 per cent) don’t have buildings or contents insurance, increasing to around one in five (22 per cent) of people living in high social flood risk areas.
- Around half (53 per cent) of those without insurance say that this is due to financial barriers (too expensive / rising cost of living / rising premiums).
- Half (50 per cent) of building / contents insurance holders do not know whether their insurance plan covers flood damage.
- Those who have experienced flooding are less likely to be uninsured. Only one in 10 people (10 per cent) who have experienced flooding don’t have home or contents insurance, compared to around one in seven (15 per cent) of people who haven’t experienced flooding.

^{xi}Flood insurance covers loss and damage caused by flooding and is normally included as a standard part of home insurance. However, the extent of the cover varies depending on the policy in place and some policies may exclude flood cover or add a high excess. In high-risk areas most people are now covered by the **Flood Re** scheme, a government initiative which runs until 2039 and is designed to make the flood cover part of insurance more affordable and available to those at risk. However, some focus group participants reported that their flood insurance was still unaffordable.

3.3.2 Practical actions

There are a range of practical actions individuals can take to prepare for a flood to keep themselves and their properties safe. These range from simple tasks (such as turning off gas, electricity and water mains supplies, and moving items of personal value to a safe place) to implementing Property Flood Resilience (PFR) measures (such as flood doors^{xii} and automatic air bricks^{xiii}).

Focus group participants with previous experience of flooding to their homes were more aware of practical actions they could take to prepare than those who had not experienced flooding. Some participants in Rhondda Cynon Taf and Hull gave examples of actions they had already taken, such as moving valuable belongings.

“I now keep documentation and passports upstairs, but people that haven’t been in that situation would not think about that.”

– Focus group participant, Hull

In Rhondda Cynon Taf, some had made their homes more resistant or resilient to flooding by fitting flood doors or moving sockets higher up the wall (examples of PFR measures). Some participants in Hull were aware of PFR measures, but had not taken them because they did not perceive the risk of flooding in Hull to be high enough to warrant it. No one in Glasgow or Belfast had taken any measures to prepare for flooding because they were not aware that they were at risk.

The usefulness of sandbags is heavily contested, but many participants discussed them as a way of protecting their properties.^{xiv} Some who had experienced flooding felt that sandbags were impractical.

“When it comes to sandbags, it’s not practical, where do you keep them?”

– Online workshop participant, Hull

Echoing this, two expert interview participants explained how sandbags can be heavy and difficult to manipulate, making them an inappropriate tool for some people. They also raised issues associated with disposing of contaminated sand after a flood and difficulties with storage due to the bags’ bulk and weight.

When discussing practical action, a lack of knowledge and awareness of how to prepare for a flood was the most prominent barrier raised by focus group participants.

“If we had the information, then I’d have a plan. But if you’ve never experienced it then you’re unlikely to act.”

– Focus group participant, Belfast

Several participants in Belfast, Glasgow and Hull said that if they had more information about what they could do to prepare then they would take action. However, many participants felt that knowledge alone is insufficient, and stressed the necessity of people having a sense of personal responsibility (see section 3.3.3).

One challenge highlighted by the experts was how to encourage individuals to proactively seek information before flooding occurs, in order to best prepare themselves. Some of the experts reported that people rarely look at advice pages on national authority websites until a period of bad weather hits, or until after they are affected by flooding for the first time. Participants also raised this issue during the online workshop:

“It can be difficult because people live in the moment and so will not dwell on it. It is not until your house is affected by it that you take notice.”

– Online workshop participant, Hull

The experts stressed the importance of going beyond simple information provision to encourage individuals at risk to take action. A flood risk management expert from a government agency explained how organisations such as the National Flood Forum and local community flood groups can help people navigate official information and help translate it into local action. A resilience expert from the Northern Ireland Executive explained how authorities have prepared household ‘flood packs’ for people at risk of flooding, which are delivered directly to homes to try and overcome this barrier.

^{xii} Flood doors create a watertight seal between the door and its frame when closed and the locking system is engaged (Source: floodhub.co.uk)

^{xiii} Automatic (self-closing) air bricks are designed to replace traditional air bricks, allowing air flow under normal conditions and self-closing when they come into contact with floodwater (Source: floodhub.co.uk)

^{xiv} Traditional sandbags have many limitations including cost, inability to hold back water, a tendency to leak and rot and a requirement for proper environmental disposal. Alternative products, such as barriers, often provide more effective long-term protection, are more easily deployed and have greater reliability when fitted correctly (Source: sepa.org.uk)



Polling insights: preparing for a flood

- Only one in seven (14 per cent) UK adults know what to do to prepare for a flood. The proportion is similar (13 per cent) for those living in high social flood risk areas.
- Those who have experienced flooding are only slightly more likely to know what to do to prepare for a flood than those who haven't (16 per cent compared to 13 per cent, respectively).
- Homeowners are more likely to know what to do to prepare for a flood than renters (16 per cent compared to 10 per cent, respectively).
- Fewer than one in five (19 per cent) UK adults know where to access information about what to do before, during, and after a flood. That figure drops to around one in seven (15 per cent) of those living in high social flood risk areas.
- Those who have experienced flooding are more likely to know where to access this information than those who haven't (30 per cent compared to 17 per cent, respectively).



3.3.3 Perceptions of responsibility

Some of the participants who had not experienced flooding indicated that, having learnt about the flood risk in their area during the focus groups, they would go on to take actions such as making a flood plan and storing their documents safely.

“Now the box is open, I want to know what I can do in the case of a flood.”

– Focus group participant, Glasgow

However, many focus group participants felt that preparing for flooding was not their responsibility. In Glasgow, participants felt they couldn't be expected to prepare because of other time pressures, such as work and taking care of their family. They also felt that communities were not best placed for this.

“Ideally, we shouldn't know anything about it, because government should just be sorting it, and there would be no panic.”

– Focus group participant, Glasgow

Such views were commonplace in Belfast too. One participant queried why residents should be expected to prepare, saying it was the role of the local authority to clear the drains and stop surface water flooding. Evidence of this heavy reliance on the authorities was not as prominent in the focus groups in Hull or Rhondda Cynon Taf. In both areas, it was generally felt that everyone has some responsibility to protect themselves and their property, but that ultimately the main responsibility should sit with national and local government.

Echoing the findings of the focus groups, the majority of the experts said flood management was more difficult because of the absence of a sense of personal responsibility for preparing for flooding. Many reported that those who experience flooding tend to blame the impacts on a lack of public infrastructure rather than looking at what they could do to prepare.

“It is so far down most people's list of priorities, and then even if they're aware, it's always somebody else's problem to solve.”

– Flood risk expert, government agency, UK-wide

Some focus group participants felt that authorities are not fulfilling their responsibilities when it comes to protecting people from flooding. In the Rhondda Cynon Taf focus group, many placed blame on authorities for the flooding in 2020:

“We haven't been given any explanation [for the cause of the flood] apart from that it was Storm Dennis. The reason that they got away with it was because of the Covid pandemic – we weren't able to meet and get legal advice. Since then, we've been inundated with information and graphs. We don't think [the severity of flooding] was from anything natural or normal.”

– Focus group participant, Rhondda Cynon Taf

The research indicates that clarity and transparency on the part of the authorities is essential for developing a sense of shared responsibility for flooding preparedness.

Polling insights: perceptions of responsibility

- About four in five UK adults think that flooding should be a priority for the UK government (82 per cent) and for local councils (82 per cent).
- Respondents were asked who they think should be responsible for the following actions (top three selected):

Prevention of flooding to people's homes

- 1) Local councils (64 per cent)
- 2) UK government (61 per cent)
- 3) Environmental protection agencies (48 per cent)

Helping individuals and communities prepare for flooding to their homes

- 1) Local councils (61 per cent)
- 2) UK government (46 per cent)
- 3) Emergency services (34 per cent)

Keeping people safe during a flood

- 1) Local councils (62 per cent)
- 2) Emergency services (52 per cent)
- 3) UK government (44 per cent)

Responding to damage to people's homes caused by flooding

- 1) Local councils (55 per cent)
- 2) Emergency services (44 per cent)
- 3) UK government (40 per cent)



3.4 Impacts of flooding

Key findings – impacts of flooding

Flooding can have a devastating effect on people's lives. The impacts are multiple and varied, and can interact with and exacerbate one another

- The impacts experienced by focus group participants included economic harm, loss of sentimental items, effects on mental health, and household disruption.
- The extent of economic impacts differed depending on the severity of flooding and the financial circumstances of the household. Adequate insurance cover was considered essential to enable recovery, but an inability to purchase insurance was discussed as a barrier preventing people from financially protecting themselves.
- Many focus group participants highlighted the loss of irreplaceable and emotionally significant items as being the worst impact of flooding. Loss of sentimental items also emerged as the most damaging impact among polling respondents who had experienced flooding.
- Focus group participants and the experts interviewed emphasised the short- and long-term mental health impacts of flooding, including stress, anxiety, and an enduring sense of fear whenever it rains.
- The theme of household disruption was prominent in focus group discussions with people who had experienced flooding. Flooding can also reduce social cohesion by physically separating communities, increasing isolation, and creating tensions when flooding affects members of the community in different ways.

Focus group participants in Hull and Rhondda Cynon Taf who had experienced flooding spoke about its devastating effects on their lives. The impacts were wide-ranging and included economic impacts from physical damage to homes and properties, loss of sentimental items, effects on mental and physical health, and disruption to family life and community cohesion.



3.4.1 Economic losses

The economic impacts of flooding came up repeatedly in the focus groups and expert interviews. Participants in Hull and Rhondda Cynon Taf spoke about the difficulties they and others in their community had faced in replacing essential household goods and personal items.

One participant in Hull had been forced to abandon their car when trying to drive back home through the flooding. Another participant, in Belfast, reflected on additional costs which can arise in the immediate aftermath of floods:

“Information and access to emergency funds... electricity will have gone out, lost food from fridge and freezer, you might need to book into a hotel, might be living hand to mouth, what do you do?”

– Focus group participant, Belfast

Among those who had experienced flooding, the economic impacts varied depending on the severity of the floods and the financial circumstances of the household, including whether or not they had adequate insurance in place.



Flood insurance

Participants with experience of flooding emphasised that adequate insurance cover is essential to enable swift recovery. Both the Hull and Rhondda Cynon Taf groups discussed how differences in insurance cover had shaped their experience of the recovery process. This included whether they were provided with temporary accommodation, what repairs were done to their homes and which items were replaced.

“Our insurance wouldn’t pay for that [a rental property]...They replaced some stuff in the garage, tools and stuff. They paid for plastering and drying out, but things in the house didn’t get replaced. Insurance paid for a decorator, but I had to re-do it because it was rubbish. I’m aware of people with TVs and stuff that got replaced.”

– Focus group participant, Hull

An inability to purchase flood insurance was discussed as a barrier to people being able to protect themselves financially, particularly those on low incomes. A couple of participants in Hull had not been insured when their homes flooded in 2007, making economic impacts severe.

“I had to re-mortgage my house to cover and pay for everything. I wasn’t insured. Everything had to be ripped out and replaced. I was out of my house for three months... I was young, had a young baby, had only bought the house a couple years ago.”

– Focus group participant, Hull

A community flood resilience expert from Scotland explained that, while the main difference between people in terms of cover is whether or not they have an insurance policy in place, policies also contain caveats which may affect the amount people can claim and what they can claim for. The same expert explained that there is little help for people in understanding the meaning of these clauses, so those at risk may not get the insurance cover they need.

Participants who had not previously experienced flooding echoed this and shared concerns about how to obtain the right insurance cover, how to access information on insurance, and what to do if unable to secure appropriate insurance. All participants noted the need for more information and support on making insurance claims – for example, help with interpreting policies and caveats that may affect the amount an individual can claim.

Wider economic impacts

In addition to the cost of property repairs, the experts highlighted how flooding can leave people incapable of working, due to the multiple stressors associated with recovering from a flood. The loss of personal income can be devastating for those struggling to pay to repair their homes.

“Wellbeing can also impact finance because they may be unable to work, exacerbating cost issues further. The cost of living crisis is also making it harder to finance PFR, decreasing resilience in the event of a flood.”

– Community flood resilience expert, VCS, Scotland

People may also be unable to work when floods affect local businesses. For example, a focus group participant in Glasgow described how their relative’s business had been forced to close by flooding, harming their ability to make a living. Experts interviewed explained how flood damage to businesses can have repercussions for the wider community, due to the impact on local amenities and services. One local government representative from Hull described how investors have been deterred from investing in areas that have high flood risk, and the knock-on economic consequences this can have.

“Investors are deciding not to invest in the city because of high flood risk, which has an impact on jobs.” – Flood risk management expert, government agency, England

Another case mentioned was Cumbria, where repeated flooding has led to a significant fall in property values:

“They can’t sell their own houses and no one can get a mortgage on them because they are so high in flood risk. It’s fine that we are doing more for resilience and investing in protection, but there is a ratcheting effect for finances as flood risk gets worse...”

– Independent flood resilience expert, UK-wide

These examples show how flooding can have long-term consequences for the economic vitality of an area, with harmful implications for resilience.



3.4.2 Non-economic losses

Among those who had experienced flooding, many participants said that some of the worst impacts they suffered came from the loss of emotionally significant items, as these were irreplaceable. Participants spoke of the compounding effect on their mental health of losing such possessions. One focus group participant in Rhondda Cynon Taf described how they had been advised to throw away everything to avoid any contamination from flood water:

“The sorriest thing I did was allow people in to empty the mess. Everything went including my father’s medals in the war and things he’d saved since seven years old. Things he kept all those years were shovelled up and gone.” – Focus group participant, Rhondda Cynon Taf

One community resilience expert from a VCS organisation highlighted the stress and sense of loss people can experience when returning to their home after a flood to find that items of personal value have been damaged:

“A fire leaves you without memories... pictures or photos that you’ve got are gone, whereas... with a flood you go back in, you’re digging through mud and you find a photograph that is stuck together and so you go through that trauma again. And so floods are, in a lot of ways, far more mentally devastating... it’s a different kind of heartbreak.” – Community resilience expert, VCS organisation, UK-wide

Another resilience expert explained how, even when people’s homes have been repaired and property replaced, the sense of loss can be severe and people may feel differently about their homes.

“Because when you’ve been flooded, when it’s all repaired – even when it’s replaced by the insurance company – it’s not your house, it’s all new... You don’t feel at home anymore”

– Independent flood resilience expert, UK-wide

Focus group participants from Hull and Rhondda Cynon Taf reiterated this. One discussed their changed feelings towards their home after it had been flooded:

“Now, the house is brand new, I can’t complain, it looks good. My son asks why I haven’t put pictures up – I don’t want to, it’s not the same anymore. I feel completely different about the house, it’s just a house now.” – Focus group participant, Rhondda Cynon Taf

One focus group participant recalled how they had never returned to their home after it was flooded, partly because they had been so put off by the contamination from the flood water.



3.4.3 Health impacts

None of the Hull or Rhondda Cynon Taf focus group participants reported having physical health problems directly resulting from the flooding, but they did share examples of hazardous or unhygienic conditions during and immediately after the flooding of their homes:

“Everything in the house was disgusting with toilet waste coming up.”

– Focus group participant, Rhondda Cynon Taf

“...it was awful, the smell. Middle of summer too, it was evaporating. The stench was stagnant.”

– Focus group participant, Hull

Participants also discussed how flooding had affected their mental health. Some recalled the immediate impacts, while others discussed the longer-term effects that stayed with them for years afterwards.

“At the time, you panic. It’s not an everyday thing, you don’t know how to handle it.”

– Focus group participant, Hull

“125 houses in our street alone – we were all out of our houses for years – it was terrible for our mental health.”

– Focus group participant, Rhondda Cynon Taf

Many participants reported feeling a lack of control around the process of repairing and redecorating their properties, as well as stress from living in alternative accommodation.

“[It was] stressful, trying to keep on top of the workmen and making sure everything went through properly. Didn’t make me ill but it could do to some people.”

– Focus group participant, Hull

Participants spoke frequently of the continued anxiety they experience whenever it rains, including participants from Hull who had experienced flooding 15 years previously. This demonstrates the long-lasting mental health impacts flooding can have.

Many of the experts interviewed also considered the biggest psychological impact of flooding to be a long-term sense of fear. They explained that people living in areas where flooding occurs repeatedly are likely to be worst affected. One local authority resilience expert discussed the impacts this phenomenon can have on people’s mental health:

“Each time there is a weather warning, it can be a psychological nightmare, especially through summer if there is a period of heavy rain.”

– Resilience professional, local authority, Northern Ireland

These findings demonstrate the layered nature of the impacts of flooding, which can permeate many aspects of a person’s day to day life. This highlights the need for support for mental and physical health issues.^{xv}



^{xv}Public Health England has published a guide on the mental health impacts of flooding: [gov.uk/government/publications/flooding-and-public-mental-health-assessment-and-management/flooding-and-health-assessment-and-management-of-public-mental-health](https://www.gov.uk/government/publications/flooding-and-public-mental-health-assessment-and-management/flooding-and-health-assessment-and-management-of-public-mental-health)

Living in fear of flooding – Debbie*

The street where Debbie lives in Rhondda Cynon Taf, saw severe flash flooding when Storm Dennis hit the UK on 16 February 2020.

Debbie has a graph of the water level of the river that passes close to her house, from just before 1am that morning. It shows that the water was 4.1 meters above normal and rising. It was raining hard and a friend had sent a message alerting her to flooding further downstream. But she did not receive any specific flood warnings for her area that night and went to bed. The next thing she remembers was being woken up by her son saying that their house was being flooded.

“My abiding image of the events is of my 90-year-old father being carried upstairs out of the flood water. My father had to be lifted and carried from his bed... If my nephew and two sons hadn’t woken me up, my father would have been dead downstairs.”

Her father was saved but many of his possessions, including a collection of war medals, were lost.

Debbie feels that she and many others in the community did not get the support they needed after the flooding. Her insurance did not cover alternative accommodation and she had to live in the damp house even though repair work did not start until May. In June 2020 her house was flooded again. She believes this was partly due to the failure of the authorities to clear drains that had become blocked during the February flooding.

The ordeal had a severe effect on Debbie’s father, who was unable to secure appropriate accommodation. Debbie recalls that the council offered him a house with an upstairs toilet, which he could only access using a stairlift. He was finally able to move back into the house in July, but sadly passed away soon after.

Debbie still lives in fear of flooding. She knows she needs insurance but can’t afford it as the cost has risen from £27 to £120 per month. Debbie feels shocked and confused at this huge increase, especially because this was the first time she had ever claimed on insurance.

Being flooded has changed her perception of her home and her safety:

“I hate my house now. Every time it rains, I’m up in the night looking through the windows. I used to love the sound of rain and going to sleep at night, now I hate it. I hate everything about the area... I feel trapped.”

***Not her real name**

3.4.4 Household disruption

The theme of household disruption was prominent in focus group discussions with people who had experienced flooding. Many participants gave examples of having to move home, either temporarily or permanently, or of only being able to inhabit certain rooms in their properties while repairs were carried out.

“We didn’t get to leave while it got fixed, so it felt like we were squatting.”

– Focus group participant, Hull

One participant in Hull moved with their children into a caravan on their drive for six months following the flooding. Others had moved away from their neighbourhood to stay with friends or family in overcrowded living conditions:

“It’s just that it’s hard having two families together... When you’re in somebody else’s house you’re under their feet.”

– Focus group participant, Hull

Participants described how they longed to return to their own homes and regain a sense of normality.

The experts interviewed explained how flooding can be an added strain on top of life’s usual pressures, and can exacerbate the challenges of bringing up children. One flood resilience expert recounted how 95 of the 98 schools in the area had closed in the immediate aftermath of the 2007 flooding. This had had a substantial impact on the area’s children and their exams. One parent in Hull recounted having to move their child to a new school after relocating to a family member’s house in a different area, where they remained for a full year.



The challenge of getting help after a flood – Mark*

Mark remembers the “crazy day” in 2007 when he witnessed flooding across Hull as he drove his bus through the city. When he opened the bus doors all he could see was water and rubbish flowing past.

Later, Mark’s own home flooded, and his wife called his work to see if he could return home to help, but he was not permitted to leave. This treatment led him to quit his job as a bus driver. By the time he got home at 8pm, Mark found that almost everything downstairs was ruined, with the flood water reaching up to his chest in some areas. Everything that wasn’t damaged had been moved upstairs into a small box room, which was so full he could barely shut the door.

Afterwards, Mark and his wife found out that they weren’t fully insured for flooding and did not have contents insurance. Few of their belongings were replaced. The insurance company only paid for the downstairs part of their home to be dried and plastered, and the quality of the work was so poor that Mark had to re-do it himself.

Mark and his wife ended up living in their bedroom with just a kettle to heat water. The smell around the house was awful after the flooding, with warm temperatures turning everything stagnant. The stress the couple experienced had severe consequences:

“My wife miscarried after the flooding. She puts it down to the stress of it, and living in a bedroom and cooking etc all in that one room... I would say be careful who you get insured with. It is hard to find companies to insure you for flooding if you live in a flood area. You have to press for it.”

Mark also recalls positive aspects of the experience, as community members rallied round to help. Most memorable was a local church that provided clothes, food and white goods to those in need. Mark also acknowledged how the local authorities delivered flood protection work through the Living with Water project.

Since the floods in 2007, Mark has become more knowledgeable about flooding. Despite this, he believes that most people in the community, including himself, would not be adequately prepared for a flood if one were to hit Hull now.

***Not his real name**

3.4.5 Community impacts

Both focus group participants and the experts interviewed gave examples of communities uniting after flooding, but also highlighted the challenges flooding can pose to community cohesion.

A community engagement and resilience expert from a government agency in Wales described how communities and support networks can become fractured when people are unable to return to their homes for a long time. Another expert reiterated this, explaining how flooding can lead to a breakdown in social networks, particularly when only certain areas have been affected.

“If a large area has been flooded, it draws people together, but if there are smaller pockets of flooding, it can isolate people.”

– Community resilience expert, VCS organisation, UK-wide

Both focus group participants and the experts interviewed reflected on the value of community groups and community-led responses, where they exist. Across the Rhondda Cynon Taf and Hull focus groups, participants spoke about the crucial role played by volunteers (from local organisations, businesses and the VCS), both during and after flooding.

“People were fantastic, they came from everywhere to help.”

– Focus group participant, Rhondda Cynon Taf

“My brother helped out with the elderly, they had boats and were getting them out and to safe shelter and stuff like that. The way the community came together and helped do that obviously was nice. People coming together to help.”

– Focus group participant, Hull

A local government community-development expert reiterated how community groups can play a vital role in the aftermath of unexpected flooding. In their area, such groups had emerged as natural leaders in the response. They opened community centres immediately to support people affected by the flooding, and continued to do so even after the flood had subsided.

One community resilience expert highlighted the power of ‘bottom-up’ approaches in mitigating some of the harmful effects of flooding. They described how involvement in community responses can benefit wellbeing:

“By having that community response, it gives people something to focus on... By giving people a role, it can be really positive for their wellbeing.”

– Community flood resilience expert, VCS organisation, Scotland



Polling insights: impacts of flooding

Respondents were asked what the most damaging potential impact of flooding is (top three selected):

- The most common response among UK adults who have not experienced flooding was economic loss (54 per cent), followed by household disruption (52 per cent).
- In contrast, the most common response among those who have previously experienced flooding was household disruption (43 per cent) followed by loss of sentimental items (41 per cent).
- Less than one in five adults in the UK know what to do to keep themselves safe during a flood (17 per cent).
- Those who have previously experienced flooding are more likely to report that they know what to do to stay safe during a flood (29 per cent) and after it (34 per cent) than those who haven't (15 per cent and 14 per cent, respectively).

3.5 Building resilience through community engagement

Key findings – building resilience

Establishing and improving community networks through participatory and place-based approaches can help build community resilience

- Several of the interviewed experts emphasised how strong social networks and relationships within a local area are key drivers of community resilience to flooding. However, social support and community cohesiveness can vary significantly within and between communities.
- Focus group and expert interview participants gave examples of how self-organised community networks can be an effective means of providing information and support pre- and post-flooding, and of increasing preparedness.
- Focus group participants and the experts interviewed emphasised the importance of different actors – including individuals, community groups, authorities, businesses, and VCS organisations – in building community resilience.

Community engagement was a prominent theme to emerge in discussions with focus group participants and experts. Many of the experts interviewed agreed that establishing and improving community networks through participatory and place-based approaches can help to build community resilience.

Several of the interviewed experts emphasised how strong social networks and relationships within a local area are key drivers of community resilience to flooding.

“In areas where there is community spirit, they can do a lot. They [community organisations] can be mediators because they know the characters in the community to get things done.” – Flood planning expert, government agency, Scotland

Experts offered examples of how self-organised community networks can be an effective means of providing information and support pre- and post-flooding. Post-flood social support networks can provide shelters and basic help. This can include evacuation and the moving of belongings in the response phase, as well as the cleaning up of contaminated houses and public places in the recovery period. Some focus group participants who had previously experienced flooding gave examples:

“The community response has been outstanding – so much donated, so much help from volunteers. Organisations who organised help included churches – people made up hampers for those that had been flooded, supermarkets helped. There were volunteers coming from everywhere. We wanted to throw them a party, we felt so supported.” – Online workshop participant, Rhondda Cynon Taf

Levels of social support and community cohesiveness can vary significantly between and within communities. A UK-wide flood resilience expert explained how it can be challenging for communities to act independently where there are no existing local networks. Focus group participants reported varying levels of community cohesion in the areas where they live. Some were aware of differences between neighbourhoods in their local areas. Examples were given of social networks operating at a very local level across a number of streets.

There was agreement among the experts interviewed that supporting self-organised community groups and initiatives is an effective way of increasing local preparedness for flooding. A local authority expert from Northern Ireland felt that if awareness and measures to prepare for flooding become embedded within the agenda of broader community groups, support would be provided more comprehensively.

Several interviewed experts explained how 'bottom-up' approaches can enable communities at risk of flooding to have their voices heard, while allowing flood risk management authorities to tap into local knowledge. Experts from the Northern Ireland Executive and government agencies recognised that communities often have greater or different knowledge about what is happening on the ground than the agencies themselves.

“Communities know what’s happening better than we do. For example, where I live, the community know the levels of the river, and they know at what point they need to take action. They know what actions can be taken to help them. Statutory bodies [in Northern Ireland] don’t have that info and don’t have the resources – they can’t be everywhere at once.”

– Resilience expert, Northern Ireland Executive

Some experts felt that providing communities with the skills to support monitoring and local warnings in collaboration with the flood authorities and emergency services, could help increase community resilience. However, according to a flood management expert from a government agency, communities can become frustrated when they see problems (such as a blocked drainage system) developing, but cannot access the relevant organisations to get the issue addressed. This suggests a need for clear channels of communication between community members and flood risk management organisations.

“Low social resilience arises without good connections to organisations that can make it happen.” – Flood risk management expert, government agency, England

Despite the strong support from the expert interviewees for community-led resilience groups and initiatives, focus group participants across all groups felt that local and national governments should be responsible for preparing for flooding in light of increasing future flood risk (see section 3.3).

The experts interviewed gave several examples of local authorities or VCS organisations successfully coordinating with community groups to enhance resilience to flooding. For example, one local government participant described a successful collaboration between repeatedly flooded communities and the local fire and rescue service. If a street is going to flood, the public can call the 'regional community resilience group', which will contact the fire and rescue service to pump water away into another area. Another example given was of community groups producing and sharing their own local flood plans to enhance resilience.

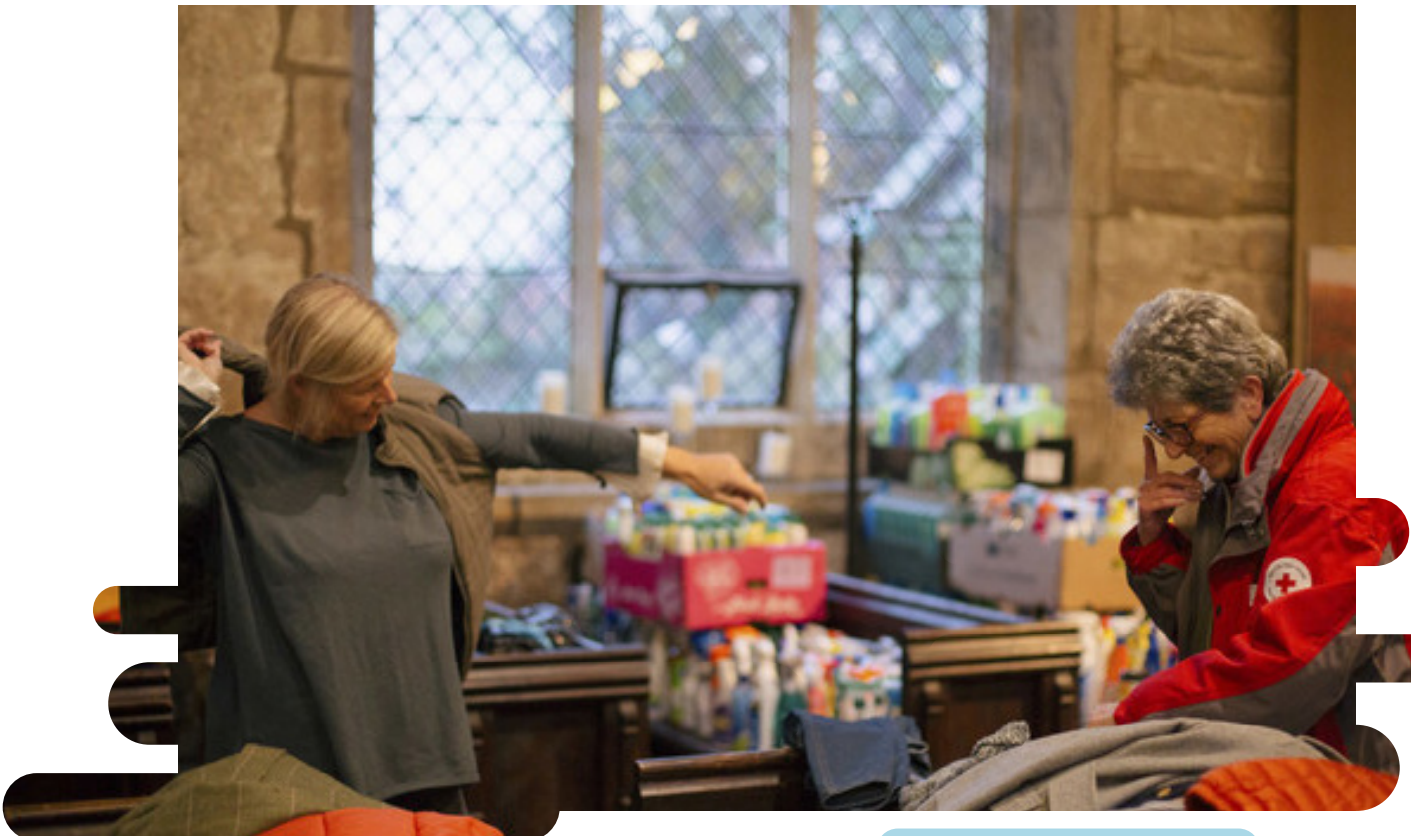
There was agreement among the experts interviewed that effective coordination between local authorities, self-led community groups and other VCS organisations can increase community resilience. An independent flood resilience expert explained how the existence of specific roles such as community development officers, who can engage with communities via community hubs, can be particularly beneficial. They create spaces and mechanisms for people affected by flooding to have their voices heard. While these self-organised community groups are founded locally, other successful community resilience groups have been initiated by flood management authorities.

“Across Northern Ireland, we have set up number of community resilience groups focused on flooding and they’ve been a success. We’ve provided them with education, training and physical equipment like sandbags. The community is working together and helping themselves and talking to each other – particularly in warnings and recovery.”

– Resilience expert, Northern Ireland Executive

The experts interviewed highlighted a number of other bottom-up, participatory and place-based approaches to building community resilience, which they felt had been successful. These included:

- Experts and flood organisations presenting at community forum events and offering opportunities for community members to engage and ask questions.
- Local or national authorities providing education and training to community resilience groups.
- Establishing community flood plans with community members in which towns and community councils take responsibility for preparing for and/or managing flood events.
- Identifying and setting up specialist 'rest places' for those affected by flooding, overseen by a community co-ordinator who is respected locally. (Ideally a familiar base with facilities, chosen by communities themselves).
- Having an elected member of the community council taking the lead in the community flood group, (offering strengths such as connections to local authorities and administration skills).
- Using remote technology (e.g. video calls) to share best practice among flood resilience groups. (This approach is especially beneficial in Scotland where there are many remote communities with small populations).



3.5.1 Role of the voluntary and community sector (VCS)

The VCS can improve social support networks within communities through collaboration with local resilience forums and emergency preparedness groups.⁷¹ The expert interviews highlighted how the VCS can also play an important role in providing financial assistance and advice to improve the financial capacity of communities or individual families who have experienced flooding. Such actions include making available donations from corporate partners as cash assistance, coordinating VCS organisations and ensuring equity in government support.

Many experts commended the VCS in supporting community-based resilience, both before and after floods. They felt that the VCS has advantages to offer in enhancing community resilience. For example, a UK-wide government agency expert said that VCS organisations often have local knowledge, which is useful when directing people on what they should do during a flood. It was felt that VCS organisations can be well placed to contextualise local information, for example through being aware of colloquial place names, as well as the correct pronunciation of local place names.

Several interviewed experts also felt that the VCS can act as independent intermediaries between authorities and communities, as members of the public may be more willing to listen to them than to public-sector authorities. VCS organisations could therefore be used to overcome the communication gap that exists between authorities and communities, creating a better flow of information on flood risks and what to do in the case of flooding. A few experts also felt that VCS organisations often have a valuable network of contacts within communities and beyond that they can use in a flood emergency.

“Communities have more confidence in the voluntary sector that they are going to work more in their interest, rather than statutory level. [The voluntary sector has a] better understanding of what happens in each community and organisation, they have a better interest. They are living in and a part of that community and that is important.”

– Resilience expert, Northern Ireland Executive

Participants in Glasgow and Belfast commended the role of the VCS in providing relief to flood-affected people, but said their work should not be used by local authorities to step back from their responsibilities. However, issues concerning liability and health and safety during the response to a flood emergency were seen as a barrier to effective VCS support by experts from VCS organisations.

A key point that emerged from the expert interviews was that for all of their abilities, the VCS needs to be well coordinated to be effective. An independent flood resilience expert and a government agency expert both stated that when there is a well-coordinated response, communities' ability to respond to a flood emergency improves. However, one of the VCS experts interviewed felt that the VCS can be fragmented and lack unity.

Various initiatives can help promote community resilience among communities at risk of flooding. Relationships within a community can be a strong source of self-organised responses to flooding, while the VCS can have a key role as a facilitator to connect local people and government initiatives. A lack of trust can be a barrier to authorities working effectively with communities.

4. Conclusion and priorities for future action



Conclusion

This research has generated new evidence on perceptions of flood risk, levels of preparedness and experiences of flooding among people living in high social flood risk areas across the UK.

Many of the people we spoke to consider flooding to be a major challenge facing the UK. However, despite the availability of data and tools that highlight the risk posed by flooding to particular communities, awareness of this risk, and levels of preparedness among people living within those areas is worryingly low.

While information and awareness is an essential prerequisite for individuals and communities to be prepared, respond to and recover from floods, and needs to be prioritised by national and local policymakers, it is by no means all that is required. Existing research tells us that, even where awareness of individual risk is high, it does not necessarily lead to action.⁷² This research highlights a range of potential reasons for this. These include financial barriers to accessing insurance, a lack of knowledge about how to prepare, and a perception that it is, or should be, the responsibility of national and local governments.

We can also see that while past experiences of flooding can sometimes lead to greater awareness of future risk and improved preparedness, this is not guaranteed and the contrast with those who have not experienced flooding is not always significant.

It is clear that the relationship between awareness and preparedness in relation to flooding is complex. Finding solutions requires an understanding of the barriers faced by people in at-risk areas, particularly those with high social flood risk, and strong and inclusive engagement with communities. Community engagement and bottom-up action are key to improving local resilience. Translating knowledge and awareness into action requires individuals and communities to be linked to the wider flood risk management authorities and networks, and VCS organisations play a crucial role in supporting this collaboration.

Flooding can have a severe impact on the mental health, finances, and homelife of those affected. Recovery can take a long time and some people never fully get over the experience. More support to help recovery is therefore required. Access to affordable insurance is vital, as is access to support with the enduring psychological and emotional impacts.

The findings highlighted in this research pose a challenge to national and local governments and policymakers across the UK. Recent progress across all four UK nations to build awareness through greater community engagement, improve preparedness within at-risk communities, and recognise the wider psychosocial impact of flooding, is welcome. Nonetheless, it is evident that more comprehensive and coordinated action to address gaps in policy, guidance and funding is required. Particular attention is required to better support those groups and communities who not only face a higher probability of flooding but whose vulnerability is compound by social factors such as deprivation, health inequalities, and poor access to appropriate services.

We know that over the coming years many more people across the UK will be impacted by flooding. There is a pressing need to act now to support these communities to understand their risk and build their resilience before they are affected.



Priorities for future action

The below priorities for future action outline what is required to improve flooding policy and practice across the UK. It makes suggestions for how this could be taken forward and what should be taken into consideration. It draws on the research and includes perspectives from the experts and people living in at-risk communities.

The British Red Cross looks forward to working with partners, policymakers, and communities across the UK to explore how these improvements can be realised.

Building awareness

1. National and local governments across all four nations should prioritise increasing awareness of, and providing specific support to, high social flood risk areas. This could include:
 - a. utilising existing tools that map social flood risk to support identification of, and awareness raising with, particularly vulnerable communities
 - b. ensuring awareness building in areas where flooding is likely and social vulnerability is high is cognisant of the local context and part of wider place making approaches
 - c. additional funding to support local areas to deliver targeted awareness raising activity.
2. Local resilience forums and their devolved equivalents in areas that are at high risk of surface water flooding should take targeted action to improve preparedness including promoting increased awareness of the risk within their areas.
3. Each government should explore ways to improve the reach and effectiveness of early warning systems, particularly among those individuals and communities most at risk. This could include:
 - a. reviewing flood warning services to understand who they are reaching and how people respond following an alert, as well as who they are not reaching
 - b. testing whether approaches that use a direct message rather than relying on pro-active sign-up would serve their population more effectively, particularly those groups most at risk.
4. Local bodies with civil contingencies and resilience responsibilities should explore ways to improve engagement with at-risk communities. This could include investment in specific roles, such as community development officers, who can engage with communities through community hubs and create the spaces and mechanisms for community participation and partnership working.

Early warning systems active across the UK

In England and Wales in flood risk areas both landline and mobile numbers are automatically included on warning systems via anonymised data sharing agreements with telecoms companies. At-risk homes and businesses are advised to register themselves in order to receive a more personalised service. In Scotland, a voluntary sign-up system is in use, and in Northern Ireland no flood warning service is available (flood risk maps are available online).

The UK Government is also set to release Emergency Alerts, which warn by an alert sent to mobile phones if there is a danger to life nearby. This has implications for those who don't have compatible handsets and for those with particular needs (such as older people and their carers, children, or people with an impairment). Alongside this, some groups should receive additional, tailored support to prepare based on these warnings. Emergency Alerts represent an additional form of communications, and existing crisis comms will need to continue to incorporate the needs of those who are most vulnerable.

Improving preparedness

5. National and Local governments should work with local partners, including VCS organisations, and community groups, to increase awareness and uptake of Property Flood Resilience (PFR) measures. This could include:

- a. Using insights captured in the Environment Agency's *Applying Behavioural Insights to Property Flood Resilience*⁷³ to improve the uptake.
- b. Supporting community organisations to improve public understanding and awareness of PFR, including engaging the VCS to connect people with flood programmes, advice and information.
- c. Reviewing existing, or implementing new, subsidised and centralised PFR schemes.

National Property Flood Resilience schemes

In England, the government has issued discretionary grants of up to £5,000 to purchase PFR measures when widescale flooding has occurred. In Northern Ireland homeowners can apply to the Homeowner Flood Protection Grant for a grant of up to £10,000. There are currently no equivalent subsidised national schemes in Wales or Scotland.

Independent Review of Flood Insurance in Doncaster

The government commissioned an independent review into the flooding event in Doncaster, South Yorkshire in 2019 that affected over 760 households. The review sought to identify the reasons why people did not have sufficient insurance cover and what action might improve protection in future – looking particularly at awareness of flood insurance, uptake, availability, and affordability.

The recommendations set out in the Independent Review of Flood Insurance in Doncaster, led by Amanda Blanc in 2020, particularly those around affordability, should be addressed as a priority.⁷⁴ The government responded to the independent review in the summer of 2021, setting out that it accepted the majority of the recommendations, with some being accepted in part.⁷⁵

7. National and local governments should ensure appropriate psychological support is available for those who experience negative mental health impacts due to flooding. This could include:

- a. Updating the UK Resilience Standards to outline a stronger role for mental health (particularly in the form of assessments and interventions) and other forms of psychosocial support, so that they are seen as an integral part of emergency response and recovery.
- b. Developing guidelines for training emergency responders in trauma-informed approaches and psychological first aid.
- c. Ensuring Recovery Coordinating Groups involve mental health trusts and representatives from organisations with expertise in mental health at the start of the recovery phase following a flooding event.

Reducing impact

6. The UK Government should work with regulators and industry to ensure that adequate and affordable insurance against flood damage is available to every household, particularly those most at risk. This should include:

- a. Implementation of the recommendations, particularly those around affordability, set out in the Independent Review of Flood Insurance in Doncaster, led by Amanda Blanc in 2020.
- b. Further research into barriers to access to flood insurance, particularly for people within at-risk groups.

Supporting community resilience

- 8.** Local authorities should work with their communities to develop community led groups that have ready access to flooding experts and local decision makers. This could include:
- a. Learning from the model of Regional Community Resilience Groups seen in Northern Ireland, which brings together organisations from government, utilities and the voluntary sector to work with communities.
 - b. Utilising VCS expertise and resources, such as the British Red Cross **Community Resilience Toolkit**, to support communities to build local resilience.
 - c. Reviewing existing, or implementing new, subsidised and centralised Property Flood Resilience schemes.

Prioritising resilience building at a national level

- 9.** Key government resilience plans, including the National Resilience Strategy, should set out how to build institutional and infrastructure capacity and resilience across the UK to ensure a coordinated and comprehensive approach to preparing for and responding to emergencies, including floods.



Appendix A: Methodology



Research partners

The British Red Cross commissioned several providers to conduct different elements of the research:



Desk research

The Grantham Research Institute at LSE conducted an initial evidence review to explore the current and future risk of flooding in the UK, and the impact of climate change. High future social flood risk areas identified in the review determined the locations for the focus groups. The background section in this report draws on sources identified in Grantham's evidence review, as well as additional literature sourced by Eunomia Research and Consulting Ltd., Mary Dhonau Associates, and the British Red Cross.

Qualitative research

Eunomia Research and Consulting Ltd. conducted the focus groups, interviews, and online workshop. They were also responsible for overseeing recruitment; analysing interview, focus group and workshop data; developing the first iterations of this report; and supporting with development of the community resilience toolkit.

Polling

Opinium Research conducted nationally representative, UK-wide polling to explore findings from the qualitative research on a wider scale.

Focus groups with community members

In June and July 2022, four in-person focus groups were conducted in the local authority areas with highest future social flood risk (as identified in section 2.3.2). These were: Rhondda Cynon Taf, City of Kingston Upon Hull (referred to as Hull throughout report), Belfast and Glasgow City (referred to as Glasgow throughout report). Each focus group lasted two and a half hours.

Focus group participants were recruited through a professional recruitment company, Mercatus Research Ltd. The focus groups in Hull and Rhondda Cynon Taf brought together people who had previously experienced flooding, while the other two groups in Glasgow and Belfast comprised people who had not previously experienced flooding, but lived in high social flood risk neighbourhoods.

Ten people took part in the focus groups in Glasgow and Hull, nine people in Belfast and four in Rhondda Cynon Taf. Due to the smaller group size in Rhondda Cynon Taf, three more people from Rhondda Cynon Taf who had experienced flooding were individually interviewed over the phone.^{xvii}

Focus group location	Age group	Gender	Ethnic group
Belfast	1 x 18-30 3 x 31-45 4 x 46-59 1 x 60+	5 x female 4 x male	9 x white (British and Irish)
Glasgow	4 x 18-30 2 x 31-45 3 x 46-59 1 x unknown	5 x female 5 x male	2 x Asian or Asian British (Indian and Pakistani) 8 x white (British)
Hull	3 x 18-30 5 x 31-45 2 x 46-59	7 x female 3 x male	1 x Arabic 9 x white (British)
Rhondda Cynon Taf	4 x 46-59 3 x 60+	4 x female 3 x male	4 x white (British) 3 x unknown

Table 2: Focus group participants

Focus group sessions were held in community centres or other easily accessible and familiar venues. Sessions were audio recorded and detailed written notes were drawn up for analysis. At the end of the focus groups, participants were asked to put their names forward if they were interested in attending the follow-up online workshop to discuss priorities for future action.

Mapping high social flood risk neighbourhoods

For Rhondda Cynon Taf, Hull and Glasgow, highest risk Middle Layer Super Output Areas (MSOAs) – referred to as ‘neighbourhoods’ in the report – were identified using SFRI data.⁷⁶ MSOA areas with an SFRI score in the top decile for both river / coastal and surface water flooding, both currently and in future (taking into account 2°C and 4°C scenarios), were identified and mapped.

For Belfast, highest risk Super Output Areas (SOAs) – referred to as ‘neighbourhoods’ in the report – were identified using SFRI data⁷⁷ for river, coastal and surface-water flooding. Scores were combined into a single overall flood risk metric. SOA areas with an SFRI score the top 20 per cent (relative to the rest of Northern Ireland) were identified and mapped.

The maps were used to guide recruitment for focus group participants in Belfast and Glasgow, and as an elicitation tool in all four focus groups when discussing awareness of flood risk.

^{xvii} All community members who participated in the research are referred to as focus group participants throughout the report.

Interviews with experts

In July 2022, twelve semi-structured interviews were conducted with professionals from different sectors from across the UK. Interviews were conducted online or over the phone and lasted up to 45 minutes.

Area of expertise	Sector/organisation type	Nation
Community flood resilience expert	VCS organisation	Scotland
Flood planning expert	Government agency	Scotland
Resilience expert	Northern Ireland Executive	Northern Ireland
Resilience professional	Local authority	Northern Ireland
Community development expert	Local authority	Wales
Community engagement and resilience expert	Government agency	Wales
Independent flood resilience expert	N/A	UK-wide
Flood risk expert	Government agency	UK-wide
Community resilience expert	VCS organisation	UK-wide
Community flood resilience expert	VCS organisation	UK-wide
Flood risk management expert	Government agency	England

Table 3: Expert interview participants

Experts were asked about the main challenges caused by, and solutions to, flooding in the UK. They were also asked to give examples of solutions, including climate adaptation measures, community resilience programmes, and tools being used by communities to prepare for and recover from flooding. Interviews were audio recorded and detailed written notes were drawn up for analysis. Expert interview participants were consulted on the inclusion of their insights in the report findings before finalising.

Online workshop with community members

In August 2022, an online follow-up workshop was held, which brought together 10 participants from the focus groups (three from Glasgow, two from Belfast, one from Rhondda Cynon Taf and four from Hull). During the three-hour workshop, participants reviewed, added to and modified an initial summary of key findings from the focus groups. Working in two groups of five, participants were invited to discuss key learning points drawn from the focus groups and expert interviews, and to suggest additional issues. All participants then voted for the issues they felt were the most important for British Red Cross to focus on. This resulted in the identification of four priority themes (awareness, preparedness, impacts and building resilience) which were developed into priorities for action by the British Red Cross.

Review of the Community Resilience Toolkit

On completion of the fieldwork, Eunomia reviewed the community resilience toolkit from the Community Resilience in Urban Areas (CRUA) project, a two-year, EU-funded project led by British Red Cross Emergency Response in Northern Ireland (2015-2016). Drawing on insights from the focus groups, Eunomia made suggestions for modifications to the toolkit. A summarised version of the toolkit was then developed by British Red Cross.

Polling

Opinium conducted a 10-minute online survey among 2,005 UK adults. The survey was in field between 26 September – 31 October 2022. Data was weighted to be nationally representative of UK adults by age, gender and region.

British Red Cross used survey respondents' postcode data to identify which Lower Layer Super Output Area (LSOA) they lived in. This was then matched to corresponding SFRI data⁷⁸ to identify postcodes in high^{xviii} social flood risk areas (for either river/coastal and/or surface water flooding).

A limitation of this analysis is that Northern Ireland postcodes couldn't be matched because the raw SFRI data was unavailable, these were classed as NA. Other NA values were due to missing or incorrect postcodes.

Priorities for action

The priorities for action set out in this report are based on a combination of insights from the interview, focus group and online workshop participants, the polling findings, and insights from British Red Cross operational and policy teams. Drawing on the research findings, priorities for future action were developed through extensive consultation with colleagues across the organisation.

Ethical considerations

All research adheres to social research ethics. All aspects of research involving participants were conducted according to the British Psychological Society's code of ethical conduct. Eunomia's quality assurance processes are guided by the Research Councils UK Policy and Guidelines on the Governance of Good Research Conduct (2013 and its updates); the Social Research Associations (SRA) Ethics Guidelines (2003); and the General Data Protection Regulation (GDPR).

^{xviii} For the purpose of this analysis areas with 'high', 'very high', 'acute', or 'extreme' level current social flood risk were categorised as 'high social flood risk' areas.

Acknowledgements

Our special thanks to:

Special thanks to all the people who participated in focus groups, interviews, and workshops; those who shared their personal stories of flooding with us; and all those who completed the polling survey – without whose valuable input this research would not have been possible.

The research team at Eunomia Research and Consulting Ltd., who carried out the qualitative research on our behalf, conducted the data analysis and wrote the first iterations of this report: Paula Orr, Rebecca Jones, Mathilde Braddock, William Fitter, Sam Hiron and Clare Twigger-Ross.

The Opinium Research project team for conducting the polling on our behalf – Maria Stonehouse, Isobel Colledge and Georgina Deegan.

Carly Rose and Mary Dhonau at Mary Dhonau Associates for their expert guidance on the report and recommendations.

The British Red Cross project team who brought their time and expertise to the project and report: Christina Marriott, Ellen Tranter, Jenny Reed, Kenneth Watt, Leo Bryant, Lucy Fisher, Lois Davies, Lydia Clark, Mary Friel, Naomi White, Olivia Field, Stephen Browne, Suzanne Foster and Tom Cottam.

Matt Thomas and Mike Page for their invaluable support with creating the social flood risk maps, analysing postcode data from the polling and reviewing the report.

Our wider British Red Cross colleagues for their input, advice and support throughout: Alessandro Froldi, Alexei Schwab, Anna Grafitti, Beatrice Tooke, Carney Bonner, Chris Davies, Ellie Murtagh, Gemma Robinson, Henry Barnes, Ian Dodds, Joanne Mckenna, Laura O'Rourke, Matt Thomas, Matthew Killick, Navreen Mangat, Paul Etches, Robert Colburn, Rosie Wallbank, Sara Chew and William Spencer.

Our British Red Cross media and communications colleagues: Alice Owen, Amina Abukar, Anthony Barej, Dean Johnson, Diana Shaw, Irina Perry, Jo Gök, Jude Shapiro, Kate Stanworth, Kirsty Reid, Lindsay Beacom, Nana Crawford, Paul Scott, Penny Sims, Sanjima De Zoysa and Sebastian Bench.

The four venues that generously hosted the focus groups - ArtsEkta cultural organisation in Belfast, Kinning Park Complex in Glasgow, Mitchell Community Centre in Hull and Taff Meadow Community Centre in Pontypridd.

Andy Jacques for proofreading this report and the talented NotOnSunday team, Mike Willows and Wayne Trevor Townsends, who designed this report.

Finally, grateful thanks to Paul Sayers for providing access to SFRI data.

References

- ¹ Met Office (nd). 'What is climate change'. Retrieved from: [metoffice.gov.uk/weather/climate-change/what-is-climate-change](https://www.metoffice.gov.uk/weather/climate-change/what-is-climate-change)
- ² Newground (2020). 'Types of flooding'. Retrieved from: thefloodhub.co.uk/wp-content/uploads/2018/09/Types-of-Flooding.pdf
- ³ Sayers, P. B., Horritt, M., Penning Rowsell, E. and Fieth, J. (2017). 'Present and future flood vulnerability, risk and disadvantage: A UK assessment'. Joseph Rowntree Foundation. Watlington: Sayers and Partners LLP.
- ⁴ Met Office (nd). 'What causes flash floods?'. Retrieved from: [metoffice.gov.uk/weather/learn-about/weather/types-of-weather/rain/flash-floods](https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/rain/flash-floods).
- ⁵ Local Government Association (nd). 'Flood risk and flood risk management'. Retrieved from: [local.gov.uk/topics/severe-weather/flooding/flood-and-coastal-erosion-risk-management/flood-risk-and-flood-risk](https://www.local.gov.uk/topics/severe-weather/flooding/flood-and-coastal-erosion-risk-management/flood-risk-and-flood-risk)
- ⁶ GOV.UK (2022). 'Groundwater: current status and flood risk'. Retrieved from: [gov.uk/government/collections/groundwater-current-status-and-flood-risk](https://www.gov.uk/government/collections/groundwater-current-status-and-flood-risk).
- ⁷ Sayers, Paul, Penning-Rowsell, Edmund C. and Horritt, Matt (2018). 'Flood vulnerability, risk and social disadvantage: current and future patterns in the UK'. *Regional Environmental Change*, 18 (2). pp. 339-352.
- ⁸ Ibid.
- ⁹ JBA consulting (nd). 'Property flood resilience'. Retrieved from: jbaconsulting.com/flood-water-management/property-flood-resilience/
- ¹⁰ Devon County Council (nd). 'Property Flood Resilience Funding Scheme'. Retrieved from: [devon.gov.uk/floodriskmanagement/flood-resilience/property-flood-resilience-funding-scheme/](https://www.devon.gov.uk/floodriskmanagement/flood-resilience/property-flood-resilience-funding-scheme/)
- ¹¹ British Red Cross (2021). 'Ready for the Future: Meeting People's Needs in an Emergency'. Retrieved from: [redcross.org.uk/ready-for-the-future](https://www.redcross.org.uk/ready-for-the-future)
- ¹² JBA consulting. 'Property flood resilience'. Retrieved from: jbaconsulting.com/flood-water-management/property-flood-resilience/
- ¹³ Twigger-Ross, C., Orr, P., Kolaric, S., Parker, DJ (2020). 'Evidence Review of the Concept of Flood Resilience'. Department for Environment Food and Rural Affairs. Retrieved from: [.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/review-of-the-concept-of-flood-resilience](https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/review-of-the-concept-of-flood-resilience)
- ¹⁴ Newground (2020). 'Types of flooding'. Retrieved from: thefloodhub.co.uk/wp-content/uploads/2018/09/Types-of-Flooding.pdf
- ¹⁵ Ibid.
- ¹⁶ Sayers, P. B., Horritt, M., Penning Rowsell, E. and Fieth, J. (2017). 'Present and future flood vulnerability, risk and disadvantage: A UK assessment'. Joseph Rowntree Foundation. Watlington: Sayers and Partners LLP, p24.
- ¹⁷ Ibid, p29.
- ¹⁸ Newground (2020). 'Types of flooding'. Retrieved from: thefloodhub.co.uk/wp-content/uploads/2018/09/Types-of-Flooding.pdf
- ¹⁹ Kendon, M., McCarthy, M., Jevrejeva, S., Matthews, A., Sparks, T., and Garforth, J. (2021). State of the UK Climate 2020. *International Journal of Climatology*, 41 (Suppl. 2), pp. 1– 76. Retrieved from: doi.org/10.1002/joc.7285
- ²⁰ UK Climate Risk (2021). 'Flooding and coastal change briefing - Findings from the third UK Climate Change Risk Assessment (CCRA3) Evidence Report 2021'. Retrieved from: ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Briefing-Flooding-and-Coastal-Change.pdf
- ²¹ Sayers, P., Horritt, M., Carr, S., Kay, A., Mauz, J., Lamb, R., and Penning-Rowsell, E. (2020). 'Third UK Climate Change Risk Assessment (CCRA3): Future flood risk'. London: Committee on Climate Change, pp. 55.

- ²² Kovats, S. and Brisley, R. (2021). 'Chapter 5: Health, Communities and the Built Environment' in Betts, R. A., Haward, A. B. and Pearson, K. V. (eds.) The Third UK Climate Change Risk Assessment Technical Report. London: Committee on Climate Change, p48.
- ²³ UK Climate Risk (2021). 'Flooding and coastal change briefing - Findings from the third UK Climate Change Risk Assessment (CCRA3) Evidence Report 2021'. Retrieved from: ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Briefing-Flooding-and-Coastal-Change.pdf
- ²⁴ Thompson, V., Dunstone, N.J., Scaife, A.A. et al. (2017) 'High risk of unprecedented UK rainfall in the current climate'. *Nature Communications* 8, 107 (2017).
- ²⁵ Betts, R.A. and Brown, K. (2021). 'Introduction. In: The Third UK Climate Change Risk Assessment Technical Report' [Betts, R.A., Haward, A.B. and Pearson, K.V. (eds.)]. Prepared for the Climate Change Committee, London.
- ²⁶ Ibid.
- ²⁷ UK Health Security Agency. (2022). 'Guidance – Flooding and health: assessment and management of public mental health'. Retrieved from: gov.uk/government/publications/flooding-and-public-mental-health-assessment-and-management/flooding-and-health-assessment-and-management-of-public-mental-health#app1
- ²⁸ Ibid.
- ²⁹ Elizabeth L. Tempest, English National Study on Flooding and Health Study Group, Ben Carter, Charles R. Beck, G. James Rubin, 'Secondary stressors are associated with probable psychological morbidity after flooding: a cross-sectional analysis', *European Journal of Public Health*, Volume 27, Issue 6, December 2017, pp. 1042–1047. Retrieved from: doi.org/10.1093/eurpub/ckx182
- ³⁰ McNaughton, E. Wills, J. and Lallemand, D. (2015). 'Leading in Disaster Recovery: A Companion through the Chaos'. New Zealand Red Cross. Retrieved from: preparecenter.org/wp-content/sites/default/files/leading_in_disaster_recovery_a_companion_through_the_chaos.pdf
- ³¹ Sayers, P., Horritt, M., Carr, S., Kay, A., Mauz, J., Lamb, R., and Penning-Rowse, E. (2020). 'Third UK Climate Change Risk Assessment (CCRA3): Future flood risk'. London: Committee on Climate Change.
- ³² After Sayers, P., Horritt, M., Carr, S., Kay, A., Mauz, J., Lamb, R., and Penning-Rowse, E. (2020). 'Third UK Climate Change Risk Assessment (CCRA3): Future flood risk'. London: Committee on Climate Change, p55.
- ³³ Kovats, S. and Brisley, R. (2021). 'Chapter 5: Health, Communities and the Built Environment' in Betts, R. A., Haward, A. B. and Pearson, K. V. (eds.) The Third UK Climate Change Risk Assessment Technical Report. London: Committee on Climate Change.
- ³⁴ Newground (2020). 'Types of flooding'. Retrieved from: thefloodhub.co.uk/wp-content/uploads/2018/09/Types-of-Flooding.pdf; Met Office (nd). 'What is climate change' Retrieved from: metoffice.gov.uk/weather/climate-change/what-is-climate-change; GOV.UK (2022). 'Flooding and coastal change – groundwater'. Retrieved from: gov.uk/government/collections/groundwater-current-status-and-flood-risk
- ³⁵ Westra, S., Fowler, H. J., Evans, J. P., Alexander, L. V., Berg, P., Johnson, F., Kendon, E. J., Lenderink, G., and Roberts, N. M. (2014). 'Future changes to the intensity and frequency of short-duration extreme rainfall', *Reviews of Geophysics*, Vol 52(1), pp. 522– 555.
- ³⁶ Kendon, M., McCarthy, M., Jevrejeva, S., Matthews, A., Sparks, T., and Garforth, J. (2021). State of the UK Climate 2020. *International Journal of Climatology*, 41 (Suppl. 2), pp. 1– 76. Retrieved from: doi.org/10.1002/joc.7285
- ³⁷ Lee, J.-Y., J. Marotzke, G. Bala, L. Cao, S. Corti, J.P. Dunne, F. Engelbrecht, E. Fischer, J.C. Fyfe, C. Jones, A. Maycock, J. Mutemi, O. Ndiaye, S. Panickal, and T. Zhou, (2021). 'Future Global Climate: Scenario-Based Projections and Near-Term Information'. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 553–672 (Chapter 4).
- ³⁸ Met Office (2021). 'UK Climate Projections: Headline Findings July 2021'. Retrieved from: [metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_headline_findings_v3.pdf](https://gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_headline_findings_v3.pdf)
- ³⁹ Intergovernmental Panel on Climate Change (IPCC) (nd). Retrieved from: www.ipcc.ch/report/sixth-assessment-report-working-group-i/

⁴⁰ Sayers, P., Horritt, M., Carr, S., Kay, A., Mauz, J., Lamb, R., and Penning-Rowsell, E. (2020). 'Third UK Climate Change Risk Assessment (CCRA3): Future flood risk'. London: Committee on Climate Change, p. 55.

⁴¹ Sayers, P. B., Horritt, M., Penning Rowsell, E. and Fieth, J. (2017). 'Present and future flood vulnerability, risk and disadvantage: A UK assessment'. Joseph Rowntree Foundation. Watlington: Sayers and Partners LLP.

⁴² Ibid. pi.

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid. Map retrieved from: climatejust.org.uk/map

⁴⁶ Ibid.

⁴⁷ Ibid. Map retrieved from: climatejust.org.uk/map

⁴⁸ Ibid.

⁴⁹ Ibid. Map retrieved from: climatejust.org.uk/map

⁵⁰ Ibid.

⁵¹ Sayers, P., Horritt, M., Carr, S., Kay, A., Mauz, J., Lamb, R., and Penning-Rowsell, E. (2020). 'Third UK Climate Change Risk Assessment (CCRA3): Future flood risk'. London: Committee on Climate Change

⁵² Ibid.

⁵³ National Flood Forum and Collingwood Environmental Planning Ltd (2018). 'Sustainable Communities Pilot Study - Final Report'. Prepared for Welsh Government and Natural Resources Wales. Retrieved from: nationalfloodforum.org.uk/wp-content/uploads/2019/07/Wales-Sustainable-Communities-Pilot-Study-final-report.pdf; Convery, E., Farrell, A., Farrington, J., Gross, M., Park, T., Schein, A., Ahern, J., Oakley, M., Bransby, L and Cotton, J (2021) 'Applying behavioural insights to support flood resilience - summary report'. Retrieved from: www.bi.team/wp-content/uploads/2021/08/210621-EA-Flood-resilience-report_final-draft.pdf; Henderson, F., Helwig, K., and Teedon, P. (2022). 'Effective future communication of flood risk in Scotland'. Centre of Expertise for Waters. Retrieved from: crew.ac.uk/sites/www.crew.ac.uk/files/publication/CRW2018_04_Main_Report%20FINAL.pdf

⁵⁴ Grothmann T, Reusswig F. (2006). 'People at risk of flooding: Why some residents take precautionary action while others do not. *Natural Hazards*. 38(1–2) pp.101–120.

⁵⁵ Burningham, K., Fielding, J. and Thrush. D. (2008) 'It'll never happen to me': understanding public awareness of local flood risk'. *Disasters*. Vol. 32 Issue 2 pp. 216-238.

⁵⁶ Ibid

⁵⁷ Paton, D., Smith L. M., and Johnston, D. (2000). 'Volcanic hazards: risk perception and preparedness'. *New Zealand Journal of Psychology*. 29(2): pp. 86-91; McGee, T.K. and S. Russell. (2003). 'It's just a natural way of life: an investigation of wildfire preparedness in rural Australia'. *Environmental Hazards*. pp.1-12.; McClure, P.J. (2006). 'Guidelines for encouraging householders' preparation for earthquakes in New Zealand - report for Building Research'. Victoria University of Wellington: Wellington, New Zealand.; Knocke, E.T. and Kolivras K. N. (2007). 'Flash Flood Awareness in Southwest Virginia. *Risk Analysis*'. 27(1). pp. 155-169; Parker D.J., Priest S.J, and Tapsell, S.M. (2009). 'Understanding and enhancing the public's behavioural response to flood warning information'. *Meteorological Applications*. Vol. 16. 03-11.

⁵⁸ Levac, J., Toal-Sullivan, D. and O'Sullivan, T.L. (2012). cited in Randrianarisoa, A., Richardson, J., Brady, K. and Leguy, L. (2021). 'Understanding preparedness and recovery: A survey of people's preparedness and recovery experience for emergencies'. Australian Red Cross, North Melbourne, Vic.

⁵⁹ British Red Cross (2021). 'Ready for the Future: Meeting People's Needs in an Emergency'. Retrieved from: redcross.org.uk/ready-for-the-future

⁶⁰ Twigger-Ross, C., Orr, P., Kolaric, S., Parker, DJ (2020). 'Evidence Review of the Concept of Flood Resilience'. Department for Environment Food and Rural Affairs. Retrieved from: gov.uk/flood-and-coastal-erosion-risk-management-research-reports/review-of-the-concept-of-flood-resilience

- ⁶¹ Stone, A. and Wheeler, N. (2021). 'Flood and Water Management Act 2010: Storm Dennis February 2020 – Overview Report'. Retrieved from: rctcbc.gov.uk/EN/Resident/ParkingRoadsandTravel/Roadspavementsandpaths/FloodAlleviation/FloodInvestigationReports.aspx
- ⁶² Coulthard, T., Frostick, L., Hardcastle, H., Jones, K., Rogers, D., Scott, M. and Bankoff, G. (2007). 'The June 2007 floods in Hull: Final Report by the Independent Review Body'. Retrieved from: coulthard.org.uk/downloads/floodsinhull3.pdf
- ⁶³ Ramsden, S. (2021). 'Living with Water: Hull Household Flood Survey Autumn 2018'. Retrieved from: livingwithwater.co.uk/news/living-with-water-and-university-of-hull-release-report-on-2007-floods
- ⁶⁴ Sayers, P., Horritt, M., Carr, S., Kay, A., Mauz, J., Lamb, R., and Penning-Rowsell, E. (2020). 'Third UK Climate Change Risk Assessment (CCRA3): Future flood risk'. London: Committee on Climate Change.
- ⁶⁵ Met Office (n.d.) 'Flood warnings guide'. Retrieved from: metoffice.gov.uk/weather/guides/flood-warnings
- ⁶⁶ Ibid.
- ⁶⁷ Environment Agency (2010) 'Flood warnings: What they are and what they do?'. Retrieved from: assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/311020/flood_warnings_LIT_5215.pdf
- ⁶⁸ Scottish Environment Protection Agency (nd). 'Flood messages'. Retrieved from: sepa.org.uk/environment/water/flooding/floodline/
- ⁶⁹ Natural Resources Wales (nd). 'What to do in a flood'. Retrieved from: naturalresources.wales/flooding/what-to-do-in-a-flood/?lang=en
- ⁷⁰ GOV.UK (nd). 'Sign up for flood warnings'. Retrieved from: gov.uk/sign-up-for-flood-warnings
- ⁷¹ Twigger-Ross, C., Kashefi, E., Weldon, S., Brooks, K., Deeming, H., Forrest, S., Fielding, J., Gomersall, A., Harries, T., McCarthy, S., Orr, P., Parker, D., and Tapsell, S. (2015). 'Flood Resilience Community Pathfinder Evaluation: Rapid Evidence Assessment'. Department for Environment Food and Rural Affairs. Retrieved from: assets.publishing.service.gov.uk/media/60351b74e90e0766047734be/13185_FD2664_FloodResilienceCommunityPathfinderSchemeEvaluation_FR.pdf
- ⁷² Paton, D., L.M. Smith, and D. Johnston (2000). 'Volcanic hazards: risk perception and preparedness'. *New Zealand Journal of Psychology*. 29(2): pp. 86-91; McGee, T.K. and S. Russell, 'Its just a natural way of life: an investigation of wildfire preparedness in rural Australia' (2003). *Environmental Hazards*. pp. 1-12.; McClure, P.J., (2006). 'Guidelines for encouraging householders' preparation for earthquakes in New Zealand - report for Building Research. Victoria University of Wellington: Wellington, New Zealand; Knocke, E.T. and K.N. Kolivras (2007). 'Flash Flood Awareness in Southwest Virginia. *Risk Analysis*'. 27(1). pp. 155-169; D. J. Parker, S. J. Priest and S. M. Tapsell. (2009). 'Understanding and enhancing the public's behavioural response to flood warning information'. *Meteorological Applications* Vol. 16 pp.103-11;
- ⁷³ Park, T., Oakley, M. and Luptakova, V. (2020). 'Applying Behavioural Insights to Property Flood Resilience'. Retrieved from: assets.publishing.service.gov.uk/media/6038bfbce90e070558e429c2/Applying_behavioural_insights_to_property_flood_resilience_-_report.pdf
- ⁷⁴ Blanc, A., (2020). 'Independent review of flood insurance in Doncaster'. London: BMG Research.
- ⁷⁵ Department for Environment, Food and Rural Affairs (2021) Government response to the independent review of flood insurance in Doncaster. Retrieved from: gov.uk/government/publications/government-response-to-the-independent-review-of-flood-insurance-in-doncaster/government-response-to-the-independent-review-of-flood-insurance-in-doncaster
- ⁷⁶ Sayers, P.B., Horritt, M., Penning Rowsell, E., and Fieth, J (2017). Present and future flood vulnerability, risk and disadvantage: A UK assessment. A report for the Joseph Rowntree Foundation published by Sayers and Partners LLP.
- ⁷⁷ Ibid.
- ⁷⁸ Ibid.

For more information

[redcross.org.uk](https://www.redcross.org.uk)

@RedCrossPolicy

December 2022