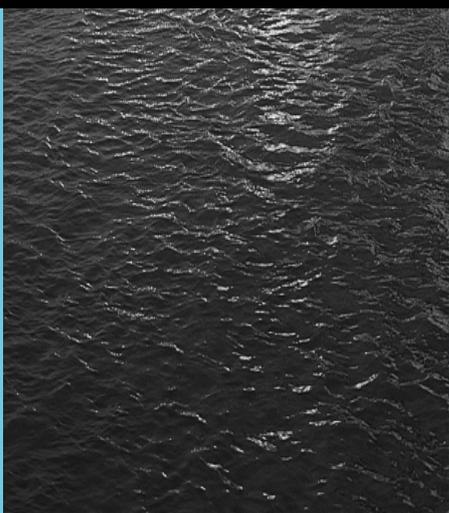


LLOYD'S



FLOOD RESILIENCE, RESPONSE AND RECOVERY



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For more information, see: www.lloyds.com

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Lloyd's is a member of ClimateWise, the insurance industry initiative launched in September 2007 through which members work individually and collectively to pro-actively reduce the societal and economic risks associated with climate change. Members include leading international brands from across the industry.

All members commit to principles in six key areas. These cover climate risk analysis, public policy, climate awareness amongst customers, investment strategies and the impact of their business operations. Members also commit to independent public reporting against all of these commitments.

For more information, visit www.climatewise.org.uk

ABOUT RUSI

The Royal United Services Institute (RUSI) is an independent think tank engaged in cutting edge defence and security research. A unique institution, founded in 1831 by the Duke of Wellington, RUSI embodies nearly two centuries of forward thinking, free discussion and careful reflection on defence and security matters.

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THE INTER INSTITUTIONAL FLOODING GROUP

The Royal United Services Institute is a member of the Inter Institutional Flooding Group (IIFG) which comprises the Royal Institution of Chartered Surveyors, the Chartered Institution of Water and Environmental Management, the Landscape Institute, the Institution of Civil Engineers, the Royal Institution of British Architects and The Royal Town Planning Institute. The IIFG seeks to develop a consensus about the management of water.

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WORKSHOP MARCH 2011

This report is the result of a workshop organised in March 2011 by the Royal United Services Institute on behalf of Lloyd's. The workshop brought together representatives of organisations involved in planning for, responding to and recovering from a flood emergency with representatives of the insurance industry, to explore how closer working practices might lead to improved flood resilience for individuals, communities and the UK as a whole.

The outcomes of the workshop and recommendations of this paper primarily focus on the role of insurers in supporting flood resilience and preparedness. However, several points and recommendations are also likely to be of interest and of relevance to organisations outside the insurance industry.

The organisations that participated in the workshop were:

1. ACE
2. Argyll Environmental
3. Association of British Insurers
4. BRE Scotland
5. CFOA Inland Water Strategy Group
6. Civil Contingencies Secretariat
7. Essex County Council Emergency Planning
8. Government Decontamination Service
9. Greater London Authority
10. Hereford and Worcester Fire and Rescue Service
11. Institution of Civil Engineers
12. Kiln
13. Lloyd's
14. Lloyd's Market Association
15. Mary Dhonau OBE, Flood Specialist, formerly National Flood Forum
16. Ministry of Defence
17. North Cornwall District Council
18. Ordnance Survey
19. Paul Hayden – Independent flood consultant
20. Paul Hendy – Independent flood consultant
21. Royal Institution of Chartered Surveyors/RICS Insurance Forum
22. Royal United Services Institute
23. Worthing Borough Council
24. UK Flood Barriers
25. University of Gloucestershire
26. University of Manchester
27. University of Leeds

ACKNOWLEDGEMENTS

We would like to thank Jennifer Cole from the Royal United Services Institute for working with us on this paper and for organising and running the workshop in March 2011 which formed the basis for the views expressed in this report.

1 EXECUTIVE SUMMARY

As the risk of flooding increases due to climate change, the insurance industry faces a considerable challenge in providing affordable cover whilst ensuring that policies are priced to accurately reflect the risk. This report acknowledges the many other demands on the industry including a difficult economic environment and changing regulatory and capital requirements. However, in the light of growing evidence of the impact of climate change, the insurance industry may wish to consider some of the recommendations in this report.

1 MORE THAN FIVE MILLION PROPERTIES IN THE UK ARE CONSIDERED TO BE AT RISK OF FLOODING.

Property holders at risk should prepare for flooding and take action to protect their homes. Property holders can reduce the damage caused by flooding to their property, and recover more quickly, by introducing resilience measures before a flood happens. Insurance companies can and do help to promote awareness of both flood risk and the measures that can be taken to protect property.

2 INSURERS SHOULD INVESTIGATE WAYS TO SHARE ANONYMISED HISTORICAL CLAIMS DATA.

Where insurers hold anonymised information on past claims, they should consider ways to make it more easily available to emergency services and other key stakeholders. There is good information available to the public on the flood risk to areas on coastal or inland flood plains, but less information available on where flood damage has occurred in the past due to other factors, such as poor drainage systems and surface water flooding in general.

3 INSURERS CAN HELP TO PROMOTE FREE FLOOD WARNING SERVICES.

Policyholders should be made aware of free severe weather and flood warning services offered by organisations such as the Met Office and the Environment Agency. Insurers can help to communicate messages to policy holders when they are issued.

4 APPROPRIATE RISK BASED PRICING IS CRITICAL IN ENSURING ADAPTATION TO EXTREME EVENTS SUCH AS FLOODING.

The premium charged for property cover needs to accurately reflect the risk. Distorted market prices remove any incentive for policyholders to arrange adaptation measures. However, the insurance industry can also support the building-in of flood defences and of flood resistant or resilient design, by taking this into account when pricing wherever possible.

5 ALLOWING CLAIMS TO BE MADE AGAINST COSTS INCURRED IN PREVENTING FLOOD DAMAGE, SUCH AS HIRE OF TEMPORARY FLOOD DEFENCES, WOULD FACILITATE ADAPTATION AND AID THE RECOVERY PROCESS.

However, determining when such preventative measures need to be taken, and exactly what damage they have prevented, will be difficult and needs further consideration.

6 THE INSURANCE INDUSTRY SHOULD WORK COLLECTIVELY TO ASSIST RE-BUILDING A COMMUNITY FOLLOWING A FLOOD.

The insurance industry should develop frameworks that enable insurance companies to work collaboratively on the clean-up and recovery of flooded communities, so that repairs are carried out cooperatively where possible.

7 INSURERS NEED TO BALANCE THEIR DESIRE TO USE ESTABLISHED CONTRACTORS WITH THOSE OF LOCAL BUSINESSES FOLLOWING A FLOOD.

Where possible, insurers may consider hiring local firms to repair flood damage to help affected communities help themselves in the recovery phase. However, this needs to be balanced against the use of established contractors with specialist knowledge of flood recovery, who are experienced in responding to the needs of insurers and the community.

8 THE ISSUES INVOLVED IN FLOOD CLAIMS REQUIRE SPECIALIST KNOWLEDGE AND EXPERTISE.

Surveyors and contractors working for insurers should have a good understanding of flood damage, the restoration of flood damaged properties, and how flood protection measures can be incorporated into repairs to prevent the incidence of secondary claims.

9 INSURERS SHOULD REMAIN ACTIVE AND AVAILABLE IN AFFECTED COMMUNITIES THROUGHOUT THE IMMEDIATE AND LONGER-TERM RECOVERY.

In particular, insurers have a role to play in providing initial advice to affected policy holders in community centres; in supporting communities through insurance claims by providing face-to-face access to staff at advice centres; and in supporting the Local Authority Recovery Steering Group.

2 INTRODUCTION

Flooding is a serious issue in the United Kingdom. Many of us remember the dramatic images from Boscastle in August 2004, when the North Cornwall village was devastated as six centimetres of rain fell in just two hours and local residents had to be rescued from their rooftops by RAF helicopters, or during the summer of 2007, when several large areas of the UK were submerged under flood water, particularly in parts of South Yorkshire, Gloucestershire and the Thames Valley.

Flooding occupies a prominent position on the UK's National Risk Register: coastal flooding is second only to pandemic flu in terms of its likely impact, with inland flooding and severe weather not far behind. The Environment Agency's 2008 National Flood Risk Assessment estimation of expected annual damages to residential and non-residential properties in England at risk of flooding from rivers and the sea was £1bn and rising¹; the summer 2007 floods resulted in £3bn in insurance claims². For comparison, during the 1990s, the ABI paid out £1.5bn in flood claims, whereas during the 2000s this figure rose to £4.5bn due to a series of costly flooding events including the summer 2007 floods, 2005 floods in Carlisle and 2009 floods in Cumbria³.

Flooding has a major impact on insurance and the companies in the industry have a unique role to play in flood preparedness, management and response. By working together with key stakeholder partners - including policyholders from local and national government, the emergency services, engineers and the construction industry, as well as with volunteer agencies and charities that support both victims and responders - insurers can help to raise awareness of flood risk, promote the uptake of flood resistant and resilient products and behaviours, ensure that the recovery from a flood runs as smoothly as possible, and support affected communities through the long and often painful recovery process.

Identifying where insurers can best interact with the organisations and agencies involved in planning, recovery and response will help to ensure that knowledge is shared and good advice is available at all stages of a flood emergency.

Lloyd's has recently collaborated on a report with the World Economic Forum (WEF) on managing natural disaster risks. The WEF report entitled "[A vision for managing natural disaster risk: Proposals for public/private stakeholder solutions](#)" helped inform the structure of this paper by examining the different responses required before an event, during an event, immediately after and longer-term recovery needs.

¹ See *Flooding in England: A National Assessment of Flood Risk*, Environment Agency report, 2009, <http://publications.environment-agency.gov.uk/pdf/GEHO0609BQDS-E-E.pdf>

² See *Learning Lessons from the 2007 Floods: an independent review by Sir Michael Pitt*, 2008, http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/pittreview/thepittreview/final_report.html

³ See *Massive rise in Britain's flood damage bill highlights the need for more help for flood vulnerable communities says the ABI*, ABI News Release 24 November 2010 http://www.abi.org.uk/Media/Releases/2010/11/Massive_rise_in_Britains_flood_damage_bill_highlights_the_need_for_more_help_for_flood_vulnerable_communities_says_the_ABI.aspx

3 BEFORE A FLOOD EMERGENCY

More than five million properties in the UK are considered to be at risk of flooding, either because they have been built on a flood plain, are in an area at risk of coastal, river, ground or surface water flooding, or are in an area which has a history of flooding⁴.

The severe weather conditions that cause coastal or river flooding, from heavy rainfall to changes in atmospheric pressure over the sea, can be (and often are) predicted several days in advance by the Met Office. As such, it is often possible to predict where and when flooding is likely to occur, to realise when the risk is becoming more immediate, and to put plans in place to manage it. The more planning that has taken place in advance of a flood, and the more mitigating measures that are taken, the less devastating the arrival of the flood water may be.

Far in advance of the flood water rising, Local Authorities, the Environment Agency, property owners, town planners, civil engineers and architects can use information on which areas of the UK are at risk of flooding to build physical flood defences, to design flood resilient buildings and urban spaces, and to encourage communities and individuals to make flood plans.

Knowing the extent and likely efficiency of physical defences, and also understanding when they may not provide adequate protection, will help Local Authorities, communities and property owners plan what to do when heavy rainfall and coastal surges are forecast.

Insurance companies may be able to assist planning agencies and Local Resilience Forums⁵ by offering advice on known flood risk, based on knowledge of which areas have led to claims in the past.

UNDERSTANDING FLOOD RISK

Insurers have a good understanding of geographical flood risk. Flood maps and models, both from public and private sources, are used to make decisions on insurance pricing while claims data indicates where flooding has occurred in the past. Sharing information on general claims trends with Local Authority planning departments, civil engineers and construction firms would help to influence where new developments are best sited and where flood defences, if needed, would be best placed.

A property built on a flood plain, or in an area of high flood risk, may be difficult to insure. Highlighting likely difficulties with insurance cover may help to encourage developers to consider alternative sites or to design-in flood mitigation measures.

Insurers should be aware that Local Planning Authorities should be following the principles contained in the Government's [Planning Policy Statement 25](#) which aims to ensure that flood risk is taken into account at all stages in the planning process.

Developers need to also consider that the ABI's Statement of Principles – an agreement with the Government on the provision of flood insurance – does not apply to properties built after January 1 2009, as the ABI wishes to ensure that developers consider the insurability of new developments and avoid construction in high risk areas (see box [3] on page 14 for further information).

Property owners also need to be made aware that the Statement of Principles is due to expire on 30 June 2013 and that this may have consequences for their insurance cover if they live in a high risk area.

The insurance industry can support the building-in of flood defences and of flood resistant or resilient design by reflecting these changes in risk based pricing.

Where a property is in an area of known flood risk and/or has been flooded previously, the insurance industry might consider the use of conditions in contracts to ensure resilience measures have been taken before cover can be offered.

⁴ See *Flooding in England: A National Assessment of Flood Risk*, Environment Agency report, 2009, <http://publications.environment-agency.gov.uk/pdf/GEHO0609BQDS-E-E.pdf>

⁵ The Local Resilience Forum comprises representatives of the organisations designated Category 1 or 2 responders under the Civil Contingencies Act 2004 (including police, fire, ambulance, utilities supplier and the Local Authority), who have legal responsibility for planning the response to a major incident. More information can be found at <http://interim.cabinetoffice.gov.uk/ukresilience/preparedness/ukgovernment/lrfs.aspx>

RAISING AWARENESS OF FLOOD RISK

The Environment Agency and Met Office provide detailed information on flood risk via information provided by the [Flood Forecasting Centre](#), which they jointly sponsor.

Online maps enable property holders to check whether or not their property is located on a [flood plain](#) and also lets them sign up to receive flood warning alerts on the [Environment Agency](#) website. However, workshop attendees of the March 2011 which helped inform the conclusions of this report, expressed the view that not all property owners necessarily make use of these services, and insurance companies should consider ways to help promote awareness and to encourage policy holders to use them.

Information should be provided to policy holders on the resources they are able to make use of, and insurers should consider how they could make any additional useful information available to policyholders, such as information on claims that have previously been made for flood damage in their area⁶. However, policyholders need to understand the limitations surrounding flood insurance data (see box [1] on page 9).

Property owners need to take more responsibility for their own flood resistance and resilience measures. Attendees of the workshop felt that too often people do not consider the costs of ignoring flood risk.

Workshop attendees also suggested that insurers could help raise awareness of the impact of floods by including photos of flood-damaged homes and damaged possessions in literature sent to policy holders, and provide information on practical steps that homeowners could take to protect their homes (a list of organisations that provide information on protecting your home can be found in Section 8 of this report). Insurers could also highlight the possible increased cost of insurance premiums following a claim.

There are opportunities for the wider insurance industry and public bodies to work with the manufacturers of flood defence products to promote the use of such products. For example by providing information to policyholders during renewal periods or through joint campaigns targeted at high-risk areas.

QUESTIONS TO CONSIDER:

Further questions to consider are found within each chapter in this paper. This section is designed to provide additional questions for insurers to consider, to encourage debate and stimulate new ideas that can improve flood resilience, response and recovery.

- 1 How could insurance contracts for properties in areas of high flood risk encourage policy holders to act on flood risk more responsibly?

⁶ It would be important to ensure here that data on claims and call-outs made due to burst water pipes, overflowing baths etc was separated from those resulting from catastrophe flood risk. Insurers also need to ensure that data collected on claims that are categorised as fluvial flooding and those for storm damage is as accurate as possible. This would require a change in the way claims data is categorised and collected to allow for differentiation between the different types of flood risk and catastrophe flood risk.

BOX 1: SHARING DATA ON FLOOD RISK

The ability to share data on flood risk with other stakeholders in advance of, and during a flood emergency, is vital to ensuring that adequate steps are taken to manage that risk. Data on past flood impacts, known flood risk and predicted future flood risk is gathered and held by a number of different organisations from both the public and private sector. The more this information can be shared, the better flood risk will be understood and appreciated.

Environment Agency flood maps show flood risk from rivers and coastal flooding, but do not show areas that have actually suffered previous flooding. There is currently little understanding of flood risk to properties that are not on flood plains, but are prone to flooding due to issues such as poor drainage systems and concentrations of surface water run-off.

Local authorities working alongside the Environment Agency are now working to improve their knowledge of local surface and ground water flood risk in preparation for their Preliminary Flood Risk Assessment, a requirement following the introduction of the Flood Risk Regulation resulting from a recent EU Directive (see box [3] on page 14) The challenge will be ensuring that this improved knowledge is passed on to consumers.

There is potential here for the insurance industry, which holds data on flood risk and on past insurance claims, to work with other organisations to share suitably anonymised and aggregated information. In particular, sharing information with Fire and Rescue Services, who hold data on previous call outs resulting from flooding, may help to build up a more accurate picture of flood risk. However, it is important to note that both insurers and the Fire and Rescue Services' 'call out' data only represents a limited picture of known risk. The calculation of risks should not be based purely on past claims data – not least because the insurer is only aware of homes at risk if the homeowner held an insurance policy and, equally, if they actually made a claim.

If such data is available, the insurance industry would also need to carefully explain the statistical fluctuations involved in extreme events. Past claims experience is useful but not complete, therefore insurers use catastrophe models to fill in missing data both in terms of the size of the event (typically what is experienced by policyholders is not the maximum possible event in terms of loss that could ever occur) and geographical spread (zero claims does not mean zero risk).

Following the Flood Summit organised by the Flooding Minister Richard Benyon MP in September 2010, DEFRA have initiated a working group looking specifically at flood risk data and how insurers can share claims data with public agencies.

Many insurers have invested and developed good data records on flood risk. However, sharing this data with public agencies could have commercial implications if competing insurers are able to access it. Nevertheless, as flood risk increases within the context of climate change, insurers need to be persuaded of the advantages of sharing some of this data over the risks and challenges of not sharing it. There are, additionally, issues with data protection and privacy, particularly when the flood risk is considered at the individual property level. It is nonetheless important to discuss options for sharing data, particularly if there is an opportunity to make it anonymous, and focus on trends rather than individual properties.

As insurers look to respond to a likely increased risk of flooding resulting from climate change, insurers may need to improve and maintain the accuracy of their flood risk data. This would include the proper categorisation of claims to reflect the different types of flooding.

FINANCING AND BUILDING PERMANENT FLOOD DEFENCES

Financing flood defences is a complicated issue that is only likely to get more complicated in the current financial climate. Local Authorities and the Environment Agency may not have sufficient finances to provide all the flood defences necessary for the areas they are responsible for. Flood defences are best planned and constructed at a community level; while individual properties can install flood defence products, flood water may seep through walls and floorboards from an undefended property next door.

It may be possible for insurers to work more closely with banks and mortgage companies to encourage homeowners to take action on flood management. For example, money to pay for flood defences could be borrowed as part of a mortgage with the cost being offset against potentially lower insurance premiums, so that the overall cost to the homeowner is limited⁷. In this case, the mortgage holder would need to be made aware that their premiums might not always remain at the rate needed to balance additional costs in mortgage payments. Banks should also be encouraged to refuse business loans to businesses that cannot demonstrate they have taken appropriate flood risk mitigation measures and do not have a robust business continuity plan for flood risk.

This raises the issue of longer term insurance contracts to ensure that having contributed to the cost of flood resilience, the insurer who had paid, benefits through the retention of that customer and lower restoration costs if the property later floods. However, there are many difficulties associated with the use of long-term insurance policies, such that it is unlikely that they will become widespread across the industry. Box [4] on page 18 explains some of the issues surrounding these policies in more detail.

RECOMMENDATIONS

- 1 Flood risk should be taken seriously and public bodies have a responsibility to raise awareness of how homeowners can protect their homes. Insurers should support this by highlighting the consequences of not considering flood risk or underinsuring their property in awareness campaigns and literature sent to policy holders.
- 2 A database of actual flood events and insurance claims could perhaps be developed, and shared with other public agencies, to build up a better understanding of areas that are not located on flood plains but which are nonetheless at risk of flooding. Organisations such as the Ordnance Survey could facilitate this on behalf of insurers.
- 3 Insurers should consider ways to acknowledge property owners and communities who have recognised and taken responsibility for flood risk in such areas, and have taken measures to address this.

4 DURING A FLOOD EMERGENCY

During a flood emergency, rivers and streams burst their banks, coastal defences may not prove adequate and ground water flooding occurs as the land becomes waterlogged. Drainage systems are overloaded, pushing water back into homes and onto streets. Flood water enters properties, damages gardens and agricultural land, compromises transport, communications and energy infrastructure, and contaminates properties with hazardous materials.

People may need to leave or, in extreme cases, be rescued from properties and relocated to safe shelter and accommodation. Temporary flood barriers need to be sourced, allocated, dispatched and erected quickly to protect residential properties, business premises and critical infrastructure sites. Flood management resources, such as high volume pumps (bHVPs), flood barriers and rescue boats need to be mobilised. Decisions need to be made quickly, particularly where resources are limited and priority need has to be established.

There are three areas in particular in which the insurance industry can make a real impact during a flood emergency:

1. Helping the dissemination of advice on how to manage immediate flood risk following flood warnings.
2. Helping with the deployment of assets that will prevent or mitigate flood damage.
3. Helping raise awareness of how to prevent hazardous materials such as industrial chemicals or toxic materials (HazMat) from contaminating flood water.

The sooner an effective response plan swings into action, the less impact the flood itself is likely to have. It is important to remember, however, that measures taken during the flood event must be decided and rehearsed in advance. This is a time for putting plans into action, not for making them.

COMMUNICATING TO AFFECTED POLICY HOLDERS

Once severe weather has been predicted, the public needs accurate and credible information. The more they understand and believe the risk, the more likely they are to act in a way that will protect their property from damage. For example, by moving valuable items to higher floors, putting temporary flood barriers in place, driving cars to higher ground, or relocating away from areas of flood risk.

Homeowners are often reluctant to leave their homes voluntarily when a flood has been predicted unless it is clear that the threat is real and immediate. Although primary information on floods needs to come quickly and efficiently from public organisations such as the Fire and Rescue Service or Local Authority, the insurance industry can provide additional support by:

1. Raising further awareness of the immediate flood risk
2. Helping to give people additional information on which to base their decision to evacuate or not
3. Providing information on how people can protect their home or business.

Insurers could possibly promote this via text messaging services which policy holders can be automatically signed-up to when they take out their policy (unless they choose to opt-out). For example, the Environment Agency's Flood Warning Direct text message service. Although supplementary information can come from insurers, primary information on the flood itself should continue to come from the Environment Agency.

Many insurance companies use accurate flood risk mapping technology which, combined with historical data on past floods, can help to put predictions into context. Several people at the Lloyd's workshop felt that a property owner may be more willing to act on the message: "the predicted rainfall in the next 24 hours is similar to that seen in previous years, when your property did flood", than on the less precise message, "severe rainfall is predicted in the next 24 hours". However, as flooding can never be perfectly forecast, there is always the danger that people will act on such messages and incur costs such as hotel bills, only to find the flood water does not arrive. It may therefore be more appropriate to simply alert policy holders in areas at risk that Environment Agency flood warnings have been issued, and encourage them to read these messages. As with any deterministic forecast (e.g. there is a flood or there is not a flood) there is a chance it will be wrong. However, insurers deal with the language of probability all the time and can play a role in educating the public. A key message is that a robust approach to risk mitigation may involve additional costs but will reduce risk. There is certainly scope for more discussion on warning and informing mechanisms and what role it is appropriate for the insurance industry to take.

By sharing historical information on the risks posed by past floods with the Warning and Informing Group of the Local Resilience Forums (where the Local Resilience Forum has such a group), insurers can help to ensure

accurate and consistent messages are provided during the event. One key communication vehicle is the local media, particularly local radio stations, which can help to issue warnings and provide information as well as simply report on what has happened.

It is important that such alerts and warnings are considered carefully and are targeted at those who are genuinely at risk, rather than sent to all policy holders, to ensure that messages are taken seriously. Too many 'warnings' where no flood is subsequently experienced will lead to future messages being ignored.

SOURCING AND DEPLOYMENT OF ASSETS

During a flooding emergency, sourcing and deploying assets such as temporary flood barriers, HVPs and rescue boats can be delayed, not because the assets are unavailable, but because of difficulties in deciding who will foot the bill for their deployment/hire. This is especially difficult in advance of a flood when there is uncertainty over whether or not the assets will be essential or if they will be used at all. It is also difficult to predict if assets will need to be replaced after deployment, or whether they can be re-used in future flood events.

Insurers have an interest in ensuring that resources are deployed as early and efficiently as possible in order to minimise losses. Banks and Building Societies, as mortgage lenders, have a similar stake, as mortgaged houses that sustain flood damage may lose value.

The insurance industry, working with local community groups, could investigate ways to improve quick access to temporary flood management assets, such as purchasing, or setting up framework agreements with private equipment providers for the loaning of temporary flood defences that can be deployed quickly to areas of high risk during predicted flooding to protect insured properties. The costs for such a scheme could be absorbed into insurance policies for that region or offered as an additional flood response policy. This could work in a similar way to, or be incorporated into, existing home insurance schemes for emergency plumbing/electrical work. Such a scheme would work best at the community level due to the nature of flood management assets. Although the role of government and local authorities is vital in protecting communities from predicted flooding, the insurance industry can help by considering new ways of minimising possible flood damage, given the rising risk of flooding resulting from climate change. Any implications for the pricing of insurance policies would need to be clearly explained to existing or potential policyholders.

The Fire and Rescue Service (FRS) maintains a Register of National Assets, which lists both FRS assets and those held by other organisations, such as the Royal National Lifeboat Institution, that can be mobilised during a flood emergency. Sharing such information with the insurance industry might help insurance companies to calculate flood risk, as an area to which flood management assets can be deployed quickly may be at less risk of flood damage than one which has less assets easily available.

BOX 2: GETTING THE MESSAGE OUT

There are a number of ways in which the insurance industry can help to push information during the crucial early stages of a predicted or actual flooding emergency that will help to lessen its impact. These include:

Encouraging sign-up to existing warning and information initiatives for coastal and river flooding, particularly for policy holders in high risk areas.

Sending text/email alerts to policy holders living in areas of high flood risk when severe weather is predicted and/or where flood waters are known to be rising. These messages should be discussed/planned with Local Authority emergency planners, the Police and the Fire and Rescue Service to ensure consistency through a framework agreed with the Local Resilience Forum ideally through the Warning and Informing group where one exists.

Supporting media reporting of weather predictions on local television and radio channels to give advice to policy holders, with a telephone helpline/website providing more detailed information. The information given should be consistent with that coming from the media attached to the local Strategic Co-ordinating Group¹.

¹ The Strategic Co-ordinating Group comprises the strategic decision-makers from all the agencies involved in the response.

HAZARDOUS MATERIALS AWARENESS

Industrial sites where hazardous materials are stored can offer a particular challenge during a flooding emergency as damage to storage facilities can lead to contamination of land and water supplies, exacerbating damage and leading to longer and more complicated clean-up and recovery processes. These sites may require priority assistance during a flooding emergency to minimise contamination to the local environment.

In the early stages of an emergency, as well as in advance, insurance companies can promote and raise awareness of the potential dangers flooding poses to policy holders, and promote the use of flood defence products. Managing this additional risk may require higher premiums and/or conditions requiring the installation and maintenance of adequate available flood defences.

QUESTIONS TO CONSIDER

- 1 To what extent does the insurance industry have a role to play in ensuring policy owners are receiving warning and informing messages on imminent flood risk during periods of severe weather?
- 2 Should insurance companies offer policy reductions to property owners who can demonstrate that they have a flood plan, and have taken reasonable measures to mitigate flood risk? How can insurance companies best reflect (or acknowledge) actions property owners have taken to mitigate flood risk in their risk pricing following the ending of the ABI's Statement of Principles in 2013?
- 3 How can insurers input into, and liaise with, Strategic Co-ordinating Groups during an event?
- 4 To what extent can insurers assist with covering the costs incurred in preventing flood damage, particularly where it may be difficult to calculate exactly how much damage has been prevented?

CORPORATE/COMMUNITY RESPONSIBILITY

Attendees at the workshop felt strongly that maintaining good communications and providing clear information to communities during a flood event is critical for managing the effects of a flood. Insurers could facilitate this by making a representative from their company available to talk to the media and the public. If a Humanitarian Assistance Centre is opened following the flood, insurers could also liaise with the staff in these facilities to ensure those affected by the flood receive the information they require. If this role is done in an effective and sensitive manner, the public will also form a positive perception of the insurer as an open and supportive company.

RECOMMENDATIONS

- 1 Insurance companies should consider ways to promote the free [flood warning service](#) offered by the Environment Agency to policyholders, and should consider communicating messages to policy holders in targeted areas during a flooding event.
- 2 Insurance companies should consider looking at ways to share information derived from flood risk mapping technology, particularly with fire and rescue services and local authorities, on where previous floods have occurred, so that concerned callers can be given accurate information and emergency services can begin to plan the deployment of their flood management assets as early as possible.
- 3 Alongside the work of local authorities and responder agencies, insurance companies should consider ways to help the quick and efficient deployment of temporary flood barriers to policy holders during a flood event.

BOX 3: FLOOD RISK AND THE UK GOVERNMENT: CURRENT INITIATIVES

Learning Lessons from the 2007 Floods - The Pitt Review

[Learning Lessons from the 2007 Floods: An independent review by Sir Michael Pitt](#) took a comprehensive look at the arrangements for flood risk management in England and made ninety-two recommendations for improvements. The most significant changes implemented include: the Floods and Water Management Act 2010; a joint Met Office/Environment Agency flood forecasting centre; a new National Flood Emergency Framework; and closer working relationships between emergency responders and those dealing with the security and resilience of infrastructure.

EU Directive 2007/60/EC - Assessment and Management of Flood Risks

This [EU Directive](#) came into force on 27 November 2007. It requires EU Member States to assess the extent to which water courses and coastlines are at risk of flooding; to map the flood extent; and to take adequate and coordinated measures to reduce this flood risk. The Directive also reinforces the rights of the public to access this information and to have a say in the planning process. It has been implemented in the UK through the Flood Risk Regulations 2009, which now requires Lead Local Flood Authorities to produce [Preliminary Flood Risk Assessments](#) (PFRAs).

One example of local authority work is the [Drain London](#) project being undertaken by a partnership of 33 London boroughs, the Environment Agency, Thames Water, Transport for London and London Councils. The project aims to manage and reduce surface water flood risk in London by improving knowledge of the surface water drainage system in the capital and identifying areas at greatest risk of flooding.

The Flood and Water Management Act 2010

The aim of the [Flood and Water Management Act](#) 2010 is to create clearer roles and responsibilities for flood risk management and to instil a more risk-based approach. This includes a new lead role for Local Authorities in managing local flood risk from surface, ground water and ordinary watercourses, with the Environment Agency providing strategic oversight.

Government's National Strategy for Flood and Coastal Erosion Risk Management

The Environment Agency is working with DEFRA to develop a National [Strategy](#) for Flood and Coastal Erosion Risk Management in England. Final strategy documents are to be published later this year.

The Statement of Principles

Since 2000, the ABI has had an agreement with Government known as the [Statement of Principles \(SoP\)](#), which safeguards the wide availability of insurance. The SoP was only ever intended as a temporary measure, and there is a widely held view that it has had a distorting effect on the market, putting existing insurers at a disadvantage competitively along with reducing incentives for adaptation. For this reason the agreement will not be renewed when it expires on 30 June 2013. Richard Benyon MP, the Flooding Minister hosted a flood summit in September 2010 to discuss the expiry of the SoP and future actions. Working groups have been subsequently formed looking at options for sustainable flood insurance model, and the provision and transparency of flood risk data including investigating the issues around sharing claims data.

5 IMMEDIATELY FOLLOWING THE FLOOD

Immediately after a flood, affected individuals and communities need to assess the damage, clean up, plan repairs and restoration, and start to look further ahead to determine how they approach flood risk in future. To do this, they need clear and consistent advice that is easily accessible.

In order to answer the many questions policy holders will have during this period, insurers themselves need to have consistent information on the extent of the damage. A common information picture needs to be developed across all organisations to whom affected individuals will turn for advice and information, such as charities that support victims (particularly The National Flood Forum) and local media.

During this time, the emotional desire for a quick recovery will need to be balanced against longer term plans that may take time to implement but will prevent future floods from having a similar effect. This can be a difficult decision for affected individuals to balance. The more support that all organisations including the insurance industry can give to affected individuals, the easier affected individuals will find this period.

Particularly important is ensuring that information and advice on flood clean-up, repairs and restoration can be accessed and provided in such a way that it does not exacerbate the emotionally draining experience of living through a flood. One property owner's claims being dealt with quickly and efficiently while another has more difficulty can cause additional stress for individuals and communities. During emergency situations such as a flood event, it is never more important to maintain the high standards that insurers wish to provide to their customers. However, policyholders should also remember that claims service is a differentiator between insurers in a competitive market and this should be taken into consideration when choosing an insurance provider. There may, however, be an opportunity for the development of minimum standards for customer service during a flooding event.

Coordinated efforts during this time can be difficult as in any community affected individuals and businesses will have insurance policies with a number of different insurers, each of which will be handling claims on a one-to-one basis. It is critical that all residents in an affected street have similar access to advice and clean-up resources, regardless of which insurer they hold policies with, or even whether they are insured at all. Local Authorities and the Recovery Steering Group of the Local Resilience Forums have a responsibility to all individuals, insured or not. These groups should coordinate with insurance companies over advice and clean-up to ensure that, where at all possible, such activities can be collectively planned across the community.

ADVICE AND INFORMATION

The advice that insurers are able to give out to people who have been affected by flooding relies on the information they have themselves. Gathering intelligence and information on floods and flood damage is therefore an essential first step to ensuring that victims' concerns are answered and claims are processed as quickly as possible. Responder agencies (such as local councils, fire and rescue services and the Environment Agency) and the Strategic Co-ordinating Group need to work closely and openly with insurers to ensure that they have access to the most up-to-date and accurate information, particularly from geo-coding, aerial photography and mapping.

Workshop attendees highlighted the importance of honest communications with policy holders. People will want to know how long it will be before they can move back into their homes or business premises. It is often better to give a later date than promise an earlier one which is unrealistic. When it is difficult to give a precise answer, attendees felt that honesty about this is the best response. During this busy and stressful time, simple steps such as an 'out of office' reply or a voicemail message explaining when the insurer will return might help to reassure the caller. Appointing each claimant with a single case officer, who deals with all their questions and queries, might also help flood victims to feel supported.

In the past, the ABI has acted as a central point for advice and contact, providing various levels of support depending on the flooding event. This includes visits to the flooded area by ABI staff; corresponding with the media and government; sending representatives to the emergency responders' command meetings; and releasing information via their website. The ABI has also produced a guide, ['Responding to major floods: What to expect from your home insurer'](#) which is a comprehensive source of advice for customers. Attendees at the workshop felt that the ABI should continue this practice and work to ensure that their services remain highly visible.

It is important that policyholders remember, and are made aware, that there may be differences between the quality of service offered by different insurance companies. People living in flood risk areas need reputable insurers who will be able to expertly and professionally handle the aftermath of a flooding incident. The insurance

industry should reinforce the message to customers that different levels of cover are available through the different policy options they can choose from and consequently encourage policyholders who live in high risk zones to take out the most appropriate cover.

WORKING WITH THE COMMUNITY

Floods affect entire communities, not just individuals. As well as their homes, people also lose their businesses - either because their business premises are flooded, the tools and equipment they need to do their job have been damaged, their client base has been seriously affected, or because their staff have had their homes flooded and/or cannot get to work.

When insurers are financing repairs or renewals, grievances can arise amongst the community hit by the disaster if insurers hire builders from outside the affected community to deal with the clean-up and repairs to flooded properties, instead of involving local ones. Often a local firm may have lost its equipment and access to its premises but its staff members are still able and willing to work.

The needs of the community may be better met if insurers request that, where possible, companies they contract to undertake repair work hire staff from local firms and sub-contract work to local firms where possible. Doing so would also potentially reduce insurance claims for loss of business from local firms. Where using local firms is not possible, insurance companies should explain the reasons for this to the local community and talk to local firms about how they might be included. However, this needs to be balanced against the use of established contractors with specialist knowledge of flood recovery who are able to respond quickly to the needs of insurers and the community. Insurers tend to have an established database of contractors, consisting of experts in flood recovery who can be called on quickly.

Coordination is key and insurance companies need to work closely together and have a consistent approach to clean-up and repairs. A solution to this might be to create pre-arranged frameworks for how a number of insurance companies can work together to deal with large-scale flooding. This information could be managed by the Local Authority Recovery Steering Group. Insurers could also second people for specific jobs, such as engineers, planning officers and surveyors, on behalf of policy holders who can then work collectively on several claims through local councils or other public agencies, rather than leaving each claimant to sort this out for him or herself.

AWARENESS OF FLOOD DAMAGE

In the initial stages after the event, flood water, which may be contaminated, may need to be pumped out. Properties and possessions need to be cleaned where possible or disposed of. Following the 2007 floods and the subsequent Pitt Review, the need for loss adjusters and insurance companies to have people on the ground, working directly with the community during this period, assessing the situation and damage and reassuring the flood victims that they are financially covered was identified as critical. Insurers should ensure that this personal response is maintained as climate change raises the risk of more frequent extreme weather events.

Contractors used by all organisations involved in the aftermath of a flood should have clear guidelines on removing damaged materials and possessions that take into account the sensitivities of the victims. For example, treasured possessions do not need to be thrown away when they could be kept or repaired. People may lose valuable documents and memorabilia because builders do not know they are important to the victims. It is important that all parties communicate clearly before and during the clearout, in order to minimise these mistakes.

Repairing and restoring properties that have suffered flood damage requires a particular skillset. Workshop attendees noted how important it is that surveyors and builders are aware of how long it takes to dry out different types of walls and floors, and where water may have caused damage to underground pipes and electrical cables that might not be immediately apparent unless such damage is looked for. Insurers, local councils and flood support groups should work together to maintain and provide access to lists of skilled contractors who understand how to work with flood damaged properties.

Well defined standards are essential: techniques for repairing damaged properties should be described and appropriate guidance given. Builders and surveyors need to understand the nature of the building, particularly listed properties, which need special care. Surveyors and contractors should have suitable training in dealing with the effects of flooding.

Architects and builders need to be aware of what flood protection measures are available so that they can be incorporated into repairs in order to mitigate the impact of future floods. If neither the property owner nor the building contractor is aware of these issues, quick repairs can lead to long-term problems. A classic example would be repaving a concrete driveway that has channelled run-off water into a home, whereas replacing this with a permeable driveway would be more appropriate.

'Green for old'⁸ replacement is beginning to be provided by the insurance industry in response to the need to develop sustainable claims management solutions as part of climate change adaptation. Insurers should where appropriate offer repair or replace options that would adapt damaged property and lower the risk posed by future flooding. However, such improvements often lead to an increase in premium which could put an insurer at a competitive disadvantage. Insurers should also be especially mindful of competition law considerations if they are contemplating acting in unison. Lloyd's signed a [joint insurance statement](#) from the members of ClimateWise prior to the UNFCCC Copenhagen negotiations in December 2009, which called for appropriate buildings regulations that would mandate adaptation of infrastructure to climate change when renovating or re-building. Such legislation would also be appropriate for adaptation to flooding events.

QUESTIONS TO CONSIDER

- 1 How do insurance companies build awareness during and following a flood, and what opportunities are there to share information during this process?
- 2 What can the insurance industry do to encourage surveyors and builders to increase their awareness of flood damage issues that might affect repairs and restoration?
- 3 How can insurers work collectively and co-operatively with affected communities to aid the recovery process and support individuals and businesses?

⁸ 'Green for old' is the practice of replacing or repairing claims with environmentally sustainable alternatives within a context of climate change adaptation. Although the cost may be initially higher, the longer term benefits in terms of adaptation and resilience to climate change risk will counterbalance these costs. For more information, see <http://www.climatewise.org.uk/sustainable-claims-management/>

BOX 4: LONG-TERM INSURANCE POLICIES

Introducing longer-term insurance policies, instead of annual insurance, is sometimes put forward as a means to encourage policy holders to invest in flood resilient and resistant installations. It is suggested that long term contracts remove the concern held by some insurers that once betterment has been funded through the insurance policy, the policy holder will switch allegiance to another insurer motivated by cheaper premiums.

At the March workshop organised by RUSI and hosted at Lloyd's, some attendees suggested their use both as a means to counter the costs associated with the building in of flood defence and also as a flood resilient claims solutions. The basis for this assumption is that insurers would be able to offer lower premiums or pay for adaptation following a claim if they could guarantee that the customer would remain with them for several years.

However, there are many concerns over the use of such long-term policies in the UK insurance industry. Research conducted by the ABI in 2010 showed that customer demand for long-term insurance contracts is still low given concerns over the risks associated with long-term contracts such as being unable to "shop around" and take advantage of competitive rates in the market.

Although insurers acknowledge the advantages of long-term policies in providing stability in customer flows, in general the problems outweigh the perceived benefits. By offering guarantees to policy owners for more than one year, an insurer is unable to fully re-assess the risk each year at renewal even if the risk that the policy brings to the collective pool has increased. Consequently, an insurer would be obliged to hold more long-term capital to compensate for this uncertainty. This additional capital requirement is likely to mean a higher insurance premium for the customer, thus negating one of the original drivers for moving to a longer term policy. There is little appetite in the insurance industry to offer such policies. It is also more difficult for insurers to purchase reinsurance for longer-term policies. Allowing for this risk would also further add to costs.

PLANNING THE RECOVERY

Meetings organised between insurers, representatives of local authorities and residents (which are not normally open to the media) allow affected communities and people who have been directly affected by the event to discuss specific matters and agree on tangible solutions. Neighbourhood planning programmes should be developed to help people respond communally and to help each other in the direct aftermath of a flooding event.

Insurers need to maintain visibility after the event to reassure those affected that their homes will return to normal. Meetings to discuss pressing problems and enable multi-agency communication are crucial in the immediate aftermath of a flooding event.

RECOMMENDATIONS

- 1 The insurance industry should try to involve and include local businesses, even if they have themselves been badly affected by the flood, in the clean-up, repair and restoration of the local community, to aid community recovery.
- 2 Insurers may wish to consider using examples of "green for old"¹ claims practices for their resolution of flood claims, in which insurance claims can cover the cost of installing flood resilient restorations, rather than replacing like for like, which would simply leave the property vulnerable to suffering similar damage again.

¹ 'Green for old' is the practice of replacing or repairing claims with environmentally sustainable alternatives within a context of climate change adaptation. Although the cost may be initially higher, the longer term benefits in terms of adaptation and resilience to climate change risk will counterbalance these costs. For more information, see <http://www.climatewise.org.uk/sustainable-claims-management/>

6 LONG-TERM RECOVERY

The long-term recovery from a flooding event may take months or even years. As well as the more obvious repair and restoration of damaged properties and infrastructure, recovery needs to include:

- A reassessment of the flood risk
- Consideration of new and more robust flood defences
- Necessary adjustments to flood risk management and flood policy (see Box [3] on page 14)
- Improved community mechanisms for coping with flood risk

A well-planned recovery will provide better long-term protection from future flood risk, but the length of the physical recovery itself plays a factor in the psychological resilience of the affected community. If it takes too long, residents and businesses may move away from the area.

Business continuity and community resilience can be as important as the civil engineering and construction projects that repair the physical damage. The more advice insurers can provide to businesses and families with the management of their claim in the aftermath of the flood, the more quickly and completely the community is likely to recover.

It is also important to consider whether, and to what extent, change is needed. Flooded communities often want everything put back the way it was. However, if certain structures or design elements add to the flood risk and are likely to lead to repeat flooding if they are simply replaced, new approaches are needed.

ONGOING ADVICE

The recovery process may be long and drawn-out, but it is important that people do not feel they are being forgotten. Several attendees at the workshop stressed the importance of sustained support for communities from insurance companies as well as from the responder agencies. Members of the public and local businesses may need advice on insurance related issues for many months or even years after the event. Policy holders will appreciate advice hotline numbers and websites remaining active for as long as is feasibly possible.

REASSESSING FLOOD RISK

Flooding can result in those affected taking flood risk more seriously. This offers the insurance industry an opportunity to encourage people to take more responsibility for flood resilience, particularly if insurance companies can create innovative incentives. It can provide information to policyholders on actions they could take themselves to improve their flood preparedness (see Section 8 *Further Information* for links to services that provide such advice). Flood victims should be advised to consider building-in greater resilience during flood recovery; this provides an opportunity for insurance brokers to explain the terms of cover in greater depth and for organisations and public bodies to provide complimentary services that contribute to flood resilience, such as raising plug sockets higher off the ground within properties. Policy holders (and potential new policy holders) also need improved levels of information explaining why premiums are set as they are following a flooding event.

Local and national authorities need to take responsibility for the recovery of flood victims who do not have insurance and for the many homeowners who are just not in a position to pay for flood resilience for their homes. Local authorities rather than the insurance industry are the most appropriate bodies to provide the required support to these people.

QUESTIONS TO CONSIDER

- 1 Should it be a legal requirement for new properties built on flood plains and properties that are repaired following flood damage to build in flood resilience? New developments on flood plains may be hard to avoid due to land availability in certain regions, but how can flood risk in such developments be better managed?
- 2 Should insurers be legally required to restore flood damaged properties to an adequate level of flood resilience?

WORKING WITH LOCAL AUTHORITIES

Co-ordination of the long-term recovery from flooding is the responsibility of the Local Authority. In general, insurers and Local Authority Emergency Planning Departments are working well together. Insurers who need information on how a recovery is planned can find this on the Cabinet Office website⁹. While communication between individual insurers and Local Authorities is good, there is room for improvement in communication between different insurers about what is happening on the ground, perhaps coordinated by the Local Authority Recovery Steering Group.

RECOMMENDATIONS

- 1 In addition to responder agencies, it is important that the insurance industry also generates and disseminates information to policy holders in affected areas to help them understand what happened and why: was this a rare event that is unlikely to ever happen again, or is it likely to be a regular occurrence, or has the event been a regular event in the past? What might people have done before the flood, but did not, that would have mitigated its affects? They may also wish to provide information on the impacts of climate change on flood risk.

⁹ See http://interim.cabinetoffice.gov.uk/ukresilience/response/recovery_guidance.aspx

7 CONCLUSION

Flooding is a serious issue and must not be underestimated. The financial, social and emotional impacts of flooding are too significant to be ignored. Discussions at the March 2011 workshop at Lloyd's highlighted many opportunities for insurers to work together and with other organisations to improve flood risk awareness and to encourage people not only to take flood risk seriously, but also to act on it.

Working closely with Local Authority Emergency Planners and Local Resilience Forums can ensure that flood risk is understood and plans are put in place to mitigate or manage it. Links between insurers and national support organisations such as The National Flood Forum and the British Red Cross, during and immediately after flood events, can ensure that policyholders have easy and efficient access to information, helping them to feel supported and valued. Good relationships built during this time can encourage people to listen to suggestions on how they can take measures to increase their flood resilience in the future, resulting in properties and communities becoming more resilient to further flood events.

People should be encouraged to take more responsibility for their own flood resilience. They can make better use of severe weather warnings and flood warnings, make flood plans, and consider installing some or all of the many flood resistance and resilience products that are currently on the market. They should not automatically expect Local Authorities to bail them out if they have failed to respond to official warnings, not installed adequate resilience measures or failed to take out adequate insurance. This needs to be made clear to property owners and occupiers. The insurance industry can help in pricing risks appropriately to encourage adaptation.

There are however a number of challenges to overcome, which will affect the ability of the insurance industry to act on the recommendations made throughout this report. There is no single body that can speak for the entire insurance industry, or which could represent all the local insurance companies in a region to the Local Resilience Forum or the Strategic Coordinating Group. Creating a framework for how the insurance industry can speak with a single voice during major flood events should be a priority.

In short, it is clear that there is a strong appetite from everyone to include the insurance industry in flood planning, response and recovery, and many benefits to doing so. This report should be seen as the beginning of that process and not a means to an end in itself. It should be viewed as an opportunity to foster further debate and to move towards some practical solutions.

8 SUMMARY OF RECOMMENDATIONS

BEFORE A FLOOD EMERGENCY

- Flood risk should be taken seriously and public bodies have a responsibility to raise awareness of how homeowners can protect their homes. Insurers should support this by highlighting the consequences of not considering flood risk or underinsuring their property in awareness campaigns and literature sent to policy holders.
- A database of actual flood events and insurance claims could perhaps be developed, and shared with other public agencies, to build up a better understanding of areas that are not located on flood plains but which are nonetheless at risk of flooding. Organisations such as the Ordnance Survey could facilitate this on behalf of insurers.
- Insurers should consider ways to acknowledge property owners and communities who have recognised and taken responsibility for flood risk in such areas, and have taken measures to address this.

DURING A FLOOD EMERGENCY

- Insurance companies should consider ways to promote the free flood warning service offered by the Environment Agency to policyholders, and should consider communicating messages to policy holders in targeted areas during a flooding event.
- Insurance companies should consider looking at ways to share information derived from flood risk mapping technology, particularly with fire and rescue services and local authorities, on where previous floods have occurred, so that concerned callers can be given accurate information and emergency services can begin to plan the deployment of their flood management assets as early as possible.
- Alongside the work of local authorities and responder agencies, insurance companies should consider ways to help the quick and efficient deployment of temporary flood barriers to policy holders during a flood event.

IMMEDIATELY FOLLOWING THE FLOOD

- The insurance industry should try to involve and include local businesses, even if they have themselves been badly affected by the flood, in the clean-up, repair and restoration of the local community, to aid community recovery.
- Insurers may wish to consider using examples of “green for old” claims practices for the resolution of flood claims, in which insurance claims can cover the cost of installing flood resilient restorations, rather than replacing like for like, which would simply leave the property vulnerable to suffering similar damage again.

LONG-TERM RECOVERY

- In addition to responder agencies, it is important that the insurance industry also generates and disseminates information to policy holders in affected areas to help them understand what happened and why: was this a rare event that is unlikely to ever happen again, or is it likely to be a regular occurrence, or has the event been a regular event in the past? What might people have done before the flood, but did not, that would have mitigated its affects? They may also wish to provide information on the impacts of climate change on flood risk.

9 FURTHER INFORMATION

The Civil Contingencies Act 2004

<http://interim.cabinetoffice.gov.uk/ukresilience/preparedness/ccact.aspx>

Property Owner's Guide to Flooding, Royal Institution of Chartered Surveyors

www.rics.org/flooding

Responding to major flood: What to expect from your home insurer

www.abi.org.uk/Publications/ABI_Publications_Responding_to_major_floods_What_to_expect_from_your_home_insurer_92a.aspx

Floods and Water Management Act 2010

www.defra.gov.uk/environment/flooding/policy/fwmb/key-docs.htm

Learning Lessons from the 2007 Floods: An independent review by Sir Michael Pitt

http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/pittreview/thepittreview/final_report.html

Interoperability in a Crisis 2: Human Factors and Organisational Processes, Jennifer Cole, RUSI Occasional Paper, 2010

www.rusi.org/downloads/assets/Interoperability_2_web.pdf

Combined Effect: A New Approach to Resilience by Jennifer Cole and Laurence Marzell, Serco Resilience, December 2010

www.rusi.org/downloads/assets/Combined_Effect_White_Paper_for_web_2.pdf

FURTHER RESOURCES

Lloyd's

www.lloyds.com

Association of British Insurers

www.abi.org.uk

British Red Cross

www.redcross.org.uk/prepare

Environment Agency

www.environment-agency.gov.uk

Institution of Civil Engineers

www.ice.org

Met Office

www.metoffice.gov.uk

National Flood Forum

www.floodforum.org

Ordnance Survey

www.ordnancesurvey.org

The Royal Institution of Chartered Surveyors

www.rics.org/flooding

The Royal United Services Institute

www.rusi.org

