



Association of British Insurers

# Climate Adaptation

## Guidance on Insurance Issues for New Developments

Association of British Insurers  
51 Gresham Street  
London EC2V 7HQ  
020 7600 3333  
[www.abi.org.uk](http://www.abi.org.uk)

## Executive Summary

Our climate is changing. We need to design new developments to take account of the different environment they will experience over their lifetime. Changes in design, planning and investment policy are needed to create 'climate-aware developments' by taking action to build in resilience to inevitable impacts already in the system, and to mitigate further climate change.

Insurers want to be able to continue to offer affordable property insurance to as many people as possible. This is important because without insurance, mortgages are difficult to obtain and properties are virtually unsellable. However to achieve this the risk must be managed.

We want to help developers, planning authorities and people considering buying new properties ensure that new developments rise to the challenges presented by climate change.

## Key Messages

- Climate change means buildings will be increasingly vulnerable to severe weather
- This will impact on the cost and availability of insurance unless steps are taken to reduce the risk
- Buildings must be located and designed to ensure that they are able to withstand climate change – particularly increased flood risk
- Insurers will only be able to insure buildings – vital to ensure that they are sellable – if this risk is managed to acceptable levels
- We want this guide to help developers, planning authorities and people buying new properties to build and buy properties that rise to the challenges presented by climate change
- We recommend that developers:
  - Follow National Planning Policy Statements
  - Provide buyers with information on climate risks and how they are managed
  - Develop publicly available standards or kitemarks that certify enhanced resilience to climate change impacts
- Before buying a property in a new development, prospective owners should check the flood risk and obtain information on measures taken to reduce it.

## Introduction

Our climate is changing. We need to design new developments to take account of the different environment they will experience over their lifetime. Changes in design, planning and investment policy are needed to create 'climate aware developments' by taking action to build in resilience to inevitable impacts already within the system and to mitigate further climate change.

The changing climate, and building designs, will have an impact on the cost of insurance unless steps are taken to reduce risk. Hotter summers, wetter winters, rising sea level and more severe storms could all lead to costly insurance claims.

An increased risk of flooding presents the greatest challenge for the UK. This risk is not confined to flooding from rivers and the sea, flooding can also come from surface water, sewer overflows or groundwater.

For example, an annual probability of flooding of 0.5% (1 chance in 200 in any given year) may not seem high, but if an average home were to flood to a depth of 0.5 metres the damage likely to be caused (£30,000 - £40,000) is still equivalent to average damages of £150 - £200 every year, requiring a considerable increase in the average premium, typically about £350. For a single property, this may not be a significant problem but where many properties are affected at the same time, the aggregate losses involved present formidable challenges to society, property owners and insurers. The cost of insuring many correlated losses is higher than the cost of insuring equivalent uncorrelated losses because it creates an unwelcome volatility in annual results, which can only be spread over time using international reinsurance. The cost and availability of this can never be guaranteed as they depend on factors that are not all related to the risk of flooding in the UK and the use of capital for which investors demand higher returns because of the higher risks involved.

Insurers want to be able continue to offer affordable property insurance to as many people as possible. This is important because without insurance, property owners must assume financial risks themselves, mortgages are difficult to obtain and properties are virtually unsellable. However to achieve this, the risk must be managed.

The ABI has been at the forefront of researching the impacts of climate change and promoting the actions needed to adapt to them. For example, our recent agreements on flooding and insurance with the Government in England and Scotland (which are also at an advanced stage of discussion in Wales and Northern Ireland) emphasise the importance of long-term strategies to manage flood risk to the already built environment in order to ensure the continued widespread availability of flood insurance. Subject to Government commitment to this and other actions, insurers made commitments to provide flood insurance for existing buildings until June 2013. However, no commitments are made for buildings built after 1 January 2009. This provides time for strategies to be put in place to manage flood risk to minimise the impact on insurance for existing property owners, whereas purchasers of new

property developments have a choice as to whether they want to buy a property in a high-risk development.

We now want to help developers, planning authorities and people considering buying a new property to ensure that they build and buy new developments that rise to the challenges presented by climate change; buildings that are sustainable, energy efficient and low impact, attractive to occupy, with the information necessary to access affordable insurance made readily available.

This Guidance is split into two sections: section A covers how to prepare developments for the changing climate, and section B covers the impact of other changes in building and planning policy to reduce the carbon footprint of new buildings.

## Section A: Preparing for climate change

Climate change projections are that, on average, we will experience hotter and drier summers, with droughts, water shortages and possibly an increased intensification of the heat in urban areas, and milder and wetter winters, leading to increased flood risk. As well as seasonal changes, there will be more extreme weather events – hot days may get hotter, as typified by the summer heatwave in 2003, and heavy downpours of rain may get more intense and more frequent. The latter could lead to an increased risk of flooding, even in areas not normally prone to flooding from rivers and the sea, as occurred extensively in England in the Summer of 2007. Both average sea levels and extreme high water levels have increased in the last few decades and the rate of increase is predicted to accelerate. Current extremes of high water levels will occur more frequently. These effects will increase the risk of coastal flooding and erosion. The number and intensity of storms crossing the UK in winter could also increase.

The changing climate will directly increase the risk of damage to buildings by flood, storm and subsidence.

### Flooding

In the UK the greatest threat from climate change to property is the increased risk of damage by flood.

Climate change is expected to increase the probability of flood events in the future, and the average annual damages arising from them. A 2004 report by Foresight estimated that the average annual damages of flooding and coastal erosion could rise from £1.4 billion per year to as high as £27 billion per year by 2080. The report also suggested that future economic damages from flooding can be reduced by between 40% and 70% through risk management activities. A research report produced by the ABI in 2006, 'Coastal Flood Risk – Thinking for Tomorrow, Acting Today' revealed that a rise in sea level of 0.4m, which is highly likely by the end of this century and could happen as early as 2040, could, unless the level of protection provided by the existing coastal defences were enhanced, raise the financial cost of a major coastal flood in South East England to as much as £16 billion. References for these reports are provided in Appendix A.

New developments, wherever possible, should be located in areas which are not at risk of flooding from any source, both now and in the future. However, in those exceptional cases where development must take place in areas where there is a risk of flooding, it is necessary to design the development to minimise the potential damage to each property and the overall damage to all properties, both new and old, that might be caused in all areas affected at the same time. Examples include locating parks and recreational open space in the areas of highest flood risk; raising floor levels of properties above anticipated flood levels with ramps for disabled access where required; reducing exposure to damage at ground floor level for example by building multi-storey properties and using the ground floor level for flood-

compatible purposes such as car parking; taking action to prevent water entering buildings; making individual properties resilient to flood damage by altering building services and materials to allow rapid and less expensive post-flood repairs; incorporating sustainable drainage systems into the whole development; locating critical infrastructure out of flood risk areas; and using ground levels to compartmentalise flood zones to limit the size of the area affected by flood water at any one time.

Insurers rely on the planning policies and building regulations put in place by Government in all parts of the UK to ensure that flood risk is fully considered for all new developments and that new developments only proceed where the flood risk to the development is acceptable for its proposed lifetime, and will not increase flood risk elsewhere. The ABI will continue to work with the appropriate bodies to ensure that these arrangements are continually reviewed so that this remains the case. The planning policies and guidance in place in different parts of the UK are listed in Appendix A, and summarised briefly below. As part of this process, developers must assess flood risk from all sources and ensure that it is reduced to acceptable levels to obtain planning permission. Guidance on flood risk is provided by technical experts and approved by the relevant authorities.

### England

In England, Planning Policy Statement 25 (PPS25) sets out the planning policy on development and flood risk. This aims to ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where development is, exceptionally, necessary in such areas, the policy aims to make it safe without increasing flood risk elsewhere and, where possible, to reduce flood risk overall. The policy also requires developers to fund any necessary flood defence and mitigation works.

### Scotland

Scottish Planning Policy 7: Planning and Flooding (SPP7) sets out the planning policy on development and flood risk and states that new development should not take place if it would be at significant risk of flooding from any source or would materially increase the probability of flooding elsewhere. The storage capacity of functional floodplains should be safeguarded, and works to elevate the level of a site by land raising should not lead to a loss of flood water storage capacity.

### Wales

Planning Policy Wales (2002) sets the framework for the development and use of land. Under this statement, development proposals should seek to reduce, and certainly not increase, risk arising from river and/or coastal flooding, or from additional run-off from development in any location.

## Northern Ireland

In Northern Ireland, Planning Policy Statement 15 (PPS15) sets out the policies on land use and planning and has as its objectives to ensure that new development is not exposed to the direct threat of flooding and that it does not increase flood risk elsewhere, and to secure and promote the natural role of flood plains as a form of flood defence.

Our key advice is to ensure that the relevant authority on flood risk is consulted on, and approves, proposals for all new developments where there is a risk of flooding from any source. This is the Environment Agency in England and Wales, the Scottish Environment Protection Agency or the Northern Ireland Rivers Agency. Insurers expect to be able to insure developments that are built in line with advice from these responsible authorities. Where developments are not approved, insurance is likely to be more difficult to obtain. It may only be available from insurers who will give special consideration to individual cases, and they will need access to reliable information on flood risk, specific to the property concerned.

The document 'Improving the Flood Performance of New Buildings: Flood Resilient Construction' provides specific advice about how to design new buildings to be more resilient to floods – see Appendix A for details. However, this advice relates mainly to the structure of the building as covered by building regulations. It doesn't cover secondary fit-out such as skirting boards, door facings, fitted bedroom, bathroom and kitchen units and floor coverings which are a costly part of the building and prone to damage by flooding.

Insurers generally assess flood risk based on geographic location using information provided by the relevant authority. This information is currently limited to flood risk from rivers and the sea but it will be extended to other forms of flooding (e.g. surface water flooding) as this information is developed in line with the EU Directive on Flooding. Where a development takes place in a high risk location and measures are taken to reduce the risk to lower and acceptable levels, developers should provide customers with the information and evidence that they can provide to insurers to allow them to access insurance on more favourable terms.

Developers should therefore develop initiatives to provide information on flood risk for new developments to enable buyers to be aware of that risk and to access affordable insurance on the best possible terms. This information is currently provided by developers as part of the planning process and it could also be provided to buyers. An example of the information that insurers would value is set out in Appendix B. The property industry may also want to consider designing publicly available standards or kitemarks that recognise flood resilience for a property, covering not only the structure of the building but also all fixtures and fittings. This information would also be invaluable for re-sale of the property at a later date. The ABI would be happy to support this work.

### Storm

Damage to buildings by wind is related to the maximum wind speeds experienced. Within the UK, buildings are currently designed to cope with '1 in 50 year' return period wind levels as experienced in different parts of the country. It is not yet entirely clear how extreme wind speeds will be affected by climate change but there is concern that they will be increased, particularly in areas such as the South and South East of England, that do not currently experience the most extreme wind speeds. This is particularly relevant for roofs and tiles on roofs. A precautionary approach should be taken to ensure that future buildings are able to cope with climate change by designing roofs to withstand higher wind speeds.

### Subsidence

Climate change projections are that we may in future experience more periods of severe drought, particularly in summer, and higher rainfall in winter, amplifying the seasonal wetting and drying cycle. This could increase the risk of subsidence caused by shrinkage of clay soils, usually exacerbated by the desiccating effect of vegetation on the soil when planted in close proximity to buildings. It is therefore important that the foundations of buildings on soils that are shrinkable are designed to cope with periods of drought and the types of vegetation planted, or likely to be planted, in close proximity to the buildings. Guidance on the planting of vegetation in close proximity to buildings should also be given to occupants to ensure that the judicious planting of trees in appropriate locations can help improve the overall environmental impact of the development, without increasing the risk of subsidence in the future.



## Section B: Designing developments to mitigate future climate change

New developments also need to play their role in mitigating future climate change. Changes are needed to reduce the building's overall energy demand and increase sustainability through: improving insulation to reduce energy needed to both warm and cool buildings; allowing the use of different, more renewable forms of energy; reducing the use of scarce water supplies; providing a cooler environment in summer; and accommodating lifestyle changes – e.g. recycling facilities, bicycle storage.

As builders develop new designs and innovative construction techniques to achieve higher levels of sustainability, it is important that they maintain or improve the resilience of the building to future damage by any peril – not just those directly affected by climate change.

For example, much has been done in the past to ensure that the fire risk to buildings is reduced to a minimum - nothing must be done to compromise this. Fire damage can be extensive and fires present an obvious and serious risk to life. It is therefore important that each new construction technique is tested to ensure that the resulting building components are resilient to damage and that damaged components can be easily and economically repaired.

Where entire components, such as walls, roofs or even rooms are pre-fabricated off-site, they are unlikely to be entirely replaced, if damaged, and methods of repairing them economically need to be established before the construction technique is used. If the risk of damage or the cost to repair building components is increased in any way this will have an inevitable impact on insurance premiums.

Two standards have been developed by the Building Research Establishment in relation to modern methods of construction – BPS 2020 and BPS 20201 (previously known as LPS 2020 and LPS 2021). BPS 2020 is a standard for buildings using innovative forms of construction. BPS2021 is about installation on site of buildings that have been approved under BPS 2020 in the factory. There is a BREC Innovative Dwellings online database for registration of buildings that comply with BPS 2021 and BPS 2020.

The aim is to reassure the public (and mortgage lenders and insurers) that the buildings will perform at least as well as traditional forms of construction (and to ensure that a marker is attached to the building providing reference information for the building system, and details such as guides to maintenance are provided to purchasers).

However, there appears little to motivate developers to use BPS 2020 and BPS 2021, or the registration process, at present. They appear unlikely ever to be used as a 'selling feature' of a building that purchasers are keen to have and they do not promote the building as being better than standard construction in any way.

As with flood risk, there is scope for development of publicly available standards or kitemarks as a selling feature of buildings, certifying their enhanced performance not only in terms of their resilience to damage by flood but also in other respects – e.g. energy performance, performance in fire and security. Insurers would be happy to support such work. This could build on the establishment of the Code for Sustainable homes.

## Conclusion

Insurers want to be able to offer affordable insurance to their customers. As climate change increases risk, this will become harder to achieve unless actions are taken now to reduce the impact of our changing climate. The ABI is working closely with Government across the UK to secure long-term strategies to reduce risk to the already built environment. We urge property developers to design and build new developments in a climate-aware way, thus helping to secure their future insurability.

Our key message to developers is to follow national planning policy statements and to show how a new development will cope with the climate change challenge, both mitigation and adaptation. Prospective buyers and investors should be supplied with information about the climate risks and about any measures that are designed to reduce their impact. This information needs to be in an easily accessible and professional format so that customers can subsequently provide this information to insurers so they can access the best possible insurance terms. We also recommend development of publicly available standards or kitemarks as a selling feature of buildings, certifying their enhanced resilience to climate change impacts.

Our key message to prospective purchasers of a property in a new development is to obtain information on how well it is designed to cope with the changing climate. In particular, buyers should check the flood risk to the property and obtain information about the measures taken to reduce it. If the property is in a low lying area, they should check how well it is drained and whether there is a risk of flooding from surface or ground water. Buyers should also obtain information on how well the building is insulated and on how it is heated. In subsidence prone areas (that is those with clay sub-soils), they should obtain guidance on planting vegetation close to buildings and consider planting trees judiciously to improve the environmental impact of the development, without increasing the risk of subsidence in the future.

## Appendix A: Further Reading

### Planning Policies in the UK

Area of the UK	Planning Policy	Guidance
England	Planning Policy Statement 25: Development and Flood Risk <a href="http://www.communities.gov.uk/publications/planningandbuilding/pps25floodrisk">http://www.communities.gov.uk/publications/planningandbuilding/pps25floodrisk</a>	Planning Policy Statement 25: Development and Flood Risk Practice Guide <a href="http://www.communities.gov.uk/publications/planningandbuilding/pps25practiceguide">http://www.communities.gov.uk/publications/planningandbuilding/pps25practiceguide</a>
Scotland	Scottish Planning Policy (SPP7) Planning and Flooding <a href="http://www.scotland.gov.uk/Publications/2004/02/18880/32952">http://www.scotland.gov.uk/Publications/2004/02/18880/32952</a>	Planning Advice Note PAN 69 – Planning and Building Standards Advice on Flooding <a href="http://www.scotland.gov.uk/Publications/2004/08/19805/41594">http://www.scotland.gov.uk/Publications/2004/08/19805/41594</a>
Wales	Planning Policy Wales (2002) <a href="http://wales.gov.uk/topics/planning/policy/ppw2002;jsessionid=VRfsJrfMy4YI9nv5cvMw40VJQn95KSVJp842Qdyt4hqRyLnH7Frf!-1335101357?lang=en">http://wales.gov.uk/topics/planning/policy/ppw2002;jsessionid=VRfsJrfMy4YI9nv5cvMw40VJQn95KSVJp842Qdyt4hqRyLnH7Frf!-1335101357?lang=en</a>	Technical Advice Note (TAN) 15 – Development and Flood Risk (2004) <a href="http://wales.gov.uk/topics/planning/policy/tans/tan15?lang=en">http://wales.gov.uk/topics/planning/policy/tans/tan15?lang=en</a>
Northern Ireland	Planning Policy Statement 15 <a href="http://www.planningni.gov.uk/AreaPlans_Policy/PPS/pps1/PPS1.pdf">http://www.planningni.gov.uk/AreaPlans_Policy/PPS/pps1/PPS1.pdf</a>	None

### Adapting to Climate Change – A checklist for development

This is published by the South East Climate Change Partnership and has been endorsed by all other climate change partnerships in England. Although recognising that there may need to be differences in detailed application due to regional variations in climate as well as social and economic conditions, they have recognised that the principles that underpin the document provide a robust framework for developers to use in making planning and design proposals for new development.

The document is available at

[http://www.climatesoutheast.org.uk/images/uploads/Adaptation\\_Checklist\\_for\\_Development\\_Nov\\_2005.pdf?phpMyAdmin=0558bab607bd5fb28ce901eecd902d47](http://www.climatesoutheast.org.uk/images/uploads/Adaptation_Checklist_for_Development_Nov_2005.pdf?phpMyAdmin=0558bab607bd5fb28ce901eecd902d47)

### Code for Sustainable Homes

The Government in England has also published a 'Code for Sustainable Homes' as a single national standard to guide the industry in the design and construction of sustainable homes for the future and to enable a step change in sustainable building practice. The code measures the sustainability of a home and 'rates' the whole home as a complete package. However, it is focused on the climate mitigation challenge and does not assess the full range of climate impacts. The code is closely related to Building Regulations, the minimum standards required by law. The higher sustainability ratings within the code, signal the future direction for the Building Regulations.

The document is available at

[http://www.planningportal.gov.uk/uploads/code\\_for\\_sust\\_homes.pdf](http://www.planningportal.gov.uk/uploads/code_for_sust_homes.pdf)

### **Improving the Flood Performance of New Buildings: Flood Resilient Construction**

This document is the outcome of a joint research project between the Department of Communities and Local Government and the Environment Agency and has strong links to the Government's strategy for managing flood risk "Making space for water" that is co-ordinated by the Department for the Environment, Food and Rural Affairs. The project was carried out by a consortium managed by CIRIA and comprising HR Wallingford Ltd, Leeds Metropolitan University, WRc and Waterman Group.

The document is available at

[http://www.planningportal.gov.uk/uploads/br/flood\\_performance.pdf](http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf)

### **Benchmarking how UK home builders are responding to climate risks and opportunities**

NextGeneration, a multi-stakeholder initiative, produces an annual benchmark of the UK's top 20 homebuilders (determined by units built in the reporting year). The benchmark incorporates two sets of scores: the first rates the quality of reporting of the sector on climate change issues and the second rates its performance in this area.

Their autumn 2008 report is available at

[http://www.nextgeneration-initiative.co.uk/ckfinder/userfiles/files/NextGeneration\\_Report\\_full\\_2008.pdf](http://www.nextgeneration-initiative.co.uk/ckfinder/userfiles/files/NextGeneration_Report_full_2008.pdf)

### **Foresight report – Flood and Coastal Defence**

This report was produced in 2004 and provides a long-term (30-100 year) vision for the future of flood and coastal defences in the whole of the UK, taking account of the many uncertainties.

The report is available at

<http://www.foresight.gov.uk/OurWork/CompletedProjects/Flood/index.asp>

### **Coastal Flood Risk – Thinking for Tomorrow, Acting Today**

This study assessed the effects of a rise in sea levels on coastal flood risk. It is available at

[http://www.abi.org.uk/Bookshop/default.asp#Climate\\_Change](http://www.abi.org.uk/Bookshop/default.asp#Climate_Change)

### **Other ABI Reports on Climate Change and Flooding**

These reports are also available at the link immediately above.

## Appendix B: Information on flood risk that insurers would value for a new development

1. Location - the grid reference of each new property and the grid reference of the location judged to have the highest flood risk within the development
2. An assessment of the undefended and defended flood risk from all sources, allowing for climate change during the lifetime of the development,

Source	Probability of flooding without flood defences	Probability of flooding with flood defences	Potential depth of flood water in the property	Potential velocity of water	Potential contamination within flood water
Sea					
Rivers					
Sewers					
Groundwater					
Surface Water					
Infrastructure e.g. reservoirs, canals, dams					

3. Free-format description of the flood risk from each source and the flood defences protecting the area, with details of who is responsible for maintaining them. Measures taken to reduce the risk of flooding to each property and to the area – e.g. floor level relative to the maximum anticipated depth of flood water in the grounds of the property.
4. Assessment of residual flood risk and potential damages for each new property if flooded to the maximum depth in the table above, and the Estimated Maximum Loss (EML) for a flood affecting all properties, both existing and new. Details of measures taken to limit these amounts.
5. Details of any objections on the grounds of flood risk raised by the appropriate regulatory body and measures taken to address these concerns.
6. Details of the water company responsible for effectively draining the property and confirmation that their system has the necessary capacity to effectively drain the

development without reducing the capacity to effectively drain any other properties below the acceptable design standard.

7. Details of storm water drainage and any sustainable urban drainage solutions together with details of who is responsible for maintaining them.
8. An assessment of the resilience of the building components to damage by water – foundations, floors, walls, power and heating and fixtures and fittings.
9. Measures taken to ensure that critical infrastructure (e.g. power and water supply facilities, drainage pumping stations, hospital, fire, police and ambulance stations and vital telecommunication and transport links) is not at risk of flooding.
10. Measures taken to compartmentalise the area to limit the extent of any flood damage arising in a flood event.

For risks that require individual consideration and for larger and more complex risks, insurers may require professionally prepared flood risk assessments. In some cases, they may insist that these are prepared by a qualified civil engineer or hydrologist backed by professional indemnity insurance.