Flood Sense

FLOOD PROTECTION HANDBOOK

www.floodsense.co.uk

Jan 2011

"There is sense in flood defence"

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Dear Property Owner / Landlord / Tennant,

You have this Flood Protection Handbook because you may be in an area subject to flooding problems. Flooding affects many residents of the UK. Some experience fast moving floodwaters, others have frequent, but slow-moving runoff water problems in their streets or gardens / drives during local downpours. Some people have had repeated floods, while others have yet to be impacted.

Regardless of what you have seen, the next flood could be worse. We cannot ignore our flood risks. Floods take lives and damage property. They can be emotionally devastating to you and your family, both while they are happening and later when you have to deal with their aftermath.

The governments and councils of England and Wales are working together to reduce the threat of flooding by building and maintaining flood protection works. However, flood control projects are very expensive, take years to complete, and will not offer 100% protection. There are various flood monitoring and warning programs provided by local councils of England and Wales and the Environment Agency that provide advance notice of a pending hazard. New developments are closely regulated by local councils to reduce the impact of flooding.

While they are doing what they can, there are things that you can do, too. You can prevent future damage by flood proofing your building or buildings and making personalised flood preparedness plans. You can learn important flood safety rules and health precautions, and minimise your losses during flood recovery. This handbook is designed to help you do all those things. If followed, the guidelines will go a long way toward protecting your family and your home or business from the next flood.
If you would like to know more about flood protecting your home, please call Floodsense for a free flood check.

Sincerely

Kevin Williams
Flood Sense

How to use
this handbook

If you have just been flooded

see **Chapter 6**: After the flood ..... page 24

If you heard a flood warning

see **Chapter 5**: During the Flood ..... page 22

If things are quiet and dry

see **Chapter 3**: Before a flood, preparing a response plan 15

This handbook was prepared by Kevin Williams of Flood Sense

Record your IMPORTANT PHONE NUMBERS AND CONTACTS on the page provided at the end of the text. This handbook will also be available on-line at www.floodsense.co.uk

Disclaimer

How to use
this handbook

Chapter 1 : Flood Hazards

Many people think that if they haven't been flooded yet, they never will be. However, it's just not so! Areas in England and Wales have experienced the worst flooding for decades

This chapter reviews flood hazards and how a flood, worse than any you may have already experienced, could affect you.

Causes of Flooding

1. Flooding occurs when the amount of water arriving on land (from rainfall, snow melt, surface flow, flow in watercourses or inundation by the sea) exceeds the capacity of the land to discharge that water (by infiltration, surface flow, piped drainage or surface watercourses). It can occur on any level or near-level areas of land but the main concern is with such areas adjacent to watercourses (fluvial flood plains) or low-lying ground next to the coast (coastal flood plains). The limits of flood plains cannot be defined precisely because floods with similar probability can arise from different combinations of event that will have different impacts.

They are often delineated by the estimated peak water level of an appropriate flooding event on the watercourse or at the coast. On rivers, this has generally been taken to be the flood with a 1% annual probability of exceedance (the 1 in 100-year return-period flood) or the highest known water level. In coastal areas, because of the generally more dynamic nature of coastal flooding, the 0.5% annual probability (the 1 in 200-year return-period flood) or the highest known flood is generally used. It is recognised, however, that floods of greater magnitude than these will occur; such floods constitute extreme events. Locally flooding may occur due to groundwater overflowing, overland sheet flow or run-off exceeding the capacity of piped drainage during periods of heavy or prolonged rainfall. Such local flooding can only be addressed on a site-specific basis.

2. The principal cause of river flooding is excessive rainfall or snow melt within a limited period, which overwhelms the drainage capacity of land, particularly when the ground is already saturated or when channels become blocked. Inundation by the sea is largely due to combinations of high tide, storm surge and wave activity but may also be associated with structural failure of defences. Some areas are subject to combinations of tidal and river impacts.

The impacts can be aggravated by:

- The growth of built development in catchments and other changes in land use, which increase the rate and volume of run-off;
- Sediment movement that has changed river cross-sections and affected flood levels;
- Lack of maintenance of flood defence systems, watercourses, culverts (including the flood relief areas around them) and road gullies, particularly where this leads to channel blockage;
- Canalisation, modification and diversion of rivers and watercourses, which increase the rate of flow and decrease the time taken for water to travel within a catchment; and Building of structures (eg embankments) which restrict flows over historical flood plains and thereby create additional flood risks both upstream and downstream.

3. Flooding is, therefore, a combination of human activity and natural physical conditions. In determining the risk posed by flooding, account needs to be taken of the likely depth, speed and extent of inundation and the potential for anticipatory action to be taken as a result of flood warnings. Rapid flows due to flash flooding or inundation by the sea following failure of defences pose a greater risk to life than a steady rise in water level. The consequences also vary with land use.

For example, overtopping and possible failure of a flood defence defending a densely populated urban area is an extreme risk; the same event affecting agricultural land is unlikely to involve a serious threat to human life.

Impact of climate change

4. There is mounting evidence that the global climate is changing as a result of human activity. Sea level will rise globally as a result of thermal expansion of the oceans, melt- water from alpine ice and snow and from polar ice caps in Greenland and Antarctica. The current best estimate is for a 210mm rise between 2000 and 2050. However, this estimate is very uncertain and it could be as low as 100mm or as high as 550mm, depending on the future level of greenhouse gas emissions and the sensitivity of the climate system; the best- estimate sea-level rise is based on central estimates of each of these. To the climate-induced sea-level rise has to be added the movement of land, which is generally falling in the south- east and rising in the north and west. UK Climate Impacts Programme scenarios, which include both sea-level rise from climate change and land movement, estimate a rise of 410mm in East Anglia and 210mm in west Scotland by 2050.

Impact of Flooding

If you haven't personally experienced a flood, it is hard to envision the severity of damage that it can cause. Flooding affects people and their property in many ways:

- Flooding presents a safety hazard to people and animals.
- Flooding causes health problems, both physical and emotional.
- Flooding damages buildings and landscaping.
- Flooding damages the contents of buildings.

Safety Hazards

Moving water causes more safety problems than standing water. Anything that is stored outside, and not securely anchored to the ground, can be carried away by floodwaters, i.e., toys, firewood, fuel tanks, structures, tools or vehicles. Floods become much more forceful as they accumulate debris. The debris can batter or impale people, as well as structures.

Floodwaters can conduct electrical currents and hide debris. Be sure to look for potential electrical sources and stay away from any water in contact with them. Floods may structurally damage floors and stairs, making them unstable.

Experiments have shown that a person is less able to stand up in a flood as depth or velocity increase. They showed that a six-feet tall adult would be knocked over in four feet of water that is moving at a velocity of only one foot per second, or in one foot of water that is moving at four feet per second. Smaller people will have trouble in even shallower and slower floodwaters.

More people are killed trying to drive on flooded streets or bridges than in any other single flood situation. Cars can float in as little as 18 inches of water, and flooding may hide a washed out road with what appears to be only a few inches of water.

Health Hazards

Floodwaters are not clean. They carry mud, silt, road oil, and even sewage. Food, cosmetics, medicines, stuffed animals, baby toys, and any similar items that contact floodwaters, become contaminated and must be thrown out. Clothes and dishes need to be washed thoroughly in clean water with soap to disinfect them. Mould spores and bacteria grow in damp areas and are difficult to remove completely. If a potable water system becomes contaminated, the health department recommends boiling all water to be used for drinking and domestic cleaning.

Floods also take a toll on people's mental health, caused by both the immediate dangers as well as future concerns. The stresses caused by flooding are aggravated by fatigue during cleanup and anxiety over lost income, health risks, and damage to irreplaceable items. Children and the elderly are especially susceptible to negative impacts from stress. Chapter 6 - After the Flood discusses ways of coping with these problems.

Building / Exterior Damage

Standing water can seep through building walls, soak wood, dissolve drywall and contaminate insulation. Electrical components may short when flooded, creating a fire or shocking safety hazard. If improperly dried, wet wood will warp and plywood will split, requiring replacement of stairs, flooring, etc. Mould is a big source of property damage, as well as being a health risk during floods.

As the water gets deeper, it puts more pressure on walls and floors. A flood that is over a metre may crack or break a standard house wall. Even very shallow flooding on the surface can put over seven feet of water pressure on a below-grade basement wall or floor, causing cracks, leaks, or even buckling.

As discussed previously, moving water can transport debris from the ground surface as it flows downstream. The debris acts like a battering ram, capable of damaging or dislodging large structures, like buildings and bridges. It scours the ground, removing grass and plants and eroding channel banks. The flood becomes more destructive as it moves downstream.

Contents Damage

Wet wooden furniture may be so badly warped that it can't be used. Other furnishings, like upholstery, carpeting, mattresses and books, are usually not worth the cost of drying them out and restoring them. Kitchens manufactured from mdf / chipboard will start to break down very quickly. Mould and mildew will quickly spread through the remaining debris. Flooded electrical appliances will not work safely, until they are professionally dried and cleaned.

Chapter 2 : Government Flood Programs

There are many existing, government-sponsored programs to prevent or reduce flood damage.

You're not alone in tackling potential flood problems.

Causes of Flooding

Public Information Programs

This handbook is only one of several ways to obtain flood protection advice. Current law requires that people purchasing flood-prone property be advised, in writing, of the potential flood hazard.

In depth information can be found on the environment agency's web site

http://www.environment-agency.gov.uk/homeandleisure/floods/

Other contact websites and contact numbers can be found on the contacts page of this booklet.

Flood Warnings

If flooding is forecast for your area, the Environment Agency will issue warnings to show how dangerous the situation is. The three types of warning are:

- Flood Alert
- Flood Warning
- Severe Flood Warning

Flood Alert

Flood Alert means flooding is possible.

You should:

- check local news and weather forecasts and water levels near you
- be prepared to put into action any plans you have
- made to deal with flooding in your area

Flood Warning

Flooding is expected.

Immediate action required

You should:

- act now by moving cars, pets, food, valuables and important documents to safety
- put flood protection equipment in place
- Turn off gas, electricity and water supplies if it's safe to do so

You should try to stop any water from getting into your home by:

- putting plugs in sinks and baths and weighing them down with sandbags, pillowcases or plastic bags filled with garden soil, or heavy objects

If you don't have valves fitted which allow the flow of water in one direction (non-return valves), you should:

- plug water inlet pipes with towels or cloths
- disconnect any equipment that uses water (like washing machines and dishwashers)

Severe Flood Warning

Severe flooding
and danger to life.

You should:

- collect the things you need for evacuation
- stay in a high place with a means of escape, avoid electricity sources and avoid walking or driving through flood water
- co-operate with the emergency services
- call 999 immediately if you are in danger

In the event you are evacuated

If the emergency services tell you to evacuate, you should follow their instructions and leave your home. Refusing to leave on their advice will put you, your family and those trying to help you at risk.

You'll be taken to an evacuation centre run by your local council. Free food and bedding will be provided but you should bring spare clothing, essential medication and babycare items if you need them.

Most evacuation centres will let you take your pets. You should put cats and small animals in a pet carrier or secure box and bring enough food for them.

The people who run the centres are trained to give you support and advice. They will help you through the stress of a flood and prepare you for what to do afterwards.

Warnings no longer in force

The 'warnings no longer in force' message means that no further flooding is currently expected in your area (There is no symbol to accompany this message).

You should:

- keep listening to weather reports and only return to evacuated buildings if you are told it is safe to do so
- beware of sharp objects and pollution – flood water may still be around for several days after the flood
- contact your insurance company and ask their advice before starting to clean up if your property or belongings are damage

Flood Control Projects

No district, local or county council can stop flooding completely. Flood protection is improved by installing larger culverts and bridges, armoring channels and embankments, and building retaining walls or earthen berms to redirect street flooding away from buildings.

River / Stream / Sea Defence Maintenance

Accumulated debris and low tree limbs are removed to keep channels clear, especially at bridges and culverts, so storm water can flow more readily along its drainage path. If you see debris clogging or other potential flood problems in local streams, please report the condition to your local authority or local Environmental Agency office.

The Environmental Agency coordinates and funds flood control projects and maintenance programs. Its maintenance programs include: mowing and clearing debris, weed thinning, tree and bush management, floodgate and sluice maintenance, maintaining flood barriers and pumping stations, inspection and repair of flood defence structures, general watercourse surveys, weir / bridge inspections, outfall maintenance, clearance of culverts and replacement of culverts, retaining walls, and other deteriorated structures.

Floodplain Areas

One of the best ways to prevent flood damage is to keep the floodplains open. If there are no buildings in the floodplains, there will be little opportunity for property damage. Broadly speaking A “floodplain” is the lowland adjacent to a river, lake or sea. Floodplains are designated by the frequency of the flood that is large enough to cover them. For example, the 10-year floodplain will be covered by the 10-year flood and the 100-year floodplain by the 100-year flood. The above photo is an example of a floodplain area that has been kept open. These areas provide recreational opportunities for the community and a place for temporary flood detention storage.

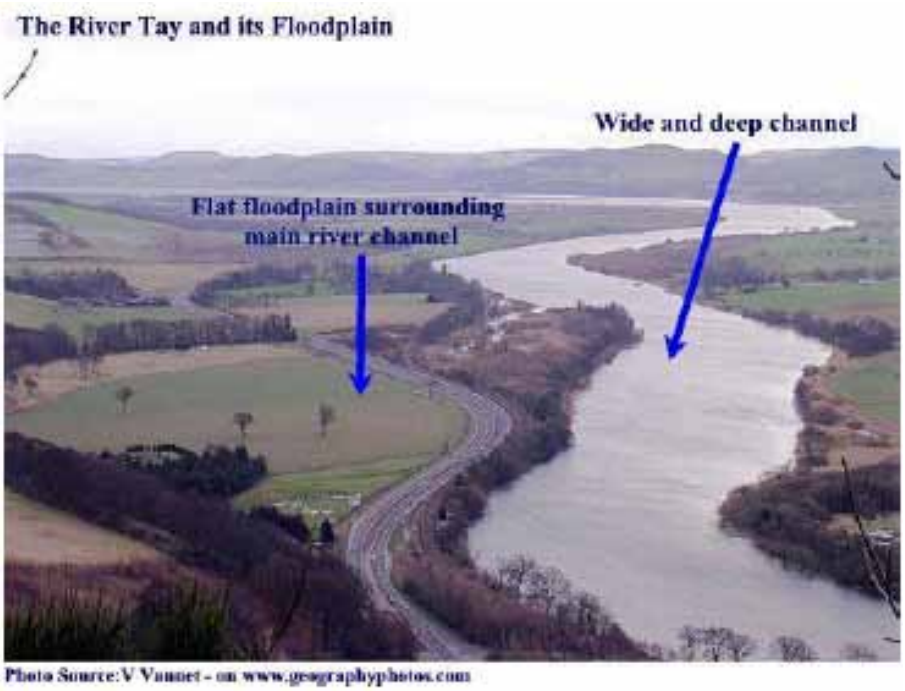


Photo Source: V Vannet - on www.geographyphotos.com

Building Regulations

Parliament and local authorities have adopted specific regulations to help ensure that new construction will not make our flooding problems worse. Construction is regulated on sites that are in floodplains. New buildings and substantial improvements to existing buildings in the floodplain must be built or flood proofed to one foot or more above the 100-year regulatory flood level.

Most flood construction projects and regulations are designed to protect people and property from the estimated 100-year flood, by keeping them out of harm's way. The 100-year flood has a one percent (0.01) probability of being equalled or exceeded every year. This is considered a cost- effective design standard for most construction projects, though some uses require different protection standards. Floods larger than the 100-year design flood can and frequently do occur.

There are different building regulations for developments located outside the floodplain. However, most construction projects must submit a drainage plan, to demonstrate that the proposed water runoff will not overload the drainage / sewer system.

Flood Insurance

Whether you know or not that your area is at risk of flooding, it's likely your insurance company will as most UK insurers have copies of the Environment Agency's flood risk mapping.
Being aware and taking action to reduce the risk of flooding to your property may even bring your insurance premiums down.

Anyone can access the same information that is available to insurance companies by using the Environment Agency's flood map. The Flood Map allows you to find out what the likelihood of flooding from rivers and the sea is in your local area. Site address can be found on the contacts page of this booklet.

If you are finding it difficult to get insurance you could try:

- Talking to one of the brokers who specialise in properties that are difficult to insure. You should be able to find these brokers in the Yellow Pages. You can also find a broker on the British Insurance Brokers' Association website or by calling its broker helpline on 0870 950 1790.

- Contacting the ABI. They can provide you with details of possible insurers.

- Contacting the National Flood Forum (NFF) which may also be able to help. The NFF is an independent, grassroots organisation, which offers support to those affected by flooding. For more information, visit the National Flood Forum website or contact the National Flood Forum on 01299 403055.

Chapter 3 : Before the Flood

The time to protect yourself from flooding is before the flood.

This chapter covers three ways to do that: flood preparedness, flood response planning and insurance.

Flood Preparedness

Many preparations can be done prior to the next flood. The following checklist will help you prepare:

1. Determine how bad flooding could be on your property (see the guidelines in the box). Lists of resources and contacts are provided in the back of this manual.

2. Be familiar with official warning and evacuation procedures.

3. Purchase your own water alarm if your flooding comes from sewer backup or basement seepage. The alarm can give you precious extra time to minimize potential property damage. A water alarm is similar to a smoke alarm; it beeps when water touches it. Floodsense can offer further advice on this if it is required.

4. Talk to your insurance agent about your home owner's insurance coverage. Consider separate flood and sewer backup insurance policies.

5. Prepare a list of emergency telephone numbers, including the number for your insurance agent. Make copies and keep them in your car, at work, or other safe location away from your home.

6. Assemble the supplies you will need for cleanup and recovery and put them in a safe place, above the expected floodwater elevation. Chapter 4 lists possible supplies.

7. Make a record of all your personal property. Go through your house room by room and make a household inventory. Take photographs or camcorder records of inside and outdoors. Inventory forms are available free from most insurance companies, or you can make your own.

8. Put photocopies of inventory records, insurance policies, deeds, logbooks, wills, telephone numbers, bank and credit card account numbers, and other valuable papers at a location away from your house, such as a safe deposit box.

9. Write a flood response plan and keep copies in your car and at work, near the utility meters, or other prominent places. The Environment Agency can provide a sample flood response plan to get you started. A link to this is here

   http://www.environmentagency.gov.uk/business/topics/flooding/32362.aspx.

   Keep a copy of your response plan with this handbook too.

10. Check out the appropriate flood proofing options for your house in Chapter 4 (page XX)

Know Your Flood Hazard

Ask your local authority the following questions:

- How high would the 100-year flood be in my neighbourhood?
- Can I expect fast-moving water, or water filled with debris?
- How much warning time can I expect?
- How will I get the flood warning?
- What streets are likely to be flooded or barricaded near my neighbourhood?

Flood Response Plan

Preparing a flood response plan will help you think through all the details that demand attention after a flood watch or warning is issued. Walk through your home or business with this handbook, and make notes of how to adjust these instructions to your own situation. Writing it down will help you remember everything, which is especially important when everyone is in a hurry and excited because of an imminent flood. Be sure to include Important Phone Numbers in your plan.

The flood response plan needs to be based on your own property's flood risk and how much lead time you have following a flood watch or warning. For example, if you are warned of a life- threatening flash flood, you should get out of the area immediately, without worrying about the backup power supply to your sump pump. Your plan should be a checklist of steps to take before floodwaters reach your home or business.

If you have only a few minutes following a Flood Warning, these activities might be on your flood response plan:

- Monitor local radio or TV stations for flood information and evacuation instructions.
- Pre-plan two places where family members or staff can meet if you are split up, one place in close proximity and another place that is out of the flood area. These places could be at another business premises or friends' house on higher ground.
- If you leave, take your pets, medicine, and other things you will need if you can't return home or to your business for a day or two. Leave a note explaining where you have gone, when you left and how to contact you.
- If you leave, lock your home or business premises.

If you have 15 to 30 minutes following a Flood Warning, include additional flood response activities like these:

- Read the safety precautions on the back cover of this handbook.
- Install flood protection equipment and any other prepared flood proofing measures.
- Turn off the electricity and water if you anticipate that they might be flooded. If you are able to, turn off the electricity to only the area that will be affected i.e. basement (if you have one), ground floor or both leaving you with power to the rest of your home or business. When you prepare a response plan, mark your fuse box breakers to show the electrical circuits that serve these areas.
- If you turn off the gas- be sure to relight your pilot light. You must determine if shutting off the gas is necessary. Fortunately, you can pre-plan your intended response to different conditions when you prepare an emergency response plan.

- Test the backup power supply to your sump pump if installed (speak to flood-sense for further advice on this).

- Move the most valuable or damage-prone contents in your home or business to above the flood level or to another safe place. These include small carpets, lower drawers to cabinets, and cleaning fluids or hazard-ous chemicals. They can be moved to the upper floors of your home or business or placed on top of cabinets, if floodwaters will not be that deep.

While you're working on a flood response plan, think about the other types of emergencies you might face, such as fires. The Environment Agency can help you with ideas to include in a flood/disaster response plan.

http://publications.environment-agency.gov.uk/pdf/GEHO1009BRDL-e-e.pdf

Flood Survival Kit

Prepare as much of your Flood Survival Kit as possible now and store it away in a suitable and accessible location. Spare blankets can be stored in Space Bags that cost only a few pounds and will keep them dry. For other items we recommend plastic storage boxes with lids.

- Important documents in a waterproof wallet or container

- Torch and spare batteries

- Blankets and warm clothing

- Waterproofs including rubber gloves

- First-aid kit, including waterproof plasters/ dressings

- A list of useful telephone numbers

- Your mobile phone

- Supply of bottled water

- Stock of non-perishable food items, camp-ing stove and a tin opener

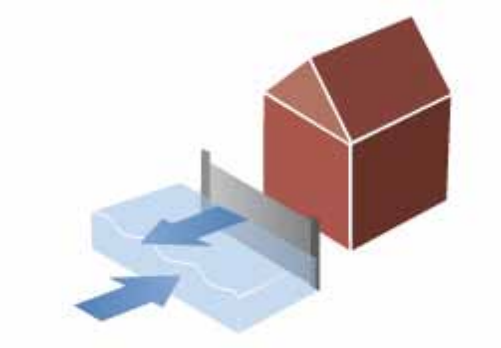
- Portable radio and supply of batteries

- A portable pet carrier for each of your pets & emergency pet supplies.

Chapter 4 : Flood proofing your building

Before you invest too much money in flood-proofing, talk to an engineer or architect, an experienced contractor like Floodsense

This chapter covers changes that you can make to your building to prevent or reduce damage by floodwaters.



Flood Preparedness

Different flood-proofing techniques are appropriate for different types of buildings and flood hazards. Use the following guidelines to select applicable techniques:

- If you have a basement, read about basement cracks, sump pumping, sewer backup, barriers and wet flood- proofing.
- If your house is on a slab foundation and the 100-year flood is estimated to be less than three feet deep on your first floor, read about barriers and dry flood-proofing.
- If your house is on a crawlspace and the 100-year flood is estimated to be less than three feet deep on your first floor, read about barriers, wet flood-proofing, and elevation.
- If the 100-year flood is estimated to be over three feet deep on your first floor or will include high velocities and/or debris flow, read about relocation.

Helpful Resources

- Prepare your property for flooding, published by the Environment Agency.

  http://publications.environment- agency.gov.uk/pdf/GEHO1009BRDL-e-e.pdf

- CIRIA: Repair and Restoration of buildings following floods

  www.ciria.org.uk/flooding

- Association of British Insurers: Flood resilience and resistance fact sheet for insurers and loss adjusters,

  http://www.abi.org.uk/content/contentfile-manag er.aspx?contentid=24922

- It is important that people understand that the predicted 100-year flood elevation is only an estimate, based on current technical standards for hydrology. Many times the floodwater elevation is higher than anticipated due to larger storms, saturated ground from prior storms or large volumes of debris in the water.

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Basement Cracks

Groundwater can seep into your basement around pipes or through cracks in the walls or floor. The seepage path may be difficult to determine if the walls have been covered with panelling or other finishing. The best way to deal with a groundwater problem is to waterproof the walls and relieve the water pressure through a footing drain system and sump pump. See next section on Sump Flooding

Cracks can be repaired and the walls can be waterproofed from inside or outside. Waterproofing on the outside is more effective because groundwater pressure forces the sealer into the foundation. The best technique is to dig a ditch around the basement wall so that you can apply a commercial sealant to the exterior walls. This can be done by a handy person (many home maintenance manuals have instructions for this), or a commercial waterproofing company.

Precautions

Waterproofing alone is recommended only for groundwater problems. Surface water will put much more pressure on the building's walls and can even break them. If the building will be affected by surface flooding, the owner should also install a barrier and an underground drain. There have been many instances of disreputable contractors doing basement waterproofing, because the work is hidden and sloppy work may not show up for several years. Therefore, ask the waterproofing supplier or company to provide references of buildings in your area that have used their material or technique – before you sign a contract.

Cost - £10-£10,000 or more

A homeowner can seal up cracks from the inside with a tube of sealant. Using a commercial waterproofing company to completely seal the exterior of all the basement walls will cost more. Costs should be used as estimates only, as they can vary widely depending on location, size and complexity of the work.

Sump Flooding

Basement flooding caused by saturated ground can be corrected by installing a footing drain around the foundation. The drain collects groundwater and directs it to a sump. When the sump fills, water is pumped out to a drainageway or onto the ground away from the building. Depending on local conditions, the drain and pumping system may have to handle large volumes of water.

If the pump is blocked with debris, is overloaded or loses power, the system designed to keep groundwater out of your basement can act as a conduit to bring water in. You can prevent sump flooding by doing one or more of these floodproofing projects:

- Clean the pump intake to remove blockages,
- Install a larger sump pump, or add more pumps,
- Connect the pump to a backup power supply, like a battery system or generator,
- Disconnect the downspouts from the footing drain, or
- Redirect the downspouts and sump pump discharge further away from the house.

Precautions

When the basement is full of water, it is hard to tell how it got in. It's a good idea to check for cracks in the walls and install sewer backup protection, too. Turn off the electricity before entering a flooded area. If your backup source of electricity is a generator, be sure it is set up outside or vent it to the outside to exhaust deadly carbon monoxide fumes. Set the backup power supply above the expected flood level.

Cost - 0-£650

A homeowner can redirect the downspouts and sump pump discharge in a few minutes at no cost. An additional sump pump will cost around £100, a battery backup system including a marine– style battery is £350-£450, and a standby generator can cost up to £550. Prices are approximate.

Sewer System Backup

Wc's, bath's, shower's, sinks, washing appliances i.e washing machines and dishwashers generally drain to a main sewer in the street. Some properties mat not be connected to the main sewer but have there own septic tank system.

During a flooding event, excessive amounts of water can enter these areas, causing backups into the house or overloading of the treatment facility.

Sewer system backups can also be caused by events not related to storms or flooding. Individual service lines can be plugged by grease, waste, tree roots, and breaks in the pipe or improper disposals. The owner or occupier can fix or prevent these problems by using proper maintenance, disposal procedures and planning. For example: Plant trees and shrubs at least 10 feet away from sewer lines to minimize potential root damage.

The following section describes ways to deal with sewer or septic tank backup that occurs when the main system is overloaded. There are ways to stop sewer backup: Each of the following measures will prevent sewer backups in buildings: mainline backwater valve, Inflatable textile bladders, Check and ball valves.

Backwater Valve

One of the keys to flood proofing your property is knowing your location in relation to the sanitary sewer system that serves your building or home. A sewer backup valve (waste backwater valve) can make the difference between having your basement (if you have one) or ground floor flooded knee deep with raw sewage or staying high and dry.

Flap or check valves, which allow flow out of the property and close automatically when flow reverses, are simple.

A properly operating backwater valve allows flow to only go in one direction (out), preventing wastewater from entering your building during flooding, regular sewer system maintenance or accidental sewer system backups.

Mainline Fullport Backwater Valves award-winning check-valve design offers an exceptionally tight seal when compared to a gate valve and still requires periodic testing, but they protect you automatically, even if you are not at home!

Cost £120 - £470+

Backwater valves range from £120 to over £400 depending on what type of sewer system you connect to and whether you have easy access to it.

Inflatable Textile Bladders

The U bend toilet bung is an example of a simple, inflatable device used to prevent sewage backflow coming back up the toilet under flood conditions. Essentially the U bend toilet bung is a strong rubber bag, attached to a hose with a Schrader valve on the end. The bung is normally supplied with a hand pump.

To use the valve, gently push the deflated bag down into the toilet under the water level, into the U bend at the bottom of the toilet. The hose which is attached to the rubber bag goes under the toilet seat and rests to the side of the toilet.

Connect the valve of the hand pump to the valve on the hose and simply pump up the bag until it is totally inflated and firm to the touch, being careful not to over pump. (This works using the same method as pumping up a bicycle tyre).
At the maximum inflation the sealing area will be severely restricted reducing the maximum allowable back pressure

Once the threat of sewage backflow has subsided, simply deflate the bag by applying pressure to the pin on the valve of the hose. This can be done by pushing your finger or thumb onto the pin of the valve to let the air escape from the bag. Remove the bag and hose from the toilet and rinse off using a mild detergent. Allow to dry and store away.

Cost from £50

The cost for this type of inflatable textile barrier start from about £50 comprising of a pvc bung, hose with Schrader valve and hand pump.

Check / Ball Valves

A check valve, non-return valve or one-way valve is a mechanical device, which allows fluid to flow through it in only one direction.

Check valves are two-port valves, meaning they have two openings in the body, one for fluid to enter and the other for fluid to leave. There are various types of check valves used in a wide variety of applications. Check valves can be installed on washing machines, dishwashers, sinks, baths, showers etc to prevent sewage backflow. They are available in a wide range of sizes and costs. Check valves generally are very small, simple, and inexpensive. Check valves work automatically and most are not controlled by a person or any external control; accordingly, most do not have any valve handle or stem. The bodies (external shells) of most check valves are made of plastic or metal. An important concept in check valves is the cracking pressure which is the minimum upstream pressure at which the valve will operate.

A swing check valve or tilting disc check valve is check valve in which the disc, the movable part to block the flow, swings on a hinge, either onto the seat to block reverse flow or off the seat to allow forward flow.

Cost from £5.00

Due to the various makes and sizes on the market we can only give you an indication from how much you can expect to pay.

Check / Ball Valves

A ball check valve is a check valve in which the closing member, the movable part to block the flow, is a spherical ball. In some ball check valves, the ball is spring-loaded to help keep it shut. For those designs without a spring, reverse flow is required to move the ball toward the seat and create a seal. The interior surface of the main seats of ball check valves are more or less conically-tapered to guide the ball into the seat and form a positive seal when stopping reverse flow. Ball check valves are often very small, simple, and cheap and like the above can be installed onto outlets leading from washing machines, dishwashers, sinks, baths, showers etc

Cost from £5.00

Due to the various makes and sizes on the market we can only give you an indication from how much you can expect to pay.

Flood protection barriers

A flood-barrier is a secondary flood-proofing system to be used when the design elevation of the building is below the Base Flood Elevation. The purpose is to form a watertight seal in front of all building openings in order to prevent floodwaters from penetrating the structure.

This system is to be removable and only used at time of storm or flood warning and in conjunction with other flood-proofing design criteria. A form of flood resistance, flood barriers come in many different formations, the correct barrier should be fitted depending on potential flood requirements.

In cases of severe flooding (where floodwater rises above 1 metre) keeping water out of your property can be more harmful than letting it in. The stress on the building caused by that amount of water can damage the structure and foundations of the building. Therefore you should never block doors, windows or air-vents over 1 metre in height.

Cost from £0 - £500+

A simple flood protection barrier can be made from a sheet of ply board cut to fit an opening and fixed in place with batons, screws and mastic sealant. After market products can range in price from a few pounds to a few hundred depending on type of opening and type of product required. More information on these can be obtained from contacting Floodsense.

Dry Flood-proofing

This term covers several techniques for sealing up a building to ensure that floodwaters cannot get inside it. All areas below the flood protection level are made watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings (doors, windows, and vents) are closed, either permanently, with removable shields, or with sandbags. A sewer backup protection measure is installed.

All of the previously described flood protection methods belong to this category. Many dry flood proofed buildings do not look any different from those that have not been modified.

Dry flood proofing is most appropriate for buildings on concrete slab floors (without basements) with no cracks, and subject to less than three feet of water. To ensure that the slab is watertight and sound, a careful inspection is recommended. A subsurface drainage system with a sump pump is needed in areas where waters will stay at flood stage for more than a few hours.

Precautions

A dry flood proofing project may require planning approval from your local authority. Footing drains should be designed and inspected during installation by an engineer. Check with the planning department of your local authority to be sure that your project does not violate any legal requirements.

A building should not be dry flood proofed if floodwaters may be more than three feet deep or move faster than five feet per second. It is very tempting for the owner of a dry flood proofed building to try to keep the flood out, even if floodwaters get deeper than two or three feet. This can result in collapsed walls, buckled floors, and danger to the occupants.

Basements should not be dry flood proofed if the floodwater will touch the walls, because of the potentially destructive water pressure on the walls and floors. Basement walls can be waterproofed to protect them from high groundwater, if a footing drain is installed to keep the water pressure from building up. See the following section on Wet Flood proofing to protect sub grade foundation walls and floors.

Many commercial waterproofing compounds are made to protect wood from rain, but they will not withstand the pressures of standing water. Some deteriorate over time, so check with the supplier to be sure the waterproofing compound is appropriate for sealing your basement walls from water. Closing openings depends on having adequate warning time and having someone present who knows what to do.

Cost - £100 - £20,000

Dry flood proofing costs can range from £100 when a handyperson simply applies a waterproofing compound, to £20,000 or more for a more secure and attractive approach that works even when no one is home.

Wet Flood-proofing (basements)

If floodwaters in the vicinity are touching the property, they are probably also seeping down between the soil and the exterior of the basement walls. Even if the outside water is only a few feet deep at the ground surface, it is putting pressure on the basement walls and floor equal to that of a standing body of water seven or more feet deep, about 750 pounds of pressure per square foot. A similar depth of dry soil exerts less than 100 pounds per square foot.

Most walls and floors are not built to withstand that kind of pressure. As a result, waterproofed basement walls and floors can be cracked, buckled, or broken by the pressure of floodwater. Instead of just a wet basement, you may end up with both a wet basement and broken walls. One way to deal with this is to remove everything that could be damaged by a flood and let the water in. This is called wet flood proofing. Several modification methods can be used to minimize potential damage to the building and its contents if floodwaters are allowed inside. These techniques range from moving a few valuable items to higher elevations within the house to rebuilding the floodable area.

In the latter case, structural components below the flood level are replaced with materials that are not subject to water damage. For example, concrete block walls are used instead of wooden studs and gypsum wallboard. The boiler, washing machine, tumble dryer etc are kept to the higher floors of the property. Another approach is to raise these items on blocks or platforms where the flooding is not deep.

Many people wet flood proof their basements, crawlspaces, garages, and accessory buildings simply by relocating all hard-to-move valuables, such as heavy furniture and electrical outlets.
Vents can be placed on the foundation walls to ensure that floodwaters can get into and out of the crawlspace to equalize water pressure on walls and floors.

Wet flood proofing has one advantage over the other approaches: no matter how little you do, you will reduce your damages. Simply moving furniture and electrical appliances out of the flood- prone area can prevent thousands of pounds in damage.

Precautions

Moving contents is dependent on adequate warning time and the presence of someone who knows what to do. Flooding an area where there is electricity, paint, or other hazardous materials can create a safety hazard. There will still be a need for cleanup, with its accompanying health problems.

Cost - £0-£20,000

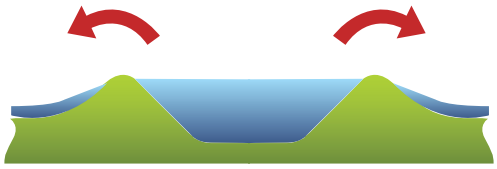
You can accomplish some wet flood proofing, just by moving valuables and hazardous materials out of the floodable area. Reconstructing a floodable area with water-resistant materials and relocating utilities can be much more expensive.

Chapter 5 : During the Flood

Storms and floods can occur very quickly. You should be on the alert when you see storms brewing.

When in doubt, turn on your radio or television and listen for weather information. Flash floods can occur at any time along the Front Range.

Follow your flood response plan (see section 3)



Turning Off the Utilities

Turning off your utilities could prevent greater damage if your building gets flooded.

Electricity

The most important utility to turn off is the electricity

Gas

Floodwaters may knock out pilot lights and silt may get into burners if you have a floor standing boiler. If there is a chance that the pilot light could be flooded, you should turn off the gas before you leave to prevent a fire or potentially explosive safety hazard.

After the flood, contact a gas safe registered plumber to check your appliance (if there are signs it has been in contact with flood water).

Fuel Oil Tanks

If you have a fuel oil or propane tank, turn off the fuel valve at the tank if the pilot light might be inundated or the supply lines might be broken by a flood.

Make sure that your outdoor fuel tanks are securely anchored to the ground in flood prone areas. Propane tanks usually belong to the fuel supplier; ask the supplier how to properly secure the tanks.

After the flood, contact an OFTEC / Gas Safe registered plumber to check your appliance (if there are signs it has been in contact with flood water).

Water

Since your sinks are usually turned off, you shouldn't worry about turning all the water to the house off during shallow flooding. However, if your washing machine is in the basement, or if the floodwaters around your property could be several feet deep, the floodwaters could get into the water lines through the appliances.

Planning can help you to develop an informed, well thought out response to potential hazards – before they happen. If you have the time, turn off the water supply to the appliances or the property. There usually is a valve near the water meter or where the service line enters the house. The water valve has a handle, similar to an outside tap. Turn it all the way clockwise.

Simple steps to stay safe during a flood.

Listen to and act on the advice of the emergency services and follow these simple steps:

1. Put people before property. Move your family and pets upstairs, with a means of escape.

2. Gather essential items (like water, blankets, a torch, first aid kit, essential medication and food) and put them out of the way of flood water to keep dry

3. Listen to local radio for updates or call Floodline on 0845 988 1188.

4. Put plugs in sinks and baths. Weigh them down with a sandbag, a pillowcase or plastic bag filled with garden soil, or a heavy object to avoid water backing up through drains into sinks and toilets if you do not have any sewage backflow prevention.

5. Turn off gas, electricity and water supplies when flood water is about to enter your home if safe to do so. DO NOT touch sources of electricity when standing in flood water.

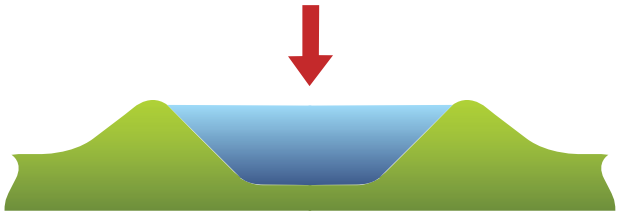
Flood water can rise quickly, stay calm and reassure those around you. Call 999 if you are in danger.

Courtesy of Floodguards Ltd

Chapter 6 : After the Flood

If you've been flooded, you should get a copy of Repairing your home or business after a flood, published jointly by the ABI (Association of British Insurers) and the National Flood Forum or contact Floodsense who will email you a copy.

This chapter covers the three steps you should take the first few days after a flood. Additional steps are explained in Repairing your home or business after a flood.



Take Care of Yourself
Step 1

You and your family have been through a disaster. It has disrupted your life, and you must allow time for things to return to normal. You should recognise that the flood can take its toll on you as well as your property. You need to look after yourself and your family while you focus on cleanup and recovery.

Your hidden enemy is stress. Watch for signs of trouble like short tempers, getting upset over little things, having difficulty sleeping, bad dreams, aches, pains, stomach problems, apathy, and depression. These are ways your body tells you that times are difficult. Reactions to stress are common and usually temporary. Here are some things you and your family can do to relieve your tensions.

- **Keep the family together**. Togetherness provides mutual support.
- **Discuss your problems**. Talk to family and friends. Share your anxieties. Let others talk to you to help release tension. Crying is a natural response to a disaster. It's also a great way to release pent-up emotions.
- **Rest often and eat well**. You are more likely to suffer from stress and health problems when you are weak.
- **Set a manageable schedule**. Make a prioritised list of jobs to do one at a time.
- **Watch for signs of stress**. Signs of stress are often noticed by other people more readily than by the person experiencing the stress. Listen to them.
- **Seek help**. If you can't shake feelings of despair and stress, get professional help.
- **Flood proof as you rebuild**. Nobody likes being subject to the whims of nature. Preparing for a future flood can increase your sense of control over your destiny.
- **Care for your children**. Be understanding of their fears and stress. Avoid scolding children for behaviour that might be flood-related, such as bedwetting, thumb sucking, or clinging to you. Remember, they are going through a rough time too.
- **Stay healthy**. When you work in an area that has been flooded, you probably will be exposed to dangerous chemicals and germs. Minimize contact with floodwater and debris by wearing protective clothing, like rubber boots and gloves, a mask or respirator.

Health Hints

- Wash your hands thoroughly. This is especially important before eating, cooking, or smoking.
- Confirm that the water is clean and safe. Don't drink it or wash dishes until you're sure.
- Disinfect dishes and all items that floodwaters touched.
- Watch out for fatigue. When your body is tired, you are more prone to accidents, back strain, and depression.
- Report health hazards. Call your local Environmental Health Department if there are animal carcasses, rats, dangerous chemicals, or other health hazards on your property.

Give Your Home First Aid
Step 2

Read the safety precautions on the back cover of this handbook. Numerous people have died over the years through flooding in the UK. Many of those fatalities are due to electrocution or other accidents that occur after the floodwaters have gone down.

Your first job is to make sure everything is safe before you enter the area. Follow these steps:

1. Stay tuned to a radio or TV to find out when you can go back home.
2. Check with your insurance agent to find out what cleanup and repair work is covered. This will help you to prepare a plan to restore your property.
3. Walk around the outside of your house and check for loose power lines and gas leaks. You can detect leaking gas by the putrid, rotten egg smell of chemicals that have been added to make a gas leak noticeable. Report gas smells to national gas emergency number (0800 111 999)
4. Check the foundation for cracks or other damage. Examine porch roofs and overhangs to be sure their supports are structurally sound. Look for gaps between the steps and the house. If you see obvious damage, have a qualified builder or surveyor check the house before you go in. For help, call your local building control officer from your local or county council.
5. Turn off the electricity at your house, even if your local energy company has turned off the main supply line (They may turn it back on when you're not ready). Call an electrician if you would have to go through water to get to your fuse box, if the boxes are wet, or if you are not comfortable with electrical matters.
6. Turn off the gas only if necessary. **DO NOT ENTER AN AREA IF YOU SMELL GAS FUMES.**
7. Call the national gas emergency number (0800 111 999) from a safe offsite place to report a gas leak.
8. Go inside carefully. It may be easier to enter your house through a window if the door will not open easily. Look carefully at the ceiling before you go in, to be sure it is not ready to fall. Do not smoke, use candles or other open flames until the house has been well ventilated. Turn on a torch before entering, as there may be explosive gases. DO NOT ENTER AN AREA IF YOU SMELL GAS FUMES. Alert someone outside of the house that you intend to enter, and ask them to call for help if you do not return or answer their call.
9. Photograph the flood damage for insurance reimbursement purposes, prior to beginning cleanup operations.
10. Rescue the most valuable items. Find and protect the "irreplaceable," like money,

jewellery, insurance papers, photographs, and family heirlooms. Wash the mud off before it has a chance to dry. Wrap wet photographs and important papers in plastic bags and temporarily freeze them, until you have time to clean and dry them. Put sturdier items in a safe dry place, inside a plastic bag, or take them to a friend's home for safekeeping.

11. Keep the damage from getting worse. Open the windows and doors (if weather permits) to reduce the interior humidity and ventilate any odours or gas fumes. Check the basic structural integrity of the building before attempting to cover holes in the roof, walls, or windows with boards, tarps, or plastic sheeting to keep out the wind and rain. Save labour and material receipts for insurance reimbursement.

12. Repair sagging floors or roof sections. Use 4 x 4's or other heavy lumber to brace weak areas. If you are uncertain how to shore up floor or ceiling joists, call a local builder. Save labour and material receipts for insurance reimbursement.

13. Remove tree limbs or other trash that may have landed on or floated into the house. Save disposal receipts for insurance reimbursement.

14. Check for broken or leaking water pipes. If you find any, cut off the water supply by turning off the mains tap. If the water pipes are not leaking, you can use your tap water for hosing things down and cleaning. However, do not drink or cook with tap water until your water provider declares it safe.

15. If you have one, drain your basement slowly. The water in saturated ground puts tremendous pressure on your basement walls and floors. The water inside your flooded basement is counteracting this pressure. If you do not follow the instructions for emptying the basement gradually, your walls and floor may lose the support they need to counteract the pressure from the outside water. The weight of the saturated earth could then cause the walls to crack and collapse, buckling the floors and seriously damaging your home. Follow the checklist of steps provided to safely drain your basement.

16. Get rid of the mud and silt. Most of the health hazards brought by a flood are in the mud and silt that is left after the water drains away. Therefore, it is very important to clean it out as soon as possible. This is more effective if you do it before the mud dries out. Follow the steps below.

Things to take when its safe

- Flashlight and batteries
- First aid kit
- Battery-operated radio
- Waterproof boots or waders
- Hard hat, boots with hard soles
- Camera or video camera to record damage
- Tools: crowbar, hammer, saw, pliers, etc.
- Drinking water
- Trash bags
- A wooden stick for turning things over and scaring away small animals!!

Cleaning supplies:

- Shovels
- Buckets, hose
- Rubbish bags
- Mops, brooms, brushes o Rubber gloves
- Rags
- Cleaners and disinfectants
- Lubricating oil

How to drain a basement

Follow these steps:

1. Make sure the electricity is off.

2. If there is no floodwater on top of the ground, start pumping the water out of the basement.

3. Pump the water level down two to three feet. Mark the level and wait overnight.

4. Check the water level the next day. If the water went back up, it is still too early to try to drain the basement.

5. Wait overnight. Then pump the water down two to three feet again. Check the level the next day.

6. When the water stops going back up, pump down another two to three feet and wait overnight. Repeat steps 4 through 6 until all water is pumped out of the basement.

Mud removal tips

- First, shovel out the mud and move furniture and debris outside.

- Next, make sure the electricity is turned off. Remove all light bulbs from sockets that have been flooded. Disconnect and throw away flooded wall switches and outlets. They should be replaced later with new ones.

- Hose the house down, inside and out. If you have an attachment that sprays soap, wash and then rinse the walls and floors. Hose the opened electrical outlets, switch boxes, and light sockets.

- Do not let the water sit on the floor too long, especially if your floor is particleboard or another wood product that falls apart when wet.

Get Organised

Step 3

Before you try to clean up and repair everything, you need to assess your damage and develop a recovery plan. Follow the steps below to make the best use of your time and money.

1. **Call your insurance provider**. How much of your loss is covered will depend on your policy. Your provider will also tell you what to throw away, and what to save for the adjuster to examine. Find out if your insurance covers living expenses while your house is being repaired. If you do not have coverage, your provider can still advise you where to get help with cleanup and repairs.

2. **Check for structural damage.** Broken basement or foundation walls, shifted stairs, or slanted floors and walls could mean that these items will have to be rebuilt from the ground up. Repair safety hazards such as broken stairs before you proceed any further.

3. **If you have structural damage,** check with your local or county council building control, Surveyor or Builder before you start any reconstruction.

4. **Ask the big question**. Odds are that the area where you live will flood again. Before you spend a great deal of money and effort repairing and rebuilding, ask yourself, “Do I really want to be flooded again?” Study the flood proofing options in this handbook.

5. **Start listing the damage**. List the damage room by room. If possible, take pictures or video recordings of the damaged items as you clean up. Keep receipts for cleanup supplies, equipment rental, hired help, and temporary housing expenses. Keep a sample of items such as a piece of carpet to show the value of what you have thrown away. good records are needed for insurance claims.

6. Make a recovery plan. A recovery plan is simply a list of jobs that need to be done. Planning can help you save time and money. Besides, being methodical and keeping everyone busy can ease tension. You will start seeing progress as you finish each project.

7. Start making lists. Begin with the projects such as “replace boiler” and “dry the walls.”

8. Decide what you can and cannot do yourself. You can save money by doing much of the cleanup and repair work yourself. However, jobs like shoring up foundations and replacing electrical boxes are best left to the professionals. Save all receipts for material, equipment rental, labour and disposal fees for insurance reimbursement records if covered.

9. Decide if you need financial assistance. After a flood, there are usually extra sources of help for the uninsured, if you need to replace items or hire a professional. Check the local newspaper, radio, and TV stations for notices about Red Cross, church, and government assistance. Even if you are insured, or think you can cover all your expenses, it makes sense to take advantage of whatever additional help is available. In the case of government assistance, you have already paid for it with your tax payments and deserve a share of the funds set aside for disaster aid.

10. Keep the windows open as much as possible to begin drying out things. Get a copy of Repairing your home or business after a flood, published jointly by the ABI (Association of British Insurers) and the National Flood Forum or contact Floodsense who will email you a copy. It will explain more steps to finish cleaning and repairing your building.

Tips on Insurance Claims

- You are supposed to be reimbursed fairly for your loss, but you are not supposed to profit from a disaster.
- You cannot collect more than the face value of your policy, or for uninsured items, like landscaping.
- There are no financial incentives to encourage the adjuster to give you a small claim payment.
- Your adjuster will probably be from out of town. Get his or her name, company, and telephone number.
- In most cases you will be reimbursed for the actual cash value of an item, not its replacement cost.
- Your policy should list an office and telephone number to call with questions

Website addresses

Professional organisation	Area of expertise	Website	Telephone
Floodsense	Flood protection Barriers Products, advice	www.floodsense.co.uk	08081 972753
Environment Agency	Environmental issues Flooding	www.environment-agency.gov.uk	08708 506 506
Flood Protection Association	Property-level flood protection	www.floodprotectionassociation.org	0870 2422340
National flood forum	Flood advice / support	www.floodforum.org.uk	01299 403055
Royal Institution of Chartered Surveyors	Building flood surveys	www.rics.org.uk	0870 333 1600
Association of Building Engineers	Building flood surveys	www.abe.org.uk	0845 126 1058
Chartered Institution of Water and Environmental Management	Flood risk assessments	www.ciwem.org.uk	020 7831 3110
British Hydrological Society	Flood risk assessments	www.hydrology.org.uk	020 7222 7722
Institution of Civil Engineers	Community-level flood protection schemes	www.ice.org.uk	020 7222 7722

Important phone numbers & contacts

Emergencies : Police, Fire and Ambulance……..……..999

To report gas hazards call national gas emergency number……...0800 111 999

Complete the following information as part of your flood response plan

Family Meeting Place _____

Alternate Family Meeting Place _____

Local Builder Contact no _____

Local authority Building Inspector Contact no _____

Local Radio FM / MW frequency _____

Local Non-Emergencies:

Police Fire Department _____

Local Environment Agency no _____

Insurance Agent Contact details _____

Insurance Company Name /Policy No. _____

Local Environmental Health Officer contact details _____

Flood Safety Outdoors

- **Do not walk through flowing water.**
  Many flood deaths are caused by drowning. Six inches of moving water can knock you off your feet. Use a pole to test the depth of standing water before you proceed.

- **Do not drive through a flooded area.**
  More drowning deaths occur in cars than anywhere else. Do not drive around road barriers as they indicate danger ahead. Two feet of water will carry away most vehicles.

- **Stay away from power lines and electrical wires.**
  Electricity can travel through water.Electrocution is a major cause of death during floods. Report broken power lines to National Grids 24-hour electricity Emergency Number 0800 40 40 90.

Flood Safety Indoors

- **Turn off your electricity if your building is flooded.**
  Some appliances can shock you, even after they have been unplugged. Do not use appliances or motors that have gotten wet, unless they have been taken apart, cleaned and dried.

- **Watch out for hiding animals.**
  Small animals may seek shelter in your home once they've been flooded out of their own.

- **Look before you step.**
  Mud can be very slippery to walk on. Broken glass, nails and other debris may be deposited by receding floodwaters.

- **Be alert for gas leaks.**
  Leave the area immediately if you smell gas fumes. Use a torch to inspect for damage. Do not smoke or use open flames unless you are sure that the gas has been turned off and the area has been ventilated.

- **Carbon monoxide is deadly.**
  Only use a generator or any gas-powered machine outdoors in a well ventilated area. This includes camping stoves and lanterns.

- **Clean everything that got wet.**
  Floodwater can be contaminated with sewage and hazardous chemicals. Do not consume anything that has contacted floodwater. Contaminated food, cosmetics and medicines are health hazards and must disposed of. Before using, clean dishes and other washable items with soap and potable water.

- **Take good care of yourself and your family.**
  Recovering from a flood includes taking care of both physical and emotional needs. The psychological impacts of a disaster may last a lot longer than the physical impacts. Learn how to recognize and care for anxiety, stress and fatigue.