



**Floodline**  
0845 988 1188  
SCOTTISH ENVIRONMENT  
PROTECTION AGENCY  
[www.sepa.org.uk](http://www.sepa.org.uk)

Protecting your property from  
**Flooding**

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This guide has been produced by the Scottish Environment Protection Agency (SEPA) working in partnership with the Association of British Insurers (ABI) and the Construction Industry Research and Information Association (CIRIA). SEPA seeks to ensure that the information contained in the guide is up to date and accurate. However, the information in the guide is intended to offer only basic advice and does not constitute legal, expert or professional advice and SEPA cannot accept any liability for actions arising from its use. SEPA cannot be held responsible for any third parties referred to in the guide.

# Introduction

In Scotland there are currently 158,195 homes and 12,826 businesses at risk of flooding<sup>1</sup>. River flooding alone causes around £32 million worth of damage annually<sup>2</sup>. Research by the insurance industry has shown that half a metre of floodwater in a modern semi-detached house will result in repairs costing an average of £15,000–£30,000 with a further £9,000 to replace damaged belongings. However, no amount of money can ever replace items with great sentimental value.

Finding out whether your home or business is in a flood risk area, understanding what you can do to reduce the risk of being flooded and taking action to prepare in advance are the key steps in learning how to cope with a flooding event. Scientists predict that, because of climate change, we may see a dramatic increase in flooding incidents from rivers and the sea in the future.

This guide gives practical advice on the steps that you can take to make your property more resistant to the effects of flooding. Flooding is a natural event that cannot be prevented entirely, but taking some action in advance may help to reduce the expense of repairing the damage and minimise the hard work and heartache of cleaning up.

<sup>1</sup>Scottish Executive report, Climate Change: Flooding Occurrences Review, is available at [www.scotland.gov.uk/cru/kd01/lightgreen/ccfo-00.asp](http://www.scotland.gov.uk/cru/kd01/lightgreen/ccfo-00.asp)

<sup>2</sup>Foresight Future Flooding Report is available at [www.foresight.gov.uk/Previous\\_Projects/Flood\\_and\\_Coastal\\_Defence/Reports\\_and\\_Publications/Future\\_Flooding\\_Executive\\_Summary.html](http://www.foresight.gov.uk/Previous_Projects/Flood_and_Coastal_Defence/Reports_and_Publications/Future_Flooding_Executive_Summary.html)

# The sources of flooding

Flooding is a natural event which is only a threat when lives and property are at risk. The most common cause of flooding is when the river catchment, the area of land that feeds water into the river, receives greater than usual amounts of water, for example, through rainfall or melting snow. The river cannot cope with this extra water, causing the river level to rise and a flood to take place.

Flooding can also occur from a number of other sources:

- **The sea** – High tides, storm surges and waves breaching defences can cause flooding in coastal areas.
- **Overland flow** – This occurs when heavy rain falls on saturated ground, where water levels are already high or on paved areas, where drainage is poor.
- **Rising groundwater** – Groundwater flooding occurs when rainfall causes an underground water table to rise to the surface of the land, flooding low-lying areas.
- **Blocked drains and sewers** – Flooding can occur at times of heavy rainfall, where the drains have become blocked or overloaded.
- **Broken water mains** – Burst water mains usually cause flooding underground and to basements of properties.

# Assessing the risk of flooding

Before considering ways to protect your property against flooding, it is vital to assess the risk of flooding to it. Once you understand the level of flood risk to your property, you can make more effective decisions about the type of flood protection measures to install.

## Consider:

- Is your property near a river, stream or ditch?
- Is the land in a hollow or at the bottom of a hill where floodwater could collect?
- Is the area at risk from flooding from the sea?
- Is the area at risk from groundwater flooding?
- Do river or coastal flood defences protect your property?

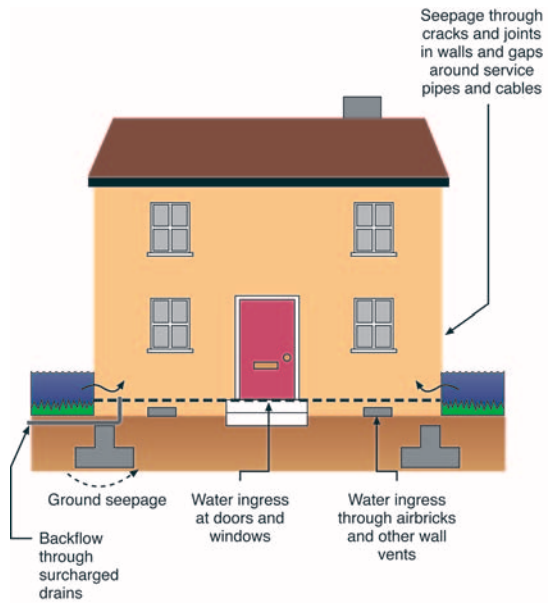
There are also a variety of sources that you can use to obtain the history of flooding in your area:

- Ask friends and neighbours who have lived in the area for a long time if they know of any flooding incidents that have occurred there.
- Visit your local library or search online for old photographs and newspaper articles.
- Speak to your local authority/building control body. They will have documents and plans on flood defences and land use. They will also be able to tell you if flooding has occurred in the area in the past.
- You can contact Floodline on 0845 988 1188 and ask for a flood risk assessment. From Spring 2006, flood risk maps for Scotland will be available on the Internet at [www.sepa.org.uk](http://www.sepa.org.uk). However, these maps will show flood risk to land, not property.

# How water can enter your property

Floodwater can enter a property by many routes. As the entrances to many properties are higher than the internal base, flood water can remain long after the flood has gone, therefore increasing the damage caused.

- Water can enter around closed doorways and airbricks
- Overloaded sewers can flow back inside the property through ground floor toilets and sinks
- Water can seep through the cracks and joints in external walls and sometimes directly through the construction materials, e.g. bricks
- Water can seep through the ground and up through the ground floor
- Water can enter from cracks and joints around cable services through external walls
- Water can enter through service outlets, e.g. washing machine



Finding these possible entry points will help you to reduce the chances of floodwater entering your property. The flooding routes will depend on how the property is constructed; the underlying ground conditions and expected flood depth.

# How to protect your property

The damage caused by floodwater, mud and sewage in your home can be very distressing. There are a variety of flood protection measures you can consider that may help to limit the damage caused and make the clean up easier.

These measures generally fall into two main categories:

- **Dry-proofing measures:** These keep water out of the building, e.g. sandbags and flood boards. If a building is flooded for long periods or by depths of water above one metre, the measures will be less effective. Simple measures are unlikely to stop water from coming in for more than a few hours while more complex solutions may protect the building for a day or two.
- **Wet proofing measures:** These improve the ability of the property to withstand the effects of flooding once water has entered the building, e.g. damp proofing.

The cost of improving the flood protection of your property will depend on a number of important factors, including potential flood depth, property size, how the property is constructed and its location. When considering flood protection measures, the cost of installing the products needs to be weighed against the potential cost savings such as reduced repair costs, accommodation charges and business losses.

It is important that you seek professional advice before installing flood products to your home or carrying out any structural alterations.

Taking out insurance will help to pay for any repairs that will be required after a flood. Insurers may take into account any flood protection measures that reduce flood risk when offering you a household insurance policy.

# Buying flood protection products

Flood protection products are designed to provide temporary protection for properties from floodwater. They may be used in places prone to flooding where more permanent defences cannot be provided or as extra protection in addition to existing defences. They are also likely to be useful where localised flooding is caused by run off from roads and sewers.

There are a wide variety of products available – we no longer have to rely solely on sandbags for protection. There are currently around 100 different flood protection products on the market. Until recently, there had been very little information available about these products and no quality standard to help people to assess their performance.

In response to the need for information and advice in choosing and using flood products, a range of government and industry partners, including the Scottish Executive, commissioned HR Wallingford to develop a test facility and certification scheme. The British Standards Institution (BSI) manages the scheme and approved products are awarded a BSI Kitemark, a widely recognised symbol of quality for consumer goods. HR Wallingford and the BSI have already tested the performance of three types of products. These are:



- Removable products that are installed as barriers across building entrances, e.g. doors and airbricks
- Temporary, free-standing barriers which are assembled close to, but not in contact with building(s)
- Building skirt systems

Products are tested in a purpose designed test rig at HR Wallingford and are subjected to a factory test to ensure product quality. For more information about the scheme or to register your product for testing, please view the BSI website at [www.bsi-global.com/Kitemark](http://www.bsi-global.com/Kitemark).

There are many flood protection products available to buy in the UK. The main types are as follows:

### Flood barriers

Flood barriers for external doors and windows usually take the form of flood boards, made of plastic or metal, which can be quickly installed across a doorway or window before a flood arrives. They usually slide into a frame which has already been attached to the door frame or window frame, to provide a watertight seal from floodwaters.

### Airbrick covers

This cover prevents floodwater from entering a property through its airbricks. A plastic cover clips to frames fitted on the exterior wall of a property. Once the floodwater has gone they must be removed to allow ventilation of the wall cavities.

### Flood skirts

This is a more advanced system of flood protection, which totally encloses the bottom 600 to 900 mm of a property, sometimes to foundation level. Water resistant sheeting is attached to the property, preventing the entry of floodwater. This method is usually more expensive than other forms of flood prevention, but can be useful for some detached properties that are flooded regularly for long periods. In cases of very severe flooding, where the floodwater is more than one metre deep, keeping water out may cause more harm than good.



Unless your building is specifically designed to withstand such stresses, the pressures involved with deep water can cause long-term structural damage and undermine the foundations of a property.

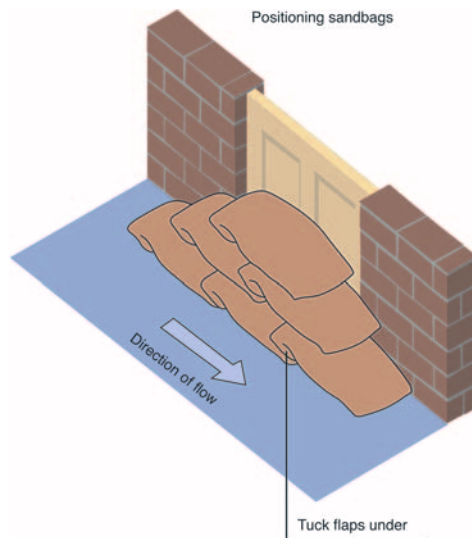
### Temporary free-standing barriers

These are mobile, removable flood protection systems, which can be used to hold back floodwaters at a distance from a detached property or group of properties. Installation of these types of product should be on firm ground and generally along pre-planned lines so that the barrier is stable under the flood load. When choosing a particular system you should think about how easy it is to install and how durable the materials are. Each product will have some unique way of forming a watertight seal.

### Sandbags

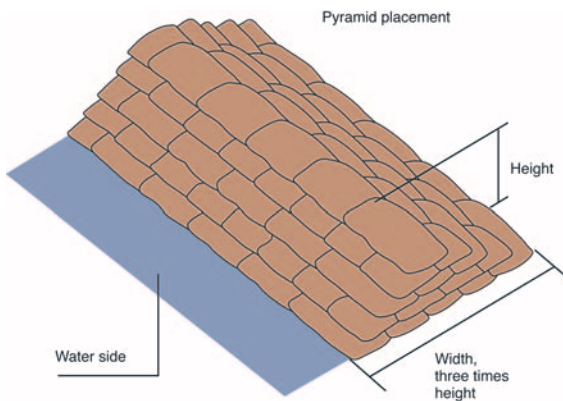
Sandbags are one of the most popular methods of flood defence for a property. Unfilled sandbags and sand can be purchased at many DIY stores and local builders merchants. Your local authority may provide sandbags in the event of a flood, but supplies may be limited.

If you do not have sandbags and sand, you can fill bin bags, carrier bags or even pillowcases with soil from the garden. It is not necessary to tie the ends; however, to be effective they must be laid correctly.



## Using sandbags

- Two people will be required to fill sandbags, one to hold the bag while the other one fills. Sand is abrasive, so both of you should wear gloves while doing this.
- Do not over-fill the sand bags. They should be no more than half full.
- Remove all debris from the area where the sandbags are to be placed.
- Place bags in layers, like a brick wall, ensuring that the next layer overlaps the one below by half.
- Stamp bags firmly into place to close gaps and create a tight seal.



If you need to create sandbag protection that is more than three layers high, you should use a pyramid shape. For the structure to be stable the width should be three times the height. Place the bags in alternate layers lengthways and crosswise, stamping each bag in place and tucking the loose ends under the filled portion of the bag.

If sandbags come into contact with floodwater they may contain contaminants such as sewage. Wear rubber gloves when removing used sandbags after a flood. The disposal of sandbags will be your responsibility, check with your local authority for advice on disposal.

## Wet proofing measures

If you are considering home improvements, you may want to think about some measures that you can take to improve the resistance of your home to flood damage. Here are some suggestions for making your home more flood resistant.

- Consider having extended concrete footings and a waterproof membrane laid in foundations.
- Walls will be more water resistant if they have closed-cell cavity insulation at ground level and a raised damp proof course.
- You will usually have to redecorate internal walls after flooding. Avoid using wallpaper, as this will come off if exposed to floodwater. Use water resistant paint for internal ground floor decoration. Consider fitting horizontal plasterboard which is easily removable.
- Staircases made of MDF may need to be replaced or refitted after a flooding event. You should think about installing solid timber staircases while you are refurbishing your property.
- Check internal and external walls for cracks and seal them.
- Paint skirting boards on both sides before fitting to improve the seal. You will probably have to replace skirting boards formed from MDF so think about using a plastic replacement instead.
- Choose rugs rather than fitted carpets on the ground floor. They can be rolled and stored as opposed to fitted carpets that are difficult to move and will be ruined by floodwater. Wooden laminate flooring is also likely to be damaged by floodwater and will normally have to be replaced.

- Timber window frames may distort if exposed to floodwater. Sealing them with a waterproof staining agent can reduce the damage. PVCu windows can fill up and can be difficult to drain. Water can get through the seal into the cavity between the glazing.
- Many kitchens are made from chipboard and MDF with plastic coatings. When exposed to floodwater these types of unit almost always need to be replaced. If fitting this type of kitchen, consider raising it above the floor level using plastic legs to prevent damage during shallow floods. PVCu kitchens can be easily cleaned and re-used after a flood.
- Try to raise kitchen appliances. Washing machines and fridge freezers are very heavy and usually need to stand on the floor so these should not be permanently raised. Any appliances that have come in contact with floodwater must be inspected by a qualified person before you use them again.
- Gas meters, boilers and associated pumps should be fitted above the maximum expected flood level. Any fittings that have been in contact with floodwater will have to be inspected by a qualified person.
- If you are rewiring, consider raising switches, socket outlets and meters to a height of at least 900 mm above the floor.

Good additional information can be found in the ABI's publication, *Flood Resilient Homes*, at [www.abi.org.uk](http://www.abi.org.uk) and in CIRIA's, *Improving the Flood Resistance of your Home*, advice sheets, which can be downloaded from [www.ciria.org.uk/flooding](http://www.ciria.org.uk/flooding).

## Useful contacts

Floodline	0845 988 1188 – Provides information on possible flood risk all round the country and provides advice on preparations that can be made.
Scottish Environment Protection Agency (SEPA)	Carries flooding alerts and useful advice on dealing with flooding on its website, <a href="http://www.sepa.org.uk/flooding">www.sepa.org.uk/flooding</a>
Citizens' Advice Bureaux	May be able to offer advice on how to obtain money in an emergency and deal with insurance queries. Details of your local Bureau can be found in the phone book or on the Scottish CAB website, <a href="http://www.cas.org.uk">www.cas.org.uk</a>
Association of British Insurers (ABI)	Gives advice on what to do if you have been flooded and provides insurance company help-line numbers. Contact ABI at 51 Gresham Street, London, EC2V 7HQ. Tel: 020 7600 3333, <a href="http://www.abi.org.uk">www.abi.org.uk</a>
The Construction Industry Research and Information Association (CIRIA)	Provides a lot of information on coping with flooding and other issues. See the website <a href="http://www.ciria.org.uk/flooding">www.ciria.org.uk/flooding</a>
The Chartered Institute of Loss Adjusters (CILA)	Advice on working with loss adjusters and how to complain if you feel your insurance claim is being handled incorrectly. Contact CILA at Peninsular House, 36 Monument Street, London, EC3R 8LJ. Tel: 020 7337 9960/ 0845 345 9960, <a href="http://www.cila.co.uk">www.cila.co.uk</a>
The Financial Ombudsman Service	Complaints are handled by the Financial Ombudsman Service, South Quay Plaza, 183 Marsh Wall, London, E14 9SR. Tel: 0845 080 1800, <a href="http://www.financial-ombudsman.org.uk">www.financial-ombudsman.org.uk</a>
The Samaritans	The Samaritans are specially trained to help people cope with distress and will be able to listen sympathetically to anyone who wants to talk. You can telephone them on 08457 90 90 90 at any time. In a major flood, the Samaritans may have teams on site.

The National Flood Forum

A non-profit making organisation providing advice and support to people who have experienced flooding.  
Tel: 01299 40 30 55, [www.floodforum.org.uk](http://www.floodforum.org.uk)

Scottish Water

Tel: 0845 601 8855, [www.scottishwater.co.uk](http://www.scottishwater.co.uk)

Local Authorities

For contact details of all 32 Scottish Council offices, you can contact 0131 474 9200 or [www.cosla.gov.uk](http://www.cosla.gov.uk)

*Preparation of an emergency flood kit could prove invaluable in the event of flooding*



