

The Gospel According to Noah

“By faith Noah, being warned by God concerning events as yet unseen, took heed and constructed an ark for the saving of his household; by this he condemned the world and became an heir of the righteousness which comes by faith” (Heb. 11:7).

Noah demonstrated, by his actions, that not only was he a good carpenter/boat builder but that he also had the skills of a strategic planner, weather forecaster, organiser, conservationist, family man and believer. In this he was probably one of the greatest all-rounders of all time. However, there is no evidence that he was good neighbour. Following Noah’s example - that of looking after yourself and your own - I will try to deal with some of the issues surrounding flooding and make suggestions on how to deal with it. I make no attempt to suggest that this is all-encompassing and perhaps you might find it useful, first, to familiarise yourself with some of the other sites which give advice on flood management some of which are listed in APPENDIX 1.

Two things are clear. Firstly that virtually no-one (with the exception of the Environment Agency) bothers about flooding until it actually happens; the same being true of other unpredictable natural events such as drought, tsunami, hurricanes, storms, forest fires and earthquakes. And secondly that it is always someone else’s fault even if you did buy a house in the floodplain or on the seafront. However, one other thing is clear – that preparation, by both agencies and individuals, can be a great help in mitigating the effects of almost any extreme event. The roles of the various agencies are often misunderstood so I have listed them in APPENDIX 2.

Planning for an emergency can be conveniently split into three main sections:

- Advance planning
- Dealing with the emergency
- The aftermath

These are dealt with in more detail in the paragraphs which follow.

Step One - Advance Planning

If you own a property which is in an area which is in a risk area, then it’s not a matter of whether flooding will occur, rather than when and how often. Coastal areas, floodplains and the banks of watercourses are the most obvious areas. Distance from the coast or river bank is not always as relevant as the level of the property. The first step is to identify the nature of the risk then assess it. Flood risk may come from a variety of sources and each one will manifest itself in a different way:

Coastal flooding may be onto low lying land which will normally present a problem during high tides. It may also occur onto protected seafronts during heavy storms and tidal surges. Damage is often caused by material picked up in waves and by the combination of wind and wave action. I have not considered tsunamis here.

Fluvial flooding is largely concerned with major rivers in the flood plain. It is usually the result of prolonged rainfall, snowfall or a combination of them (as in 1947). The river will normally come up quite slowly over a period of several days as the runoff from the upstream areas reach the floodplain. Examples include the Severn and Thames.

Flash flooding will occur in small steep catchments and create short term events lasting less than an hour and sometimes only minutes. Examples include the Lynton/Lynmouth disaster and the 2004 Boscastle flood. Many of these catchments now have an emergency warning system which gives advance notice of an impending flash flood.

Between these latter two are the **minor rivers** which tend to react to rainfall in hours rather than days but have a floodplain so do not cause flash flooding. The nature of the drained catchment will determine the type of response which the river has to rainfall as developed areas respond much more quickly than rural catchments. Prime examples would include the Tame, which drains Birmingham and much of the Black Country plus the rivers Test and Itchen.

Dam Burst. This is a possibility, where a water retaining structure, such a dam or canal, fails releasing water downstream. The effects are unpredictable and can be catastrophic but are thankfully rare.

Highway drainage can be a source of flooding especially during short intense summer storms and can be seriously affected by the runoff from fields.

Sewer flooding is usually caused by overloading of the system by rainfall or by malfunction due to blockages which may only manifest themselves during heavy rainfall. Inadequate capacity in a pumped system or mechanical breakdown can also be a cause.

Here is a list of questions which will help to identify the risk:

1. Is the property in an area which has ever flooded before and what caused it; if so, have protection measures been taken?
2. Is the property on the seafront?
3. Is it in a floodplain (see EA website for maps showing the floodplain)
4. When the property was built, did the EA object to it on the basis of flooding?
5. Is it alongside a river, stream or other watercourse?
6. Is it downstream of a dam or other structure?
7. Is it below the adjacent highway or at the lowest point on a section of highway
8. Is it in a postcode which the insurance companies list as high risk?
9. When you bought it, did the vendor disclose any history of flooding (this is a requirement before contracts are exchanged)

After answering these basic questions, you should examine the property paying particular attention to the floor level in relation to the surrounding ground and adjacent properties. You can also seek information from neighbours, the water company, the district council and the environment agency as well as consulting the local press and even the local historian. If in doubt get help.

Most of the advice which follows is concerned with fluvial flooding though the planning aspects can be applied to all.

Advance Measures

Having identified that there is a risk of flooding we now turn to what measures are required to mitigate the effects. These come in two distinct flavours: hard measures which physically help to prevent flooding or mitigate the effects and soft measures concerned with managing the situation.

Protection

There is good advice elsewhere on protection measures for keeping the water out, especially on Mary Dhonau's and suppliers' websites. Simple retrofitted measures include: door gates and airbrick covers and waterproofing walls. More extreme solutions will include: raising the floor level, internal tanking, sumps and pumps. Sandbags are a useful defence against flowing water, wave action and to raise an embankment but are generally useless in protecting a property where the water level is rising slowly. In this case, depending on the nature of the subsoil, water will come up through the floor. A marginal benefit is that they will act as a filter to avoid faecal contamination inside of the property.

It should always be assumed that, sooner or later, a flood will occur that will enter the property. Once inside the damage done hardly depends on the depth of the water; an inch is as good a yard. This means that any property which is at risk should have measures installed to minimise the effects of the inundation. These include:

- Moving the electrics, television aerial and telephone sockets above harm's way (usually 1m above floor level)
- Placing a television aerial socket in an upstairs room
- Replacing normal plaster with the waterproof variety or concrete to a height of at least 1m above the floor; a dado rail is useful as a demarcation
- Tiling the floor rather than wood and replacing wooden skirting boards with plastic
- Using loose rugs rather than fitted carpets
- Making kitchen units resistant to water using hard feet and plastics rather than board
- Installing gas boilers above the maximum flood level and ensuring that gas fires can be disconnected (the gas will likely be turned off)
- Having a reserve store of building blocks to raise furniture up to a safe level; these can also be used as a base for duckboards to aid access across a flooded garden
- Ensuring that the fridge and freezer are above the flood level or that they can be easily moved up onto blocks
- If flooding is severe a non-return valve may be required on the drains to prevent backflow up the toilet.

There are specialist companies who will carry out a survey for you – see list at end of APPENDIX 1.

Planning

Having a ready-made plan is invaluable and all of the family should be involved in its preparation. This to ensure that, not only is everything covered, but that all are aware of their part in it. There are a number of versions of this on-line but you need to ensure:

- That you have assessed the risk and know what your intentions are in the event that water gets into the property; do you intend to evacuate or stay?
- That you have an evacuation plan for people and pets should things get bad and you know where you are going to
- That valuables, documents and family photographs are safely stored away from the flood either upstairs or in another place
- That your pets will be looked after either with friends or in kennels if appropriate; remember pet food and litter if they are staying with you
- That you have sufficient food and water to last (normally ten days) if you are going to stay put, including longlife milk and that you have a means to heat food and make hot drinks
- That you have access to toilet facilities for washing and ablutions; normally they will remain in use but if downstairs this will be inconvenient; keep a supply of disinfectant
- That you have waterproof clothing and wellingtons/waders

- That you have a battery powered radio and are aware of the local radio frequency; also torches
- Ensure that you have medicines and first aid kit and that any drugs will last for the duration

- Have an overnight bag packed; include a mobile phone and charger plus all of the numbers you are likely to need
- Make sure that you car is moved to high ground and that it will be safe there

Ask the neighbours and flood wardens what's in their plan and check that you have not omitted anything. See APPENDIX 3.

Step Two Dealing with the Event

Once heavy rain has started to fall, knowledge of when and where flooding will occur is crucial to management of the situation. This is where some knowledge of the catchment characteristics is useful. Do flood waters take three minutes, three hours or three days to come down?

If the area has flooded before, then a Flood Warden should have been appointed. The role of this person is simply to inform you of the situation, not to sandbag your door! The FW should be in regular contact with the EA about the predicted event and with the district council if resources are required. However, you can easily keep abreast of the flood levels and timing yourself by going to the EA's website. A little practise with the mouse will enable you to identify the nearest flood gauge, assuming there is one in the catchment; an upstream gauge is more useful than a downstream one. If you carefully observe the water levels and record the gauge reading at the time when the flood is at the same level as your floor, then you will have a baseline which can be used to predict whether you will flood in any future event. If you can't manage this, then record the highest level reached in the property and make a permanent mark. Obtain the gauge reading for this level from the EA

website and this will provide you with a river level and an equivalent at your property. Subtract the vertical distance between the flood mark and the floor level from the gauge reading and you have the gauge level at which your property becomes critical. It is possible, depending on how near the gauge is, to be able to predict the critical flood level with an accuracy approaching 1cm. Record this information in your address book under 'Flooding' along with the details of how to access the gauge level should you need it in future.

In the event that you are not computer literate you can use the EA Floodline which has an automatic dial-in system which takes you directly to information from the relevant gauge.

Assuming that you have planned properly then the event itself should be nothing less than a damp squib (excuse the pun). It's largely a matter of staying put, waiting for the water to subside and monitoring of the situation based on the EA's on-line information. If you have doubts on the security front, contact the local police.

Mark maximum flood levels on the wall of each affected room and take photographs. Notify your insurers as soon as you think you have a claim; keep copies of all correspondence and receipts.

Step Three – the Aftermath

Mopping-up is the really soul-destroying part of the process but, if you have planned for the event and have insurance, it will be considerably less stressful than if you failed to do so.

Having gotten rid of the floodwater and notified the insurers, you need to start drying the property out. Take more photographs. If you have a dehumidifier, get it going but you're likely to need more than that. The district council or military may be prepared to help with industrial driers otherwise you may need to hire one. Dispose of any spoiled material taking care to do this legally using a skip or licensed waste manager. Clear the floors and disinfect them. Clear the garden to allow a clear (and clean?) access.

The insurers will send a loss adjuster to assess the damage and agree the next steps. Don't forget the costs of any overnight accommodation (including pets) if this is included in your policy. They will normally have framework agreements with contractors to undertake remedial measures but you will need to consider whether this is right for the long-term. Insurers will pay to put things back to how they were but you may need to consider whether improvements are required to mitigate any future damage. This would include such issues as raising the floor and electrics and water-proofing the kitchen units.

As the recovery gets underway, talk with your neighbours and ask what measures they have taken or are considering. Ask the council and the EA whether they have any plans for improvement in the pipeline.

When it's all over, just remember why you bought the property in such a lovely location and make the most of it. Blaming others for the situation will not improve matters; only make you bitter and twisted. And don't assume that it won't occur again - if it's happened once then it probably will again.... and dredging a river like the Thames is unlikely to make any difference as its flow is controlled by the weirs.

APPENDIX 1 – Useful Websites

Environment agency's website:

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

Gateshead District Council with links to the EA's leaflets on flooding

<http://www.gateshead.gov.uk/Environment%20and%20Waste/Floods.aspx>

Mary Dhonau's site:

<http://www.marydhonau.co.uk/about-us>

The Red Cross

<http://www.redcross.org.uk/What-we-do/Preparing-for-disasters/How-to-prepare-for-emergencies/Floods-and-flooding>

Public Health England

http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317140405287

National Flood Forum and Blue Pages Directory

<http://nationalfloodforum.org.uk/>

Total Flood Solutions

<http://www.totalfloodsolutions.com/>

Floodsure

<http://floodsure.biz/> [For other companies just Google 'flood solutions']

British Insurers Brokers Association

<http://www.biba.org.uk/CustomHome.aspx>

Association of British Insurers

<https://www.abi.org.uk/>

Flood recovery guide

http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodRecoveryGuide_Interactive.pdf

Flood reliance

http://www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForHomeowners.pdf

Flood Protection Association website

<http://thefpa.org.uk/>

APPENDIX 2 Roles of the Various Parties Concerned with Flood Management

National Government and Treasury	<ul style="list-style-type: none"> • Policy and funding • Coordination with military
County Council	<ul style="list-style-type: none"> • Emergency planning and support • High level development planning
Police	<ul style="list-style-type: none"> • Security • Emergency control and coordination
Fire and Ambulance	<ul style="list-style-type: none"> • Rescue and support
Environment Agency	<ul style="list-style-type: none"> • Permanent and temporary measures to mitigate flooding • Flood measurement and prediction • Maintenance of 'main rivers' • Training Flood Wardens
District Councils	<ul style="list-style-type: none"> • Local support such as provision of duckboards and sandbags • Support during 'mopping-up' and drying out • Provision of temporary evacuation facilities and buildings • Permissive powers to maintain 'non-main rivers' • Local development planning and building regulations
Parish Councils	<ul style="list-style-type: none"> • Provision of flood wardens* in association with the EA • Volunteers
Drainage Boards	<ul style="list-style-type: none"> • Provision and maintenance of waterways under their control
Water Companies	<ul style="list-style-type: none"> • Provision of water supply and sewerage but not temporary facilities
Volunteers	<ul style="list-style-type: none"> • Manpower for temporary measures • Provision of foodstuffs in the event of prolonged events
Insurance companies	<ul style="list-style-type: none"> • Reimbursement of insured costs

*The role of flood wardens is not formally defined but might include the following:

- Monitoring of flood levels through observation and communication with the EA
- Disseminating this information to local inhabitants
- Identifying vulnerable areas/property at risk
- Listing those who might be affected, including the elderly, vulnerable and those with special needs
- Encouraging those at risk to make a plan and support them in its preparation by providing examples from others
- Liaising with volunteer groups and helping to coordinate their efforts
- Maintaining a list of locally available specialist skills and equipment

Above all, keep up-to-date with the situation and keep everyone informed.

APPENDIX 3 – Sample Emergency Plan

Introduction

The 2014 floods brought one thing into sharp focus - the comparison between the inhabitants of Worcester and those in the Thames Valley. Worcester has flooded many times and when the Severn is predicted to rise, well oiled, coordinated procedures swing into place. In the Thames Valley all hell broke loose with everyone looking to someone else for an answer. Part of this difference is down to expectation but the main difference is about planning.

The occupiers of property which is at risk of flooding are encouraged to make a plan which can be implemented when the need arises. For many this is not an easy task even if a specification is provided. On the basis that an example is easier to work with; this sample plan deals with real events in a specific location; however, it can easily be adapted to any other situation.

Background

The benchmark flood in Worcester, and Diglis in particular, was 1947 and most subsequent events are measured against this as well as the OS datum (more on this later). The Edwardian terrace which is Diglis Avenue fronts directly onto the River Severn having vehicular access only at the rear. The houses are situated on part of the floodplain which goes back about 100m just downstream from the Cathedral.

They flooded badly in 1947 but no details are available for the 1950s. They were inundated three times in the 1960s and the floor level of No 20 was subsequently raised by about a foot. No flooding of the property occurred during the 1970s or the 1980s; which some attributed to the building of the dam at Clywedog in Wales which helps to balance flows in the river.

During the 1990s the property flooded three times and various remedial measures were considered. A flood bank was proposed by the EA but dismissed by the residents who said it would not work due to the nature of the sandstone subsoil. Instead, the EA made a grant of £6,000 to each property to raise the floor level (again). This was carried out around 2000.

Even with the raised floor, flooding occurred inside the property during 2004 and again in 2007. The record flood of 2014 has flooded the property to near the 1947 level. As it would not appear possible to protect the properties from flooding, the remaining options would appear to be limited. Demolition is not considered as the location continues to be sought after, so living with the risk of flooding would seem to be the only way forward. This makes the preparation of an emergency plan essential.

The raised floor level is now at 14.80m above Newlyn Ordnance Datum and the datum level for the Diglis gauge is 10.00m AOD thus the flood will be level with the internal floor when the gauge reads 4.80.

The Plan

1. Having been alerted to a risk of flooding, keep abreast of developments through contact with the flood warden and the EA's website which indicates predicted levels and times
2. Request duckboards and blocks from council before garden floods to maintain access; have them put in place; check neighbours have taken pets to kennels/cattery
3. Place two sandbags on top of each drain cover to ensure that faecal matter does not come up from drains
4. Check on waterproof clothing plus wellingtons/waders
5. Call on help when gauge level is predicted to reach 4.5m. Confirm this by telephone contact with the EA Floodline personnel then:
 - a. Turn off the gas and disconnect the gas fire
 - b. Take carpets, rugs, light furniture, pictures and carryables upstairs
 - c. Put tables up on blocks and place other furniture on top
 - d. Raise fridge and freezer on blocks
 - e. Take television upstairs and plug in
6. Pack overnight bag and place safely upstairs or in car boot
7. Ensure that valuables, documents, computers and family photographs are safe or taken elsewhere for temporary storage
8. Check on supplies for up to ten days
 - a. Food and water
 - b. Longlife milk and bread/biscuits
 - c. Fuel for heating food and drinks
 - d. Medicines and first aid
 - e. Disinfectant and cleansing materials
 - f. Torches and portable radio
9. Check on landline telephone and mobile phone plus charger; update list of essential telephone numbers
10. Inform family and friends of situation and your intentions
11. Install electric fire in upstairs room and means to heat food preferably by electricity
12. Check that the portable radio is working and has spare batteries; it should be tuned to the local radio frequency
13. Decide at what level (300mm water in house) you will evacuate and where you will go
14. Move the car to the car park on higher ground
15. Don't panic.