

Flooding

Technical bulletin published by
Allianz Risk Consulting

The recent flooding in various parts of the UK has been, and indeed continues to be, very traumatic for those involved, and has caused considerable damage and interruption to operations for many businesses. This technical bulletin is designed to introduce some key actions which can be taken by clients to address the risk to their businesses, and includes a self-help questionnaire to help these clients to analyse their awareness of, and preparation for, the risk of flooding at their facilities.

Key Factors Affecting the Flood Risk

Flooding can either follow a heavy period of rain, causing pooling water which subsequently enters buildings, or can arise from rivers and streams bursting their banks and overflowing, the impact of which is largely determined by three factors:

1. Elevation of the threatened premises or facility above the anticipated flood plain and water level. (An initial overview of the flood risk can be obtained for England and Wales by visiting the Environmental Agency website at www.environment-agency.gov.uk/subjects/flood. For Scotland use www.sepa.org.uk/.)
2. Location of assets within premises (e.g. at ground floor level, or in basements)
3. Susceptibility of contents to water damage

Action

- When planning the construction of new facilities, consider the risk of flood at the proposed site, and select locations which are not exposed to flooding from nearby water courses.
- Where existing facilities are located in a flood prone area, or are considered at risk of water ingress, undertake the following:
 1. Have a flood assessment undertaken. This survey can be completed by a professional hydrologist or civil engineering company, based on locally available river level information provided by the Environment Agency. The survey should be based on computer modelling of the rivers history and relate the floor elevations of site buildings to expected water levels in the 50 year, 100 year and 500 year flood return periods.

It should be remembered that premises, even those with no obvious flood plain exposure, can be exposed to flash flooding, arising from persistent heavy rain, which should also be considered in the analysis. Indeed, flood modelling since 2003 shows that close to a third of average annual flood losses come from sources outside the major floodplains (source: RMS Modelling).

2. Develop a pre-flood emergency plan (as overleaf).

Pre-Flood Emergency Plan

A pre-flood emergency plan should have 3 key parts:

i) Permanent Measures

Permanent measures that should reduce damage to the site in a flood incident include:

- **Barrier systems:** although often difficult and costly to develop, effective water sealing of all wall penetrations can significantly reduce the impact of flooding. Remember that such systems require routine inspection and maintenance.
- **Asset positioning:** raising the elevations of critical equipment, or relocating particularly vulnerable equipment to another part of the facility, or to an upper floor.
- **Utilities:** protecting important utility services, such as gas pipes or electrical cables, which may be routed over bridges, or providing protection to vulnerable electrical substations.
- **Asset location:** ensure that important papers such as archives and other flood-vulnerable assets are not located in basements, or on ground floor level in a facility exposed to flooding.
- **Clean-up equipment:** maintain a stock of clean up equipment for use post flood.
- **Training and flood drills:** train employees in what is expected of them both prior to, during and after the flood.
- **Materials:** Use of furnishings not prone to water damage in flood prone areas.

ii) Temporary Measures

- **Removable flood gates:** consider these for areas where permanent barriers are not appropriate. These should be easily and quickly installed in the event of potential flooding
- **Portable generators:** to provide temporary electrical power to the facility. The provision of quick connections to the electrical system should be provided.
- **Submersible pumps:** the provision of pumps to remove water from basements, or below ground areas, such as hydraulic pits.

iii) Emergency Measures

- **Early warning:** monitor the exposing river level, and become part of the Environment Agency's early warning system for high water levels.
- **Asset movement:** organising staff to move assets out of the flood zone. This should include having quick disconnects on equipment that could be moved to higher elevations
- **Key asset protection:** for example wrapping motors in cling film
- **Sand bagging key equipment:** see the Environment Agency website (www.environment-agency.gov.uk) for more information.
- **Emergency services:** have a good working relationship with the emergency services. The fire brigade can be used to extract water from flooded pits, or basements.
- **Command & control:** nominate persons who are authorised to invoke the flood emergency plan and to implement it.

Having a good understanding of flooding potential and a team to deal with it can significantly reduce the overall site damage and return the site to production more quickly. However, all of these measures revolve around generating people who are trained, equipped and organized efficiently to act as the flood emergency team.

Flood facts – England and Wales

- Climate scientists have predicted that intense rainstorms will be 20% more frequent by the second half of this century. This could double the chance of flooding for many rivers.
- More than 2 million homes and businesses face risk of flooding, with 570,000 of these considered to be at high risk - more than double the assessment when spending levels were set in 2002.
- The Government estimates that annual flood damages now average £2.3 billion per year, double the level in 2004.
- To manage this threat, it is believed that spending on flood defences needs to rise from the current level of £570 million to £750 million a year by 2011, an increase of around 10% each year.

Source: ABI, July 2006

Flooding Checklist

Know your flood risk

- | | Yes | No | Action |
|---|--------------------------|--------------------------|--------------------------|
| • Do you know if you're at risk of flooding? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Are flood warnings available in your area? | | | |
| • Do you know how you can receive flood warnings? | | | |
| • Are dams, man made or natural reservoirs downhill from the facility, with the facility located uphill from a valley or ravine? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Does the site conduct operations or produce waste or by-products that may potentially clog or restrict storm or catastrophe drainage systems with an absence of adequate and frequent cleaning regimes? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Preparing a flood plan

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| • Do you know how your business will respond to a flood? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Do you have a list of useful numbers including Floodline, local authority and Insurance company? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Do you know how to shut off your gas/electric/water supplies? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Are your stock, fittings and valuable equipment stored above flood level? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have you developed flood contingency plans with suppliers and/or clients? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Can you call someone to help you in the event of a flood? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have you tested your plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Staff training and evacuation

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| • Are you aware of correct flood safety procedures for you and your staff? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have you trained your staff on flood safety procedures? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Can your staff work quickly and efficiently to protect your business in the event of a flood? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Are there sufficient numbers of staff to carry out the required duties? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Do you have suitable protection equipment for your staff (boots, torches, gloves, high visibility coats etc)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Protecting property

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| • Have you installed flood protection products? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Do you have a stockpile of useful materials including plywood, plastic sheeting, sandbags (unfilled), sand, nails, hammer, shovel, blocks of wood and a saw? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have you installed non-return valves in your toilets and drains? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Do you and your staff have high ground where you can park your cars? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Are your electrical sockets above flood level? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Do you avoid keeping computer or critical production or utility equipment in basements? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Are there formal gutter and drain cleaning programmes in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Flood insurance

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| • Do you have sufficient insurance cover in the event of a flood situation? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Do you know what information your insurer will require to support a claim? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Evacuation

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| • Do you have an easy way to let your staff know about an evacuation? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Do you know which roads will stay open in your area during a flood? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have you identified where staff can shelter in the event of a flood? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Could you control staff panic during a flood? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

This technical bulletin should be used in conjunction with the Allianz Technical Bulletin – Flooding, February 2011.

Contact Allianz Risk Consulting for more information.

This bulletin is in no way comprehensive and merely serves to highlight some of the key actions open to businesses. It is no substitute for specific and professional advice on this complex issue. For further information or assistance, please contact Allianz Risk Consulting or your professional advisers.