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Flood is the new UK business risk

Since 2000, major flood events have driven flood risk up the political and risk management agenda. Dr Justin Butler, of flood risk assessment and modelling consultants Ambiental Technical Solutions (www.ambiental.co.uk), looks at the growing issue of flooding in the UK, examining what businesses and insurers can do to address the problem.

One year on after Hurricane Katrina and many businesses in New Orleans are still not up and running. Damage to sewers, water contamination, mould and a variety of infrastructural problems have resulted in many businesses being unable to return to a pre-Katrina state.

Even those which have successfully rebuilt are finding it difficult to get back on their feet. As the clean up in New Orleans continues, businesses and insurers in other parts of the world, including the UK, need to better understand what level of flood risk applies to their business and what they can do to manage the risk on their own doorsteps.

Risk of flooding to UK Plc

Recent incidents of flooding in the UK have highlighted the damage that such events can cause to both residential and commercial property.
For example, the insurance bill for the Autumn 2000 floods was £1.3 Billion, of which £440m was associated with commercial property losses (Association of British Insurers, 2001).

As is the case in many flood incidents, business interruption is likely to be a significant component of the overall losses that are incurred. Given that numerous high-value industrial and commercial premises are located in urban areas near watercourses in the UK, flood risk is a real problem for UK Plc. According to the Environment Agency, businesses in the UK are more likely to be

flooded than burned down (Environment Agency, 2006). Indeed, some 10 per cent of businesses in the UK are, to some extent, at risk from flooding. Worryingly, however, many companies in the UK are unaware of the extent to which flood risk could affect them. Many businesses and insurers are, to some extent, guilty of this by taking the view that if they haven't flooded before, it won't happen in the future. This is a dangerous perception especially as the climate and urban environment is constantly changing around us.

Experts predict climate change will increase the frequency and intensity of flood generating storms and coastal surge events that affect the UK in the future. Increased urban development will also play a role, changing the nature of flood risk on the ground.

Simply because a business has not experienced flooding in the past does not mean it is not at risk of flooding now or in the future. The business community must face up to the very real danger that flooding poses to their operations. The insurance industry and wider business community need to identify what assets are at risk of flooding and to what extent. Only then can they effectively work together to manage the risk. An end-to-end approach to flood risk management needs to be adopted so that insurers, risk managers and business owners can better understand and deal with the changing nature of flood risk that we face today.

Stage 1: flood modelling

The first stage in an end-to-end approach to flood risk management is to identify which properties are at risk of flooding and to what extent. This process involves a detailed examination of the immediate risk to specific sites but can also include the mapping and modelling of flood risk to the surrounding area.

This analysis should include risks to essential infrastructure and transport routes as well as the risk faced by a company's distributors or suppliers. Depending on the size of business, this process may involve analysis of hundreds of sites, or from an insurance perspective, multiple policies or entire books of business.

Flood models come in a variety of forms, but in simple terms, a flood model determines the volume and passage of water which would be expected during a major flood event. Depending on the application and level of complexity required, different flood models examine flood risk at different scales with varying levels of accuracy, from detailed, single site analysis to wide-area, catchment-based studies.

Generally speaking, there tends to be a trade-off between the cost of the modelling exercise and its resolution. Increasing resolution (i.e. detail) increases cost in terms of data collection, processing and the sophistication of the model required.

However, new approaches to detailed urban flood modelling are becoming more accessible to business and insurers. Increasingly, new types of commercially available, high resolution topographic data, coupled with highly efficient computer modelling of water flow is being used as part of the flood modelling process. These 'intermediate complexity' models (such as Flowroute™, developed by Ambiental in collaboration with Cambridge University) provide detailed, high-resolution information (including depth, duration and extent of flood risk down to the individual building level) which can be used for risk rating over large areas, even entire cities, at reduced cost.

The information provided by this technology is now starting to be used by property developers, architects, businesses and the insurance / reinsurance industry, to rapidly and accurately identify which properties are at risk of flooding and to what extent.

Stage 2: risk management

Once a business has identified the extent of the flood risk facing their operations, they can then use this information to make informed decisions and to implement an effective programme of risk management.

For example, for a large manufacturing business with twenty sites across the UK, the flood modelling analysis may identify five sites at risk of flooding, two

of which are found to be significantly at risk. For those three sites determined to be at medium risk only, the business may decide to absorb the risk within their insurance cover as well as undertake some form of initial risk mitigation, such as registering to obtain early flood warnings. Whatever action is taken, it is based upon detailed and reliable flood risk information rather than conjecture.

Stage 3: flood risk assessment (FRA)

Using the example above, the manufacturing company may also decide to analyse in greater detail its two sites which face a significant risk of flooding so as to initiate a more rigorous process of flood risk assessment.

This process can include detailed topographic surveying of the site and surrounding area, an examination of the historical flood record as well as complex hydrological modelling. Information produced as part of the FRA will include a detailed assessment of the probability and potential extent of flooding, both on site and in the surrounding area. This in depth information is also likely to include identification of potential flow paths, analysis of water run-off and an examination of the capacity of existing drainage systems.

At present, FRA services (like those provided by Ambiental) are normally undertaken to accompany new planning applications in flood risk areas, so as to comply with government legislation (e.g. PPG 25 – Planning Policy Guidance Note 25 – Development and Flood Risk). The same type of assessment will increasingly be applied to existing properties, enabling businesses and insurers to mitigate against the potential risk of flooding to a particular site or sites.

Stage 4: risk mitigation

Finally, the information provided from flood risk modelling and assessment can be used by our hypothetical manufacturing company to plan and implement detailed risk mitigation strategies so as to reduce the financial and human impact of flooding to the business.

Recommendations can be produced for the improved management of surface water, potential relocation / raising of essential infrastructure above the floodplain, the incorporation of flood resilience into building design, as well as the preparation of detailed plans for staff evacuation and business continuity in the event of a flood incident. While we are unlikely to face a flood event on the scale of Hurricane Katrina or the Asian Tsunami, flooding is a very real threat to urban centres in the UK. It is widely considered that flooding is the new business risk of the 21st Century.

Yet, many companies in the UK remain unaware of the potential risk to their operations. New developments in flood risk modelling technology and the application of flood risk assessment services must be embraced by both businesses and insurers if we are going to properly address the issue of flooding and safeguard against the potentially catastrophic losses that a major flood event could generate in the future.

Dr Justin Butler is Managing Director of Ambiental Technical Solutions (www.ambiental.co.uk), a company that is developing technology to help insurers, reinsurers, risk managers and brokers tackle the risks of environmental catastrophes.