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Creating an effective FLOOD RESILIENCE STRATEGY

The five crucial stages to create an effective and cost-efficient flood resilience strategy.

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One of the most significant risks to the UK from climate change is more flooding. Since 1998, the UK has experienced six of the ten wettest years on record and Met Office data confirms that the UK's flood risk is increasing.

In recent years, the naming of storms has drawn public attention to the increased frequency of winter storms and resulting flood events. However, the pattern is changing. Summer storms with high-intensity rainfall are becoming more common, causing flooding that originates in different and often unforeseen ways. Flooding is an increasingly important all-year-round risk to consider.

Hourly rainfall exceeding 30mm per hour is the threshold the Met Office and the Environment Agency Flood Forecasting Centre use to issue flash flood alerts. By 2070, it is projected we will meet this threshold twice as often as in 1990.

The risk is increasing, but it's also becoming less predictable. Flooding from watercourses and the sea is well mapped, and flood warnings are readily available, so even though the intensity and frequency might increase, the system can at least provide advanced warnings.

The challenge property owners face is the increased frequency of surface water rainfall events. This risk isn't as well understood and mapped, so it isn't easy to predict. The lack of adequate warnings means this issue must be properly considered and assessed to mitigate and reduce risk. James Harvey's article *Scratching the surface* in August 2024 *stronger* is an excellent place to start to understand more about surface water flooding.

Working in the insurance industry, we see and experience firsthand the devastating impact of flood events. Awareness of increased flood risk is clearly important as it escalates the issue up the agenda and encourages preventative measures. An effective and cost-efficient flood resilience strategy helps mitigate the growing unpredictable risk and saves costs. Here we share the methodology for taking proactive action and managing flood risk better.

STEP ONE - Know your risk

Start off by assessing the strategic importance of flood risk by analysing the data and evaluating your priorities. At a high level, this means understanding the different types of flood risk that could impact your property portfolio.

It's important to assess not only the traditional risk from watercourses and the sea but also reference specific flood risk mapping for surface water. Consider less common causes of flooding, such as groundwater and infrastructure failure.

Flood risk data provides predicted flood heights associated with the different likelihoods of flooding. Armed with this data, decide the level of risk you want to protect against. This will vary according to several factors, such as the type and use of a particular property asset.

Consider less common causes of flooding, such as groundwater and infrastructure failure.

Figure 1

Organisation knows the asset flood risk
- Flood risk assessment explained and discussed

DECISION What risk am I willing to accept?
- No flood risk
- Defend against 1% annual chance of a flood

What strategy might be adopted?
- Loss prevention **(RESISTANCE)**
- Loss reduction **(RECOVERABILITY/ RESISTANCE)**

STEP TWO – develop a flood risk strategy

When deciding on a strategy, consider whether loss prevention or loss reduction is the best-suited approach to a particular asset. See Fig 1.

STEP THREE – Assess risk appetite

There are many conflicting issues to consider when deciding on your appetite to risk, which has to be done at organisational level. These will include the resource availability, and impact on end user and stakeholder views and many others.

However, at the outset it is important to understand the costs and benefits of flood resilience as a way of mitigating flood risk. The cost can vary considerably depending on the strategy and measures decided on.

Three main areas make up flood resilience:
- **Flood resistance** – use materials and approaches to manage water entry into a building. This relates to water exclusion or keeping water out.
- **Flood recoverability –** use materials, products and approaches that prevent the building and business from being damaged by a flood, enabling quicker recovery.
- **Flood preparedness –** create a plan that delivers a proportionate and effective response to a flood event.

The benefits are clear, as successful flood resilience reduces flood damage, speeds up recovery and reoccupation of flooded properties, lowers repair costs, and improves occupant safety. The Chartered Institute of Water and Environmental Management (CIWEM) Community of Practice[2] is a good place to learn more about the topic, including case studies and resources.

The five stages

When flood risk is understood and risk appetite confirmed, there are five stages to creating an effective flood resilience strategy:-

1 Survey sites identified at risk

The process of assessing flood risk and establishing the appetite for risk leads to a position where you've identified the sites that require a more detailed assessment. A qualified and experienced surveyor can establish existing resilience, consider resilience options, and ultimately create a site-specific resilience strategy.

A vital part of this process is discussing the flood's impact with the stakeholders and what factors are most important to them. If the site is sheltered housing it's likely to be all about keeping the property operating, and investing more resources to achieve this might require a cost-benefit analysis.

A response plan can only be effective if combined with appropriate forecasts and alerts.

2 Flood resistance plan

Once the strategy and measures are agreed on, the next stage is procuring a qualified contractor to carry out the work. Most recoverability measures can be installed by an experienced building contractor, but resistance measures normally must be installed by a specialist supplier. The surveyor who created the design should then return to sign off the completed works to ensure they have been completed to the necessary standard.

By 2070, the Met Office[1] projects:

30% Winter will be between 1 and 4.5°C warmer and up to 30% wetter.

60% Summer will be between 1 and 6°C warmer and up to 60% drier.

- Heavy rainfall is more likely.

3 Demonstrate the benefit

The developed strategy will have identified the needs of the stakeholders, and a key part of ensuring success is being able to demonstrate the benefit. This can be as simple as reassuring residents that their homes are protected or driven by the financial imperative to demonstrate to insurers the quantifiable risk reduction from the actions taken.

It is important to formally document the flood resilience strategy, then evidence the risk improvement in terms of avoided or reduced risk. It's also essential to build confidence in implementation, which might include annual scenario testing of the plan or evidence that measures have been successful.

4 Create a risk-sharing mechanism

Once all stakeholders are clear about the level of protection provided, one party may still face an unacceptable risk. Therefore, common ground must be found, and a solution must be developed where acceptable risk is shared. If you have traditional insurance cover it may require a larger excess. Parametric insurance cover might be an alternative option, where the property owner relies on the effectiveness of flood resilience below a pre-agreed trigger level of flooding.

It's essential to build confidence in implementation.

5 Flood response plan

A response plan can only be effective if combined with appropriate forecasts and alerts. Government agencies issue these, or sometimes bespoke property level flood warnings form part of the plan. Crucially, there should be a regular flood plan test to ensure it will be effective when needed.

Flooding case study

A block of flats was built across a slope with no route for surface water to escape except via ground drainage to the other side of the building. The drainage system was regularly overwhelmed, and previous losses were in excess of £185,000 for building reinstatement for a single event.

After assessing the most appropriate and cost-effective strategy, it was agreed the client would accept that a residual risk would remain. Within months of the flood resilience being implemented, a flood occurred at a height greater than the designed resistance. The reinstatement costs were reduced to £85,000, and residents returned home faster than in previous events.

Flood resilience cannot always negate all risks but can still achieve significant benefits.

Delivering effective flood resilience means understanding the required standards to be complied with and using appropriately qualified practitioners.

- The key standard to be aware of and to comply with is a Code of Practice (CoP) for Property Flood Resilience (PFR), published by the Construction Industry Research Association (CIRIA)
- CIWEM manages industry-leading training, which can be undertaken by all parties within the supply chain.[2]
- The key British Standards (BS) to comply with are BS851188 – flood resistance products and BS885500 flood resistant and resilient construction.

References

[1]Effects of climate change, Met Office
[2]Be Flood Ready, The Chartered Institution of Water and Environmental Management (CIWEM)
[3]Property Flood Resilience Industry Training, CIWEM

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