

UK National Flood Resilience Review

By Andrew Gissing

This September, following recent major floods in the United Kingdom (UK), a review of national flood resilience was completed. The review was conducted by the then Chancellor of the Duchy of Lancaster, with a team comprising key Government Departments. The review focused on the following elements.

- Understanding extreme flood risks over the next 10 years
- Assessing the resilience of local infrastructure (such as water, transport, energy and communication)
- Improving flood response operations, including through the use of temporary flood defences.



Key themes identified in the report relevant to Australia are outlined in the following sections.

Risks to essential infrastructure

The review acknowledged the importance of infrastructure to the maintenance of societal functioning and completed a preliminary assessment in partnership with infrastructure operators of the flood resilience of key local infrastructure nationwide. Most UK infrastructure is delivered by the private sector within regulatory frameworks set by Government. These regulatory frameworks outline the responsibilities of private sector operators to deliver reliable and resilient services.

The assessment focused on infrastructure that if flooded would deprive large numbers of people of a critical service. The assessment not only accounted for direct disruption impact, but those that might result from network interdependencies. In total some 1640 potentially vulnerable assets sites were identified. The review then worked with infrastructure operators to identify existing and planned flood protection at each site.

As a result of the review all sectors with infrastructure at risk have agreed to develop or expand existing plans to increase the resilience to extreme floods, either through adequately defended assets or via some other means like interconnections or back-up supplies. For example the electricity industry between 2015 and 2021 will spend 250 million pounds on increasing its resilience of the electricity network against flooding.

The Government has also agreed with operators to improve mechanisms for cooperation and information sharing between Government and infrastructure operators. In particular Government is working to establish a national infrastructure resilience council or forum to:

- sponsor inter-industry cooperation and information sharing;
- develop suitable proposals on resilience;
- carefully examine and document interdependencies between different sectors; and
- in an emergency make the link between different industry sectors and the relevant local resilience forums and the Government crisis management arrangements.

In the context of Australia these learnings underpin the importance of identifying infrastructure disruption risks through emergency risk management processes and to ensure appropriate arrangements are in place to facilitate the sharing of hazard and infrastructure disruption risk information to allow for the protection of key infrastructure assets.

Temporary flood defences

The review explored the utility of utilising temporary flood defences to assist with the protection of infrastructure. Some key findings relevant to Australian emergency services included:

- Permanent defences or a permanent network of solutions are clearly preferable to the ad hoc deployment of temporary defences. Temporary barriers do not offer the same level of protection as permanent defences and typically have failure rates of 20-30%.
- The safe and robust deployment of temporary defences requires reliable and timely flood forecasts.
- Site specific pre-planning is critical to their success. Typical planning would include details of the site to be protected, the resources required, the access route, risk assessments, transportation arrangements and communication messages.
- The use of barriers is initially more expensive than utilising sandbags, though barriers were seen as offering a considerably higher degree of protection and could be re-used. Given these parameters the UK Government prefers the use of temporary barriers over sandbags.

In the Australian context the use of temporary deployable barriers has been limited in comparison to their wider use overseas. Application of temporary barriers is likely best identified through floodplain risk management processes.

Modelling improvements

Though UK flood risk modelling approaches were found to be robust the following areas were identified for longer term improvement.

- Development of a more integrated approach to flood risk modelling to allow simulations to be run that link to weather and hydrology to assess the probability of given levels of flooding and associated impacts, and to evaluate management strategies.

- Undertake further work to extend flood records, so as to improve the assessment of the likelihood of extreme floods.
- Further develop statistical methods to reduce uncertainties in flood estimation.
- Flood risk assessments should be regularly reviewed to account for updated science including climate projections.

Communication of flood risk

The review expressed concern regarding the communication of flood risk utilising terms such as a 1% chance or a 1 in 100 year risk. A set of better practice communication principles was outlined to improve communication of flood risk and include:

- Think carefully about the audience for any communication and do not address ‘the public’ as an undifferentiated aggregate of individuals
- Avoid implying that target audiences are ignorant and simply require education
- Make data public and collect as well as disseminate information
- Provide an early explanation of the logic and structure of the central tenants of any communication
- Don’t over claim
- Express estimations of the likelihood of events in intuitive, consistent and unambiguous ways. It is often helpful to frame the likelihood of flood events over timescales that are relevant to particular audiences. For example the likelihood of a one in one hundred year flood occurring during the extent of a typical mortgage is about one in four
- Make uncertainties and levels of confidence in the estimations transparent
- Take particular care with terminologies that have a more vernacular use

A full copy of the report can be downloaded from the below link.

www.gov.uk/government/publications/national-flood-resilience-review