



State Headquarters
Level 6, 6-8 Regent Street
Wollongong NSW 2500
PO Box 6126
Wollongong NSW 2500
Phone 02 4251 6111
Fax 02 4251 6690
www.ses.nsw.gov.au

NSW SES STATE HEADQUARTERS WOLLONGONG

REFERENCE: DA's, Flood Risk and Site Specific Evacuation Plans

The Service is concerned about the public safety aspects of the development of flood prone land and endeavours to provide advice and guidance to local government on matters of floodplain management. Our aim is for the SES to be involved at a strategic planning level in this process such as at the floodplain management committee level or local environment planning stage, not at the individual development application level.

Despite the preferred position, the Service is approached from time-to-time to provide advice about flood risk for the site of a proposed development. The SES is not in a position to provide a detailed assessment of the flood risk for a development site. Information about flood risk is provided by local government councils through the floodplain risk management process they are required to undertake. Recognising that not all councils have completed that process, some notes are provided below, to assist those who need to consider the emergency risk management implications of flooding for a site.

The SES often receives requests from individuals, businesses, or companies that have been asked by a council to obtain SES agreement to, or endorsement of, a site specific flood evacuation plan as a condition of development consent. The SES does not have the statutory authority to endorse private evacuation plans and the Service does not have the resources to review and comment on private plans written at the level of individual dwellings, businesses or small subdivisions. The Service can therefore not provide the response Councils often ask developers to obtain. In such cases the SES will always advise the relevant council of this position is requested to do so by the applicant.

It should also be noted that the NSW Floodplain Development Manual 2005 (FDM) specifically precludes the practice of consent conditions requiring a site plan if that plan is trying to overcome an underlying flood risk that would otherwise be considered too high to permit approval (see FDM Annex L-3). In other words, if the existence of a flood plan is ignored, is the underlying flood risk unacceptable in the context of the proposed development? This policy reflects the views of the SES on the issue and the FDM provides

an explanation of why the Service has adopted this policy.

Despite the provisions to the contrary (see above) a council may insist on the preparation of a site specific flood evacuation plan. To offer at least some assistance to the applicant of the development the following information is provided. In a consideration of public safety during an SES flood planning project or development assessment process, this Service would investigate questions such as the ones listed below. The more of these questions for which the answer is yes, the worse the risk rating for public safety will be in our assessment and the more difficult the emergency risk management planning process and response implementation will be.

Also note that the NSW SES has developed a Home FloodSafe toolkit and a Business FloodSafe toolkit. These are both available from the NSW SES FloodSafe website at www.floodsafe.com.au.

Flood Planning Questions & Considerations used by the SES

The SES Local Flood Plan for the area in question may be a useful source of information about flood prediction and warning arrangements and the flood risk generally. These plans are public documents and copies are held by public libraries, local government councils, and local SES Units. An electronic copy can be provided if requested.

1. Does the development attempt to rely on an evacuation plan to overcome an underlying flood risk? (i.e. is it un-safe to develop the site without a plan?);

The NSW Floodplain Management Manual specifically precludes this practice. The SES does not believe that evacuation plans are an effective means of reducing the **underlying flood risk** in an area. The Service's view is that for residents to have their own flood evacuation plan, indeed any household safety plan, is a desirable objective. The problem is that even well written plans are dependent on human application and often rely on technical support systems and cannot be guaranteed to work every time and for all circumstances in which a flood or other emergency may occur. Most plans will rely on the action of one or more third parties.

All plans require regular maintenance and review and most importantly, an on-going commitment from the participants. These conditions are difficult enough to implement and monitor over the long term for a full-time emergency service. They are unlikely to be achieved at all in a private ownership context where there is no external audit or monitoring.

A flood plan **cannot** satisfy the requirement for a "permanent, failsafe, maintenance free measure" to ensure the evacuation of residents, a condition often imposed by a council.

The SES prepares community-wide flood plans at a local government level to deal with the problem of **existing communities** in flood liable areas and those plans do not have the capacity to cater for open-ended population growth. The bigger and more complex the flood problem becomes, the broader the operational objectives have to become. It is then much more difficult to deal with individual people and locations.

- 2. Is the site a frequently flooded site where residents may become complacent about the smaller more frequent floods and will be surprised and caught-out by bigger events?;**

At first glance it may seem that if people live in an area where frequent low-level floods occur, they would be more flood aware. Unfortunately, although they may be aware of flooding, they generally come to the view that they are not at risk because they think all floods are like the small ones they often see. This is not true and big floods will almost always catch people by surprise and exceed their capacity to deal with the situation unless they have considered this scenario in their planning and preparedness.

- 3. Is it a location for which flood height prediction is either not available at all or within a reasonable time frame or where prediction is inherently uncertain?**

These issues will make flood planning and warning and response timing very difficult. There are many locations where the time from rainfall to flooding is less than six hours and these are termed flash flood environments. Examples are Coffs Harbour, Wollongong, and many suburban Sydney areas. In these and similar locations, Severe Weather Warnings will be the most likely form of advice about the potential for flood producing storms and rainfall. Business owners/operators must be weather aware and act early on publicly broadcast severe weather and flood warnings. The Australian Government Bureau of Meteorology has an excellent web site (www.bom.gov.au) that lists all current warnings and has access to some real time data.

- 4. Is the location remote from the main community and therefore not linked to existing community networks for warning and assistance purposes?**

It will be difficult for the SES to monitor remote locations such as rural residential communities. The more specific the warning requirement for individuals and sites becomes, the more difficult it is for the SES to deliver warnings in the short time frames that often apply.

- 5. Will residents require special flood warning arrangements because of isolation, short warning times, age or ill health?**

Neither the SES nor the Bureau of Meteorology can undertake to provide special individual flood warning services for each business site. The more specific the warning requirement for individuals and sites becomes, the more difficult it is for the SES to deliver warnings in the short time frames that often apply. Business owners/operators must be weather aware and act early on publicly broadcast severe weather and flood warnings. The Australian Government Bureau of Meteorology has an excellent web site (www.bom.gov.au) that lists all current warnings and has access to some real time data.

- 6. Will evacuation rely on a third party for warning, transport or temporary accommodation?**

Areas that do not have independent means of evacuation complicate the SES flood response. The SES has very limited human resources and cannot undertake to help out at all sites that may need it. Evacuation plans must be self-sufficient and need to consider that other sections in the community may be placing demands of public and private transport resources.

- 7. Is the area isolated by floodwater before inundation of the land the dwelling is built upon? i.e. is the only the safe road out closed by river floodwater or local stormwater before flooding is obvious to residents, making it difficult to motivate people to action?**

Vehicular escape routes that rise steadily and lead away from the flood are the best. In the worst case, a community would be cut-off by floodwater and left stranded on an island on high ground that could subsequently be submerged (see 9 below). The problem of localised closure of roads due to inadequate stormwater capacity can be critical where the available warning and evacuation time is short. If an area is cut off from road access but still has some overland escape route, then at least people will not drown.

Do not just focus on the effects up to the 1:100 flood level. Flood risk management must consider the implications of bigger floods (1:200, 1:500, 1:1000) and some thought needs to be given to the consequences of even the most rare floods up to the Probable Maximum Flood (PMF). This is reflected in the NSW Floodplain Management Manual of January 2001.

- 8. Is the development relying on an elevated structure to achieve compliance with habitable floor level requirements?**

This approach, although effective for property protection, brings with it the problem that residents will be convinced that it is safe to "sit-out the flood". Unless the floor level is above the limit of all flooding i.e. above the Probable Maximum Flood (PMF) this is not true because the water could keep rising over the floor level after residents have lost their escape route.

People tend to resist calls to evacuate before the land around them is obviously flooded. Unfortunately our experience is that people change their mind about this option **after** they have been surrounded by flood water or when essential services such as water, power and sewer cease to function. Rescue, resupply and medical responses are difficult and can be dangerous under these conditions.

In flash flood environments (floods with less than 6 hours warning) provision of a safe refuge above the limit of flooding (PMF) may be an advantage if the duration of flooding will be very short and the flood depth or velocity is high on or adjacent to the site. The success of this strategy will depend very much on the likely behaviour of people and building designs which put cars or other property under the refuge area may encourage people to take risks to save these items.

- 9. Will an SES response such as difficult/dangerous rescue or demand on limited SES resources be required if the private arrangements fail and people do not leave early enough (see 7 above)?**

During periods of widespread flooding the SES will have to deal with many communities facing the impact of flooding. There is no thing as a safe period of isolation although obviously the shorter the better and the longer the period of isolation, the more chance there is for mishap requiring external intervention. Even relatively brief periods of isolation, in the order of a few hours, can lead to personal medical emergencies that have to be responded to.

10. Is communication to the area reliant on services such as telephone and power which are known to be subject to failure during floods/storms?

Inability to communicate in an emergency will complicate the implementation of any plan and could be fatal. Lack of communication to & from the site also requires someone from outside to confirm the safety of people on the site.

Any plan that a resident or facility manager may wish to prepare for a site should address the issues listed above. The list is also an indication of the issues that should be addressed in any detailed major development proposal, especially if some of the key issues such as the reliability of evacuation routes, can be dealt with through better design and construction.

Stephen (Steve) Opper ESM
Director Community Safety