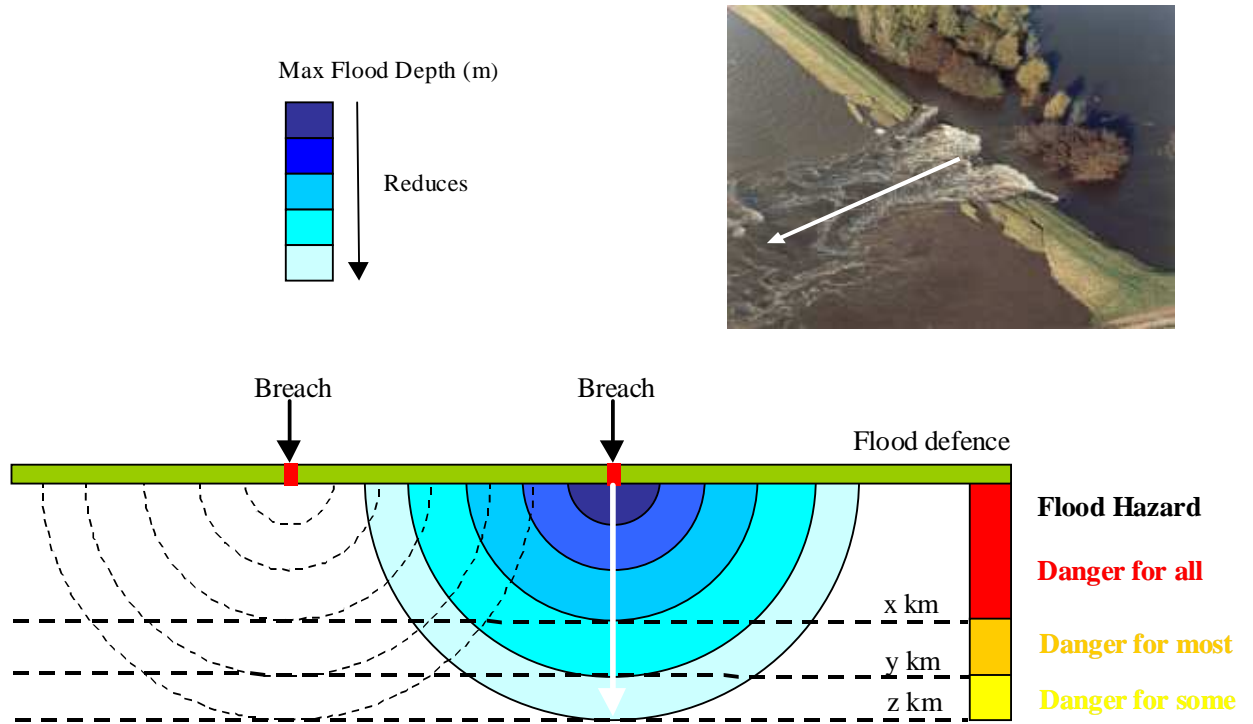


**APPENDIX J**  
Sub-delineation of Zone 3a High Probability  
The Simple Method, FD2320

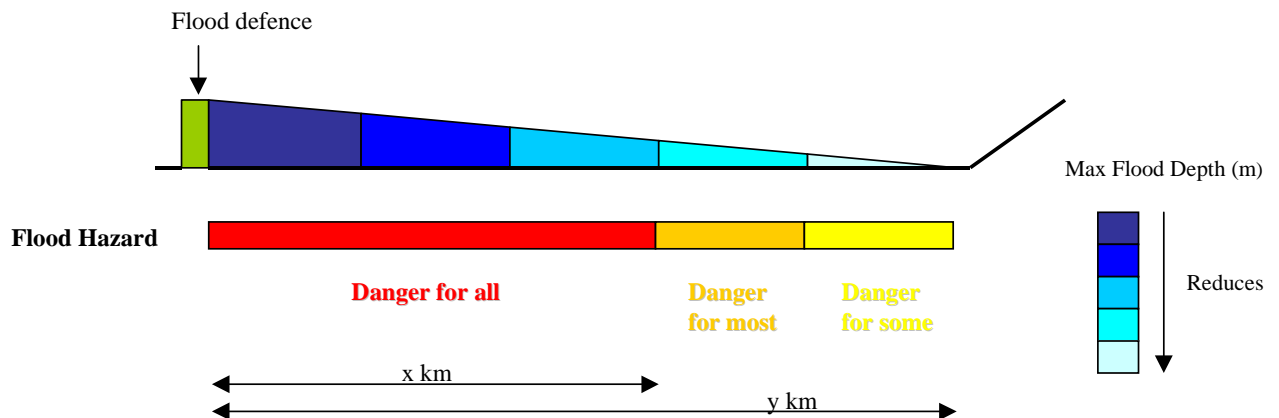
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## Simple Approach

The simplest assessment of the risk behind flood defences uses information on the danger to people from flooding in defended areas. This is illustrated in Figures 1 and 2, which show how flood depths for a particular breach scenario can be interpreted as danger to people.



**Figure 1 Plan view of danger to people for a breach scenario**



**Figure 2 Cross-section view of danger to people for a breach scenario**

The results of this type of modelling have been used to create generic lookup tables relating the level of danger to people to the distance from the defence following a breach scenario, where the hazard is related to the water level above the floodplain.

It is advisable not to construct new buildings near to defences because of the risk to people and potential for damage to buildings, particularly on the coast. The distance depends on the likely head above crest level or breach level.

Table 1 is a simple lookup table that can be used as a guide to the danger to people<sup>1</sup> at various distances behind flood defences for breaching (assuming that this will occur during the lifetime of the development).

**Table 1 - Danger to people from breaching relative to distance from defence**

| Distance from breach (m) | Head above floodplain (m) |        |        |        |        |        |        |
|--------------------------|---------------------------|--------|--------|--------|--------|--------|--------|
|                          | 0.5                       | 1      | 2      | 3      | 4      | 5      | 6      |
| 100                      | Yellow                    | Orange | Red    | Red    | Red    | Red    | Red    |
| 250                      | Yellow                    | Yellow | Red    | Red    | Red    | Red    | Red    |
| 500                      |                           | Yellow | Orange | Red    | Red    | Red    | Red    |
| 1000                     |                           | Yellow | Yellow | Orange | Red    | Red    | Red    |
| 1500                     |                           |        | Yellow | Orange | Orange | Red    | Red    |
| 2000                     |                           |        |        | Yellow | Orange | Orange | Red    |
| 2500                     |                           |        |        | Yellow | Yellow | Orange | Orange |
| 3000                     |                           |        |        |        | Yellow | Yellow | Orange |
| 3500                     |                           |        |        |        |        |        | Yellow |
| 4000                     |                           |        |        |        |        |        |        |
| 4500                     |                           |        |        |        |        |        |        |
| 5000                     |                           |        |        |        |        |        |        |

**Key:**  
 Danger for some  
 Danger for most  
 Danger for all

## Implications of Using the Simple Approach

### General

- In this simple approach, the danger to people decreases as the distance from the defence increases. A more detailed analysis would identify 'pinch points' on floodplains where flow velocity and, therefore, hazard can be high, for example at openings beneath embankments. A more detailed analysis would also identify areas where the hazard would be lower, for example due to localised high ground.

### Table 1

- This table has been generated for a breach of 100 metres wide, breaching onto a flat floodplain. There may be greater spatial variation in the hazard on complex floodplains and for different sized breaches. This uncertainty is expected to be relatively large.
- Hazard to people increases as the head of water against the defence increases.
- For small defences (say 2m high or less) the zone of high hazard only extends for the first few hundred metres if the defence is breached.
- For large defences (say 5m high or more) the zone of high hazard can extend for 2km behind the defence, if the defence is breached.
- In general, this suggests that development should be avoided within the first few hundred metres of the defence because there is a risk to all people exposed to floodwater. The distance depends on the head of water above the floodplain. In addition, the velocities in this zone will be relatively high and therefore there is a clear risk of damage to property.
- Behind large defences it would be advisable not to build within the first 500m to 1km due to the potential hazard of breaches with large heads of water. However, it is important to consider the probability of such a breach occurring.

<sup>1</sup> For details regarding the danger classifications of 'danger to all', 'danger to most' and 'danger to some' reference should be made to HR Wallingford (2003) *Flood Risks to People Phase 1*, Environment Agency/Defra R&D Technical Report FD2317/TR, July 2003.