

# **APPENDIX G**

## **ACTION SCREENING METHODOLOGY**

### Storage and Floodplain Storage

Storage considers areas where flood water can be stored and then released at a controlled rate therefore reducing the flow rate through the study area and reducing the level of flood risk. This can be achieved by using existing depressions to create online or offline storage areas or by identifying pinch points which could be dammed such as a restricted point along a valley. Storage areas can be effective either upstream of the risk areas or within the risk area where parks or open areas are located. Floodplain Storage utilises the existing floodplain by increasing its storage capacity. This can be achieved by cross-flow bunds or by woodland creation which has the effect of increasing the floodplain's roughness resulting in higher water levels and therefore storage.

Storage areas are identified by using the most detailed topographical information available. This information can include OS mapping, a national DTM or LiDAR. Storage areas identified within the hydraulic model extents can be modelled in order to quantify the effect. This would involve representing a dam with a control structure and overspill weir. Where the storage area is outside the model extents an estimate as to its effect is achieved by calculating the potential storage volume. This can then be removed from the flood hydrograph at the inflow to the model. The effect can then be quantified. The uncertainty associated with this method is, however, high. Floodplain Storage can be simulated by adding bunds within the 2D mesh of the hydraulic model or by increasing the roughness coefficient. The effect of each can then be quantified.

### Direct Defences

Direct Defences refer to physical barriers which prevent water from entering an area such as flood walls, embankments and barrages. As a general rule Direct Defences are kept as far back from the river channel or coast line as possible allowing the floodplain function to remain active. Where this is not possible, due to flood risk receptors being located within the floodplain, Direct Defences are placed around the property boundary to afford it protection. Where space allows flood embankments are used but where space is restricted flood walls are utilised.

Direct Defences can be simulated within a hydraulic model, either as part of the 1D cross sections or within the 2D mesh. The resulting water level due to the restricted floodplain can be quantified along with the residual risk upstream and downstream.

### Conveyance and Control Structures

These actions work by either increasing or restricting flow to the effect of reducing water levels to the risk areas upstream or downstream. Examples include a flow diversion channel which removes flow from the watercourse along an alternative route bypassing the risk area. Existing culverts causing a restriction can be replaced with larger ones increasing the flow capacity and reducing flood risk upstream. Other actions such as sluice gates can restrict the flow reducing the flood risk downstream.

Conveyance and control structure actions can be simulated within a hydraulic model. Structures can be represented within the 1D model and diversion channels can be imprinted into the 2D mesh or given its own 1D network.