











## Examples of surface water management options

We have used the model results to investigate high level solutions to minimise flood risk from surface water. The options we have considered fall broadly into five categories:

|                   |   |   |   |
|-------------------|---|---|---|
| <b>Storage</b>    | <p>Flood storage areas and sustainable drainage systems (SuDS) can be used to temporarily hold water in the catchment.</p>                      | <p>Permeable paving/"thirsty" concrete can be used to store flood waters in urban areas.</p>  <p><small>Photo credit Tarmac/ Architectureand Design.net</small></p>  | <p>Open space can be landscaped to create flood storage areas.</p>   |
| <b>Diversion</b>  | <p>If flow can be made to change direction, flood risk to downstream areas can be reduced. However, this may increase risk to another area.</p> | <p>In open land with overland flow, water could be collected in a catchwater drain and be conveyed to the river or Nutclough Reservoir.</p>  <p><small>© Copyright H Bolton and licensed for reuse under the Creative Commons Licence</small></p> | <p>Speedbumps can be constructed on roads which are major flow routes to divert water into drains or culverts.</p>  |
| <b>Conveyance</b> | <p>Improving the flow of water from one place to another can prevent ponding in one location.</p>   | <p>Pipes can be constructed to carry surface water adjacent to roads or through fields. These would be covered up once built!</p>  <p><small>© Copyright Canada Culvert</small></p>  | <p>Flows can be conveyed by swales or drains alongside roads.</p>    |
| <b>Pumping</b>    | <p>Pumps can be used to remove water from low spots where gravity won't allow it to flow away.</p>  | <p>Pumping stations could be installed in problem areas to pump water away.</p>    | <p>Water collects in low spots such as New Road and Market Street.</p>   |
| <b>NFM</b>        | <p>Replicating the natural environment to slow or store water in the catchment.</p>   | <p>Inserting leaky dams in formed channels and blocking moorland drains retains water in the uplands, slowing the release of flow downstream.</p>  <p><small>© Photo credit North York Moors National Park</small></p>                           | <p>Tree planting on hill slopes to intercept runoff will slow the flow and increase infiltration.</p>              |

