

## Conclusions and Recommendations

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## 10.1

### Conclusions

A SFRA has been produced for the combined area of Chesterfield, Bolsover and North East Derbyshire. The study has identified the existing areas of flood risk across the LPA area from all sources. Where there are proposed development sites in areas at risk of flooding, the assessment has identified which potential development sites are most at risk and from what source of flooding. The culmination is a flood risk matrix and guidance notes that should enable the LPA to ensure that development types are sensitively located with consideration to flood risk.

All available data (September 2007) has been collected from the LPAs. In some areas there is a need for more detailed information which would improve knowledge of flood risk within the LPA areas. This includes modelled river reaches. There is also existing data which has not been made available for this study e.g. some sewer flooding information and drainage network GIS data.

Chesterfield, Bolsover and North East Derbyshire are at risk of flooding from a number of sources and mechanisms including watercourse overtopping, flooding from rivers due to defence failure, surface water sewer and foul sewer flooding, runoff and land drainage and the failure of artificial sources i.e. canals and reservoirs.

Using the available data, flood maps have been produced for different return periods and climate change extents. The potential impact of climate change has been considered across the LPA area. Levels of risk within the flood extents have been estimated where there is the necessary available data.

There are records of flooding Chesterfield, Bolsover and North East Derbyshire at a number of locations predominately from the River Rother in Chesterfield and North East Derbyshire and from the River Doe Lea in Bolsover. Section 5 in the report outlines areas of main concern as being at significant and/or frequent risk of flooding. There are also likely to be isolated problems due to sewer and culvert failure/blockage and minor watercourse flooding.

Using the available data, flood maps have been produced for different return periods and climate change extents (where models are available). Where there are river structures along the urban watercourses flood risk may increase due to higher flows occurring more often.

There are existing best practice policies in place and draft policy recommendations for flood risk and development have been drafted as part of the SFRA process, including policies for SuDS. Provided these policies are implemented and adhered to, changes in land use are not expected to have a great impact on flood risk but the abandonment of assets could increase flood risk sporadically across the three councils' area.

In some cases proposed developments will be located in areas behind existing flood defences. This could result in an intensification of property at risk, potentially putting a greater burden on the emergency services during a flooding incident. Furthermore, in some cases defences, river channels and culverts may be shown to be in (or approaching) a state of dilapidation that would require additional expenditure to return them to the required level of service. In some instances therefore it may be beneficial to require a contribution to either upgrade or more intensively maintain existing infrastructure to ensure that a development remains safe.

Flood risk and the condition/standards of protection provided by defences are not static – climate change, increased urbanisation and changes to urban and agricultural land use can have an impact on flow and water levels; defences can deteriorate with time. Furthermore, new information on flood risk will become available, both from the Environment Agency and other bodies such as the water companies (reservoir failure and failure of sewerage/water distribution systems), British Waterways, etc. Therefore the SFRA will over time become out of date and will need to be updated to reflect condition and policy.

## 10.2

### Recommendations

During the course of the work a number of specific recommendations for additional work have been identified. These are described below:

- Flood Risk Assessments should assess risk from all sources including canals. Rather than many different developers completing a separate assessment, in some cases, it is recommended that one study is completed to cover several adjacent/complementary allocations. This should cover both the issues of overtopping and breach.
- Afforestation outside floodplains is beneficial and can reduce runoff and flood risk if undertaken in a sustainable manner. Afforestation measures minimise soil loss and reduce sediment load in streams and rivers, thus moderating flash floods and controlling the meandering tendency of rivers, thereby minimising the erosion of banks and embankments. Deforestation and other significant tree loss and especially clear cutting should be avoided. Further studies required to recommend where specific sites would be suitable for afforestation.
- The guidance and matrix in the report should be used for all developments in order to identify appropriate and correct consultation processes and requirements for preparing a site specific FRA, as supplemented by central government and/or the Environment Agency from time to time.
- The LPA should use the SFRA in assessing potential sites to be allocated through the LDF.
- Developer contributions towards flood protection, strategic Sustainable Drainage Systems (SuDS) facilities, land drainage, and flood mitigation etc. may be required for some developments. This will be dealt with on a case by case basis.
- Surface water runoff arising from a developed site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk to the site itself and elsewhere, taking climate change into account. This should be demonstrated as part of the flood risk assessment and considered at all stages of the planning process.
- The SFRA should be reviewed on a bi-annual basis to ensure that the latest flood risk data is available in making informed development allocation decisions