

# Sources of Flood Risk Summary

JBA Project Code	2018s0553
Contract	Bassetlaw District Council Level 1 SFRA
Client	Bassetlaw District Council
Day, Date and Time	January 2018
Author	Freyja Scarborough
Reviewer / Sign-off	Hannah Coogan
Subject	Sources of Flood Risk Summary



## 1 Introduction

This appendix is intended to be a stand-alone document and provides supporting information to neighbourhood planners as part of the Bassetlaw level 1 Strategic Flood Risk Assessment. The information in this document provides further guidance regarding the multiple sources of flood risk which effect Bassetlaw District.

## 2 Sources of Flooding

### 2.1 Flooding from a watercourse

River and tidal flooding occurs when rivers and streams are unable to carry flood waters downstream within their banks. The level of water within the channel exceeds its banks or flood defences and spills water onto the flood plain. After this water will follow the lie of the land and pond in low points, returning to the river at some point downstream when water levels drop. This makes properties close to river banks, in low spots or along natural flow paths the most prone to flooding.

The Environment Agency produce different mapping products that show areas that might be affected by river and tidal flooding:

- The Flood Map for Planning shows river and tidal flooding across different flood zones. These flood zones have different flood likelihoods. National planning policy tells planners and developers how to use these flood zones to inform planning decisions. The map also shows areas protected by major flood defences.

You can view this at <https://flood-map-for-planning.service.gov.uk/> and we have also mapped it in this SFRA. It is worth checking the online version first as this will be updated more frequently than the SFRA.

The Flood Zones are only produced where the catchment of a river is greater than 3km<sup>2</sup>. For smaller watercourses, the Risk of Flooding from Surface Water map (see below) is a useful starting place to understanding the risk of flooding from small ditches and streams.

We have also considered the impact of climate change in the SFRA on future river and tide levels. In many places this assumes that the likelihood of flooding will increase so that a flood with a 1 in 1000-year likelihood will become a 1 in 10- year likelihood flood in future. Developers will need to consider the actual and locally specific impacts in more detail in a site-specific Flood Risk Assessment, using the latest Environment Agency guidance on using climate change allowances.

- The Risk of Flooding from Rivers and Sea is an online map that shows the chance of flooding presented in categories that take account of flood defences and the condition they are in. You can view this at <https://flood-warning-information.service.gov.uk/long-term-flood-risk>

The information on these maps is helpful for informing strategic decisions about allocated land for development but developers need to produce a more detailed assessment at a site-specific scale in a Flood Risk Assessment. Chapter 10 of the SFRA provides guidance on these.

The national Environment Agency maps do not show the interaction between different sources of flooding – for example, the combined impacts of a river and surface water flooding

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happening at the same time. The likelihood and impact of this happening needs to be considered further by Developers in a site-specific Flood Risk Assessment.

## 2.2 Flooding from surface water

Surface water flooding happens when prolonged heavy downpours overwhelm the local drainage network and water flows rapidly overland because it can't get into the river system. Much of the flooding that happened in the district in 2007 was from surface water. Local features such as kerb levels, walls, fences and landscaping can make a big difference to where water flows and ponds. This means that whilst the Environment Agency have produced a national scale map showing the Risk of flooding from Surface Water (RoFfSW), developers will still need to assess this in much more detail at a site level, using detailed ground level surveys and drainage network information.

You can view this at <https://flood-warning-information.service.gov.uk/long-term-flood-risk> and we have also mapped it in this SFRA. In the SFRA we have described the data differently by showing it in different flood likelihood bands. Online this is shown instead as areas with a different risk of surface water flooding, but it is the same data.

Nottinghamshire County Council are the Lead Local Flood Authority for the District. Developers should check with them for records of surface water flooding and if they have produced any more detailed surface water modelling for an area.

## 2.3 Flooding from ground water

Ground water flooding occurs when the water table rises above normally expected levels and emerges at the surface causing flooding. Groundwater flooding generally occurs during or after long and intense rainfall when infiltration into the ground raises the level of the water table until it exceeds ground levels. It is most common in low-lying areas overlain by porous soils and rocks (like sandstone, where water can easily pass through the rock), or in areas with a naturally high-water table. Properties with basements are more likely to be affected by groundwater flooding.

Mapping of groundwater flood risk in the SFRA has been based on the Areas Susceptible to Groundwater (ASStGWf) data. The ASStGWf dataset is a strategic map showing groundwater flood areas on a 1km square grid. It shows the proportion of each 1km grid square, where geological and hydrogeological (underground water) conditions indicate that groundwater might emerge. It does not show the likelihood of groundwater flooding occurring. This dataset covers a large area and only isolated locations in higher risk areas are actually likely to suffer from groundwater flooding.

The mapping is reproduced in the SFRA. If the area you are considering is shown having a high proportion of the area at risk from groundwater flooding then a developer will need to consider this further using more locally specific data, including ground investigations in a site-specific Flood Risk Assessment.

## 2.4 Flooding from sewers

Sewer flooding happens when intense rainfall overloads the sewer systems capacity (surface water, foul or combined surface water and foul systems), and/or when sewers cannot outfall to watercourses due to high water levels. Sewer flooding can also happen when blockages, collapses or equipment failure occur. Groundwater flooding can also cause sewer flooding where it leaks into sewers when water table levels are high.

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Sewer flooding is not mapped but historical incidents of flooding are held by water companies. However, this is not an exhaustive list and does not predict the locations of likely blockages or failures in the future. We have presented this information in the SFRA for the Severn Trent Water area at a postcode level.

Because the drainage network is very complicated, that surface water and sewer flooding often happen in the same time and at the same place when water overwhelms the sewers. At a strategic level, the surface water mapping can be a helpful starting place at showing areas where sewer flooding might also happen.

### 2.5 Flooding from a reservoir

The likelihood of flooding from a reservoir is much lower than for other types of flooding. Legislation ensures reservoirs are regularly inspected by trained civil engineers and owners are legally required to do essential safety works. There are very high safety standards for reservoirs in the UK which makes the likelihood of a failure very low.

The Environment Agency Flood Risk from Reservoirs map shows the maximum flood extent in the event of reservoir breach. The maps are an absolute worst-case scenario, which assumes reservoirs are full when they fail, that there are no emergency reservoir operating measures and that lots of different reservoirs fail at the same time. They do not show a likelihood of flooding and are not directly comparable to maps showing river, tidal or surface water flooding. They are useful for informing emergency plans and developers should take them into account when they prepare site specific Flood Risk Assessments.

You can view this at <https://flood-warning-information.service.gov.uk/long-term-flood-risk> and we have also mapped it for the SFRA. It is worth checking the online version first as this will be updated more frequently than the SFRA.

### 2.6 Flooding from a canal

Canal flooding can happen when there are sudden failures of embankments and/ or when canals and rivers interact. There is one canal within Bassetlaw District, the Chesterfield Canal and this is connected to the River Idle and River Trent. Any development proposed adjacent to a canal should include a detailed assessment of how a canal breach would impact the site, as part of a site-specific Flood Risk Assessment.