

B Data sources used in this SFRA

1.1 Historical flooding

In May 2024, Leicestershire County Council provided Section 19 reports in Harborough District which include records of historical flood events within the area. These are presented in section 4.1 of the Main Report.

The Environment Agency's Historic Flood Map, which was downloaded from the DEFRA Data Services Platform in February 2024, is presented in Appendix A: Geo-PDFs.

1.2 Fluvial flooding

1.2.1 Flood Zones 2 and 3a

The Fluvial Model Flood Zones 2 and 3a, as shown in the Appendix A mapping, show the 1000-year (0.1% AEP) and 100-year (1% AEP) fluvial flood extents, respectively from the detailed model outputs where these were available. These model outputs were obtained from the Environment Agency in June 2024. Figure B- 1 shows the coverage of these models.

The Environment Agency's Flood Map for Planning Flood Zones 2 and 3, which were downloaded from the DEFRA Data Services Platform in February 2024, are also shown in the Appendix A mapping. These should be used where detailed model outputs are not available. In August 2024, the EA provided Harborough District Council with updated Flood Zones for an area within the north of Harborough along the River Sence, Willow Brook, Bushby Brook, Evington Brook, Scraftoft Brook and Thurnby Brook. Due to the EA currently preparing an updated and improved Flood Map for Planning in the course of updating the National Flood Risk Assessment 2 (NaFRA2), this new data is publicly unavailable until 2025. However, these localised Flood Zone updates can be viewed in Appendix A mapping, alongside the existing FMfP Flood Zones.

Over time, the online mapping is likely to be updated more often than the SFRA, so SFRA users should check there are no major changes in their area.

1.2.2 Flood Zone 3b (the functional floodplain)

All the hydraulic models obtained for this SFRA in June 2024 already contain the 3.3% AEP event and therefore did not require additional re-runs for this event.

For areas not covered by detailed EA models (or where suitable outputs were not available), a precautionary approach should be adopted for Flood Zone 3b with the assumption that the extent of Flood Zone 3b would be equal to Flood Zone 3a. If development is shown to be in Flood Zone 3a, further work should be undertaken as

part of a detailed site-specific Flood Risk Assessment to define the extent of Flood Zone 3b.

If the area of interest is in an area that has seen some major changes to the extent of the Flood Zones, having checked the online mapping, developers will also need to remap Flood Zone 3b as part of a detailed site-specific Flood Risk Assessment.

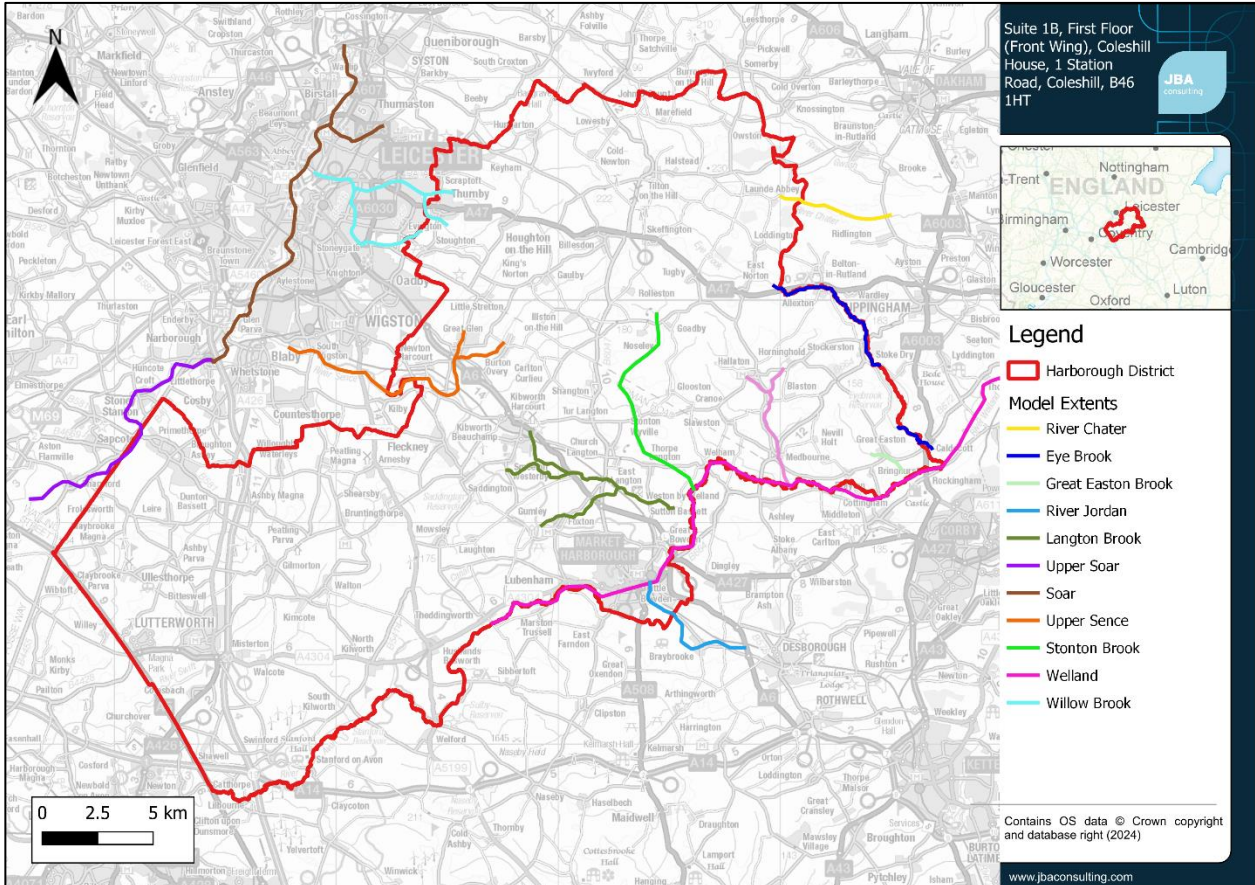


Figure B- 1: Existing hydraulic modelling coverage in Harborough District

1.3 Climate change

Detailed Environment Agency hydraulic models were obtained under licence for this SFRA in June 2024. The original climate change uplifts that were used are within +/- 10% of the updated Central, Higher Central and Upper End climate change allowances, respectively. These were therefore deemed suitable to use. This was the case for the following models detailed in Table B 1.

Table B 1: Original climate change uplifts used in this SFRA

Model	Original climate change uplifts (Central, Higher Central and Upper End)	Updated climate change allowances (Central, Higher Central and Upper End)
River Soar	1% AEP +20%, +30%, +50%	+28%, +37%, +60%
Upper Sence	1% AEP +28%, +37%, +60%	+28%, +37%, +60%
Upper Soar	1% AEP +20%, +30%, +50%	+28%, +37%, +60%
Willow Brook	1% AEP +20%, +30%, +50%	+28%, +37%, +60%
River Welland	1% AEP +20%*	+17%
River Jordan	1% AEP +20%*	+17%
Langton Brook	1% AEP +20%*	+17%
Stonton Brook	1% AEP +20%*	+17%
Medbourne Brook	1% AEP +20%*	+17%
Eye Brook	1% AEP +20%*	+17%
Great Easton Brook	1% AEP +20%*	+17%
River Chater	1% AEP +20%*	+17%

**According to the hydraulic modelling reports obtained from the EA, these models were only simulated for a +20% climate change allowance uplift. However, this uplift falls within the +/-10% range of the latest Central climate change allowance and is more conservative than the current Central allowance of +17%. This was therefore deemed appropriate to use in this Level 1 SFRA. Should a Level 2 SFRA be required by Harborough District Council, the necessary model simulations will be re-run to determine the Higher Central and Upper End climate change allowances.*

Surface Water Climate Change uplifts were modelled for the Risk of Flooding from Surface Water (RoFfSW) dataset for the following events and scenarios:

- 3.3% AEP +25% CC
- 3.3% AEP +35% CC
- 1% AEP +25% CC
- 1% AEP +40% CC

Please refer to Chapter 5 of the Level 1 report for information on the approach to climate change in this SFRA.

1.4 Surface water flooding

Mapping of surface water flood risk in the study area has been taken primarily from the Risk of Flooding from Surface Water (RoFfSW) maps published online by the Environment Agency. These were downloaded from the DEFRA Data Services Platform in February 2024. The maps are intended to provide a consistent standard of assessment for surface water flood risk across England and Wales in order to help LLFAs, the Environment Agency and any potential developers to focus their management of surface water flood risk.

The RoFfSW is derived primarily from identifying topographical flow paths of existing watercourses or dry valleys that contain some isolated ponding locations in low lying areas. They provide a map which displays different levels of surface water flood risk depending on the annual probability of the land in question being inundated by surface water (Table B 2).

Table B 2: RoFfSW EA risk categories

Category	Definition
High	Flooding occurring as a result of rainfall with a greater than 1 in 30 chance in any given year (annual probability of flooding 3.3%).
Medium	Flooding occurring as a result of rainfall of between 1 in 100 (1%) and 1 in 30 (3.3%) chance in any given year.
Low	Flooding occurring as a result of rainfall of between 1 in 1,000 (0.1%) and 1 in 100 (1%) chance in any given year.

Although the RoFfSW offers improvement on previously available datasets, the results should not be used to understand flood risk for individual properties. The results should be used for high level assessments such as SFRAs for local authorities. If a site is indicated in the Environment Agency mapping to be at risk from surface water flooding, a more detailed assessment should be considered to illustrate the flood risk more accurately at a site-specific scale.

1.5 Groundwater

Mapping of groundwater flood risk has been based on the JBA Groundwater Emergence Map 5m Resolution. This was provided by JBA Consulting in March 2024. The Groundwater Emergence Risk Map highlights areas where there is sufficient evidence to suggest that flooding should occur. The map should be interpreted as an initial indicative tool to assess groundwater flood risk.

Section 4.7 of the Level 1 SFRA explains groundwater flooding.

1.6 Sewers

Section 4.6 of the Main Report explains sewer flooding. Severn Trent Water and Anglian Water are the water companies responsible for the management of the sewer drainage networks across Harborough District. Sewer flooding records were not available for this study, however published Drainage and Wastewater Management Plans were used to understand sewer flood risk within Harborough.

1.7 Reservoirs

The risk of inundation because of reservoir breach or failure of reservoirs within Harborough District has been mapped using the outlines produced as part of the National Reservoir Flood Mapping (RFM) study, and are shown online on the Long-Term Risk of Flooding website at the time of publication.

The Environment Agency provide two flooding scenarios for the reservoir flood maps: a 'dry-day' and a 'wet-day'. These were downloaded from the DEFRA Data Services Platform in February 2024. The 'dry-day' scenario shows the predicted flooding which would occur if the dam or reservoir fails when rivers are at normal levels. The 'wet-day' scenario shows the predicted worsening of the flooding which would be expected if a river is already experiencing an extreme natural flood.

Section 4.9 of the Main Report presents the reservoirs affecting Harborough District.

1.8 Flood Defences

The Environment Agency supplied the location of all flood defences within Harborough District in their AIMS database, including information relating to the type of flood defence and their standard of protection. The Areas Benefitting from Defences shapefile was also considered. These datasets were downloaded from the DEFRA Data Services Platform in February 2024. Chapter 6 of the Main Report provides information on flood defences and schemes.

1.9 Overview of supplied data

Overview of supplied data for the Harborough District SFRA from stakeholders is as follows (highlighted sections are awaiting data):

Source of flood risk	Data used to inform the assessment	Data supplied by
Historic (all sources)	Historic Flood Map Recorded Flood Outlines Hydraulic Modelling Reports	Environment Agency (February & June 2024)
Historic (all sources)	Section 19 Reports	Leicestershire County Council (May 2024)
Fluvial	Soar (2022) 1D-2D ISIS-ESTRY-	Environment Agency (June

Source of flood risk	Data used to inform the assessment	Data supplied by
	<p>TUFLOW</p> <p>Upper Sence (2022) ISIS-TUFLOW</p> <p>Upper Soar (2018) ISIS-TUFLOW</p> <p>Willow Brook (2022) ISIS-ESTRY-TUFLOW</p> <p>River Welland (2016) 1D MIKE11</p> <p>River Jordan (2016) 1D MIKE11</p> <p>Langton Brook (2016) 1D MIKE11</p> <p>Stonton Brook (2016) 1D MIKE11</p> <p>Medbourne Brook (2016) 1D MIKE11</p> <p>Eye Brook (2016) 1D MIKE11</p> <p>Great Easton Brook (2016) 1D MIKE11</p> <p>River Chater (2016) 1D MIKE11</p>	2024)
Fluvial	Flood Map for Planning Flood Zones	Environment Agency (February 2024)
Surface Water	Risk of Flooding from Surface Water dataset	Environment Agency (February 2024)
Sewer	Drainage and Wastewater Management Plans	Anglian Water & Severn Trent Water
Groundwater	Bedrock geology/superficial deposits datasets (online dataset)	British Geological Survey (February 2024)
Groundwater	Groundwater Emergence Risk Map	JBA Consulting (March 2024)
Reservoirs	National Inundation Reservoir Mapping (long term flood risk map)	Environment Agency (February 2024)
Flood defences	Location and description of flood defences	Environment Agency (February 2024)
Cross boundary impacts	Neighbouring authority sites and Local Plan information, to help assess cross-boundary impacts and the cumulative impact assessment	<p>Melton District</p> <p>Rutland (March 2024)</p> <p>North Northamptonshire</p> <p>West Northamptonshire (March 2024)</p> <p>Rugby District</p> <p>Blaby District</p> <p>Oadby and Wigston District (May 2024)</p> <p>City of Leicester</p> <p>Charnwood District</p>

Source of flood risk	Data used to inform the assessment	Data supplied by
Other datasets	Partner Data Catalogue: <ul style="list-style-type: none"> - AIMS asset bundle - Areas with Critical Drainage Problems - Historic flood warnings - Historic landfill - LIDAR Composite DTM 2020 1m & 2m - Nitrate Vulnerable Zones - National Receptor Dataset (for CIA) - Recorded Flood Outlines - Risk of Flooding from Rivers and Sea - Risk of Flooding from Rivers and Sea (properties in areas at risk) - Reduction in Risk of Flooding from Rivers and Sea due to Defences - Reservoir Inundation Maps - Risk of Flooding from Surface Water - Spatial Flood Defences Including AIMS - Source Protection Zones - Aquifer Designation Maps - Detailed River Network - Flood Alert Areas - Flood Warning Areas - Flood Maps for Planning - Groundwater Vulnerability - Historic Flood Map 	Environment Agency (February 2024)

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