

# Appendix B - Data sources used in the SFRA

## 1 Historical flooding

As Lead Local Flood Authority (LLFA), Derbyshire County Council (DCC) provided information on historic flood incidents across the Borough. The Environment Agency's (EA's) Historic Flood Map is presented in the Interactive Mapping Portal (see Appendix A for more information), and the EA's Recorded Flood Outlines dataset has also been used to understand the flood history across the Borough. Furthermore, a list of historic sewer flooding incidences across the Borough was provided by United Utilities and Severn Trent Water.

Section 4.1 of the Main Report documents the historic flooding records obtained.

## 2 Fluvial flooding

### 2.1 Flood Zones 2 and 3a

Flood Zones 2 and 3a, as shown in the Interactive Mapping Portal, show the same extent as the online EA's Flood Map for Planning (FMfP) (which incorporates latest modelled data) other than for the watercourses listed below. In these instances, additional detailed modelling was available, so the modelled extent was used in preference of the FMfP:

- Glossop Brook and Tribs
- Hurst Brook
- Long Clough
- Hogshaw Nun

The extents of the models used in this SFRA are shown in Figure 2-1. 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.

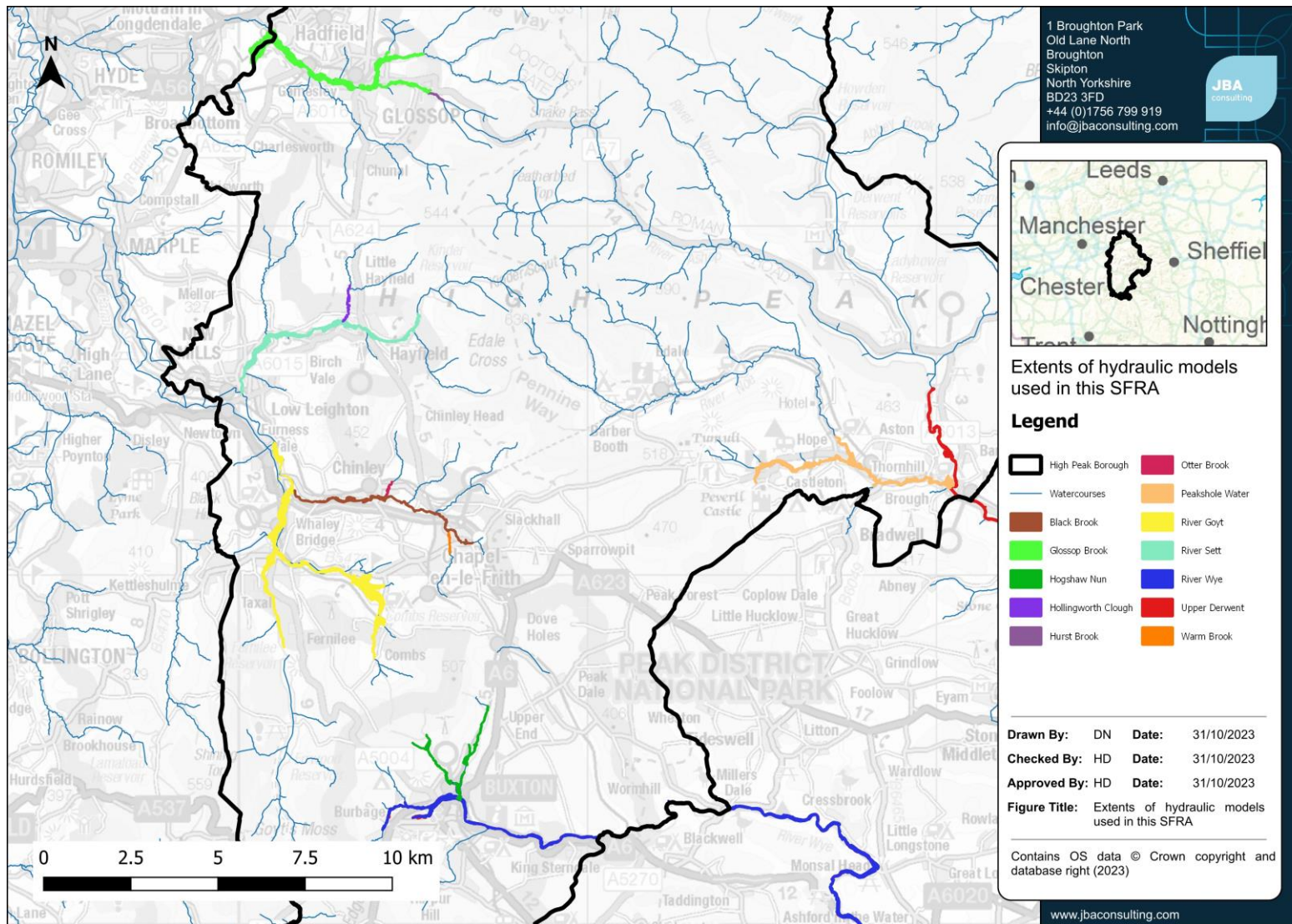


Figure 2-1: Extents of the hydraulic models used in this SFRA.



## 2.2 Flood Zone 3b (the Functional Floodplain)

Flood Zone 3b, as shown in the Interactive Mapping Portal, has been compiled for the Borough as part of this SFRA and is based on the 3.3% AEP (1 in 30-year chance of flooding in any given year) extents produced from detailed hydraulic models, where available, which is in line with the recent updates to the Planning Practice Guidance (PPG). 3.3% AEP extents were available for the following models:

- Hogshaw Nun
- Hurst Brook
- River Sett

For areas covered by detailed models, but with no 3.3% AEP output available, the 1% AEP outputs were used as a proxy. This was the case for the following models:

- Black Brook
- Glossop Brook and Tribs
- Hollingworth Clough Brook
- Long Clough
- Otter Brook
- Peakshole Water
- River Goyt
- River Wye
- Upper Derwent
- Warm Brook

The extents of the hydraulic models used in this assessment are shown in Figure 2-1.

For areas not covered by detailed hydraulic models, 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 (1% AEP). 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 located somewhere that shows large differences in extents between the Flood Zones; having checked the online mapping, developers will need to remap Flood Zone 3b as part of a detailed site-specific Flood Risk Assessment.

### 3 Surface water flooding

Mapping of surface water flood risk in the Borough has been taken from the Risk of Flooding from Surface Water (RoFSW) maps published online by the EA. These 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 EA, and any potential developers to focus their management of surface water flood risk.

The RoFSW map is derived primarily from identifying topographical flow paths of existing watercourses or dry valleys that contain some isolated ponding locations in low lying areas. The map displays different levels of surface water flood risk depending on the annual probability of the land in question being inundated by surface water (Table 3-1).

Table 3-1: RoFSW 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.

Whilst the categories in Table 3-1 are used in the national RoFSW mapping, we have used the following approach to inform the sequential test.

To inform the Sequential test for this SFRA, surface water zones have been used to define locations at either lower or higher risk of surface water flooding based on the extent of the 1% AEP plus 40% climate change allowance surface water event:

- Zone A – lower risk of surface water flooding (lies outside the 1% AEP plus 40% climate change surface water extent)
- Zone B – higher risk of surface water flooding (lies within the 1% AEP plus 40% climate change surface water extent)

Although the RoFSW 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 SFRA for local authorities. If a site is indicated in the EA 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.



## 4 Climate change

### 4.1 Fluvial flooding

The High Peak Borough falls across two different Management Catchments. As each Management Catchment has different climate change allowances, the allowances for the 2080s epoch vary for the different watercourses across the Borough. This is detailed further in Section 5 of the Main Report.

Detailed EA hydraulic models were obtained under licence for the SFRA.

The only model where suitable climate change allowances were available was Hogshaw Nun. This included uplifts for the 1% AEP of +29% for the central allowance and +39% for the higher central allowance, in line with the latest guidance for the Derwent Derbyshire Management Catchment.

Following discussions with the EA, taking into account the practicalities of re-running models and the associated time and cost versus a marginal change in allowance, a proxy approach was agreed for all other models and where no detailed models were available. The proxy approach was implemented as follows.

1% AEP (Flood Zone 3a) plus climate change scenario:

- Where hydraulic modelling was available, the 0.1% AEP outline was used as an indicative climate change extent. Where not available, Flood Zone 2 was used.

3.3% AEP (Flood Zone 3b) plus climate change scenario:

- Where hydraulic modelling was available, the 1% AEP outline was used as an indicative climate change extent. Where not available, Flood Zone 3a was used.

0.1% AEP (Flood Zone 2) plus climate change scenario:

- The 0.1% AEP plus climate change event has not been considered within this SFRA, due to the significant time and cost implications as well as the practical issues it presents; most models are not built to run events of this magnitude, and often present instabilities and an inability to run. This may need to be considered further at a Level 2 assessment or for a site-specific Flood Risk Assessment.

### 4.2 Surface water

Modelled Climate Change uplifts for the 3.3% and 1% AEP events for the 2070s are included as part of this SFRA and are presented in the Interactive Mapping Portal. As the Borough is covered by two management catchments, the following uplifts have been used.

For the western half of the Borough (Upper Mersey Management Catchment):

- 3.3% AEP with 30% and 40% uplifts
- 1% AEP with 30% and 45% uplifts





For the eastern half of the Borough (Derwent Derbyshire Management Catchment):

- 3.3% AEP with 25% and 35% uplifts
- 1% AEP with 30% and 40% uplifts

In addition, the 0.1% AEP surface water extent can be used as an indication of surface water risk from smaller watercourses which are too small to be covered by the EA's Flood Zones.

## 5 Groundwater

Two datasets were used to assess potential areas that are likely to be at higher risk of groundwater flooding:

- The EA's Areas Susceptible to Groundwater Flooding 2010 (ASStGWF) dataset, showing the degree to which areas are susceptible to groundwater flooding based on geological and hydrogeological conditions on a 1km square grid. It does not show the likelihood of groundwater flooding occurring, i.e., it is a hazard, not risk, based dataset. This dataset covers a large area of land, and only isolated locations within the overall susceptible area are likely to suffer the consequences of groundwater flooding.
- The JBA groundwater emergence map, showing the risk of groundwater flooding to both surface and subsurface assets, based on predicted groundwater levels on a 5m square grid. For each grid cell, a depth range is given for modelled groundwater levels in the 1% AEP event. It takes account of factors including topography, groundwater recharge volumes and spatial variations in aquifer storage and transmission properties.

Section 4.6 of the Main Report details the approach adopted in this SFRA to assess the risk of groundwater flooding.

## 6 Sewers

United Utilities and Severn Trent Water provided a record of flooding incidents relating to public foul, combined or surface water sewers. This was provided to cover incidents in the period from January 1990 until May 2023. For confidentiality, this data is only included within this SFRA on a 5-digit postcode basis.

Section 4.5 of the Main Report presents this data.



## 7 Reservoirs

The risk of inundation because of reservoir breach or failure of reservoirs within the area 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 EA provide two flooding scenarios for the reservoir flood maps: a 'dry-day' and a 'wet-day'. 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 4.8 of the Main Report presents the reservoirs affecting High Peak Borough.

## 8 Flood defences

The EA supplied the location of all flood defences within the district in their AIMS database, including information relating to the type of flood defence and their standard of protection. Section 6 of the Main Report provides information on flood defences and schemes.

## 9 Overview of supplied data

Table 9-1 below provides an overview of the supplied data from stakeholders which has been used to inform the High Peak Borough SFRA.

Table 9-1: Summary of data supplied to inform the High Peak Borough SFRA.

Source of flood risk	Data used to inform the assessment	Data supplier
Historic (all sources)	Historic flood map Recorded flood outlines	Environment Agency
Historic (all sources)	Historic flooding incident reports	Derbyshire County Council
Historic (sewers)	Hydraulic flood risk register	Severn Trent Water United Utilities



Source of flood risk	Data used to inform the assessment	Data supplier
Fluvial (including climate change)	Black Brook (ISIS), Glossop Brook and Tribs (ISIS-TUFLOW), Hogshaw Nun (TUFLOW), Hollingworth Clough Brook (ISIS), Hurst Brook (Flood Modeller-TUFLOW 1D-2D), Lough Clough (ISIS-TUFLOW), Otter Brook (ISIS), Peakshole Water (ISIS-TUFLOW), River Goyt (ISIS-TUFLOW), River Sett (ISIS-TUFLOW), Upper Derwent (ISIS), River Wye (ISIS-TUFLOW), Warm Brook (ISIS).	Environment Agency
Fluvial (including climate change)	Flood Map for Planning	Environment Agency
Surface water (including climate change)	Risk of Flooding from Surface Water dataset	Environment Agency
Sewers	Internal and external historic drainage records	United Utilities and Severn Trent Water
Groundwater	Areas Susceptible to Groundwater Flooding dataset	Environment Agency
Groundwater	Groundwater emergence map	JBA
Reservoir	National Inundation Reservoir Mapping (Long term flood risk map)	Environment Agency
Flood defences	AIMS Spatial Flood Defences dataset	Environment Agency
Cross-boundary impacts	Neighbouring authority sites and Local Plan information, to help assess cross-boundary impacts and the cumulative impact assessment	Planners at neighbouring authorities (Cheshire East Council, Derbyshire Dales District Council, Stockport Metropolitan Borough Council, Tameside Metropolitan Borough Council)
Other datasets	Source Protection Zones Aquifer Designation maps	Environment Agency (via High Peak Borough Council)





Source of flood risk	Data used to inform the assessment	Data supplier
	(Bedrock Geology and Superficial Deposits) Detailed River Network Flood Alert and Flood Warning areas Groundwater Vulnerability Risk of Flooding from Rivers and Sea National Receptor Dataset	