Appendix B - Data sources used in the SFRA

1 Historical Flooding

Warwickshire County Council provided a record of flood incidents across the district since 2008. Where the location of these incidents was provided to at least a 5-digit postcode, these are presented in Section 5.1 of the main report. Warwickshire County Council provided Section 19 reports in the area.

The Environment Agency's Historic Flood Map is also presented in Appendix A: GeoPDF Mapping.

2 Fluvial flooding

2.1 Flood Zones 2 and 3a

Flood Zones 2 and 3a, as shown in the Appendix A mapping, show the same extent as the online Environment Agency's Flood Map for Planning (which incorporates latest modelled data).

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.

2.2 Flood Zone 3b (the Functional Floodplain)

The following detailed models were available for use in this Level 1 SFRA:

- Arrow and Alne 2009 - 50-yr
- Bell Brook 2014 – 50yr
- Avon 2010 - 50yr
- Stour 2010 - 50-yr & 50yr CC
- Racecourse Brook 2019 - 75yr
- Wellesbourne 2010 - 100-yr defended
- Leam, Itchen & Stowe 2010 - 50yr
- Kenilworth 2010 - 50yr
- Canley Brook 2010 – 50yr
- River Sowe 2010 - 50yr

Where detailed models were not available, a precautionary approach has been adopted for Flood Zone 3b with the conservative assumption that the extent of Flood Zone 3b is 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.

3 Climate change

As there were no detailed models available for this Level 1 SFRA, Flood Zone 2 has been used as an indication of climate change.

Surface Water Climate Change uplifts were modelled for this assessment for the following events and scenarios:

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

Please refer to Chapter 4 for information on the approach to climate change in this SFRA.

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 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-1).

Table B-1: RoFfSW risk categories

Category	Definition
High	Flooding occurring as a result of rainfall with a greater than 1 in 1000 (0.1%) chance in any given year.
Low	Flooding occurring as a result of rainfall with a less than 1 in 1,000 (0.1%) 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.

5 Groundwater

Mapping of groundwater flood risk has been based on the Areas Susceptible to Groundwater Flooding 2010 (AStGWF) dataset and the JBA Groundwater Flood Risk map.

The AStGWF dataset is a strategic-scale map showing groundwater flood areas on a 1km square grid. It shows the proportion of each 1km grid square, where geological and hydrogeological conditions indicate that groundwater might emerge. It does not show the likelihood of groundwater flooding occurring and does not take account of the chance of flooding from groundwater rebound (e.g. following cessation of mining or industrial activity). 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 AStGWF data should be used only in combination with other information, for example local data or historical data. It should not be used as sole evidence for any specific flood risk management, land use planning or other decisions at any scale. However, the data can help to identify areas for assessment at a local scale.

The JBA Groundwater Flood Risk map shows groundwater flood risk on a 5m square grid. For each grid cell, a depth range is given for modelled groundwater levels in the 100-year return period flood event. It takes into account factors including topography, groundwater recharge volumes and spatial variations in aquifer storage and transmission properties.

Section 5.7 of the Main Report explains groundwater flooding.

6 Sewers

Severn Trent Water provided a list of recorded internal and external sewer flooding incidents from their Hydraulic Sewer Flooding Risk Register, last updated on the 5 September 2022.

This information is included in Table 5-2 of the Main Report.

7 Reservoirs

The risk of inundation because of reservoir breach or failure of reservoirs within the Warwick 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**.

The Environment Agency 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 5.9 of the Main Report presents the reservoirs affecting the Warwick District.

8 Flood Defences

The Environment Agency 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. The Areas Benefitting from Defences shapefile was also considered. Chapter 6 of the Main Report provides information on flood defences and schemes.

9 Overview of supplied data

Overview of supplied data for the Warwick District SFRA from stakeholders is as follows:

Source of flood risk	Data used to inform the assessment	Data supplied by
Historic (all sources)	Historic Flood Map Recorded Flood Outlines	Environment Agency
	Historic flooding incident records	Warwickshire County Council
Fluvial (including climate change)	Flood Map for Planning Flood Zones Detailed models (as described above)	Environment Agency
Surface Water	Risk of Flooding from Surface Water dataset	Environment Agency
	SWCC Uplifts (as described above	JBA Consulting
Sewers	Internal and external historic drainage records	Severn Trent Water
Groundwater	Areas Susceptible to Groundwater Flooding dataset Bedrock geology/superficial deposits datasets (online dataset)	Environment Agency
	Groundwater Flood Risk Map	JBA
Reservoir	National Inundation Reservoir Mapping (Long term flood risk map)	Environment Agency
Flood Defences	Location and description of flood defences	Environment Agency
Cross-boundary impacts	Neighbouring authority sites and Local Plan information, to help assess cross-boundary impacts and the cumulative impact assessment	Stratford on Avon District Council Rugby Borough Council Coventry City Council Solihull Metropolitan Borough Council

Other datasets	Partner Data Catalogue: - Source Protection Zones - Aquifer Designation Maps - Areas Susceptible to Groundwater Flooding - Detailed River Network - Flood Alert Areas - Flood Warning Areas - Flood Maps for Planning - Groundwater Vulnerability - Historic Flood Map - Risk of Flooding from Rivers and Sea	Environment Agency (via Warwickshire County Council)