

# 1 Appendix H.1: Mapping Supporting Information

## 1.1 Detailed hydraulic models used in this SFRA

Table 1-1 provides details of existing and available Environment Agency, Leicestershire County Council and Leicester City Council detailed models, supplied for use in the SFRA and the various approaches used to map climate change extents and to derive the SFRA Flood Zones.

Figure 1-1 at the end of the document, displays the coverage of detailed models used in the SFRA.

It is important that the Environment Agency are approached to determine whether updated (more accurate) information is available prior to commencing a site-specific Flood Risk Assessment.

Table 1-1 shows where Flood Zone 3b has been defined using existing detailed hydraulic modelling and where detailed hydraulic models have been re-run for the revised climate change allowances. In cases where Flood Zone 3b or climate change was not defined using detailed modelling, or where alternative approaches were used to map climate change extents, developers may be required to further investigate the flood risk as part of a site-specific Flood Risk Assessment. For example, the 0.1% AEP event was used as a surrogate for the River Welland Higher and Upper extents and for the Lower Wreake and tributaries Upper extents.

Table 1-1: Detailed hydraulic models used in the Level 1 SFRA

Number	Watercourse	Model Name	Included in SFRA Flood Zone 2 and Flood Zone 3a	Included in SFRA Flood Zone 3b	Return period event Flood Zone 3b is taken from	Climate change central included	Climate change higher included	Climate change upper included	Comment
1	River Avon	2010, Halcrow JBA SFRM	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	
2	Gilwiskaw Brook and the River Mease	2012, Measham and Packington model	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	
3	River Sence (at Sheepy Magna)	2013, River Sence JBA	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	
4	River Swift	2012, Rugby Hazard Mapping, ISIS-TUFLOW Swift model	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	
5	Harrow and Sketchley Brooks	2013, Stour and Hinckley Final Deliverables	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	
6	Gilwiskaw Brook and un-named drain	2015, UA007649-Ashby_Hazard_Mapping Keep	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	
7	Cosby Brook	2015, Cosby Brook Flood Risk Mapping Study	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	
8	River Soar	2012, Lower Soar Model	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	
9	Lower Wreake and tributaries	2015, Lower Wreake and Tribs	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes*	Inflows for the upstream boundary of the Lower Wreake was calculated by merging the 1D and 2D inflows taken from the 2011, River Wreake and Tribs model  *Unable to re-run hydraulic model for upper end allowance. 0.1% AEP event used as a surrogate.
10	River Wreake	2011, River Wreake and	These reflect the Environment	Yes	20-year	Yes	Yes	Yes	

Number	Watercourse	Model Name	Included in SFRA Flood Zone 2 and Flood Zone 3a	Included in SFRA Flood Zone 3b	Return period event Flood Zone 3b is taken from	Climate change central included	Climate change higher included	Climate change upper included	Comment
	and tributaries	Tribs 2011 (Melton Mowbray model)	Agency's Flood Zones at the time of preparing the SFRA.						
11	River Trent	2016, GNRT CC Scenario, EA,	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	No	N/A	Yes	Yes	Yes	Used existing Climate Change outlines (compliant with revised Climate Change guidance)
12	River Anker	2006, River Anker SFRA Model	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	25-year	Yes	Yes	Yes	
13	River Swift	1999, HEC-RAS Swift model	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	No	N/A	Yes	Yes	Yes	
14	Whetstone Brook	2005, Whetstone Brook SFRM, Halcrow, November 2005	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	25-year	Yes	Yes	Yes	
15	Broughton Astley Brook	2005, Broughton Astley Brook SFRM Model	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	25-year	Yes	No	No	Unable to produce Climate Change outputs. 1% AEP + 20% CC outline supplied
16	River Sence (Soar)	1998, River Sence (Soar)	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	25-year	No	No	No	Unable to produce Climate Change outputs
17	River Soar, Willow Brook, Melton Brook, Braunstone Brook, Saffron Brook	2010, Leicester City SFRM modelling	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	No	No	No	CC outlines were provided by the 2017, Leicester Future Flood Risk Study which supersedes the 2010 model
18	River Soar through Leicester City, Willow Brook, Bushby Brook, Evington Brook	2017, Leicester Future Flood Risk Study	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	No	N/A	Yes	Yes	Yes	Draft modelling output from the Leicester Future Flood Risk Study was provided by Riverscape Environmental Consultants Ltd, under the Leicester City Council Professional Services Framework with Arcadis. The output is subject to review and whilst it represents the best available data at the time of writing, the results are subject to review.
19	Great Easton Brook, River Jordan, Langton Brook, Medbourne Brook, Stonton Brook and the River Welland	2016, Welland Catchment Strategic Modelling	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes*	Yes*	Yes*	Unable to produce Climate Change outputs using existing model.  *The existing 1% AEP + 20% CC outline was used as a surrogate for the central extent and the 0.1% AEP event was used as a surrogate for the higher central and upper end extents.
20	Sence Brook and tributaries	2015, Leicestershire County Council Shenton Flood Modelling	These reflect the Environment Agency's Flood Zones at the time of preparing the SFRA.	Yes	20-year	Yes	Yes	Yes	

## 1.2 Leicester City ordinary watercourse models

Table 1-2: Detailed hydraulic models used in the Level 1 SFRAs

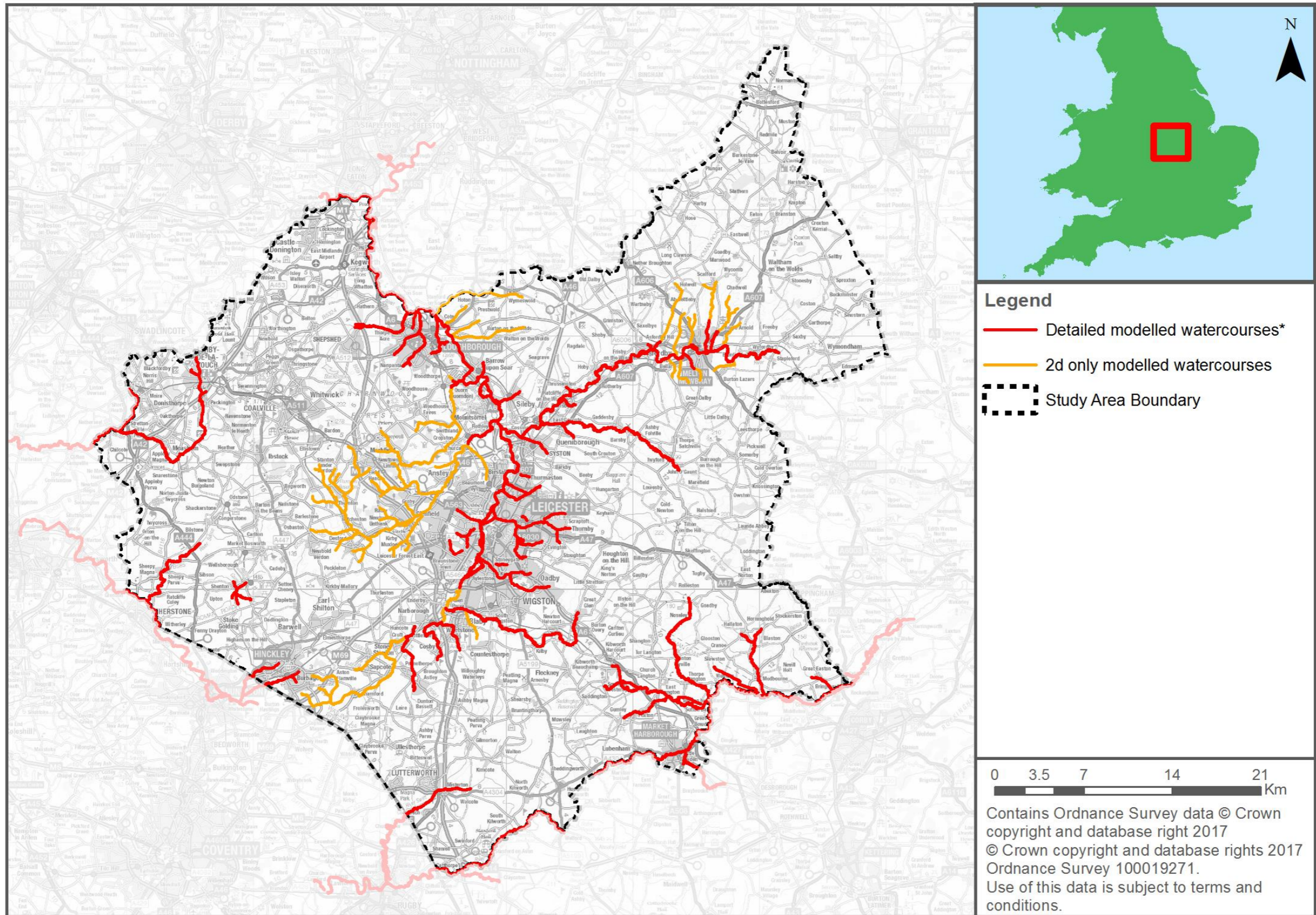
Number	Watercourse	Model Name	5% AEP outputs provided	1% AEP outputs provided	0.1% AEP outputs provided	Climate change central included	Climate change higher included	Climate change upper included	Comment
21	Ethel Brook, Gilroes Brook, Hol Brook, Portwey Brook, Thurmaston Parish Dyke and Western Park Brook	2012, Leicester City Council Ordinary Watercourse Modelling*	Yes*	Yes*	Yes*	Yes	Yes	Yes	*Supplied outputs for the Queens Road Brook corrupted and thus not provided.
22	Wash Brook	2012, Leicester City Council Ordinary Watercourse Modelling	Yes	Yes	Yes	No	Yes	No	Unable to produce Climate Change outputs. 1% AEP + 30% CC / Higher Central outline was supplied.

## 1.3 JFLOW

For some areas not covered by detailed hydraulic models, the functional floodplain has been represented using outputs of Jflow modelling undertaken in previous SFRAs, watercourses covered include:

- Soar Brook
- River Soar
- Rothley Brook
- Quorn Brook
- King's Brook
- Watton Brook
- Thrope Brook
- Scalford Brook
- Edendale Brook
- Welby Brook
- Numerous unnamed watercourses and drains

Figure 1-1: Coverage of detailed hydraulic models used in the Level 1 SFRA



\*Modelled watercourses shown in the above figure are only those where detailed hydraulic models were made available at the time the SFRA was being prepared and used in the assessment.