

Appendix F - Cumulative Impact Assessment

1 Background

1.1 Introduction

The cumulative impact of development should be considered at both the Local Plan making stage and the planning application and development design stages.

Paragraph 166 of the National Planning Policy Framework (NPPF, 2023) states:

'Strategic policies should be informed by a strategic flood risk assessment and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.'

Appropriate mitigation measures should be undertaken to prevent exacerbation of flood risk, and where possible the development should be used to reduce existing flood risk issues, both onsite and downstream of the development.

To understand the impact of future development on flood risk in the Harborough District, catchments were identified where development may have the greatest potential effect on flood risk, and where further assessment may be required within a Level 2 Strategic Flood Risk Assessment (SFRA) or site-specific Flood Risk Assessment (FRA). Fluvial and surface water datasets are used to identify communities sensitive to increased risk of surface water and fluvial flooding in future. Where catchments have been identified as sensitive to the cumulative impact of development, the assessment sets out planning policy recommendations to help manage the risk.

1.2 Strategic flood risk solutions

1.2.1 Local solutions

Harborough District Council (HDC) is reviewing and updating its planning policies through the preparation of a New Local Plan (NLP). This will create an updated planning policy framework for the future management of flood risk and drainage in the area. This includes flood risk management, alongside wider environmental and water quality enhancements. Strategic solutions that the NLP may directly or indirectly help to shape include upstream flood storage, integrated major infrastructure/ Flood Risk Management schemes, new defences, and watercourse improvements as part of

regeneration and enhancing green infrastructure, with opportunities for natural flood management and retrofitting Sustainable Drainage Systems (SuDS).

Existing specific actions for the authority area are set out in the Leicestershire County Council Local Flood Risk Management Strategy, which can be downloaded from the Council website [here](#), and the Humber, Anglian and Severn River Basin District Flood Risk Management Plan, which are available on the Government website [below](#).

- [Humber River Basin District](#)
- [Anglian River Basin District](#)
- [Severn River Basin District](#)

Section 2 of the main report sets out the strategic plans that exist for the authority area. The list below summarises the key outcomes these are seeking to achieve. This vision needs to be delivered by new development alongside retrofitting and enhancing green infrastructure and flood defence schemes in the existing developed area.

The strategic policy vision from the Catchment Flood Management Plans and the River Basin Management Plans focuses on community engagement and seeking opportunities to fund and deliver flood alleviation schemes in areas deemed high-risk; re-naturalising watercourses, safeguarding the floodplains and encouraging collaboration and creating new partnerships to reduce the risk of flooding and to enhance the natural environment.

Strategic policies relevant to Harborough District, encourage development to:

- Investigate options to cease current bank and channel maintenance and flood defence maintenance. In addition, changes in land use, development of sustainable farming practices and environmental enhancement should be investigated to mitigate an increase in flooding in the future.
- Encourage planners to develop policies to prevent inappropriate development in the floodplain. Any new development should be targeted to areas with lowest flood risk, must not increase risk to existing development and should provide opportunities to improve river environments.
- Investigate land use changes which will reduce run-off rates and lessen soil erosion from intensively farmed land in Leicestershire.
- Investigate locations and opportunities to provide water storage from all tributaries of the River Soar and assess if it is feasible.
- Encourage rural best practices in land-use and in land-management to restore more sustainable natural floodplains and to reduce run-off.

1.2.2 National solutions

In some locations nationally, the Environment Agency (EA) have committed to assist Local Planning Authorities (LPAs) in identifying areas which may be most affected by increased flood risk due to development and/or climate change. However, this work is

will likely fall short of extensive hydraulic modelling and detailed mapping of theoretical flood extents. The headline message is therefore:

Flood risk is increasing, perhaps substantially, so Planners, Emergency Planners, Asset Managers, and others will need to mitigate this through a mix of collaborative working, planning policies, use of 'worst case' scenarios, development of contingency plans and some detailed analysis.

1.2.3 Opportunities and projects in and/or affecting the Harborough District

Harborough District is already a partner of the East Mercia Rivers Trust. The partnership's mission is to bringing rivers back to life for nature and communities. More information is available on the East Mercia Rivers Trust website **here** and their aims are summarised below.

Harborough District Council also work closely with the Welland Valley Partnership who were formed through the collaboration of government organisations, local authorities, private businesses and charities to identify the pressures on the River Welland catchment and take steps to address them together. More information is available on the website **here** and their aims are summarised below.

The following sections address other stakeholders and project delivery schemes affecting the District.

1.2.3.1 East Mercia Rivers Trust

The East Mercia Rivers Trust are the associated Catchment Based Approach partner for the 'Welland' River catchment.

Their key aims are guided by the are:

- Resilient Rivers Programme aims to create and protect healthy, clean, and resilient watercourses by,
 - restoring and enhancing habitats,
 - increasing natural water storage,
 - Improving water quality,
 - controlling and removing invasive species.
- Rivers for Life Programme aims to inspire local communities, landowners, businesses, and recreational river-users to act for rivers by,
 - building data and evidence,
 - delivering educational activities and advisory services,
 - improving access to nature and
 - raising awareness.

1.2.3.2 Welland Valley Partnership

The Welland Valley Partnership (WVP) was formed in August 2011 through the collaboration of government organisations, local authorities, private businesses and charities to identify the pressures on the River Welland catchment and take steps to address them together.

The Welland Valley Partnership vision is for the River Welland to:

- Be cleaner and healthier and support more fish, birds and other wildlife.
- Meet the needs of drinking water suppliers and businesses.
- Provide a more attractive amenity for people to enjoy.
- Be sensitively managed by everyone whose activities affect it; and
- Be managed in such a way that includes flood risk protection.

1.2.3.3 Leicestershire and Rutland Wildlife Trust

Leicestershire and Rutland Wildlife Trust manage three Nature Reserves within Harborough District. These are:

- Great Merrible Wood
- Launde Woods
- Tilton Railway Cutting

These sites are home to various important and protected habitats and species, including:

- European badger
- Bluebell
- Great Spotted Woodpecker
- Treecreeper
- Broad-leaved helleborine
- English Oak
- Hemp-agrimony
- Greater butterfly-orchid
- Coal Tit
- Blue Tit
- Brimstone
- Willow Warbler
- Orange-tip
- Perforated St Johns-wort
- Hart's-tongue fern

Natural Flood Management techniques could be encouraged at some of the reserves to aid flood storage and improve natural habitats.

Further information on their reserves and the work they do is available on the **Wildlife Trust website here**.

1.3 Assessment of Cross-Boundary Issues

Harborough District is bordered by the following Local Authority areas, shown in Figure 1-1:

- Blaby District Council
- Charnwood Borough Council
- Leicester City Council
- Melton Borough Council
- North Northamptonshire Council
- Oadby and Wigston Borough Council
- Rugby Borough Council
- Rutland County Council
- West Northamptonshire Council

The centre of the District from north-east to south-west acts as a watershed for three main catchments. These are detailed as follows:

- the River Welland flowing into The Wash,
- Leicestershire based watercourses (River Soar, River Sence, Broughton Astley Brook and Bushby Brook) flowing into the River Trent, and;
- the River Swift flowing into the River Avon.

Lower lying areas tend to follow the flow routes of the watercourses in the District, with elevations being lowest in the south-east. Section 1.4 of the main report provides further details on the study area.

Future development, both within and outside of Harborough District, as well as climate change, have the potential to affect flood risk to existing development and the surrounding areas, depending on the effectiveness of SuDS and drainage implementation.

Development control should ensure that the impact on receiving watercourses from development in the district has been sufficiently considered during the planning stage. The National Planning Policy Framework (NPPF) sets out how developments should demonstrate they will not increase flood risk elsewhere. Therefore, providing developments near watercourses in neighbouring authorities comply with the latest planning policy, guidance and legislation relating to flood risk and sustainable drainage, they should result in no increase in flood risk within the district. The neighbouring authorities were contacted for information on their site allocations, to determine where development in neighbouring authorities may have an impact on Harborough District. The New Harborough District Local Plan, which will look up to 2041, is currently being prepared.

The following Local Plans have been adopted by neighbouring local authorities and include policies relevant to flood risk and drainage, with hyperlinks to the documents provided:

- Blaby District Council Local Plan
- Charnwood Borough Council Local Plan
- Leicester City Council Local Plan
- Melton Borough Council Local Plan
- North Northamptonshire Council Local Plan
- Oadby and Wigston Borough Council Local Plan
- Rugby Borough Council Local Plan
- Rutland County Council Local Plan
- West Northamptonshire Council Local Plan

For the CIA, Harborough District was assessed at catchment level, with these catchments shown in Figure 1-2.

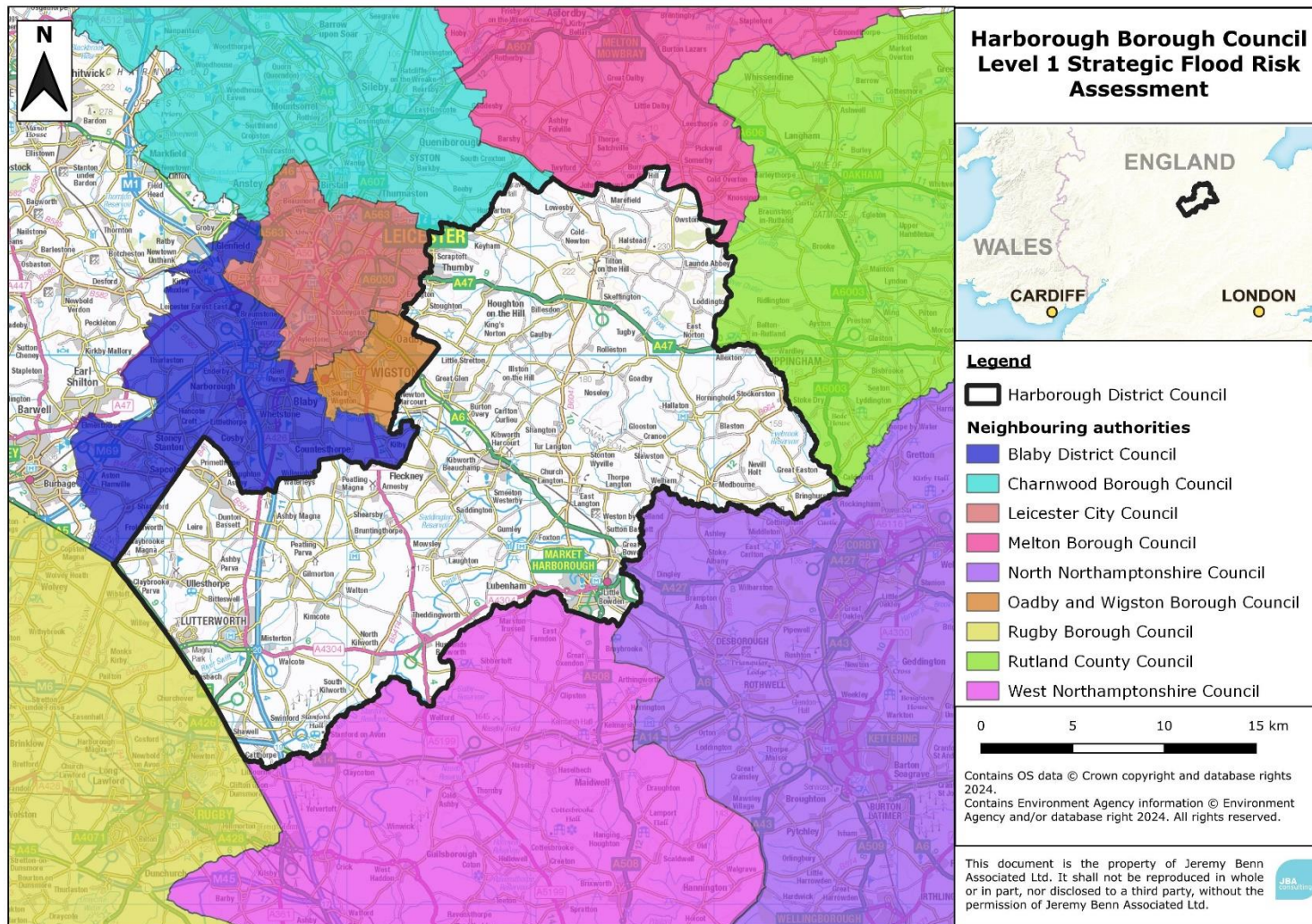


Figure 1-1: Neighbouring authorities to Harborough District.

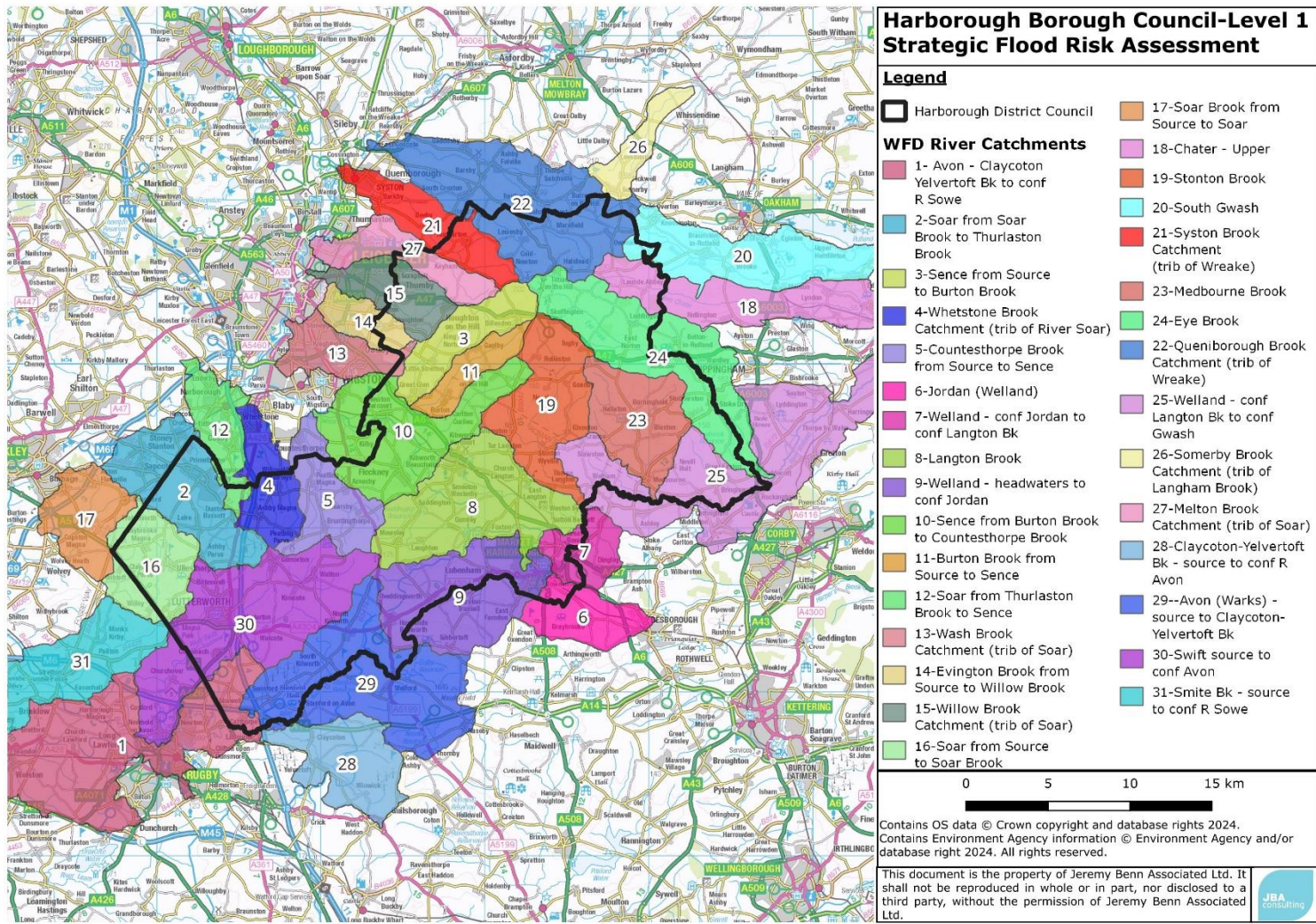


Figure 1-2: Catchments within the Harborough District.

1.4 Cumulative Impact Assessment Methodology

This broadscale assessment determines where the potential cumulative impact of developments may have the greatest effect on flood risk across the study area. Catchments at the highest risk are taken forward to a catchment-level analysis. Data on the potential proposed development within Harborough was not available for this study as Harborough has not identified potential allocations at the time of writing. This assessment therefore seeks to determine those catchments which are most sensitive to increased risk in future as a result of the cumulative impacts of development, rather than which catchments are most likely to experience an increase in risk. Analysis of this data facilitated the identification of catchments at the greatest risk of cumulative impacts of an increase in impermeable area within the catchment.

There are three stages to the Cumulative Impact Assessment (CIA):

1. Assess sensitivity to surface water and fluvial flood risk.
 - This will be assessed by calculating the change in the number of properties at risk from the 1% AEP to the 0.1% AEP events for surface water and fluvial flooding respectively, given as a percentage of the total properties in the catchment.
2. Identify the most sensitive catchments.
 - Rank catchments in each category.
 - Discussion of catchments which are at higher risk.
3. Discussion of potential cumulative impacts of development
 - Policy recommendations for developments in higher risk catchments.

The next stage after this process would be to assess the impacts of individual sites/preferred development areas in Harborough District. However, this is beyond the scope of a Level 1 SFRA and would be assessed within a Level 2 SFRA (if required) and site-specific FRA.

Table 1-1 summarises the datasets used within the Harborough District CIA.

The final results of this assessment gave a rating of low, medium, or high risk for each metric, for each catchment within the study area, the boundaries of which were derived from the Water Framework Directive (WFD). The rating of each catchment in each of these assessments was combined to give an overall ranking.

Table 1-1: Summary of datasets used within the Broadscale CIA.

Dataset	Coverage	Sources of Data	Use of Data
Catchment boundaries	Harborough District and neighbouring authorities	Water Framework Directive Catchments	Assessment of susceptibility to cumulative impacts of

Dataset	Coverage	Sources of Data	Use of Data
			development by catchment
National Receptor Dataset (2021)	Harborough District and neighbouring authorities	EA	Properties for the assessment of flood risk
Risk of Flooding from Surface Water	Harborough District and neighbouring authorities	EA	Assessing the number of properties at risk of surface water flooding within each catchment
Fluvial Flood Zones 2 and 3a	Harborough District and neighbouring authorities	EA Flood Map for Planning	Assessing the number of properties at risk of fluvial flooding within each catchment

1.4.1 Sensitivity to increases in fluvial flooding

This is the measure of the increase in the number of properties at risk of fluvial flooding from the 1% AEP event to the 0.1% AEP event. It is an indicator of where local topography makes an area more sensitive to increases in flood risk that may be due to any number of reasons, including climate change, new development etc. It is not an absolute figure or prediction of the impact that new development will have on flood risk.

The National Receptor Database (NRD) dataset 2021 was used to identify all properties within the catchments. The NRD provided by HDC covered the full extent of Harborough District with a considerable buffer but did not cover the entire area of all the cross-boundary catchments as this data is not held by HDC. The main catchments affected are:

- Avon - Claycoton-Yelvertoft Brook to confluence River Sowe, Kennet and Holy Brook
- Smite Brook - source to confluence River Sowe
- Soar Brook from Source to Soar
- Soar from Soar Brook to Thurlaston Brook
- Claycoton-Yelvertoft Brook - source to confluence River Avon

- Soar from Thurlaston Brook to Sence
- Evington Brook from Source to Willow Brook
- Willow Brook Catchment (Tributary of Soar)
- Melton Brook Catchment (Tributary of Soar)
- Syston Brook Catchment (Tributary of Wreake)
- Queniborough Brook Catchment (Tributary of Wreake)
- Somerby Brook Catchment (Tributary of Langham Brook)
- Chater - Upper
- South Gwash
- Welland - confluence Langton Brook to confluence Gwash

As shown in Figure 1-2 these catchments lie predominantly outside of Harborough District so the impact of this missing data coverage will be minimal.

The NRD was intersected with the 1% and 0.1% AEP fluvial flood extents separately to determine the number of properties in each catchment within each fluvial flood extent. The difference between the two values was then taken as a percentage of the total number of properties within the catchment to allow comparison between catchments of different sizes.

1.4.2 Sensitivity to increases in surface water flooding

This is the measure of the increase in the number of properties at risk of surface water flooding in a 1% AEP event to a 0.1% AEP event and follows the same process as for fluvial flood risk, see Section 1.4.1 above.

1.4.3 Ranking the results

The results for each assessment were ranked into high, medium, and low risk as shown in Table 1-2. Ranking delineations were given at natural breaks in the results.

The ranking results were combined from all four assessments to give an overall high, medium, and low ranking for all catchments within the district. Each catchment was assigned a score for each assessment based on its ranking (high = 3, medium = 2, low = 1) and these were then averaged to produce a final score and ranking. Any catchment producing an overall score higher than 2 was considered high risk.

There is currently no national guidance available for assessing the cumulative impacts of development. These rankings provide a relative assessment of the catchments within Harborough District and are not comparable across other boroughs/districts.

Table 1-2: Ranking assessment criteria

Flood risk ranking	Percentage of properties at increased risk of fluvial flooding	Percentage of properties at increased risk of surface water flooding
Low risk	<1	<4
Medium risk	1 to 3	4 to 7
High risk	>3	>7

1.4.4 Assumptions

The assumptions made when conducting the CIA are shown in Table 1-3.

Policy recommendations with regards to managing the cumulative impact of development have been made in Section 2 below. This will help to ensure there is no incremental increase in flood risk both within and downstream of Harborough District.

Table 1-3: Assumptions of the CIA.

Assessment aspect	Assumption made	Details of limitation in method	Justification of method used
Surface water flood risk; Flood Zone 2 and 3a	Total number of properties	Assumption that all properties have been included in the 2021 NRD dataset. It may not include all new build properties. It also does not include all properties across some of the larger cross-boundary catchments.	This was the most up to date and accurate data available. The cross-boundary catchments most affected by the missing NRD data lie mostly outside Harborough District so the impact will be minimal.
Fluvial flood risk	Climate change proxy	Used the Flood Map for Planning Flood Zone 2 as an indicative estimate of the impacts of climate change across the district.	Although detailed climate change modelling was available for some watercourses, the broader Flood Map for Planning covers the entire area of the catchments both within and outside the district and therefore provided a consistent approach for this high level assessment.

1.5 Cumulative Impact Assessment

1.5.1 Sensitivity to fluvial flooding

The number of properties located within Flood Zone 2, but not presently within Flood Zone 3a was calculated, as a percentage of the total properties across the whole catchment. These properties are considered sensitive to increased flood risk as a result of climate change. Flood Zone 2 can be used as an indicative climate change extent given the upper end climate change estimates are often similar to the 0.1% AEP/ Flood Zone 2 extents.

Catchments with greater than 3% of properties at increased risk were considered high risk and are listed in Table 1-4 below.

Table 1-4: Catchments considered highly sensitive to increased fluvial flood risk in the future.

Catchment	Percentage of properties sensitive to increased fluvial flood risk	Ranking of catchments at the highest risk (catchment ranked 31 is at the most risk)
6-Jordan (Welland)	3.3	26
7-Welland - confluence Jordan to confluence Langton Brook	3.5	27
1- Avon - ClaycotonYelvertoft Brook to confluence River Sowe	4.1	28
11-Burton Brook from Source to Sence	4.4	29
4-Whetstone Brook Catchment (Tributary of River Soar)	4.7	30
28-Claycoton-Yelvertoft Brook - source to confluence River Avon	8.2	31

1.5.2 Sensitivity to surface water flooding

The number of properties located within the 0.1% AEP surface water extent not presently within the 1% AEP extent was calculated, as a percentage of the total properties across the whole catchment. These properties are considered sensitive to increased flood risk as a result of climate change.

Catchments with greater than 7% properties at increased risk were considered high risk and are listed in Table 1-5.

Table 1-5: Catchments considered highly sensitive to increased surface water flood risk in the future.

Catchment	Percentage of properties sensitive to increased surface water flood risk	Ranking of catchments at the highest risk (catchment ranked 31 is at the most risk)
3-Sence from Source to Burton Brook	7.0	23
22-Queniborough Brook Catchment (Tributary of Wreake)	7.0	24
20-South Gwash	7.1	25

Catchment	Percentage of properties sensitive to increased surface water flood risk	Ranking of catchments at the highest risk (catchment ranked 31 is at the most risk)
25-Welland - confluence Langton Brook to confluence Gwash	7.7	26
28-Claycoton-Yelvertoft Brook - source to confluence River Avon	9.1	27
11-Burton Brook from Source to Sence	9.1	28
6-Jordan (Welland)	10.5	29
7-Welland - confluence Jordan to confluence Langton Brook	10.6	30
9-Welland - headwaters to confluence Jordan	11.1	31

1.6 Overall rankings

For each assessment, catchments were given a score of 3 (high), 2 (medium), or 1 (low) risk. These scores were then averaged across the assessment to give a combined score. Table 1-6 provides a summary of the rankings for each catchment for the individual assessments and the combined scores.

Table 1-6: Catchment rankings and combined scores.

Waterbody name	Fluvial flooding	Surface water flooding	Average score
1- Avon - ClaycotonYelvertoft Brook to confluence River Sowe	3	1	2
2-Soar from Soar Brook to Thurlaston Brook	1	1	1
3-Sence from Source to Burton Brook	2	3	3
4-Whetstone Brook Catchment (Tributary of River Soar)	3	1	2
5-Countesthorpe Brook from Source to Sence	1	1	1
6-Jordan (Welland)	3	3	3
7-Welland - confluence Jordan to confluence Langton Brook	3	3	3
8-Langton Brook	1	2	2
9-Welland - headwaters to confluence Jordan	2	3	3
10-Sence from Burton Brook to Countesthorpe Brook	1	2	2
11-Burton Brook from Source to Sence	3	3	3
12-Soar from Thurlaston Brook to Sence	2	2	2
13-Wash Brook Catchment (Tributary of Soar)	2	2	2
14-Evington Brook from Source to Willow Brook	1	1	1
15-Willow Brook Catchment (Tributary of Soar)	1	2	2
16-Soar from Source to Soar Brook	1	1	1
17-Soar Brook from Source to Soar	1	1	1

Waterbody name	Fluvial flooding	Surface water flooding	Average score
18-Chater - Upper	1	2	2
19-Stonton Brook	1	2	2
20-South Gwash	1	3	2
21-Syston Brook Catchment (Tributary of Wreake)	2	2	2
22-Queniborough Brook Catchment (Tributary of Wreake)	2	3	3
23-Medbourne Brook	2	2	2
24-Eye Brook	1	2	2
25-Welland - confluence Langton Brook to confluence Gwash	2	3	3
26-Somerby Brook Catchment (Tributary of Langham Brook)	1	1	1
27-Melton Brook Catchment (Tributary of Soar)	1	1	1
28-Claycoton-Yelvertoft Brook - source to confluence River Avon	3	3	3
29--Avon (Warks) - source to Claycoton-Yelvertoft Brook	1	1	1
30-Swift source to confluence Avon	1	1	1
31-Smite Brook - source to confluence River Sowe	1	2	2

A Red-Amber-Green (RAG) rating was then applied to the catchments, with red being high sensitivity, amber being medium sensitivity and green being low sensitivity. The RAG ratings are shown in Figure 1-3. The catchments with an average score of greater than 2 were deemed high risk and are shown in Table 1-7.

Table 1-7: High risk catchments as shown in Figure 1-3.

Waterbody name	Average score
6-Jordan (Welland)	3
7-Welland - confluence Jordan to confluence Langton Brook	3
11-Burton Brook from Source to Sence	3
28-Claycoton-Yelvertoft Brook - source to confluence River Avon	3

The catchments classified as medium and low risk are shown in Table 1-8 and Table 1-9 respectively.

Table 1-8: Medium risk catchments.

Waterbody name	Average score
1- Avon - ClaycotonYelvertoft Brook to confluence River Sowe	2
4-Whetstone Brook Catchment (Tributary of River Soar)	2
8-Langton Brook	2
10-Sence from Burton Brook to Countesthorpe Brook	2
12-Soar from Thurlaston Brook to Sence	2
13-Wash Brook Catchment (Tributary of Soar)	2
15-Willow Brook Catchment (Tributary of Soar)	2
18-Chater - Upper	2
19-Stonton Brook	2
20-South Gwash	2
21-Syston Brook Catchment (Tributary of Wreake)	2
23-Medbourne Brook	2
24-Eye Brook	2
31-Smite Brook - source to confluence River Sowe	2

Table 1-9: Low risk catchments.

Waterbody name	Average score
2-Soar from Soar Brook to Thurlaston Brook	1
5-Countesthorpe Brook from Source to Sence	1
14-Evington Brook from Source to Willow Brook	1
16-Soar from Source to Soar Brook	1
17-Soar Brook from Source to Soar	1
26-Somerby Brook Catchment (Tributary of Langham Brook)	1
27-Melton Brook Catchment (Tributary of Soar)	1
29--Avon (Warks) - source to Claycoton-Yelvertoft Brook	1
30-Swift source to confluence Avon	1

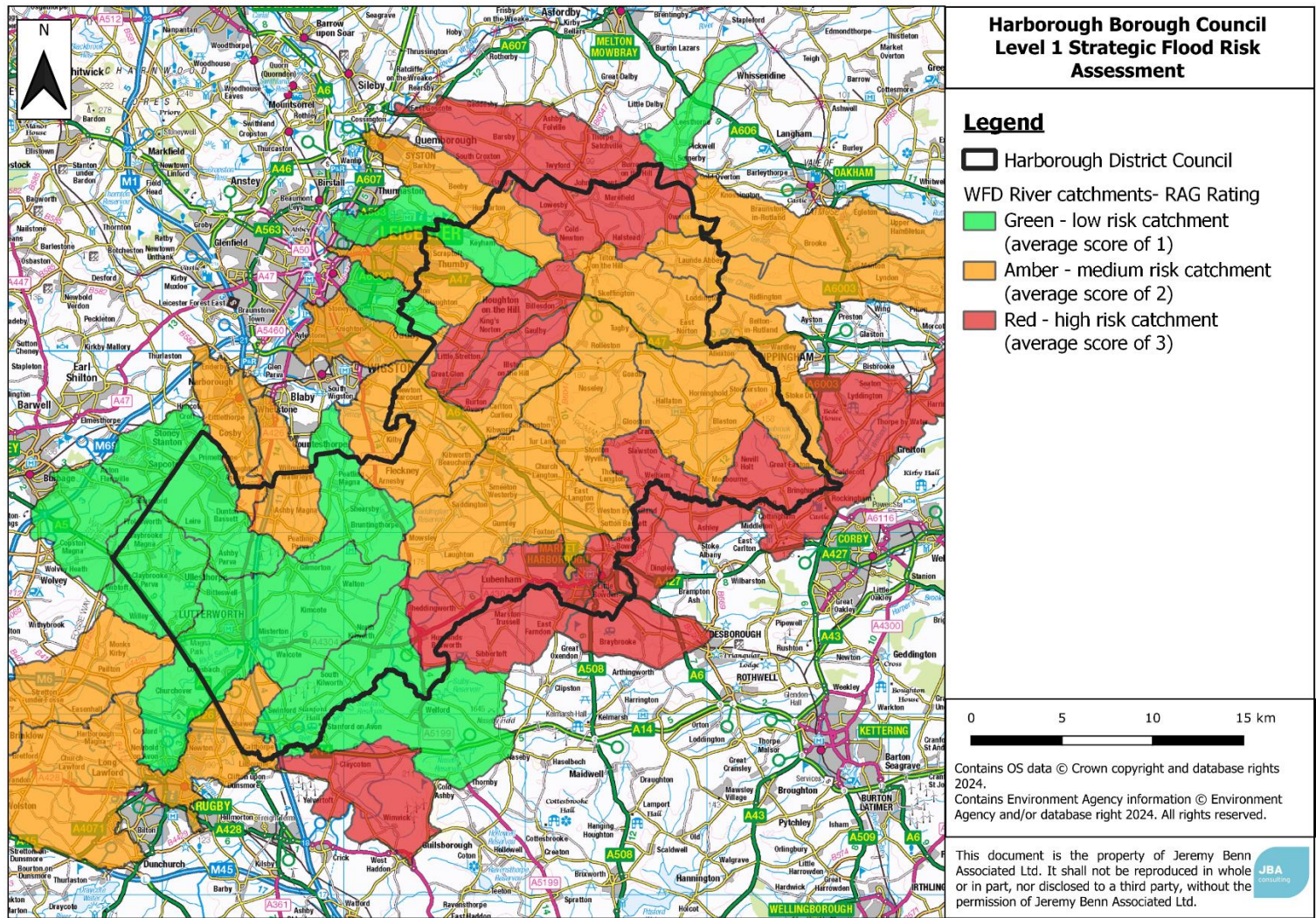


Figure 1-3: Results of the ranking assessment showing high (red), medium (amber) and low (green) risk catchments across Harborough District.

2 Level 1 SFRA Policy recommendations

2.1 Broadscale recommendations

All developments are required to comply with the NPPF and demonstrate they will not increase flood risk elsewhere. Therefore, providing developments comply with the latest guidance and legislation relating to flood risk and sustainable drainage, and appropriate consideration is given to surface water flow paths and storage proposals should normally not increase flood risk downstream.

The high-level CIA for Harborough District has highlighted areas where there is the potential for development to have a cumulative impact on flood risk. Catchments have been identified as high, medium, or low risk, relative to the other catchments within the district.

Flood risk can be affected by several different factors, which have been assessed as part of the CIA. As a result, incremental action and betterment in flood risk terms across all of the District should be supported where possible.

The following policy recommendations therefore apply to all catchments within the study area:

- HDC should work closely with neighbouring local authorities to develop complementary Local Planning Policies for catchments that drain out of the area to other local authorities in order to minimise any cross-boundary issues of cumulative impacts of development.
- Developers should incorporate SuDS and provide details of adoption, ongoing maintenance, and management on all development sites. Proposals will be required to provide reasoned justification for not using SuDS techniques, where ground conditions and other key factors show them to be technically feasible. Preference will be given to systems that contribute to the conservation and enhancement of biodiversity and green infrastructure where practicable. Developers should refer to the relevant Lead Local Flood Authority (LLFA) guidance for the requirements for SuDS in Harborough District. Further guidance on SuDS can be found in Section 8 of the main report.
- Leicestershire County Council (LCC) as LLFA will review Surface Water Drainage Strategies in accordance with their local requirements for major and non-major developments. These should consider all sources of flooding to ensure that future development is resilient to flood risk and does not increase flood risk elsewhere.
- Where appropriate, the opportunity for NFM in rural areas, SuDS retrofit in urban areas and river restoration should be maximised. Culverting should not be

supported, and day-lighting existing culverts should be promoted through new developments.

- Developers should be encouraged to achieve a 20% reduction in runoff rates compared to pre-development conditions to account for existing surface water runoff problems. If this is not viable, developers will need to demonstrate why such a betterment is unattainable. Developers should refer to the relevant LLFA guidance for the requirements for SuDS in Harborough District. Runoff rates from all development sites must be limited to greenfield rates (including brownfield sites) unless it can be demonstrated that this is not practicable. If it is demonstrated that greenfield rates are not practicable then the runoff rates should be restricted to the lowest rate that is practicable. Developers should refer to the relevant LLFA guidance for the requirements for SuDS in the Harborough District.

Section 8 of the main report details the local requirements for mitigation measures. Catchment-specific recommendations are made for high-risk catchments below.

2.2 Recommendations for high risk catchments

High risk catchments are detailed in Table 1-7. From analysing the results produced above, high-level recommendations for flood storage and betterment have been proposed for sites in each of the high risk catchments. These recommendations should be considered by developers as part of a site-specific assessment, but more detailed modelling should be undertaken by the developer to ascertain the true storage needs and potential at any site at the planning application stage. An FRA should consider the potential cumulative effects of all proposed development and how this affects sensitive receptors.

The following recommendations are made for high risk catchments:

- Developers should include a construction surface water management plan to support the Construction Drainage Phasing Plan. This should provide information to the EA, the LLFA and the LPA regarding the proposed approach to surface water management in storm events during the construction phase.
- For developments in high risk catchments, the LLFA and LPA should consult with Local Not-For-Profit organisations such as wildlife trusts, rivers trusts and catchment partnerships. This will help to understand ongoing and upcoming projects where NFM, flood storage and attenuation, and environmental betterment may be possible alongside developments and aid in reducing flood risk.
- Opportunities to achieve a 20% reduction in runoff rates compared to pre-development conditions should be encouraged (e.g. through the use of oversized SuDS). If this is not viable, developers will need to demonstrate why such a betterment is unattainable. Developers should show, through an FRA, that they

have explored options, and that proposals will contribute to reducing flood risk off site.

- LPAs should work closely with the EA and the LLFA to identify any areas of land that should be safeguarded for any future flood alleviation schemes and NFM features. Investigations should seek to determine where developments have the potential to contribute towards works to reduce flood risk and enable regeneration in catchments as well as contributing to the wider provision of green infrastructure.

2.3 Development within medium risk catchments

Catchments that have scored an overall ranking of medium, but where development is proposed should also consider the following recommendations:

- LPAs should work closely with the EA and the LLFA to identify any areas of land that should be safeguarded for any future flood alleviation schemes and NFM features.
- There is the potential for development in these catchments to contribute towards works to reduce flood risk and enable regeneration as well as contributing to the wider provision of green infrastructure.

Medium risk catchments can be found in Table 1-8.