# Appendix F – Cumulative Impact methodology

## 1.1 Methodology

### 1.1.1 Sensitivity to increases in flood flows

This is the measure of the increase in the number of properties at risk of surface water flooding in a 1 in 100-year event to a 1 in 1,000-year 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 2014 was used to identify all properties within the Blaby District study area.

This data was intersected with the 1,000-year and 100-year surface water flood extents separately to determine the number of properties in each catchment, in each surface water 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.

### 1.1.2 Growth in the area

Development in neighbouring authorities can affect flood risk in Blaby District, especially if the catchment is draining towards the study area. Development sites in neighbouring authorities were assessed to determine if any neighbouring development would affect flood risk in Blaby District.

Likewise, development within the District has the potential to affect flood risk in neighbouring authorities, especially if there are existing flood risk issues. The River Soar drains out of Blaby District towards Leicester city centre.

Areas for future proposed development were received from Blaby District Council and neighbouring authorities. The area of new development within each catchment was expressed as a percentage of the total catchment area to determine the potential for increase in flood risk as a result of new development.

### 1.1.3 Historic flood risk

Historic flood risk was determined using Leicestershire Fire and Rescue Service's Incident Recording System data and data provided by Leicestershire County Council and the Canals and Rivers Trust. Each point represents a location where it is known there has been at least one flood event (however, the nature and scale of these flood events varies significantly).

Attribute data for each Incident Recording System data point includes the:

- Time
- Date
- Location (grid reference and street name)
- Description of incident

Data was manually filtered to include only incidents where a property was recorded to have flooded internally. A count of each historical flood incident was conducted for each catchment to determine the historic flood risk of the catchments.

A summary of the datasets used to calculate the historic flood risk and the sensitivity to increases in flood flows for each catchment is shown in Table F-1.

**Table F-1: Summary of datasets used in the cumulative impact assessment**

| Dataset | Coverage | Source of data | Use of data |
|---|---|---|---|
| Catchment Boundaries | Blaby study area | Water Framework Directive Catchments | Surface Water and Development Flood Risk |
| National Receptor Database (2014) | Blaby study area | Environment Agency | Assessing the number of properties at risk of surface water flooding within each catchment |
| Risk of Surface Water Flooding Mapping | Blaby Study Area | Environment Agency | Assessing the number of properties at risk of surface water flooding within each catchment |
| Future development areas | Blaby study area and neighbouring authorities. | Blaby District Council, Leicester City Council, Harborough District Council | Assessing the impact of proposed future development on risk of flooding. |
| National Receptor Database (2014) | Bedford study area | Environment Agency | Assessing number of properties at risk of surface water flooding within each catchment |
| Historic Flooding Incidents | Blaby study area | Leicestershire County Council, Leicestershire Fire & Rescue Service, Canals & Rivers Trust | Assessing incidences of historic flooding within the Blaby study area. |

### 1.1.4 Ranking the results

The results for each assessment were ranked into high, medium and low risk as shown in Table F-2 below.

| Flood risk ranking | % of properties at increased risk of SW flooding | Total number of data points in the Fire and Rescue Historic Flooding Incidents Register | % Area of Catchment Covered by new development |
|---|---|---|---|
| Low risk | <2.5% | <4 | <4% |
| Medium risk | 2.5 to 4% | 5 to 10 | 4 to 10% |
| High risk | >4% | >10 | >10% |

The ranking results were combined from all three assessments to give an overall high, medium and low ranking for all catchments within the district. Each catchment received a score for its ranking in each category, which were totalled to give a total risk score as shown in table F-3.

**Table F-3: Final combined rankings**

| Individual Rank | Score | Total Score (out of 9) | Final Rank |
|---|---|---|---|
| High Risk | 3 | 7-9 | High Risk |
| Medium risk | 2 | 5-6 | Medium Risk |
| Low Risk | 1 | 3-4 | Low Risk |

### 1.1.5 Assumptions

The assumptions made when conducting the cumulative impact assessment are shown in Table F-4.

**Table F-4: Assumptions of the cumulative impact assessment**

| Assessment aspect | Assumption made | Details of limitation in method | Justification of method used |
|---|---|---|---|
| Surface water flood risk | Total number of properties flooded | Assumption that all properties have been included in the 2014 NRD dataset. It may not include all new build properties. | This was the most up to date and accurate data available. |
| Historic Flooding incidents | Total number of historic events and severity of flooding | Only flooding incidents recorded that could be georeferenced with XY coordinates to produce GIS files.<br>Each point represents a location where it is known there has been at least one flood incident. The severity of the historic flooding event relating to the point has not been considered, just the total number of points within each catchment where there has been a flood incident. | GIS data provided the most accurate results for the location of historic flooding incidents in Blaby District and neighbouring authorities. |

The results of the assessment and policy recommendations can be found Chapter 7 and Chapter 10 of the main SFRA report.