

Appendix C - 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 F1 1. of the National Planning Policy Framework (NPPF, 2026) states:

'a. Be informed by an up-to-date strategic flood risk assessment which considers current and future flood risk from all sources, including cumulative impacts in, or affecting, areas susceptible to flooding; and

b. 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, about levels of risk, options for mitigation, and the implications for development in the plan area.'

When allocating land for development, consideration should be given to the potential cumulative impact of the loss of floodplain storage volume. Whilst the loss of storage for individual developments may only have minimal impact on flood risk, the cumulative effect of multiple developments may be more severe. There are also risks of development causing modified flow regimes from sites creating an alignment in peak flows in downstream watercourses and resulting in greater flood risk as a result of the development.

Conditions imposed by Solihull Metropolitan Borough Council should allow for mitigation measures so any increase in runoff as a result of development is properly managed and should not exacerbate flood risk issues, either within, or outside of the Councils' administrative area.

The cumulative impact of development should be considered at both the Local Plan making and the planning application and development design stages. Appropriate mitigation measures should be undertaken to ensure flood risk is not exacerbated, and where possible the development should be used to reduce existing flood risk issues.

To understand the impact of future development on flood risk in the Solihull Metropolitan Borough, catchments were identified where development may have the greatest potential effect on flood risk, and where further assessment would be required within a Level 2 Strategic Flood Risk Assessment (SFRA) or site-specific Flood Risk Assessment (FRA). To identify the catchments at greatest risk, various factors were considered, including local buildings sensitive to increased fluvial and surface water flood risk, and records of historic flooding. 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.

2. Assessment of cross-boundary issues

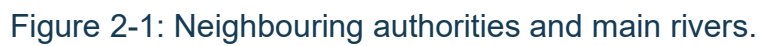
Solihull Metropolitan Borough area is located in the West Midlands and is bordered by Birmingham City to the northwest, North Warwickshire District to the northeast, Coventry City to the east, Bromsgrove District to the southwest along with Stratford-on-Avon and Warwick Districts to the south/ southeast.

The Borough encompasses areas of fifteen separate catchments outlined in Figure 3-1. The catchments with the majority areas within the Borough is River Blythe from Temple Balsall Brook to Patrick Bridge, River Blythe from Source to Cuttle Brook, the Hatchford-Kingshurst Brook from Source to River Cole and Cuttle Brook from Source to River Blythe. The remaining catchment areas fall predominantly outside of the Borough. The highest elevations are in the eastern area of the Borough, north of Meriden. The lowest elevations across the Borough are found in the north near the confluence of the River Cole and Hatchford Brook.

The Borough is drained by a number of watercourses designated by the Environment Agency as statutory Main Rivers, primarily the River Blythe and its associated tributaries: the River Cole, Hatchford Brook, Low Brook, Westley Brook, Shadow Brook, Pickford Brook, Purnell's Brook, and Hollywell Brook, all of which are classified as statutory Main Rivers.

Significant risk is also presented by ordinary watercourses, namely the Cuttle Brook, Spring Brook, and the upper area of the Low Brook.

The neighbouring authorities and the main rivers are shown in Figure 2-1.



3. Cumulative Impact Assessment

3.1 Methodology

For the Cumulative Impact Assessment (CIA), Solihull Metropolitan Borough was assessed at a catchment level, shown in Figure 3-1. The Water Framework Directive (WFD) catchments were used throughout the assessment.

Table 3-1 summarises the datasets used within the Solihull Metropolitan Borough CIA.

Table 3-1: Summary of datasets used within the broadscale CIA.

Dataset	Coverage	Source of data	Use of data
Water Framework Directive catchments	Solihull Metropolitan Borough and neighbouring authorities	Environment Agency	Defining catchments for use within the assessment
OS Open Zoomstack Local Buildings	Solihull Metropolitan Borough and neighbouring authorities	Ordnance Survey (open source)	Assess the current developed area in each catchment
Flood Map for Planning Surface Water Spatial Planning	Solihull Metropolitan Borough and neighbouring authorities	Environment Agency	Assessing the built area at risk of surface water flooding
Flood Zones 2 and 3a	Solihull Metropolitan Borough and neighbouring authorities	Environment Agency	Assessing the built area at risk of fluvial flooding
Local Planning permissions and site designations	Solihull Metropolitan Borough and neighbouring authorities (Except Bromsgrove District)	Solihull Metropolitan Borough, Coventry City Council, Birmingham City Council, North Warwickshire District Council, Stratford-on-Avon District, Warwick District	Assessing the proposed developable area within each catchment

Dataset	Coverage	Source of data	Use of data
Historic Flooding Incident Data (surface water, groundwater, and foul drainage incidents)	Solihull Metropolitan Borough and neighbouring authorities (except Birmingham City, Coventry City and Bromsgrove District)	Solihull Metropolitan Borough, Warwickshire County Council	Assessing the prevalence of historic flooding

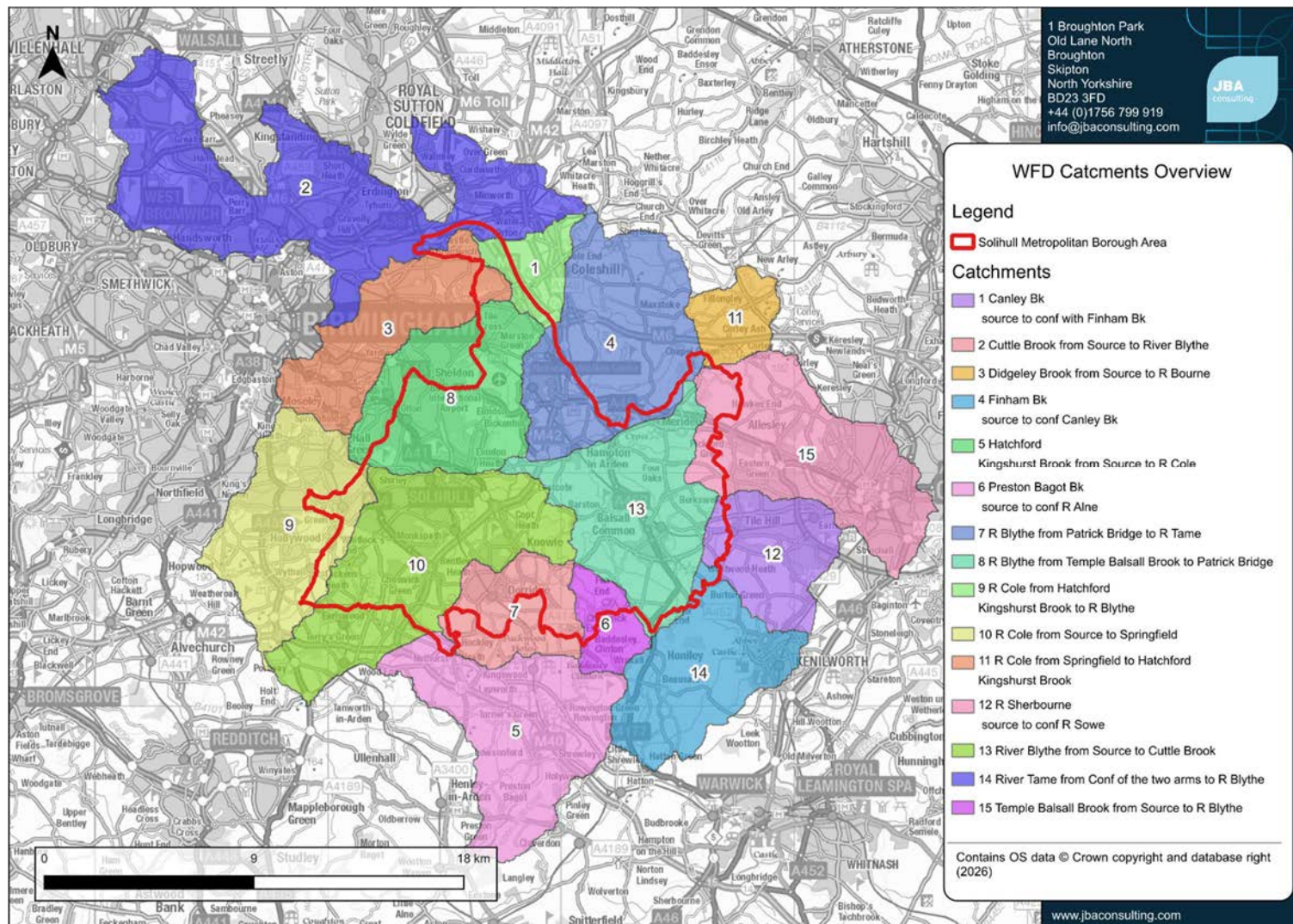


Figure 3-1: WFD catchments across Solihull Metropolitan Borough.

There are four stages to this Level 1 CIA:

1. Assess the percentage of each catchment outlined as proposed development

Development data was available for this assessment from SMBC and all its neighbouring authorities, excluding Bromsgrove District. This data is important, particularly in the less urbanised south and east of the Borough where much of the development will likely be required on greenfield sites.

Development is assessed using the following data

- Total catchment area of each WFD catchment
- Total proposed developments area (Merge of all proposed developments from Solihull MBC and neighbouring authorities)

2. Assess sensitivity to increased fluvial flood risk

It is important to understand which catchments are most sensitive to increases in fluvial flood flows which may theoretically be caused by new development. Predicted flood risk was assessed using the following datasets:

- Total area of buildings within Flood Zone 3a for each catchment.
- Total area of buildings within Flood Zone 2 and 3a for each catchment.

The difference in the area of buildings at risk in these two datasets has then been used as an indicator to identify which catchments are more sensitive to increases in fluvial flood flows.

3. Assess sensitivity to increased surface water flood risk

It is important to understand which catchments are most sensitive to increases in surface water flood flows which may theoretically be caused by new development. Predicted flood risk was assessed using the following datasets:

- Total area of buildings within the 1% AEP surface water flooding extent for each catchment.
- Total area of buildings within the 1.0% AEP plus climate change surface water flooding extent for each catchment.

The difference in the area of buildings at risk in these two datasets has then been used as an indicator to identify which catchments are more sensitive to increases in surface water risk.

4. Identify historic flood risk

A historic flood risk ranking was derived for each catchment using the number of historic flooding incidents within each catchment, based on data provided by Solihull Metropolitan Borough Council and its neighbouring authorities where Warwickshire County Council acts as the LLFA, Historic flooding information was not provided by Birmingham City, Coventry City and Bromsgrove District.

The severity of the historic flooding event relating to the point data has not been considered, just the total number within each catchment where there has been a flood incident.

3.2 Ranking of catchments

The results for each assessment were ranked into high, medium, and low susceptibility to increased risk as shown in Each indicator is assessed relative to the 15 catchments. For development, fluvial flood risk, surface-water risk and LLFA incidents, catchments are ranked from highest to lowest and divided into three groups: ranks 1–5 High, 6–10 Medium and 11–15 Low. Historic flood-map area is scored using the 33rd and 67th percentiles.. The ranking results were combined from the four assessments to give an overall high, medium, and low ranking for all catchments within the city. 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.

There is currently no national guidance available for assessing the cumulative impacts of development. These rankings provide a relative assessment of the catchments that have areas within the Borough and are not comparable across other boroughs/districts. Each indicator is assessed relative to the 15 catchments. For development, fluvial flood risk, surface-water risk and LLFA incidents, catchments are ranked from highest to lowest and divided into three groups: ranks 1–5 High, 6–10 Medium and 11–15 Low. Historic flood-map area is scored using the 33rd and 67th percentiles.

3.3 Overall rankings

A Red-Amber-Green (RAG) rating was applied to the catchments, with red being high, amber being medium, and green being low sensitivity to increased flood risk. The catchments with an average score of greater than 2 were deemed high risk.

The following catchments are identified as **high risk**:

- River Tame from confluence of the two arms to River Blythe
- River Blythe from Patrick Bridge to River Tame
- Hatchford-Kingshurst Brook from Source to River Cole
- Canley Brook- Source to confluence with Finham Brook

The following catchments are identified as **medium risk**:

- River Cole from Hatchford-Kingshurst Brook to River Blythe

- River Cole from Springfield to Hatchford-Kingshurst Brook
- River Cole from Source to Springfield
- River Blythe from Source to Cuttle Brook
- River Blythe from Temple Balsall Brook to Patrick Bridge
- Finham Brook - source to confluence Canley Brook
- River Sherbourne - source to confluence River Sowe

The following catchments are identified as **low risk**:

- Preston Bagot Brook - source to confluence River Alne
- Temple Balsall Brook from Source to River Blythe
- Cuttle Brook from Source to River Blythe
- Didgeley Brook from Source to River Bourne

The results of the RAG assessments are shown in Figure 3-2.

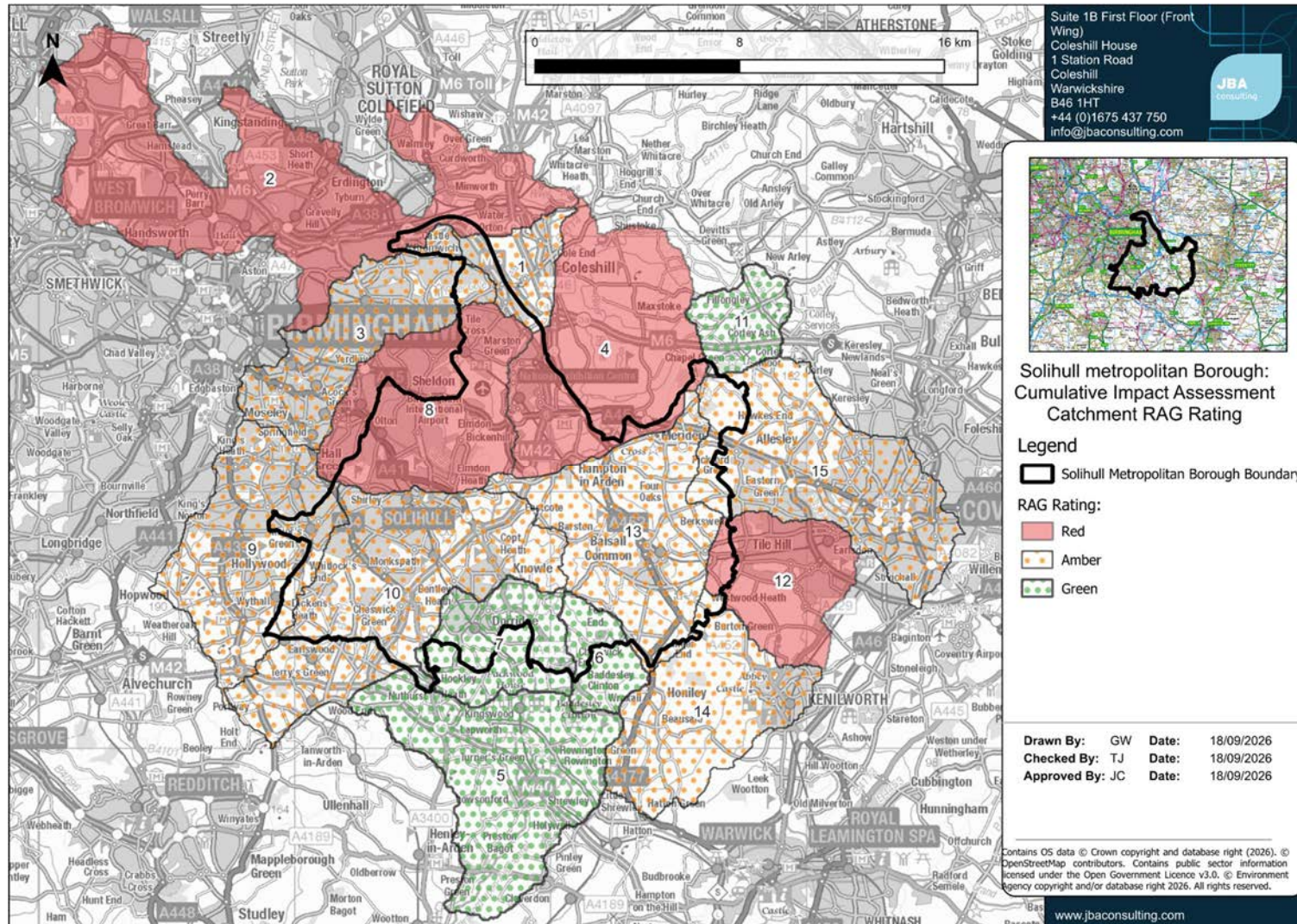


Figure 3-2: Results of the RAG assessment for Solihull Metropolitan Borough.

The catchments identified at **high risk** are primarily within the north of the Borough. In this area, the main fluvial risk is from the Hatchford Brook, Low Brook and Kingshurst Brook. In the very north of the Borough the fluvial influence is the River Tame which falls outside of the Borough. Across the north and west of the Borough, the catchments are highly urbanised meaning that risk is likely to be more greatly influenced by surface water flooding. Therefore, a separate ranking considering just surface water flood risk is set out within Section 3.4 and should be compared with the overall rankings to discern surface water impact compared with that of fluvial and historical reports of flooding.

Seven catchments were identified as **medium risk**. The River Cole from Hatchford-Kingshurst Brook to River Blythe is designated as having a higher sensitivity to fluvial flooding and medium sensitivity to surface water flooding with lower instances of historical flooding. River Cole from Springfield to Hatchford-Kingshurst Brook is ranked at a higher sensitivity to fluvial and surface water flooding but a lower effect of development areas and historic flooding instances. The River Cole from source to Springfield is at a medium sensitivity of increases due to development in the Borough and surface water flooding with a medium number of instances of historical flooding throughout the catchment. The River Blythe from Source to Cuttle Brook is indicated to have a low sensitivity to increased fluvial risk; however, there is a higher risk within the catchment due to proposed development and a high instance of historical flooding reports. This trend continues within the downstream River Blythe from Temple Balsall Brook to Patrick Bridge. The Finham Brook – Source to confluence Canley Brook has a medium sensitivity to both fluvial and surface water impacts. Finally, the River Sherbourne – Source to confluence River Sowe is shown to have a higher sensitivity to both fluvial and surface water flooding but a lower number of historical records of flooding. This is likely due to its rural location and lack of flooding history from the neighbouring Coventry City Council.

The remaining catchments are identified as being at low risk of cumulative impacts of flooding.

3.4 Surface water rankings

As identified in Section 0, the characteristics of the north and west of the Borough area means that the key source of flood risk that can potentially be influenced by new development is surface water. Therefore, a RAG rating was applied to the catchments, with red being high, amber being medium, and green being low sensitivity to increased surface water flood risk.

This identified the following catchments as **high risk**:

- River Tame from Confluence of the two arms to River Blythe
- Cole from Springfield to Hatchford-Kingshurst Brook
- Hatchford-Kingshurst Brook from Source to River Cole
- Canley Brook – Source to confluence with Finham Brook
- River Sherbourne – Source to Confluence River Sowe

The following catchments are identified as **medium risk**:

- River Cole from Hatchford-Kingshurst Brook to River Blythe
- River Blythe from Patrick Bridge to River Tame
- River Cole from source to Springfield
- River Blythe from Source to Cuttle Brook
- Finham Brook – source to confluence with Canley Brook

The results of the RAG assessment for surface water are shown in Figure 3-3.

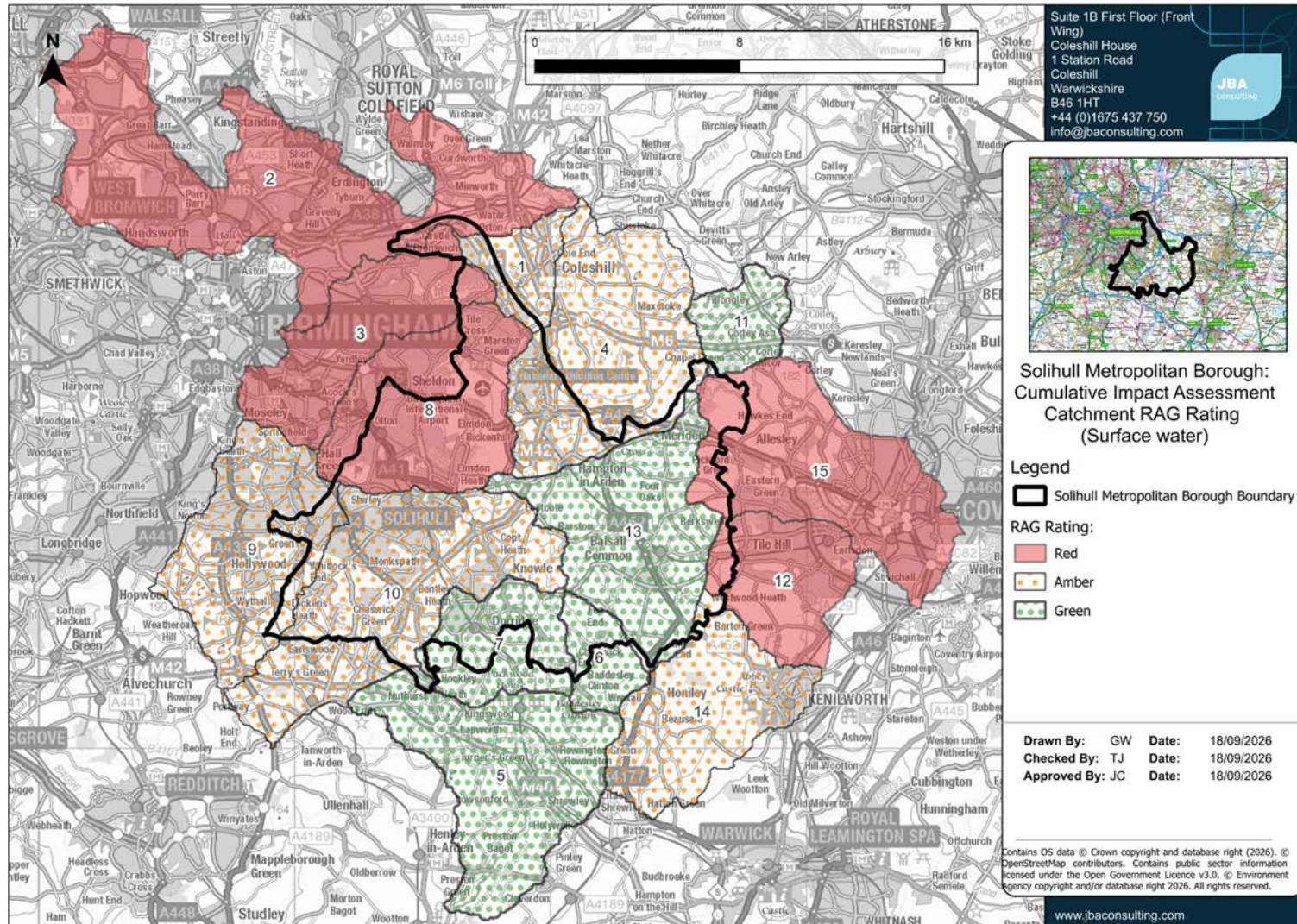


Figure 3-3: Results of the RAG assessment for surface water risk for Solihull Metropolitan Borough.

4. Level 1 SFRA Policy recommendations

4.1 Broadscale recommendations

All developments are required to comply with the 2026 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 Solihull Metropolitan Borough (SMBC) has highlighted areas where there is the potential for development to have a cumulative impact on flood risk. 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 the entire Borough should be supported where possible.

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

- SMBC should work closely with neighbouring local authorities to develop complementary Local Planning Policies for catchments that drain into and out of the area to other local authorities, in order to minimise any cross-boundary issues of cumulative impacts of development.
- SMBC should work closely with neighbouring local authorities and other groups such as the local Rivers Trusts and the Catchments Partnerships to seek opportunities for Natural Flood Management (NFM) in upstream catchments, particularly those associated with the Birmingham City area that may reduce the flood risk downstream within the Solihull Borough area.
- 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 [A guide to sustainable drainage in Solihull \(Solihull.gov\)](#) for the requirements for SuDS in the Borough. Further guidance on SuDS can be found in Section 9 of the Main Report.
- SMBC 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.
- The opportunity for SuDS retrofit within the authority area should be maximised given the significant urbanisation and prevalence of historic surface water incidents.

- 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 closest rate that is practicable but not exceeding the existing brownfield runoff rate.
- Where required, site-specific FRAs should explore opportunities to provide wider community flood risk benefits through new developments. Measures that can be put in place to contribute to a reduction in flood risk downstream should be considered. This may be either by the provision of additional storage on site e.g. through oversized SuDS, NFM techniques, green infrastructure, and green-blue corridors, and/ or by providing a Partnership Funding contribution towards any flood alleviation schemes.
- SMBC should consider requiring developers to contribute to community flood defences outside of their red line boundary to provide wider benefits and help offset the cumulative impact of development.

Specific recommendations are made for high-risk catchments below.

4.2 Recommendations for high-risk surface water catchments

These recommendations should be considered by developers as part of a site-specific assessment, but more detailed modelling may need to be undertaken by the developer to ascertain the true storage needs and potential at each site at the planning application stage. The FRA should consider the potential cumulative effects of all proposed development and how this affects sensitive receptors.

If any future windfall sites are proposed within these catchments, then developers should also consider the recommendations detailed so that existing flooding issues in the catchment are not exacerbated by any future development and options for betterment are considered.

The following recommendations are made for high-risk surface water catchments:

- The LPA should work closely with the neighbouring LPAs of Birmingham City, Coventry City and Warwick District Councils to manage any cross-boundary implications within catchments designated at high-risk of surface water impacts. Development upstream in Birmingham may have implications for flood risk in the Solihull Borough, whilst the Solihull Borough may have implications for flood risk downstream in Coventry City and Warwick District Council areas.
- Use of oversized SuDS should be considered, where viable, to provide betterment beyond the existing greenfield runoff rate.
- Opportunities for retrofitting of SuDS in existing developed areas should be sought to reduce runoff rates from existing developments, particularly in the most densely urbanised areas in the north-west of the Borough (Olton, south of Sheldon and the Marston Green area), considering the prevalence of historic surface water incidents.

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