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# Derby City Level 2 Strategic Flood Risk Assessment

**Final**

A1-C01

Prepared for  
Derby City Council

Date  
July 2026



Derby City Council

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This report describes work commissioned by Derby City Council by an instruction dated 11th June 2026. The Client's representative for the contract was David Brown of Derby City Council. Lucy Briscoe, Zoe Benson and Grace Sheppard of JBA Consulting carried out this work.

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## Acknowledgements

We would like to acknowledge the assistance of Derby City Council, the Environment Agency, and Severn Trent Water.

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## Abbreviations

|        |                                     |
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| AEP    | Annual Exceedance Probability       |
| AIMS   | Asset Information Management System |
| BGS    | British Geological Survey           |
| CC     | Climate Change                      |
| CCTV   | Closed Circuit Television           |
| EA     | Environment Agency                  |
| FAA    | Flood Alert Area                    |
| FMfP   | Flood Map For Planning              |
| FRA    | Flood Risk Assessment               |
| FWA    | Flood Warning Area                  |
| GIS    | Geographical Information System     |
| JBA    | Jeremy Benn Associates              |
| LiDAR  | Light Detection And Ranging         |
| LLFA   | Lead Local Flood Authority          |
| LPA    | Local Planning Authority            |
| mAOD   | metres Above Ordnance Datum         |
| NaFRA2 | National Flood Risk Assessment 2    |
| NPPF   | National Planning Policy Framework  |
| OS     | Ordnance Survey                     |
| PPG    | Planning Practice Guidance          |
| RBD    | River Basin District                |
| RMA    | Risk Management Authority           |
| RoFSW  | Risk of Flooding from Surface Water |
| SFRA   | Strategic Flood Risk Assessment     |
| SuDS   | Sustainable Drainage Systems        |

## Definitions

**1D model:** One-dimensional hydraulic model, typically representing a watercourse and structures within the channel (for example bridges and culverts).

**2D model:** Two-dimensional hydraulic model, typically representing the floodplain flows.

**Annual Exceedance Probability:** The probability (expressed as a percentage) of a flood event occurring in any given year.

**Brownfield:** A previously developed parcel of land.

**Climate change:** Long term variations in global temperature and weather patterns caused by natural and human actions.

**Design flood:** A flood event of a given annual flood probability, which is generally taken as: fluvial (river) flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year), or surface water flooding likely to occur with a 1% annual probability (a 1 in 100 change each year), plus an appropriate allowance for climate change, against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

**Dry island:** Land which may not be at risk of flooding itself but is surrounded by flood risk and therefore may become cut off during a flood event.

**Flood defence:** Infrastructure used to protect an area against floods such as floodwalls and embankments; they are designed to a specific standard of protection (design standard).

**Green infrastructure:** A network of natural environmental components and green spaces that intersperse and connect the urban centres, suburbs, and urban fringe.

**Greenfield:** An undeveloped parcel of land.

**Lead Local Flood Authority:** The unitary authority for the area or if there is no unitary authority, the county council for the area.

**Local Planning Authority (LPA):** The local government body which is responsible by law to exercise planning functions for a particular area.

**Main river:** A watercourse shown as such on the statutory main river map held by the Environment Agency. They are usually the larger rivers and streams. The Environment Agency has permissive powers (not duties) to carry out maintenance and improvement works on main rivers.

**Major development:** Defined in the National Planning Policy Framework as a housing development where 10 or more homes will be provided, or the site has an area of 0.5 hectares or more, or as a non-residential development with additional floorspace of 1,000m<sup>2</sup> or more, or a site of 1 hectare or more, or as otherwise provide in the [Town and Country Planning \(Development Management Procedure\) \(England\) Order 2015 \(gov.uk\)](#).

**Natural Flood Management:** Techniques that work with nature to reduce the risk of flooding for communities.



**Ordinary watercourse:** Any river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows but which does not form part of a main river. The local authority or internal drainage board has permissive powers (not duties) on ordinary watercourses.

**Permissive powers:** Authorities have the power to undertake flood risk management activities, but not a duty to do so. This will depend on priorities in flood risk management.

**Return period:** An estimate of the interval of time between events of a certain intensity or size, in this instance it refers to flood events. It is a statistical measurement denoting the average recurrence interval over an extended period of time.

**Riparian owner:** A riparian landowner, in a water context, owns land or property, next to a river, stream or ditch.

**Risk:** In flood risk management, risk is defined as a product of the probability or likelihood of a flood occurring, and the consequence of the flood.

**Risk Management Authority:** The Environment Agency, Lead Local Flood Authorities, District and Borough Councils in an area where there is no unitary authority, Coast Protection Authorities in coastal areas, Water and sewerage companies, Internal Drainage Boards, and Highways authorities.

**Standard of Protection (SoP):** Defences are provided to reduce the risk of flooding (typically from a river, sea or surface water). A Standard of Protection is usually described in terms of an AEP flood event. For example, a flood embankment could be described as providing a 1% AEP Standard of Protection

**Stakeholder:** A person or organisation affected by the problem or solution or interested in the problem or solution. They can be individuals or organisations, includes the public and communities.

**Sustainable Drainage Systems:** Sustainable Drainage Systems are methods of management practices and control structures that are designed to drain surface water in a more sustainable manner than some conventional techniques, such as grates, gullies, and channels.

**Windfall site:** A site which becomes available for development unexpectedly and therefore not included as allocated land in a planning authority's local plan.

# Executive Summary

## Introduction and context

This Level 2 Strategic Flood Risk Assessment (SFRA) document was prepared with the purpose of providing part of the evidence base for the Emerging Local Plan from 2026 to 2050 for Derby City Council. It follows on from the Derby City Level 1 SFRA produced in 2025 and should be read in conjunction.

The primary purpose of the Level 2 SFRA is to provide an appropriate understanding of the level of flood risk affecting development included in the updated Local Plan. The assessment takes into account all sources of flooding and considers other factors affecting flood risk such as residual risk. The information provided as part of the Level 2 SFRA enables Derby City Council to apply the Exception Test to sites in accordance with the National Planning Policy Framework (NPPF).

## SFRA objectives

The Government's Planning Practice Guidance (PPG) on Flood Risk and Coastal Change advocates a tiered approach to risk assessment involving Level 1 and Level 2 SFRAs.

After completing the Level 1 SFRA and the 'Call for Sites' process, Derby City Council have undertaken the Sequential Test and have shortlisted sites which cannot be relocated outside of flood risk areas due to additional planning factors. The Level 2 assessment aims to build on identified risks from the Level 1 SFRA in order to provide a greater understanding of fluvial, surface water, groundwater, sewer, and reservoir related flooding risks to these shortlisted sites. From this, Derby City Council and developers can make more informed decisions regarding future development. The Level 2 assessment also identifies sites requiring further risk analysis at the site-specific Flood Risk Assessment (FRA) stage.

## Summary of Level 2 SFRA

Derby City Council provided JBA Consulting with an initial 38 sites that were screened against the NAFRA2 Flood Zones (which included models within the study area) and Risk of Flooding from Surface Water (RoFSW) datasets, in addition to proximity to watercourses, and groundwater levels. These sites were then assessed using a Red Amber Green (RAG) analysis. From these sites, Derby City Council highlighted 18 sites for Level 2 Analysis. Sites taken forwards were: Derby Riverside, North Castleward, Railway Station Quarter, The Eagle Quarter Former Full St Police Station, Abbey St Carpark (east), Abbey St Carpark (west), Becketwell, The Market Place, Museum, University of Derby (City Centre Hub), Central Activity Area, Railway Quarter, Beaufort Business Centre, Former Ivy House School, Former Friar Gate Goods Yard, Bradshaw Way, Babington Lane Carpark, and Northern Gateway.

The following points summarise the Level 2 assessment:

- **Fluvial flooding** - the majority of sites are at fluvial flood risk from the Markeaton Brook and the River Derwent, with sites most affected being the Derby Riverside

site in all AEP events, and the University of Derby (City Centre Hub) and Central Activity Area sites in the 1% AEP and 0.1% AEP events. It is noted that whilst extents from the River Derwent are present within the North Castleward and Railway Quarter sites, they are not significant enough to impede development inline with the sequential approach. In total 11 sites are affected by fluvial flooding.

- **Flood Warning Areas (FWAs)** - 12 sites are located within existing EA FWAs. For proposed development within existing EA FWAs, developers should consult the EA to ensure that adequate flood warning procedures and evacuation processes are in place and that Risk Management Authorities (RMAs) are not put under any additional burden. The sites are Becketwell, Central Activity Area, Derby Riverside, The Eagle Quarter, Former Full St Police Station, Former Friar Gate Goods Yard, HA14, The Market Place, Museum, North Castleward, Railway Quarter, and University of Derby (City Centre Hub).
- **Surface water flooding** - Surface water tends to follow topographic flow routes, for example, along watercourses or isolated pockets of ponding where there are topographic depressions. The majority of sites are at risk from surface water flooding in the 0.1% AEP event. Sites that are at risk within all AEP events are the Museum, Central Activity Area, and University of Derby (City Centre Hub) sites.
- **Access and escape routes** - The majority of sites have potential access and escape route issues as a result of fluvial and/or surface water flooding of the surrounding roads, particularly in the 1% AEP and 0.1% AEP events. At these sites, consideration should be made as to how safe access and escape routes can be provided during flood events, both for people and emergency vehicles. Consideration should also be given to the nature of the risk, for example whether the flooding forms a flow path or bisects the site meaning access across the site from one side to another may be compromised.
- **Climate change** - Fluvial and surface water climate change mapping indicates that flood extents are predicted to increase. As a result, the depths, velocities, and hazard of flooding may also increase. The significance of the increase will depend on the topography of the site and the climate change percentage allowance used. Site-specific FRAs should confirm the impact of climate change using latest guidance. The sites most at risk from increased risk due to climate change are the Derby Riverside, University of Derby (City Centre Hub), Eagle Quarter, Former Full Street Police Station, Becketwell, The Market Place, Central Activity Area, Abbey Street Car Park (west), HA14 and HA16 sites. It is recommended that Derby City Council work with other RMAs to review the long-term sustainability of existing and new development in these areas when developing climate change plans and strategies for the borough.
- **Historic flooding** - Historical data shows that the Markeaton Brook and River Derwent is prone to large flood events with far reaching extents. Sites near and within the city centre of Derby are likely to be affected.

- **Sewer flooding** - Sewer flooding data provided by Severn Trent water shows that there are sites within postcodes that have recorded flood events.
- **Groundwater flooding** - the JBA Groundwater Emergence data set shows that the groundwater levels are varied between sites, ranging from within 0.025m of the grounds surface to below 5m. An appropriate assessment of the groundwater regime for a site should be carried out at the site-specific FRA stage.
- **Reservoir flooding** - There are 11 sites (all but Northern Gateway, Friar Gate, Babington Lane Crapark, Bradshaw Way, the two Abbey St Carparks, and HA14) are assessed within the detailed site assessments that are shown to be at risk of reservoir flooding. The level and standard of inspection and maintenance required under the Reservoirs Act means that the risk of flooding from reservoirs is very low. However, there is a residual risk of a reservoir breach, and this risk should be considered in any site-specific FRA.
- **SuDS** - A strategic assessment was conducted of SuDS options using regional datasets. A detailed site-specific assessment of suitable SuDS techniques would need to be undertaken at site-specific level to understand which SuDS option would be best.

## Recommendations

Section 8 sets out the recommendations based on the findings of this Level 2 SFRA. This includes recommendations for applying the Exception Test, where required, requirements for developers in developing the Local Plan allocations, and guidance for windfall sites and development of sites not included within the Local Plan. Site specific recommendations are made in the site-specific assessments that form Appendix A.

# 1 Introduction

## 1.1 Purpose of the Strategic Flood Risk Assessment

Paragraph 171 of the [National Planning Policy Framework \(NPPF\) \(2024\) \(gov.uk\)](#) states that '*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.*'

## 1.2 Levels of SFRA

The [Planning Practice Guidance \(PPG\) Flood risk and coastal change \(gov.uk\)](#) advocates a staged approach to risk assessment and identifies two levels of a Strategic Flood Risk Assessment (SFRA):

- A Level 1 assessment, which all Local Planning Authorities (LPAs) are required to undertake. Where potential site allocations are at low flood risk and where development pressures are low a Level 1 assessment is likely to be sufficient, without the LPA progressing to a more detailed Level 2 assessment. The Level 1 assessment should be of sufficient detail to enable application of the Sequential Test, to inform the allocation of development to areas of lower flood risk.
- A Level 2 assessment is required where land outside flood risk areas cannot appropriately accommodate all necessary development, creating the need to apply the NPPF's Exception Test, or if an LPA believe they may receive high numbers of applications in flood risk areas on sites not identified in the Local Plan. In these circumstances the assessment should consider the detailed nature of the flood characteristics within a Flood Zone and assessment of all sources of flooding.

This SFRA report fulfils the requirements for a Level 2 assessment of development sites identified for potential allocation within Derby City and has been prepared in accordance with the NPPF (2024) and PPG (2022).

This report should be read alongside the Derby City Level 1 SFRA<sup>1</sup> and builds upon information presented within the Level 1 SFRA.

## 1.3 SFRA objectives

The objectives of this Level 2 SFRA are to:

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<sup>1</sup> Deby City Level 1 SFRA -

<https://derby.gov.uk/media/derbycitycouncil/content/documents/environmentandplanning/localplan/derby-city-strategic-flood-risk-assessment-level1.pdf>

1. Provide individual flood risk analysis for site options using the latest available flood risk data, thereby assisting the Council in applying the Exception Test, where required, to their proposed site options in preparation of their Local Plan.
2. Using the available data, provide information and comprehensive mapping presenting flood risk from all sources for the site.
3. Provide recommendations for making sites safe throughout their lifetime.
4. Take into account most recent policy and legislation in the NPPF, PPG, EA SFRA Guidance, and LLFA SuDS guidance.

## 1.4 Consultation

SFRAs should be prepared in consultation with other RMAs. RMAs consulted within this study are:

- Derby City Council as Local Planning Authority (LPA) and Lead Local FloOd Authority (LLFA)
- The Environment Agency (EA)
- Severn Trent Water (STW)

## 1.5 How to use this report

Table 1-1 below outlines the contents of this report and details how different users can apply this information.

Table 1-1: Outline of the contents of each section of this report.

| Section                                          | Contents                                                                                                                                                               | How to use                                                                                                                                                                    |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Introduction                                  | Outlines the purpose and objectives of the Level 2 SFRA.                                                                                                               | For general information and context.                                                                                                                                          |
| 2. Policy and strategy for flood risk management | Includes information on the implications of recent changes to planning and flood risk policies and legislation and signposts to relevant sections of the Level 1 SFRA. | Users should refer to this section and the relevant sections of the Level 1 SFRA for any relevant policy which may underpin strategic or site-specific assessments.           |
| 3. Sequential and Exception Tests                | Signposts to relevant sections of the Level 1 SFRA for information on the Sequential and Exception Tests.                                                              | Users should refer to this section and the relevant sections of the Level 1 SFRA to understand and follow the steps required for applying the Sequential and Exception Tests. |
| 3. Information used in the Level 2 SFRA          | Summarises the data used in the Level 2 detailed site assessments and mapping.                                                                                         | Users should refer to this section in conjunction with the detailed site assessments (Appendix A) and mapping (Appendix A) to understand the data presented.                  |
| 4. Level 2                                       | Summarises the sites taken                                                                                                                                             | Users should refer to this section                                                                                                                                            |

| Section                                              | Contents                                                                                                                                                                                                                                                                | How to use                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Assessment Methodology                               | forward to a Level 2 assessment and the outputs produced for each of these sites.                                                                                                                                                                                       | in conjunction with the detailed site assessments (Appendix A) and mapping (Appendix B) to understand the data presented.                                                                                                                                                                            |
| 6. Flood risk management requirements for developers | Identifies the scope of the assessments that must be submitted in Flood Risk Assessments (FRAs) supporting applications for new development. Refers to relevant sections in the Level 1 SFRA for mitigation guidance.                                                   | Developers should use this section alongside the relevant sections of the Level 1 SFRA to understand requirements for FRAs, which conditions/guidance documents should be followed, and information on flood mitigation options.                                                                     |
| 7. Surface water management and SuDS                 | Signposts to relevant sections of the Level 1 SFRA for information on the management of surface water including types of SuDS, SuDS policy and guidance, and SuDS constraints.                                                                                          | Developers should use this section alongside the relevant sections of the Level 1 SFRA to understand what national, regional, and local SuDS standards are applicable.                                                                                                                               |
| 8. Summary of Level 2 assessment and recommendations | Summarises the results and conclusions of the Level 2 assessment, and signposts to the Level 1 SFRA for planning policy recommendations.                                                                                                                                | Developers and planners should use this section to see a summary of the Level 2 assessment and understand the key messages from the detailed site assessments.<br>Developers should refer to the Level 1 SFRA recommendations when considering requirements for site-specific assessments.           |
| Appendix A: Detailed site assessments                | Provides a detailed summary of flood risk for sites requiring a more detailed assessment, which considers flood risk, emergency planning, climate change, broadscale assessment of possible SuDS, Exception Test requirements, and requirements for site-specific FRAs. | Planners should use this appendix to inform the application of the Sequential and Exception Tests, as relevant.<br>Developers should use these assessments to understand flood risk, access and escape route requirements, climate change, SuDS, and FRA requirements for site-specific assessments. |



| Section                                    | Contents                                                                                                                                                                                                                              | How to use                                                                                                                                                                                                                                                                                           |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Appendix B: GeoPDF Mapping                 | Provides mapping of the flood risk at each of the sites afforded a detailed site assessment. Includes depth, velocity and hazard information for fluvial and surface water flood risk where available, alongside climate change risk. | Planners should use this appendix to inform the application of the Sequential and Exception Tests, as relevant.<br>Developers should use these assessments to understand flood risk, access and escape route requirements, climate change, SuDS, and FRA requirements for site-specific assessments. |
| Appendix C: Data sources used in this SFRA | Summarises the data used in the Level 2 detailed site assessments and mapping.                                                                                                                                                        | Users should refer to this section to understand the data used and where this data can be obtained.                                                                                                                                                                                                  |

## 1.6 SFRA study area

Derby City is located in the midlands and its administrative boundaries cover an area of approximately 78.1km<sup>2</sup>, servicing a population of approximately 261,400 people<sup>2</sup>. The Council is predominantly urbanised city with some green spaces, with the district centres consisting of Allestree, Alvaston, the city centre, Chaddesden, Chellaston, Littleover, Mickleover, Normanton, and Spondon. Derby City Council shares boundaries with Amber Valley Borough Council, Erewash Borough Council, and South Derbyshire District Council, as shown in **Error! Reference source not found..**

Derby is serviced by Severn Trent Water for potable water, wastewater treatment and sewerage, and there are no Internal Drainage Boards within the city area. Derby City Council is both the Local Planning Authority (LPA) and the Lead Local Flood Authority (LLFA) for the Derby City area. Derby City Council as LLFA is situated within the wider Derbyshire County Council LLFA area, as shown in **Error! Reference source not found..** As LLFA, Derby City Council prepares guidance and strategies for flood risk management, conducts work to manage local flood risk, maintains an asset register, regulates and manages ordinary watercourses, and undertakes Section 19 investigations.

Within the city area, there are eighteen named watercourses, as shown in **Error! Reference source not found.**, with no canals present. The watercourses are as follows:

- Amber Brook
- Bramble Brook
- Burley Brook
- Chaddesden Brook
- Cotton Brook
- Cuttle Brook
- Dam Brook
- Eggington Brook

## 2 [2021 Census](#)



- Folly Brook
- Hell Brook
- Littleover Brook
- Lees Brook
- Mackworth Brook
- Main Drain
- Markeaton Brook
- Meadow Draom
- River Derwent
- Thulston Brook
- Wood Brook

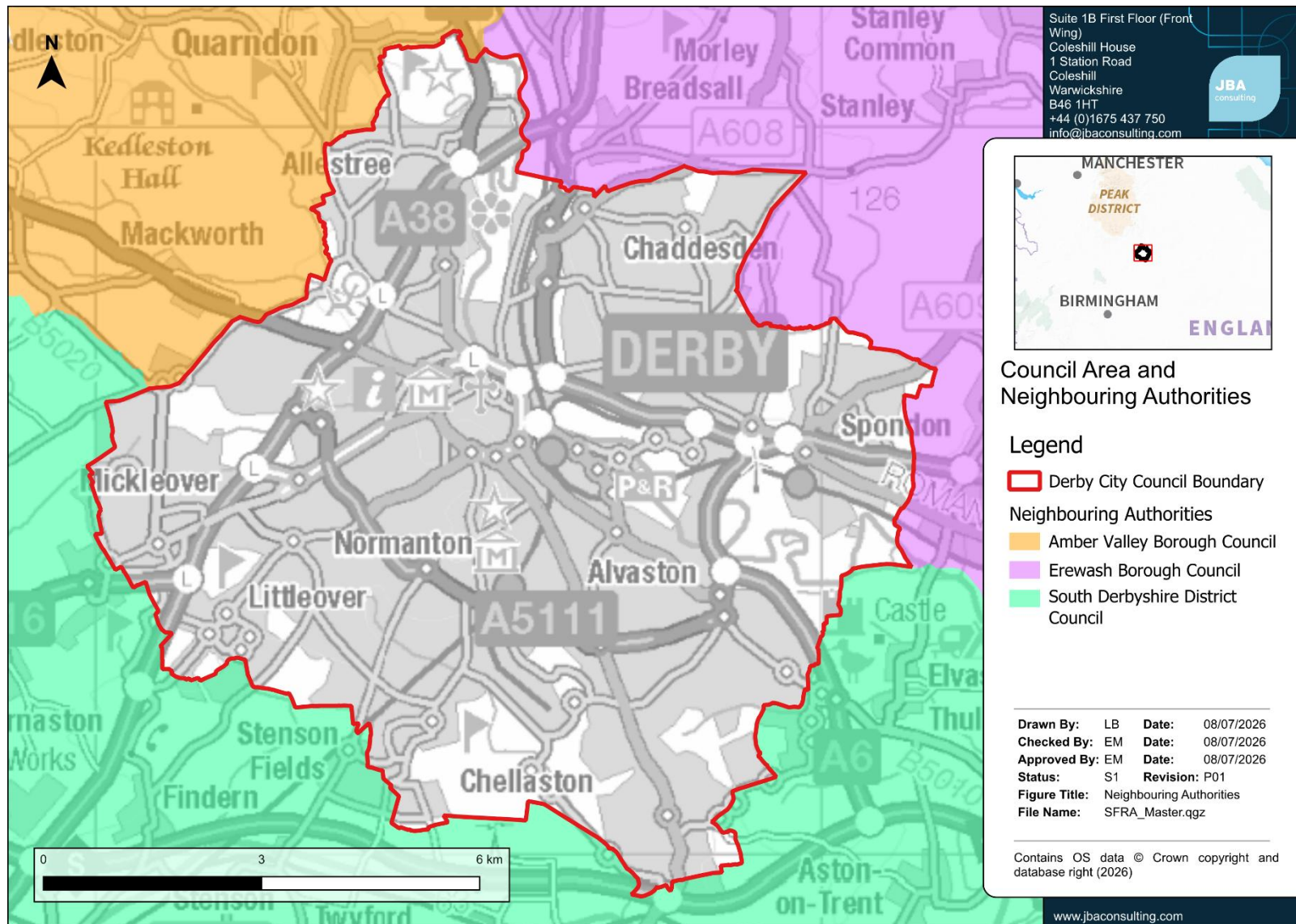


Figure 1-1: Derby City Council and its neighbouring authorities.

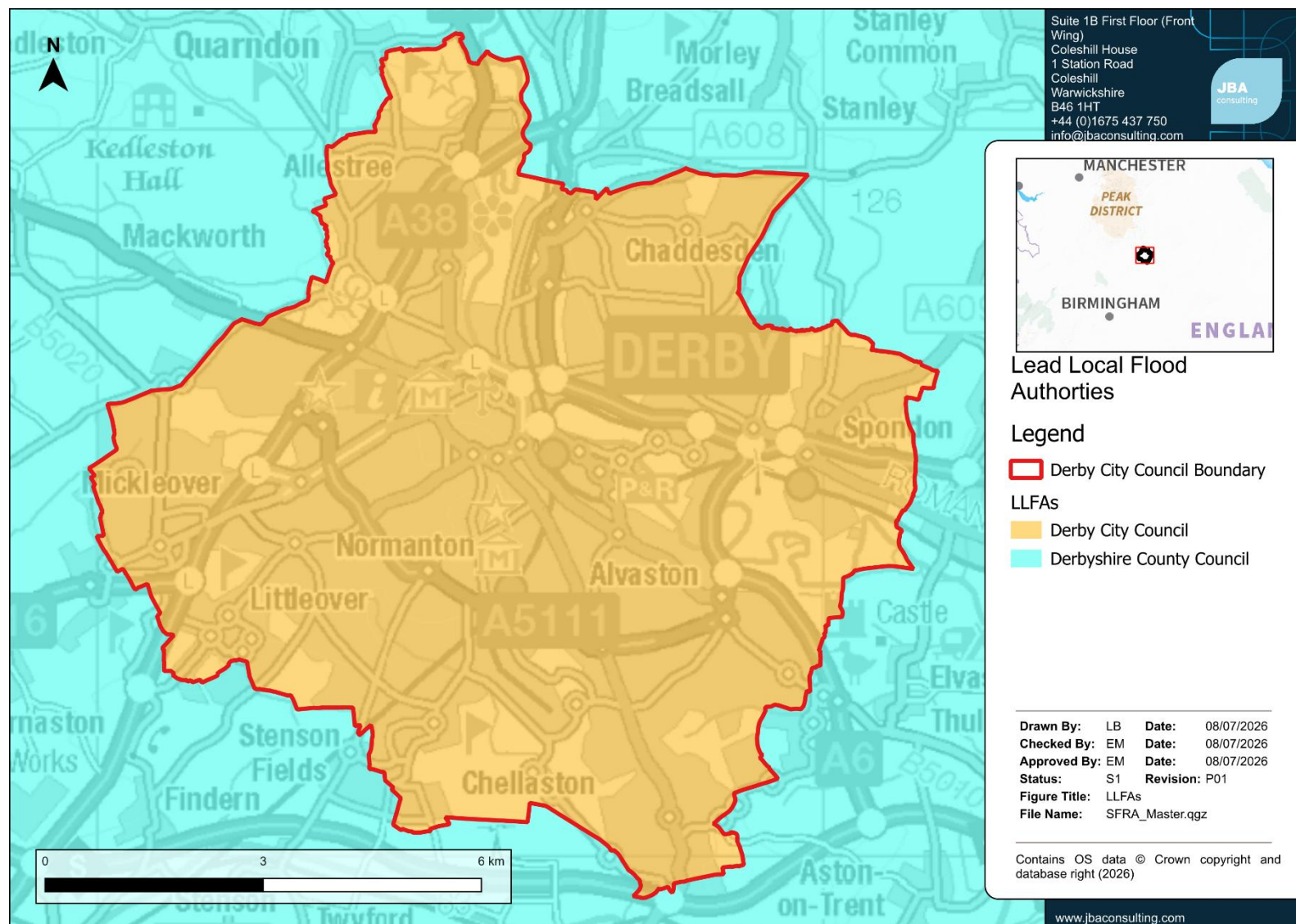


Figure 1-2: LLFA coverage across the city area.



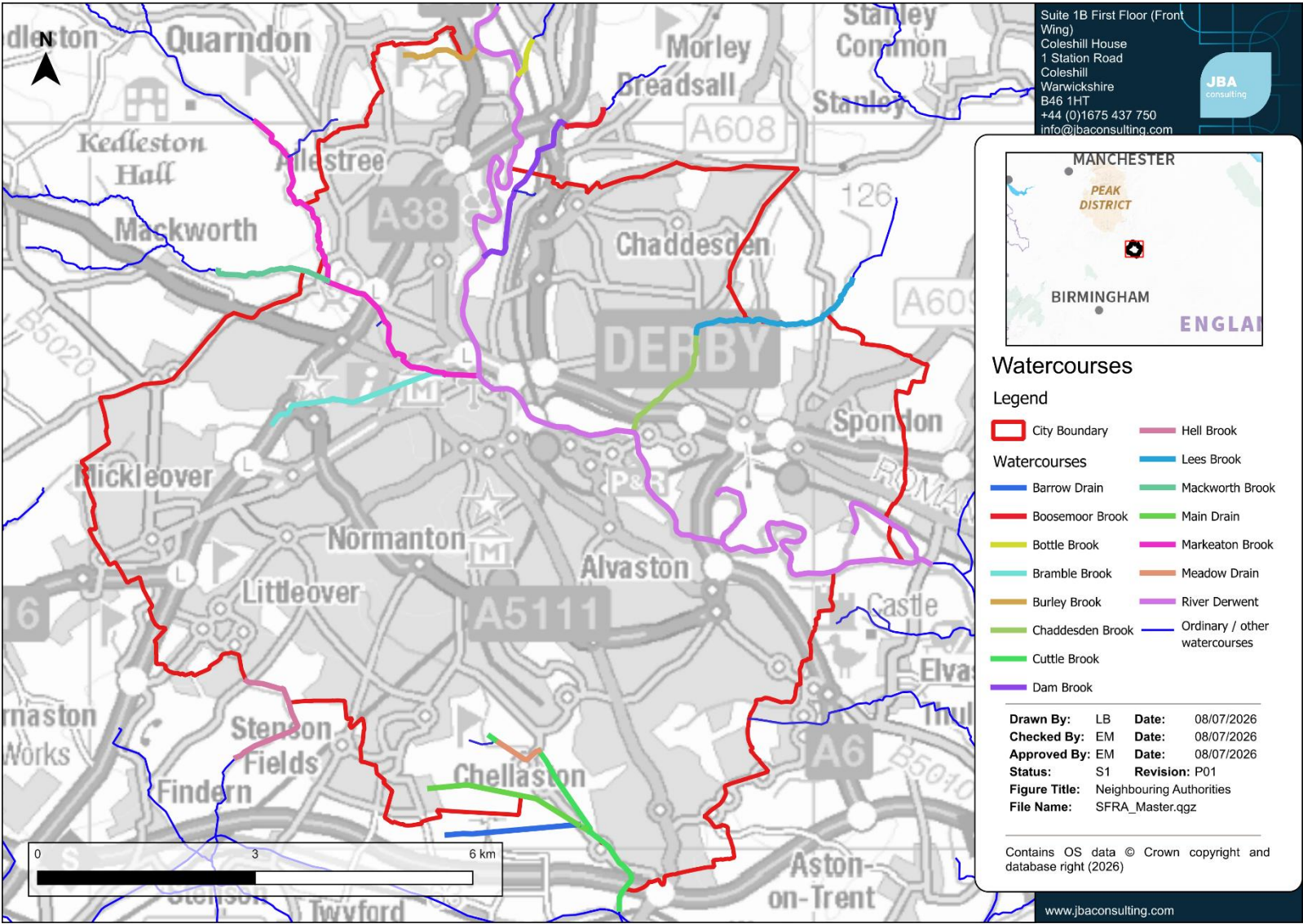


Figure 1-3: Watercourses within the study area

## 2 Policy and strategy for flood risk management

The flood risk management roles and responsibilities for different organisations and relevant legislation, policy and strategy are detailed within Section 2 of the Derby City Level 1 SFRA.

This contains details on:

- Key legislation for flood and water management.
- Key national, regional, and local policy documents and strategies.
- Roles and responsibilities for flood risk management in Derby City.

The following section summarise any changes to flood risk legislation, policy, and strategy since publication of the Level 1 SFRA.

### 2.1 National Planning Policy Framework

The [NPPF \(December 2024\) \(gov.uk\)](#) sets out the Government's planning policies for England. It must be considered in the preparation of Local Plans and is a material consideration in planning decisions. The NPPF advises on how flood risk should be considered to guide the location of future development and FRA requirements. The NPPF states that:

“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” (Paragraph 171).

The [Flood Risk and Coastal Change PPG \(gov.uk\)](#), last updated September 2025, sets out how the policy should be implemented. Diagram 1 in the PPG (Paragraph: 007 Reference ID: 7-007-20220825) sets out how flood risk should be considered in the preparation of Local Plans. The information within the Level 1 SFRA (December 20925) remains the most up to date at time of writing.

### 3 Sequential and Exception Tests

Information on planning policy for flood risk management is detailed in Section 3 of the Derby City Level 1. Users should consider this section within the Level 1 SFRA to understand national planning policy guidance and how to evidence that a proposed development will pass the Sequential Test, and if necessary, the Exception Tests.

Section 3 contains detail on:

- the NPPF and PPG;
- the risk-based approach; and
- the Sequential and Exception Tests.

## 4 Information used in the Level 2 SFRA

This section outlines the datasets used in assessing the Local Plan proposed development sites in the Level 2 SFRA Appendix A.

It should be noted that datasets used to inform this SFRA may be updated following the publication of this SFRA and new information on flood risk may be produced by RMAs. This new information (such as updated mapping and modelling) may supersede the information included in this SFRA. Guidance should be sought from the LPA, LLFA, and the EA as appropriate to check the most up to date source of information is used for future flood risk assessment.

Appendix C provides an overview of the supplied data used to inform the appraisal of flood risk for Derby City, including when the data was provided, the source of the data, and how the data can be obtained by a developer if applicable.

### 4.1 Historic flooding

Historic flooding was assessed using publicly available data from the following sources:

- The Environment Agency's Recorded Flood Outlines Dataset
- The Chronology of British Hydrological Events
- Section 19 Flood Investigation Reports held by Derby City Council as Lead Local Flood Authority
- Various news articles

It is important to note that the absence of historic flood records does not mean that an area has never flooded, only that records are not held. For previously undeveloped sites, it is likely that historic flooding incidents may have gone unreported due to a lack of site use or interest. In addition, it is also possible that flooding mechanisms have changed since the date of a recorded flooding incident, making it more or less likely for flooding to occur on site.

### 4.2 River networks

Main Rivers are represented by the EA's Statutory Main River layer. Ordinary Watercourses are represented by the OS Watercourse Link dataset. Caution should be taken when using these layers to identify culverted watercourses which may appear as straight lines but, in reality, are not.

### 4.3 Fluvial flooding

The City of Derby is covered within the EA's Flood Maps for Planning (FMfP) Flood Zones. The Flood Zones do not consider defences, except when considering the functional floodplain. This is important for planning long term developments as long-term policy and funding for maintaining flood defences over the lifetime of a development may change over time.

The Flood Zones are:

- Flood Zone 1: Low risk: less than a 0.1% chance of river flooding in any given year.
- Flood Zone 2: Medium risk: between a 1% and 0.1% chance of river flooding in any given year.
- Flood Zone 3a: High risk: between a 3.3% and 1% chance of river flooding in any given year.
- Flood Zone 3b: Functional Floodplain: land where water has to flow or be stored in times of flood (greater than a 3.3% chance of river flooding in any given year). Only water compatible and essential infrastructure are permitted in this zone and should be designed to remain operational in times of flood, resulting in no loss of floodplain or blocking of water flow routes. [Annex 3 of the NPPF \(gov.uk\)](#) provides information on flood risk vulnerability.

The following models have been used to inform the Level 2 assessment:

- Bottle Brook ISIS-TUFLOW (Black and Veatch 2012 and EA CC update 2021)
- Chaddesden Brook Derby Tributaries ESTRY-TUFLOW (JBA Consulting 2013 and EA CC update 2020)
- Cuttle Brook ISIS (JBA Consulting 2006)
- Derby Our City Our River Flood Modeller-TUFLOW (Binnies 2023)
- Derbyshire Trent Flood Modeller-TUFLOW (EA 2021)
- Ecclesbourne and Derwent ISIS-TUFLOW (JBA Consulting 2014 and EA CC update 2017)
- Hell Brook HEC-RAS (JBA Consulting 2006)
- Markeaton Brook ESTRY-TUFLOW (JBA Consulting 2013 and EA CC update 2020)

The Markeaton Brook hydraulic model and the Derby Our City Our River (OCOR) hydraulic model have been used within the Level 2 site assessments. Depth, velocity, and hazard data has been provided within the Derby OCOR model, however only extents are available for the Markeaton Brook results. Where models are used, they are specified within the individual site assessments.

Within a meeting with the EA dated 4th June 2026, the EA confirmed that the River Derwent model is currently being updated, and that in its absence the use of the Derby OCOR model is appropriate, and that the assessment of city centre sites as a single unit is also appropriate. Developers should consult with the EA as part of their detailed site-specific FRAs to understand the status of this new modelling and ensure the best available data is used.

#### 4.4 Flood defences

Current flood defence information has been taken from the EA's Asset Information Management System (AIMS) Spatial Defences dataset. These datasets include all flood



defences currently owned, managed or inspected by the EA and include information pertaining to their current condition and standard of protection.

The OCOR scheme is currently under construction through Derby and will protect a large area of the city centre. Where sites are shown to be at potential risk if these defences were to breach or overtop during a flood event, a site-specific flood risk assessment which considers the risk of breach using detailed modelling will be required to demonstrate that users of the site will be safe throughout its lifetime, which is likely to require a flood warning and evacuation plan.

#### 4.4.1 Our City Our River (OCOR)

The [Our City Our River](#) project is led by Derby City Council in partnership with the EA and has been developed to reduce flood risk, particularly in the city centre and areas at high risk from fluvial flooding from the River Derwent. The project includes providing greater levels of protection from defences up to the 1% AEP event and is being delivered through three packages, the first of which was completed in 2015 with packages 2 and 3 ongoing with continued funding at time of publishing. The Environment Agency's River Derwent Model is currently being updated and it is anticipated the model will include runs simulating the impacts of the completed OCOR Scheme. At present however, potential future impacts of the scheme are not considered in the flood extents shown in this SFRA. The [Munio Projects](#) form part of the three packages, and the packages are as follows:

- Package 1: Alfreton Road Industrial Estate to Sowter Road, and [was carried out from 2015 to 2019](#).
- Package 2: North Riverside and Meadow Lane, Derby Junction Railway Bridge, Pride Park, Ambaston and Shardlow
- Package 3: Chaddesden Sidings and Triangle (delivered in 2023 as part of development) and Raynesway north of the river, Alvaston Park south of the river.

#### 4.4.2 Other Initiatives

The Friends of Littleover Parks have conducted natural flood management measures in 2021, creating meadows and wetlands, as well as cross track drainage and land reformation to slow water flow and redirect water into storage ponds already present in the park. The [Derwent Connections Project](#) includes natural flood management schemes, that while schemes may not be within the city area, provides attenuation of flood water that could affect the city.

The Cuttle Brook flood Alleviation Scheme was completed in 2021, providing flood storage for the Cuttle Brook in Sunnydale park. It also delivered wetlands and habitat/biodiversity enhancements in the park. The scheme was funded from Grant in Aid and EU European Regional Development Funds.

Grant in Aid is allocated to complete the Cotton Brook Refurbishment scheme in Normanton and Osmaston, expected to be completed between 2026-2028.

## 4.5 Surface water flooding

The [EA's Risk of Flooding from Surface Water mapping \(RoFSW\) \(gov.uk\)](#) has been used to assess surface water risk within this SFRA. 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 EA, and any potential developers to focus their management of surface water flood risk.

The RoFSW 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. The RoFSW should not be used to understand flood risk for individual properties but is suitable for high level assessments such as SFRAs for local authorities.

NaFRA2 RoFSW data is used to define the present day surface water flood risk, where depths and hazards have been provided, however a velocity dataset is not presently available. The flood risk information represents the low, medium or high likelihood of a flood depth occurring with water at a given depth and hazard or higher (e.g. the chance of flooding reaching a depth of 60cm or greater). The available banded layers have been used to give a broad indication of depth and hazard across assessed sites in the absence of available gridded data.

## 4.6 Climate change

Climate change mapping is shown in the mapping in Appendix A for fluvial and surface water flooding using modelled outputs with the latest climate change uplifts where available.

### 4.6.1 Climate change allowances for peak flows

Climate change is expected to increase the peak flows of rivers, meaning that flows which were previously thought to be extreme will now be considered far more possible. Areas benefiting from flood defences will find the standard of protection changes over time with overtopping of defences more likely unless they are upgraded.

Peak river flow climate change allowances developed by the EA are divided into a series of Management Catchments. The city of Derby is covered by two Management Catchments, with the relevant allowances for each Management Catchment detailed in Table 4-1 and Table 4-2.

Where modelled climate change extents are present, the extents will be used to assess the sensitivity to increased flood risk to climate change. Where modelled extents are not present, the NAFRA2 FMfP Flood Zones 2 and 3 CCP1 dataset.

**Table 4-1: Peak river flow allowances for the Derwent Derbyshire Management Catchment.**

| Allowance category | Total potential change (%) anticipated for '2020s' (2015 to 2039) | Total potential change (%) anticipated for '2050s' (2040 to 2069) | Total potential change (%) anticipated for '2080s' (2070 to 2125) |
|--------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
| Upper end          | 29%                                                               | 38%                                                               | 63%                                                               |
| Higher Central     | 18%                                                               | 23%                                                               | 39%                                                               |
| Central            | 13%                                                               | 17%                                                               | 29%                                                               |

Table 4-2: Peak river flow allowances for the Lower Trent and Erewash Management Catchment.

| Allowance category | Total potential change (%) anticipated for '2020s' (2015 to 2039) | Total potential change (%) anticipated for '2050s' (2040 to 2069) | Total potential change (%) anticipated for '2080s' (2070 to 2125) |
|--------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
| Upper end          | 29%                                                               | 38%                                                               | 62%                                                               |
| Higher Central     | 18%                                                               | 23%                                                               | 39%                                                               |
| Central            | 13%                                                               | 39%                                                               | 29%                                                               |

#### 4.6.2 Climate change allowances for peak rainfall

Climate change is predicted to result in wetter winters and increased summer storm intensity in the future. This increased rainfall intensity will affect land and urban drainage systems, resulting in surface water flooding, due to the increased volume of water entering the systems. In addition, the 0.1% AEP surface water extent can be used as an indication of the impact of climate change on surface water flood risk from smaller watercourses, which are too small to be covered by the EA's Flood Zones.

Peak rainfall climate change allowances developed by the EA are divided into the same Management Catchments as peak river flows and are detailed in Table 4-3 and Table 4-4.

The NAFRA2 FMfP Surface Water Spatial Planning Climate Change dataset is used for assessing the sensitivity to increased risk of climate change within this study.

Table 4-3: Peak rainfall intensity allowances for small and urban catchments for the Derwent Derbyshire Management Catchment.

| Allowance category | Total potential change (%) anticipated for '2050s' (2022 to 2060) for 3.3% AEP | Total potential change (%) anticipated for '2050s' (2022 to 2060) for 1% AEP | Total potential change (%) anticipated for '2070s' (2061 to 2125) for 3.3% AEP | Total potential change (%) anticipated for '2070s' (2061 to 2125) for 1% AEP |
|--------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Upper end          | 35%                                                                            | 40%                                                                          | 35%                                                                            | 40%                                                                          |

| Allowance category | Total potential change (%) anticipated for '2050s' (2022 to 2060) for 3.3% AEP | Total potential change (%) anticipated for '2050s' (2022 to 2060) for 1% AEP | Total potential change (%) anticipated for '2070s' (2061 to 2125) for 3.3% AEP | Total potential change (%) anticipated for '2070s' (2061 to 2125) for 1% AEP |
|--------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Central            | 20%                                                                            | 20%                                                                          | 25%                                                                            | 30%                                                                          |

Table 4-4: Peak rainfall intensity allowances for small and urban catchments for the Lower Trent and Erewash Management Catchment.

| Allowance category | Total potential change (%) anticipated for '2050s' (2022 to 2060) 3.3% AEP | Total potential change (%) anticipated for '2050s' (2022 to 2060) 1% AEP | Total potential change (%) anticipated for '2070s' (2061 to 2125) 3.3% AEP | Total potential change (%) anticipated for '2070s' (2061 to 2125) 1% AEP |
|--------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Upper end          | 35%                                                                        | 40%                                                                      | 35%                                                                        | 40%                                                                      |
| Central            | 20%                                                                        | 20%                                                                      | 25%                                                                        | 25%                                                                      |

#### 4.7 Groundwater flooding

The JBA Groundwater Emergence map has been used to assess potential areas that are likely to be at higher risk of groundwater flooding. The JBA Groundwater Emergence map, shows the likelihood of groundwater emergence posing a risk to both surface and subsurface assets, based on predicted groundwater levels during a 1% AEP event. Surface water mapping and topographic data is used to gain an understanding of the overland flow routes which may be impacted by this emergence.

The JBA Groundwater Emergence mapping is categorised into five different classes; a detailed description of the classes is in Table 4-5 below.

Table 4-5: JBA Groundwater Emergence Map category descriptions.

| Category                                                                             | Potential risk                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Groundwater levels are either at or very near (within 0.025m of) the ground surface. | Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots. |
| Groundwater levels are between 0.025m and 0.5m below the ground surface.             | Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.                                                        |
| Groundwater levels are between 0.5m and 5m below                                     | There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.                                                                                                                         |

| Category                                                     | Potential risk                                                                                                                |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| the ground surface.                                          |                                                                                                                               |
| Groundwater levels are at least 5m below the ground surface. | Flooding from groundwater is not likely.                                                                                      |
| Negligible risk.                                             | This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits. |

#### 4.7.1 Groundwater flooding and climate change

The impact of climate change is more uncertain for groundwater flooding associated with rivers and land catchments and those watercourses where groundwater has a large influence on winter flood flows. Changes in frequency and intensity of groundwater flooding due to climate change would depend on the flooding mechanism and geological characteristics.

Milder wetter winters may increase the frequency of groundwater flooding incidents in areas that are already susceptible, but warmer drier summers may counteract this effect by drawing down groundwater levels to a greater extent during the summer months.

#### 4.8 Reservoir flooding

The risk of inundation as a result of a breach or failure of a number of reservoirs within the area has been identified from the EA's [Reservoir Flood Extents dataset \(gov.uk\)](https://www.gov.uk/government/datasets/reservoir-flood-extents). Although it is predicted that there is a risk to life if these reservoirs were to fail, the risk of such an event occurring is very low.

This dataset consists of flood extents for two scenarios including 'Wet Day' and 'Dry Day', for all large, raised reservoirs. The 'Dry Day' scenario shows flood extents in the event that reservoirs were to fail and release the water they hold when local rivers are at normal levels. The 'Wet Day' scenario shows flood extents in the event that reservoirs were to fail and release the water they hold when local rivers are in flood.

Flood extents are not included for smaller reservoirs or for reservoirs commissioned after the reservoir modelling programme began in October 2016. Furthermore, only those reservoirs with an impounded volume greater than 25,000 cubic metres are governed by the Reservoir Act 1975.

#### 4.9 Sewer flooding

Severn Trent Water (STW) are the water company responsible for the management of the sewerage networks across the city of Derby, and provided sewer records from 1999 to the start of 2025.

Due to licencing and confidentiality restrictions, sewer data has not been represented on the mapping, but incidents within the same postcode location as a site were referred to within the detailed site assessments.

Information provided within the STW [Drainage and Wastewater Management Plan](#) (DWMP) has also been used to inform the assessment of sewer risk. The DWMP was published in 2022 which has been split into three levels; an overview, strategic planning areas, and wastewater treatment work sites. The city is served by the Derby wastewater treatment work, with further details within the [Level 3 report \(page 96\)](#).

#### 4.10 Residual risk

Several sites assessed within the city of Derby are near culverted sections of watercourses which flow beneath roads, railway lines, and footpaths, and present a residual flood risk should they become blocked or collapse. Potential culvert blockages that may affect a site were identified on OS Mapping and the OS Watercourse Link layer to determine where watercourses flow into culverts or through structures (i.e. bridges) in the vicinity of the sites. Culverted watercourses within the city of Derby include the Bramble Brook, Markeaton Brook, and an unnamed ordinary watercourse, with historical records noting blockages within the culverted reach of the Markeaton Brook. Any potential locations were flagged in the detailed site assessments.

Several sites within the city of Derby are located within close proximity of raised flood defences which present a residual risk should they breach or be overtopped. Raised flood defences were identified using the EA AIMS dataset.

#### 4.11 Depth, velocity, and hazard to people

The Level 2 assessment seeks to map the probable depth and velocity of flooding as well as the hazard to people and use this within the detailed site assessments.

Depth, velocity, and hazard grids from modelled extents, where available, have been used to assess the fluvial flood risk for the present day and climate change scenarios. Depth and hazard data is available for the EA's RoFSW dataset, however there are currently no reliable velocity datasets for the present day. For assessing surface water with climate change, only the depth grids have been provided by the EA within the NAFRA2 FMfP Surface Water Spatial Planning Climate Change dataset.

Hazard to people has been calculated using the below formula as suggested in [Defra's Supplementary note on flood hazard ratings and thresholds for development planning and control purpose \(gov.uk\)](#). The different hazard categories are shown in Table 4-6.

Developers should also test the impact of climate change depths, velocities, and hazard on the site, as part of the site-specific FRA.

Table 4-6: Defra's 'Flood Risks to People' classifications

| Description of Flood Hazard Rating | Flood Hazard Rating | Classification Explanation                                     |
|------------------------------------|---------------------|----------------------------------------------------------------|
| Very Low Hazard/<br>Caution        | <0.75               | 'Flood zone with shallow flowing water or deep standing water' |
| Danger For Some (i.e. children)    | 0.75 - 1.25         | 'Danger: flood zone with deep or fast flowing water'           |



| Description of Flood Hazard Rating | Flood Hazard Rating | Classification Explanation                                |
|------------------------------------|---------------------|-----------------------------------------------------------|
| Danger For Most                    | 1.25 - 2.00         | 'Danger: flood zone with deep fast flowing water'         |
| Danger For All                     | >2.00               | 'Extreme danger: flood zone with deep fast flowing water' |

#### 4.12 SuDS suitability

The hydraulic and geological characteristics of each site have been assessed to determine the factors that potentially constrain schemes for surface water management. This assessment is designed to inform the early-stage site planning process and is not intended to replace site-specific detailed drainage assessments. A high-level assessment of suitability of SuDS is included in the site assessments in Appendix A.

The assessment is based on catchment characteristics using the following data:

- EA 1m LiDAR
- [The British Geological Survey website \(bgs.ac.uk\)](http://bgs.ac.uk) geology and soils mapping
- JBA Groundwater Emergence Mapping (see Section 4.7 for further details)
- Historic landfill sites
- Groundwater Source Protection Zones
- Nitrate Vulnerable Zones
- OS Watercourse Link
- RoFSW mapping
- Flood Zones derived as part of this Level 2 SFRA (see Section 4.3 for further details)

This data was then collated to provide an indication of particular groups of SuDS systems which might be suitable at a site. SuDS techniques were categorised into five main groups, as shown in Table 4-7.

Table 4-7: Summary of SuDS categories

| SuDS Type       | Technique                                                                                                                                                  |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source Controls | Green Roof, Rainwater Harvesting, Rain Gardens                                                                                                             |
| Infiltration    | Infiltration Trench, Infiltration Basin, Soakaway, Pervious Pavements                                                                                      |
| Detention       | Pond, Wetland, Subsurface Storage, Shallow Wetland, Extended Detention Wetland, Pocket Wetland, Submerged Gravel Wetland, Wetland Channel, Detention Basin |
| Filtration      | Surface Sand Filter, Sub-Surface Sand Filter, Perimeter Sand Filter, Bioretention, Filter Strip, Filter Trench                                             |
| Conveyance      | Dry Swale, Under-drained Swale, Wet Swale                                                                                                                  |



The suitability of each SuDS type for the development sites has been described in the detailed site assessments, where applicable. The assessment of suitability is broadscale and indicative only; more detailed assessments should be carried out during the site planning stage to confirm the feasibility of different types of SuDS.

#### **4.13 Emergency Planning**

Flood Warning Areas (FWAs) and Flood Alert Areas (FAAs) are detailed in the EA's GIS datasets and can be used to inform emergency planning. FAAs inform the EA when there is flooding first in the catchment, irrespective of properties, hence this coverage tends to apply to whole watercourses or stretch of coastline. FWAs are derived from the extreme flood outline (0.1% AEP event), focussed on communities, properties, and/or infrastructure. Modelled depth, velocity and hazard data can be used to understand safe access and escape routes for each site.

## 5 Level 2 Assessment Methodology

This section outlines how sites were screened against flood risk datasets to determine which sites required a Level 2 detailed site assessment. It also identifies other sites, referred to in this SFRA as 'amber sites', at lower risk with general recommendations for developers.

### 5.1 Site screening

Derby City Council provided 38 sites for assessment, 9 of which were assessed under two different proposed site usages. These sites were screened using an 'overlap analysis' tool in GIS. This analysed various flood risk datasets against the site allocations layer and calculated the percentage cover for each flood risk dataset against each site. This was used to provide a summary of risk to each site, including:

- the proportion of the site in each Flood Zone derived from detailed hydraulic model outputs where available, and where detailed modelling was unavailable the information is taken from the EA's NaFRA2 FMfP (see Section 4.2 for a summary of how the Flood Zones were derived for this SFRA).
- the proportion of the site affected by climate change within the modelled fluvial climate change extents of the River Derwent and Markeaton Brook, and within the EAs FMfP climate change dataset.
- whether the site is shown to be at risk from surface water flooding in the RoFSW mapping for the 3.3%, 1%, and 0.1% AEP events, and the and within the EAs RoFSW climate change dataset
- whether the site is within, or partially within, the reservoir 'Dry Day' or 'Wet Day' flood extents.
- whether the site is within, or partially within, the EA Historic Flood Map dataset.
- whether the site is within 10m of watercourses shown within the OS Watercourse Link dataset.
- whether the site is at risk from groundwater emergence using the JBA Groundwater Emergence Map.

The results of the screening provide a quick and efficient way of identifying sites that are likely to require a Level 2 assessment assisting Derby City Council with Sequential Test decision-making so that flood risk is taken into account when considering allocation options.

The screening also provides an opportunity to identify sites which may show to be 100% in Flood Zone 1, but upon visual inspection in GIS, have an ordinary watercourse flowing through, adjacent to, or culverted beneath them. Although there are no Flood Zone maps available for these watercourses, it does not mean the watercourse does not pose a risk, it just means no modelling has yet been undertaken to identify the risk.

Flood Zones are not provided for specific sites or land where the catchment of the watercourse falls below 3km<sup>2</sup>. For this reason, the Flood Zones are not of a resolution to be

used as application evidence to provide the details of possible flooding for individual properties or sites and for any sites with watercourses on, or adjacent to the site. The RoFSW has been used to assess flood risk in these cases because it is comparable to fluvial flooding from smaller watercourses and is therefore a reasonable representation of the floodplain of such watercourses to use for a strategic assessment.

## 5.2 Sites taken forward to a Level 2 assessment

The 38 sites were screened against the NAFRA2 FMfP Flood Zones and RoFSW, whether the sites were within 8m of a watercourse, and whether there are groundwater levels within 0.5m of the grounds surface. At the time of screening, models were incorporated into the updated Flood Zones.

Sites were then classified using a Red Amber Green (RAG) approach, where:

- For red sites, a high percentage of the site is at risk from fluvial and/or surface water (greater than 20% of the site) in the 0.1% AEP event. A red rating does not mean that a site cannot be developed, but rather there are significant flood risk issues that would need to be addressed in order for the site to be brought forwards safely.
- For amber sites, a moderate percentage (between 10% to 20%), of the site is at risk in the 0.1% AEP surface water event or any part of the site is at risk in the 0.1% AEP fluvial event. These sites are generally at low risk of flooding, which is likely to be manageable on site by avoiding the areas at risk and appropriate application of SuDS. They may also have specific considerations such as groundwater risk, access and egress issues, or proximity to defences which will need to be considered as part of a site-specific flood risk assessment.
- For green sites, the site is generally at low risk of flooding, with no risk from fluvial sources and less than 10% of the site at risk in the 0.1% AEP surface water event. These sites can generally be developed without further consideration to flood risk, although may still require a flood risk assessment, for example if they are greater than 1 hectare or located within a critical drainage area. The 18 sites that were taken forwards for Level 2 assessment are detailed below in Table 5.1. In agreement with the EA, all but HA14 and HA16 will be assessed as a single unit due to their proximity and similar flood risk considerations at each site.

Table 5-1: RAG analysis of assessed sites

| Policy Number | Site Name                             | RAG Rating |
|---------------|---------------------------------------|------------|
| CC3           | Derby Riverside                       | Red        |
| CC3           | North Castleward                      | Red        |
| CC3           | Railway Station Quarter               | Red        |
| CC4           | The Eagle Quarter                     | Red        |
| CC4           | Former Full St Police Station         | Red        |
| CC4           | Abbey St Carpark (west)               | Red        |
| CC4           | Becketwell                            | Red        |
| CC5           | The Market Place                      | Red        |
| CC5           | Museum                                | Red        |
| CC5           | University of Derby (City Centre Hub) | Red        |
| CC7/E4        | Central Activity Area                 | Red        |
| CC7/E4        | Railway Quarter                       | Red        |
| HA14          | Beaufort Business Centre              | Red        |
| HA16          | Former Ivy House School               | Red        |
| CC4           | Former Friar Gate Goods Yard          | Amber      |
| CC4           | Bradshaw Way                          | Green      |
| CC4           | Abbey St Carpark (east)               | Green      |
| CC4           | Babington Lane Carpark                | Green      |
| CC4           | Northern Gateway                      | Green      |

\*These sites have been assessed as part of the wider city centre assessment however already have planning permission, and whilst it is recommended that developers follow the recommendations in this assessment for site design and layout it is recognised that these sites do not need to resubmit any additional evidence based on the findings of this assessment to go forwards. Details of permissions for sites can be found on Derby City Council's Website:

- The Eagle Quarter - [25/01315](#)
- Former Full St Police Station - [23/01462](#)
- Becketwell- [19/01245](#)
- Bradshaw Way - [24/01738](#)
- Former Friar Gate Goods Yard - [23/01102](#)

Sites HA14 and HA16 were assessed as individual sites, whilst the remainder were assessed within the same report under the City Centre Site Assessment due to their geographical proximity and the interconnected nature of development proposals.

### 5.3 Detailed site assessments

As part of the Level 2 SFRA, detailed site assessments have been produced for the 18 sites identified in Section 5.2. The site assessments can be found in Appendix A with the mapping shown in Appendix A. Table 5-2 sets out the information contained within each section of the site assessment.

Table 5-2: Summary of the information within each section of the detailed site assessments.

| Section                  | Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Background            | <ul style="list-style-type: none"> <li>• Location of the site</li> <li>• Area, current land use (greenfield/brownfield), proposed site use</li> <li>• Topography of the site</li> <li>• Geology and soil characteristics</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2. Sources of flood risk | <ul style="list-style-type: none"> <li>• Location of the site within the catchment</li> <li>• Existing drainage features</li> <li>• Fluvial – proportion of site at risk including description from mapping/modelling, utilising depth, hazard, and velocity information from detailed hydraulic models where available</li> <li>• Surface Water – proportion of site at risk including description from RoFSW mapping using available depth, hazard, and velocity information</li> <li>• Reservoir flood risk in both the 'Dry Day' and 'Wet Day' scenarios</li> <li>• Groundwater emergence risk</li> <li>• Sewer flood risk - reported incidences within the site and any additional known risks identified by STW</li> <li>• Flood history - historic incidents on or surrounding the site from the EA Recorded Flood Outline and Historic Flood Map datasets, Section 19 reports, and the Chronology of British Hydrological Events</li> </ul> |
| 3. Climate Change        | <ul style="list-style-type: none"> <li>• Fluvial climate change - summary of available climate change allowances and increase in flood extent compared to the 1% AEP event (Flood Zone 3a)</li> <li>• Surface water climate change - summary of available climate change allowances and increase in flood extent compared to the 1% AEP event</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Section                                                    | Information                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4. Flood risk management infrastructure                    | <ul style="list-style-type: none"> <li>• Flood risk management infrastructure</li> <li>• Description of residual risk</li> </ul>                                                                                                                                                                                                                        |
| 5. Emergency planning                                      | <ul style="list-style-type: none"> <li>• Flood warnings and alerts</li> <li>• Access and escape routes</li> </ul>                                                                                                                                                                                                                                       |
| 6. Requirements for drainage control and impact mitigation | <ul style="list-style-type: none"> <li>• Broadscale assessment of possible SuDS to provide indicative surface water drainage advice for each site assessed for the Level 2 SFRA.</li> <li>• Identification of potential SuDS constraints including Groundwater Source Protection Zones, Nitrate Vulnerable Zones and historic landfill sites</li> </ul> |
| 7. NPPF and planning implications                          | <ul style="list-style-type: none"> <li>• Exception Test requirements</li> <li>• Requirements and guidance for site-specific Flood Risk Assessment</li> <li>• Guidance for site design and making development safe</li> </ul>                                                                                                                            |
| 8. Conclusions                                             | <ul style="list-style-type: none"> <li>• Summary of key risks to the site</li> <li>• Summarising considerations if development proceeds</li> </ul>                                                                                                                                                                                                      |

#### 5.4 Amber sites assessment

As set out in Section 5.2, one site that was taken forward by Derby City Council was identified as an 'amber site' based on the surface water risk on or surrounding the site and/or groundwater emergence potential at the site. The site is addressed within the City Centre site assessment.

## 6 Flood risk management requirements for developers

The flood risk management requirements for developers are detailed within the Derby City Level 1 SFRA (Section 7). Users should refer to this section for guidance on site-specific FRAs and other principles for managing flood risk in new development.

This contains details on:

- early consultation with statutory and non-statutory consultees;
- requirements for site-specific FRAs, including signposting to specific guidance; and
- emergency planning.

The sections below contain further information on emergency planning and the requirements for developer contributions.

### 6.1 Emergency planning

Safe access and escape routes from the site should be provided. The developer should seek to incorporate an emergency plan and a safe refuge point if the development site has been identified to be at risk of flooding. The local authority and Emergency Services should be consulted when designing an emergency plan.

This Level 2 assessment has identified 12 proposed sites located within existing EA FWAs and/or FAAs, which are as follows:

- Becketwell
- Central Activity Area
- Derby Riverside
- The Eagle Quarter
- Former Full St Police Station
- Former Friar Gate Goods Yard
- HA14
- The Market Place
- Museum
- North Castleward
- Railway Quarter
- University of Derby (City Centre Hub)

FWAs and FAAs that are present are:

- FAAs
  - Tributaries in South Derbyshire (034WAF411)
  - Lower Derwent in Darbyshire (024WAF409)
- FWAs



- River Derwent at Little Chester, Eastgate, and Cattlemarket (034FWFDELITTLECH)
- River Derwent at Derby City (034FWFDEDERCITY)
- Markeaton and Bramble Brooks at Derby City (034FWFMBMRKEAT)

For proposed development within existing EA FWAs, developers should consult the EA to ensure that adequate flood warning procedures and evacuation processes are in place and that RMAs are not put under any additional burden.

Section 10.2 of the Level 1 SFRA report discusses NPPF requirements and what an emergency plan will need to consider and other relevant information on emergency planning. Further information is provided on the [Derby City Council emergency planning webpage](#).

The duration and onset of flooding affecting a site depends on several factors:

- Location of the site within the catchment: flooding is likely to be rapid and flashy in the upper catchment (e.g. small tributaries) and slower responding and longer in duration in the lower catchment.
- Upstream storage: floodplains, reservoirs, and other storage areas upstream of a site may provide some online flood storage that reduces the flood risk downstream and delays the onset of flooding.
- Timing of peak flow: at the confluence of the larger watercourses and smaller tributaries, there may be different timings of peak flows, for example smaller tributaries would peak much earlier than the larger catchments.
- The principal source of flooding: where this is surface water, depending on the intensity and location of the rainfall, flooding could be experienced within 30 minutes of the heavy rainfall event e.g., a thunderstorm. Typically, the duration of flooding for areas at risk of surface water flooding, or from flash flooding from small watercourses, is short (hours rather than days).
- The preceding weather conditions prior to the flooding: wet weather lasting several weeks will lead to saturated ground. Rivers respond much quicker to rainfall in these conditions.
- Whether a site is defended, noting that if the defences were to fail, a site could be affected by very fast flowing and hazardous water within 15 minutes of a breach developing (depending on the size of the breach and the location of the site in relation to the breach), causing danger to life.
- Catchment geology: the permeability of a catchment affects its response time, for example chalk catchments take longer to respond than clay catchments.

## 6.2 Developer contributions

In some cases, and following the application of the Sequential Test, it may be appropriate for the developer to contribute to the improvement of flood defence provision that would benefit both proposed new development and the existing local community. Developer contributions should include the following:

- Developers should check the online [Flood Map for Planning \(gov.uk\)](https://www.gov.uk/flood-map-for-planning) in the first instance to identify any major changes to the Flood Zones and the [long-term flood risk mapping portal \(gov.uk\)](https://www.gov.uk/long-term-flood-risk-mapping-portal) for any changes to flood risk from surface water or inundation from reservoirs.
- Developer contributions can be made to maintenance and provision of flood risk management assets, flood warning and the reduction of surface water flooding (i.e. SuDS).
- Developers should also confirm that a development will not impact upon the ability of a floodplain to store or convey and seek opportunities to provide floodplain betterment, should the footprint of a development change.
- Where necessary, compensatory flood storage should be provided up to the 1% AEP plus climate change flood level and adjacent to the floodplain so that the flood storage can hydraulically fill and drain.
- Developers must be aware that that information within the Level 1 and Level 2 SFRA's will be a useful starting point for development considerations, however they must request the most recent data and update hydraulic modelling where required. The EA are due to publish a new national risk information for flooding and coastal erosion, this will include future scenarios accounting for climate change. Once this information is available, it should be used as the main source of flood risk information, unless site-specific modelling / information is available.

The council should only use planning obligations to secure contributions where it is satisfied that the contribution will fund works / measures which are:

- Necessary to make the development acceptable in planning terms;
- Directly related to the development; and
- Fairly and reasonably related in scale and kind to the development (Paragraph 57, NPPF).

## 7 Surface water management and SuDS

The Surface Water Management roles and responsibilities for different organisations and relevant legislation, policy and strategy are detailed within the Derby City Level 1 SFRA (Section 9). Users should refer to this section when considering the different sources of flood risk to the site and how this can be mitigated in a sustainable way.

This contains detail on:

- role of the LLFA and LPA in surface water management;
- types of SuDS;
- sources of SuDS guidance; and,
- other surface water considerations including Groundwater Vulnerability Zones (GVZs), Groundwater Source Protection Zones (GSPZs), and Nitrate Vulnerability Zones (NVZs).

### 7.1 Updated SuDs guidance

The [Defra National standards for sustainable drainage systems \(SuDS\) \(gov.uk\)](https://www.gov.uk/government/publications/defra-national-standards-for-sustainable-drainage-systems-su-ds) were published in June 2025.

Previously SuDS guidance was developed to sit alongside the PPG and provide non-statutory standards as to the expected design and performance for SuDS. The new national remain as a non-statutory specification but form a material consideration for LPAs when assessing planning applications. These standards aim to reflect and reinforce good practice and use of SuDS, reflecting the four pillars of SuDS design.

The national standards contains two sets of standards. The first type (Standard 1) is known as the hierarchy standard and gives criteria for the prioritisation of final runoff destinations. The other standards (Standards 2-7) detail the minimum requirements of design criteria that surface water drainage systems should satisfy alongside how they are to be appropriately built, maintained, and operated.

## 8 Recommendations

### 8.1 Considering the Exception Test for the proposed development sites

Where required, to pass the Exception Test it must be shown that the development will provide wider sustainability benefits that outweigh the risk, and that the development will be safe throughout its lifetime without increasing risk elsewhere. The former is a planning-related consideration and the Level 2 SFRA helps to answer the latter part of the Test.

Some of the sites assessed in this Level 2 SFRA are at greater risk and will require careful consideration and significant mitigation to pass the flood risk element of the Exception Test. These sites are as follows:

- Central Activity Area
- Derby Riverside
- Museum
- North Castleward
- Railway Quarter
- University of Derby (City Centre Hub)

The other sites are likely to pass the flood risk element of the Exception Test by:

- Undertaking a sequential approach to site planning so development is steered away from areas within the site at the highest risk.
- Considering safe access/escape routes in the event of a flood (from all parts of the site, if say the site is severed by a flood flow path). If access and escape are affected, a Flood Response Plan may be required.
- Designing buildings with finished floor levels above the estimated flood level (fluvial 1% AEP event with an allowance for climate change), including an allowance for freeboard.
- Using areas in Flood Zone 2 for the least vulnerable parts of the development in accordance with Table 2 in the PPG. No development should be permitted in Flood Zone 3b (aside from Essential Infrastructure).
- Testing flood mitigation measures if these are to be implemented, to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
- Considering space for green infrastructure in the areas of highest flood risk.

Although not explicitly required within the PPG, consideration should be given to the surface water risk where this is high, with regards to the Exception Test. Sites at significant risk of surface water flooding are as follows:

- Central Activity Area
- Museum
- University of Derby (City Centre Hub)

If a site is split in future into smaller land parcels for development, and some of those parcels are in areas of flood risk, the Exception Test may need to be re-applied by the developer at the planning application stage.

## **8.2 Recommendations from the Level 1 SFRA**

Recommendations from this report should be considered in addition to recommendations from the Level 1 SFRA, which still stand for the site allocations and any windfall development that comes forward. The recommendations for the Level 1 SFRA are set out in Section 13 of the Derby City Level 1 SFRA.

## **8.3 Requirements for developers**

The sections below set out requirements for developers to consider both for developing sites assessed within this Level 2 SFRA and for developing windfall sites.

### **8.3.1 Watercourses**

Any sites located where there is a Main River (including culverted reaches of a Main River) will require an easement of 8m either side of the watercourse from the top of the bank. This may introduce constraints regarding what development will be possible and consideration will also need to be given for access and maintenance at locations where there are culverts. Developers will be required to apply for appropriate permits so the activity being carried out over easements does not increase flood risk. Further information relating to this can be viewed on the government website [Flood risk activities: environmental permits \(gov.uk\)](https://www.gov.uk/government/topics/flood-risk-management/flood-risk-activities).

Where no recent detailed hydraulic modelling is present, it is recommended that developers construct new, or update existing, detailed hydraulic models at these sites as part of a site-specific FRA using channel, structure, and topographic survey to confirm flood risk. Site-specific flood modelling will likely need to be developed in locations where it is necessary to understand the effects of proposed development schemes on the existing flood flow paths and flood volume storage, in the present day and in the future.

At the planning application stage, developers may need to undertake more detailed hydrological and hydraulic assessments of unmodelled watercourses and surface water interactions so that the potential effects of proposals can be evaluated at site level and ensure that there is no increase in risk off-site as a result of development. The modelling should evidence flood extents, depths, velocities and hazard (including latest climate change allowances), inform development zoning within the site and prove, if required, whether the Exception Test can be passed.

If an ordinary watercourse is within or immediately adjacent to the site area, consultation with the Derby City Council as the LLFA should be undertaken. If alterations or discharges are proposed to the watercourse, a land drainage consent will be required.

Developers should be aware of the need to identify the route of, and flood risk associated with, any culverts within a site. CCTV condition survey will be required to establish the current condition of the culvert and hydraulic assessments will be necessary to establish

culvert capacity of both culverts on site and those immediately offsite that could pose a risk to the site. The risk of flooding should be established using site survey, including the residual risk of culvert blockage.

### 8.3.2 Flood risk management infrastructure and residual risk

For sites where existing flood defences provide a reduction in the flood risk to the site, it is important to understand the standard of protection these structures and measures provide. It is also necessary to understand how this level of protection changes over time, considering the implications of climate change.

If flood defences are required to protect a development site, evidence will be required to show that the new development does not adversely impact and increase flood risk to other areas, for example that there is no net loss in floodplain storage in circumstances where this is a material consideration. It will need to be established that these defences can be appropriately managed and maintained during the lifetime of the development. In some cases, it will be a requirement to demonstrate that there is an appropriate level of commitment to the maintenance of the standard of protection afforded by existing defences, where reliance is placed on the standard they provide.

Where defences are present, particularly those that form the Our City Our River defences, developers should prepare a site-specific FRA using detailed hydraulic modelling that simulates a breach scenario. Additionally, the FRA will need to demonstrate that users of the development site will can be kept safe throughout the lifetime of the development, which is likely to require a Flood Warning and Evacuation Plan.

### 8.3.3 Access and escape routes

Access and escape routes should be considered at the site, but also in the vicinity of the site, for example, a site may have low surface water risk, but in the immediate locality, access/escape routes to and from the site could be restricted for vehicles and/or people. For sites assessed within this Level 2 SFRA, an initial overview of potential access and escape options is provided within the detailed site assessments and potential constraints identified.

### 8.3.4 Surface water flood risk and SuDS

Surface water risk should be considered in terms of the proportion of the site at risk in the 3.3%, 1% and 0.1% AEP events (with an appropriate allowance for climate change), whether the risk is due to isolated minor ponding or deeper pooling of water, or whether the risk is due to a wider overland flow route.

A strategic assessment of SuDS options has been undertaken using regional datasets for sites assessed within this Level 2 SFRA. A detailed site-specific assessment of suitable SuDS techniques should be undertaken at site-specific level to understand which SuDS options are most appropriate. This may need to include infiltration testing to determine the suitability of infiltration methods.

Surface water risk and mitigation should be considered as part of a detailed site-specific FRA and surface water drainage strategy.

#### 8.4 Use of SFRA data and future updates

It is important to recognise that the SFRA has been developed using the best available information at the time of preparation. This relates both to the current risk of flooding from all sources and the potential impacts of future climate change.

The SFRA should be a 'living document', and as a result should be updated when new information on flood risk, flood warning, or new planning guidance or legislation becomes available. New information may be provided by Derby City Council as LPA and LLFA, the EA, and Severn Trent Water. Such information may be in the form of:

- New hydraulic modelling results.
- Flood event information following a future flood event.
- Policy or legislation updates.
- Updates to the EA flood mapping.
- New flood defence schemes or flood alleviation schemes.

The EA regularly reviews their flood risk mapping, and it is important that they are approached to determine whether updated information is available prior to commencing a detailed FRA. The EA continues to periodically update both the [Flood Map for Planning \(FMfP\) \(gov.uk\)](#) and [Risk of Flooding from Surface Water \(RoFSW\) dataset \(gov.uk\)](#). As of July 2026, there are no imminent updates. It is also noted that the EA are currently updating the River Derwent Model and users of this SFRA are recommended to confirm with the EA that models are up to date.

It is recommended that the SFRA is reviewed in line with the EA's Flood Zone map updates to ensure latest data is still represented in the SFRA, allowing a cycle of review and a review of any updated data by checking with the above bodies for any new information.



## **Appendices**

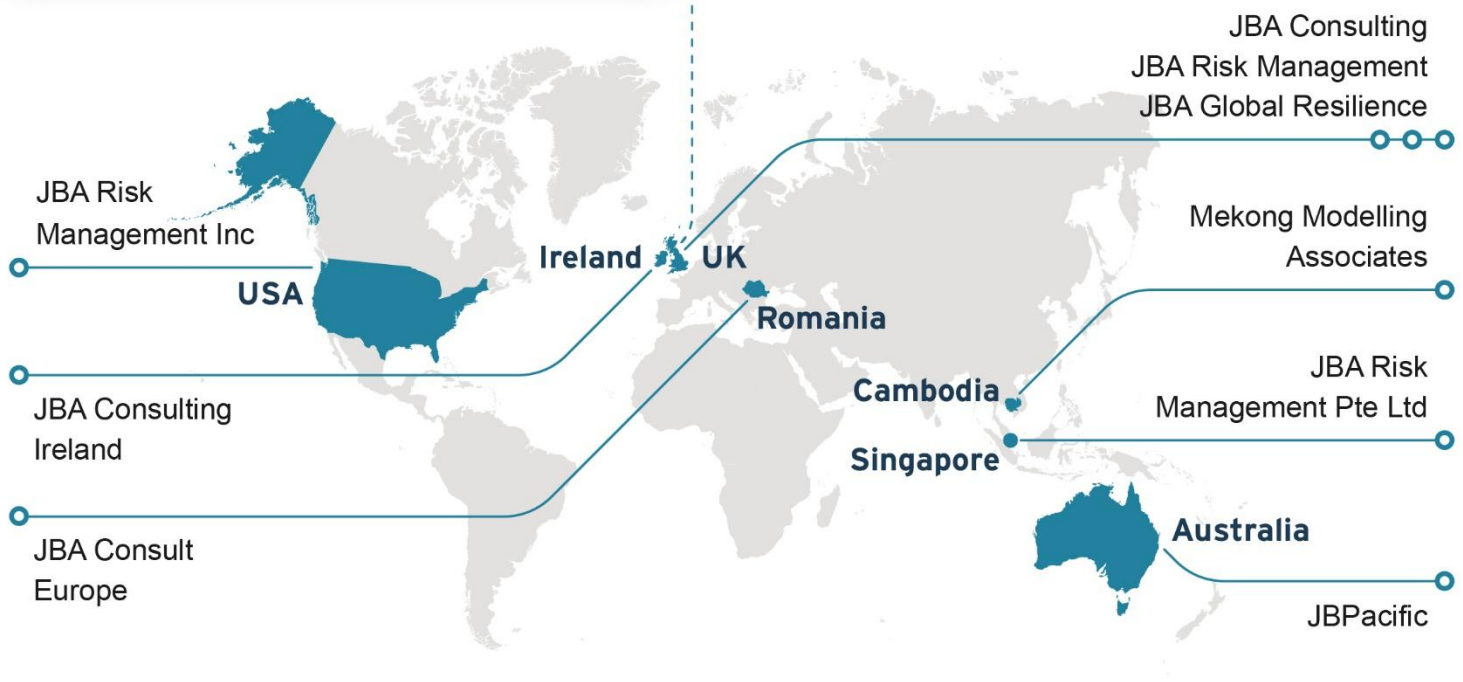
- A Detailed site assessments**
- B GeoPDF mapping**
- C Data sources used in this SFRA**



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