



LEVEL 2 STRATEGIC FLOOD RISK ASSESSMENT

Notice

This document and its contents have been prepared and are intended solely as information for Bath and North East Somerset Council and use in relation to the Level 2 Strategic Flood Risk Assessment.

AtkinsRéalis assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 52 pages including the cover.

Document history

Document title: Level 2 SFRA

Document Reference: 100126859/DG/001

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Client Draft	EG	EP	LS	BN	11/06/26
2.0	Final	EG	EP	LS	BN	03/07/26

Client signoff

Client	Bath and North East Somerset Council
Project	Level 2 Strategic Flood Risk Assessment
Job number	100126859

Client
signature/date



Contents

Executive Summary	7
1. Introduction	9
1.1 Overview	9
1.2 Levels of SFRA	9
1.3 Objectives	10
1.4 Scope of this document	10
2. Sequential and Exception Tests	11
2.1 National planning policy	11
2.2 The Sequential Test	11
2.3 The Exception Test	12
3. Data Collection and Review	13
3.1 Introduction	13
3.2 River networks	13
3.3 Historic flooding	14
3.4 Flood Zone definition	14
3.4.1 The NPPF Flood Zones	14
3.4.2 The Environment Agency Flood Map for Planning	15
3.5 Environment Agency Risk of Flooding from Rivers Map	16
3.5.1 River Flooding Extent	16
3.5.2 River Flooding Depth	17
3.6 Hydraulic Modelling	18
3.7 Environment Agency Risk of Flooding from Surface Water	19
3.7.1 Surface Water Flood Extent	19
3.7.2 Surface Water Flood Depth	20
3.7.3 Surface Water Flood Speed	20
3.7.4 Surface Water Flood Hazard	21
3.8 Climate Change	21
3.8.1 Peak river flow allowance	21
3.8.2 Peak rainfall intensity allowances	23
3.8.3 NaFRA Flood Outputs and Climate Change	23
3.9 Groundwater	23
3.10 Reservoirs	24
3.11 Existing flood risk management	25
3.12 Flood warning	26
4. Level 2 Assessment Methodology	28
4.1 Site Screening as part of Level 1 SFRA	28
4.2 Initial Level 2 Assessment	29



4.3	Detailed Level 2 Assessment Methodology	33
5.	Detailed Site Assessments.....	35
6.	Planning Requirements and Flood Risk Management	39
6.1	Sequential Approach.....	39
6.2	Flood Risk Assessment.....	39
6.3	Drainage Strategy	40
6.4	Watercourses	41
6.5	Flood risk management infrastructure and residual risk	41
6.6	Emergency Planning	42
7.	Conclusion and Recommendations	43
7.1	Conclusions.....	43
7.2	Recommendations	44
7.2.1	Process	44
7.2.2	Mitigation	44
7.2.3	SuDS	44
7.2.4	General.....	45

Tables

Table 3-1 - Hydraulic Models.....	19
Table 3-2 - Flood Hazard Rating Definition	21
Table 3-3 – Peak river allowances for the Central, Higher and Upper scenarios, for the 2020s, 2050s and 2080s epochs.	22
Table 3-4 – Peak rainfall allowances for the Central and Upper scenarios, for the 2020s, 2050s and 2080s epochs	23
Table 4-1 - Initial Level 2 assessment of sites.....	30
Table 5-1 – Summary of Level 2 Detailed Assessments.....	35

Figures

Figure 3-1 - River Networks.....	13
Figure 3-2 - Historic flood events in Bath and North East Somerset.....	14
Figure 3-3 – Environment Agency Flood Map for Planning Flood Zones for Bath and North East Somerset	16
Figure 3-4 – Environment Agency Risk of Flooding from Rivers and Sea for Bath and North East Somerset.....	17
Figure 3-5 – Hydraulic Model Extents	18
Figure 3-6 – Environment Agency Risk of Surface Water Flooding for Bath and North East Somerset.....	20



Figure 3-7 – Application of peak river flow allowances (Environment Agency, 2026).....	22
Figure 3-8 – Areas Susceptible to Groundwater Flooding in Bath and North East Somerset	24
Figure 3-9 - Reservoir breach flood risk in Bath and North East Somerset	25
Figure 3-10 - Flood Defences	26
Figure 3-11 - Flood Warning and Flood Alert Areas for Bath and North East Somerset	27
Figure 4-1 – Sites identified as requiring further assessment as part of the Level 1 SFRA.....	29
Figure 4-2 – Sites identified as requiring Level 2 assessment	33

Appendices

Appendix A. NPPF Vulnerability Classification

Appendix B. Initial Level 2 Assessment

Appendix C. Detailed Site Assessments



Glossary

Term	Definition
AEP	Annual Exceedance Probability
AIMS	Asset Information Management System
AStGF	Areas Susceptible to Groundwater Flooding
B&NESC	Bath and North East Somerset Council
BGS	British Geological Survey
FRAs	Flood Risk Assessments
LLFAs	Lead Local Flood Authorities
LPAs	Local Planning Authorities
MTP	Medium-Term Plan
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance
RMA	Risk Management Authority
SFRA	Strategic Flood Risk Assessment
SHLAA	Strategic Housing Land Availability Assessment
SuDS	Sustainable Drainage Systems
RoFRS	Risk of Flooding from River and Sea
RoFSW	Risk of Flooding from Surface Water
UKCP18	UK Climate Projection 2018

Executive Summary

This Level 2 Strategic Flood Risk Assessment (SFRA) is required to inform the new Local Plan for Bath and North East Somerset Council (B&NESC). This Level 2 SFRA provides an overview of the planning context in relation to flood risk and development within Bath and North East Somerset. SFRAs are considered live documents and should be revised periodically when updated information becomes available, following policy changes or when it is required to inform Local Plans.

An initial assessment of the 18 sites considered as requiring further assessment as part of the Level 1 SFRA recommendations identified that 8 of those sites are considered acceptable for development as a sequential approach to the masterplan layout can manage the level of flood risk from fluvial and surface water sources. 10 sites were identified as requiring a Level 2 SFRA.

In principle, it is feasible for the 10 sites assessed in the Level 2 SFRA to satisfy the flood risk element of the Exception Test by:

- Siting development away from the areas at highest risk and within Flood Zone 1 or very low risk of surface water flooding.
- Using areas in Flood Zone 2 for the least vulnerable parts of the development in accordance with Table 2 in the NPPF (Appendix A2). Residential development should not be permitted in Flood Zone 3 and no development at all should be permitted in Flood Zone 3b (aside from water compatible use or essential infrastructure).
- Designing buildings with finished floor levels above the estimated flood level (1% AEP with climate change) including an allowance for freeboard.
- Considering space for green infrastructure in the areas of highest flood risk where this is appropriate.
- Considering safe access and egress routes in the event of a flood.

The wider sustainability benefits to the community that outweigh flood risk element of the Exception Test shall be covered as part of the development of the Local Plan and be included within a site-specific FRA.

If larger sites are 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.

Windfall sites are potential development sites that are not allocated through the Local Plan and have not been individually sequentially tested for this SFRA. The Sequential Test will need to be applied to these sites and if necessary, evidence to meet the requirements of the Exception Test at the planning application stage would also be required.

As well as assessing flood risk at potential development sites and guidance for reviewing windfall sites, this SFRA also provides guidance on surface water management for new development. This is owing to surface water flood risk becoming more of a focus in the assessment of planning applications due to the increased knowledge and understanding associated with this source of risk, and specifically the potential flood risk impacts of insufficient surface water management.

Given this SFRA is to inform the emerging Local Plan for B&NESC, the recommendations of this report should be considered when setting the Local Plan Policies. The recommendations for the Local Plan Policies are:

- The flood risk to, and impact of, new development should be promoted through careful planning and where possible locating new development in the lowest flood risk areas, from all sources;
- Where development cannot be proposed in the lowest flood risk area, but where development would provide benefits that outweigh flood risk, suitable mitigation must be provided. This will ensure an



acceptable level of risk to the new development whilst not increasing risk elsewhere. This would normally be demonstrated through the application of the Exception Test and must be agreed with relevant statutory consultees;

- There is an increased focus on surface water management and new development must ensure the drainage system serves to reduce runoff to agreed standards over the lifetime of the development. It is also necessary that the design of new surface water drainage systems follow the Sustainable Drainage Systems (SuDS) hierarchy. The runoff rate is normally the pre-development rate for greenfield sites or as recommended in the West of England SuDS guidance. Where possible a strategic approach to surface water management should also be considered; and
- Where possible, redundant watercourse crossings and culverted reaches are removed to provide flood risk and ecological benefits. However, the downstream impacts should be carefully considered to prevent an increased flood risk elsewhere.

The other recommendations from this SFRA are that:

- This SFRA should support the completion of site-specific Flood Risk Assessments (FRAs). FRAs are required for all proposed development that goes through the planning system located within areas at risk from fluvial flooding and those covering sites greater than 1 hectare;
- The Sequential Test should be carried out for all proposed windfall development and, if required, the Exception Test.
- It is recommended that this SFRA is considered as a live document, which is based on current understanding and available data. As further flooding occurs, as policy changes and as there are advances in flood risk studies this SFRA should be reviewed and updated as appropriate.



1. Introduction

1.1 Overview

B&NESC is a unitary authority area comprising the north-east part of Somerset including the city of Bath and covers an area of 136 square miles (352 km²). Bath and North East Somerset is a largely rural area with population concentrated in the principal settlements of Bath and Keynsham and a number of villages including Midsomer Norton, Radstock and Saltford. Flooding is one of the most widespread and frequently occurring of natural hazards and, therefore flood risk is one of the main factors that influences the spatial planning process. All forms of flooding and their impact on the natural and built environment are material planning considerations.

B&NESC lies wholly within the catchment of the River Avon except for the far western part near Blagdon Lake which drains into the River Yeo. The south of the area drains northwards through Wellow Brook, Cam Brook and Newton Brook to the River Avon at Bath or via the River Chew to Keynsham.

B&NESC is situated immediately upstream of Bristol which the River Avon flows into. South Gloucestershire and Wiltshire are both upstream of B&NESC and catchments flow into Bath and North East Somerset. There are a large number of properties within the urban area of Bristol that are susceptible to flooding from the River Avon and future development within Bath and North East Somerset must be carefully managed to ensure that this risk of flooding is not exacerbated.

B&NESC are currently preparing a new Local Plan for Bath and North East Somerset that will set out the locations at which development should take place up to and beyond 2042. The Local Plan will guide future development and will look at various issues such as housing and economic needs, as well as measures to protect the environment and the effects of climate change.

Under existing planning law, most applications for proposed development should be assessed in accordance with the development plan, and the new Local Plan for Bath and North East Somerset will take into account the National Planning Policy Framework¹ (NPPF). The NPPF states that *'inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere'*. The NPPF also requires that the Local Plan is supported by a SFRA. This SFRA has made use of recent updates to flood mapping, guidance, and modelling information to correctly inform the draft Local Plan.

1.2 Levels of SFRA

The NPPF and Planning Practice Guidance (PPG)² advocates a two-level approach to SFRAs.

- A Level 1 SFRA is mandatory for all Local Planning Authorities (LPAs). It is usually sufficient when development sites are at low flood risk and pressure for development is low. Its main purpose is to help apply the Sequential Test, guiding development towards safer areas. 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 1 SFRA for B&NESC was completed in June 2026.
- A Level 2 SFRA is needed when development cannot be placed in low-risk areas, or when there is likely to be significant development in flood-prone zones. It supports the Exception Test and provides detailed

¹ <https://www.gov.uk/guidance/national-planning-policy-framework>

² <https://www.gov.uk/government/collections/planning-practice-guidance>

analysis of flood risks from all sources. This SFRA report fulfils the requirements for a Level 2 assessment of development sites identified for potential allocation within Bath and North East Somerset and has been prepared in accordance with the NPPF and PPG.

1.3 Objectives

The objectives of this Level 2 SFRA are:

- To provide sufficient data and information to enable B&NESC to apply the Sequential Test and the Exception Test for potential land allocations. The Level 2 SFRA has only included sites which B&NESC are considering allocating and were identified as requiring further assessment as part of the Level 1 SFRA assessment;
- To enable B&NESC to prepare appropriate policies for the management of flood risk within the Local Plan;
- To identify the level of detail required for site specific FRAs; and
- Enable B&NESC to determine whether the flood risk is acceptable in relation to emergency planning capability.

1.4 Scope of this document

This Level 2 SFRA report has been prepared in accordance with the NPPF to summarise the findings of the data collection phase and to provide a basis for the application of the Sequential Test in respect to potential development areas/sites identified so far through the planning process.

This report provides an overview of the planning context in relation to flood risk and development within Bath and North East Somerset (Section 2). A summary of the data collected, and a review of this data is provided (Section 3) along with the Methodology for undertaking the Level 2 assessment (Section 4). Detailed site assessments are outlined for each of those sites included within the Level 2 assessment (Section 5). Conclusions and Recommendations are provided (Section 6).

2. Sequential and Exception Tests

This section provides an overview of the planning context in relation to flood risk and development within Bath and North East Somerset and the application of the sequential and exceptions tests for both planners and developers.

2.1 National planning policy

National planning policy plays a key role in shaping the direction in which LPAs prepare their Local Plans for development. The Government requires LPAs to apply a risk-based approach to the preparation of development plans and their decisions on development control. The NPPF encourages LPAs to steer development away from areas affected by flood risk and recommends the application of a 'Sequential Test'. NPPF is the key guidance for planners managing flood risk as it clearly defines the appropriateness of the development type for each of the defined flood risk zones.

The NPPF and PPG have both been updated since the last Local Plan and supporting SFRA in 2018, as outlined below. It should be noted that both documents are classed as live documents and therefore the most relevant and up to date versions can be found on the relevant websites.

- In 2021, updates were made to the NPPF to update a number of environment related sections, including amendments on flood risk, and also climate change.
- In 2022, the PPG was updated. Key changes were made to reflect alterations in functional floodplain (Flood Zone 3b), vulnerability classifications, design flood level for developments, and surface water management requirements, amongst other changes.
- In December 2024, updates were made to the NPPF. Additional context for the Sequential Test is included in Section 173 for application of a sequential risk-based approach to individual applications. Section 175 states that the Sequential Test does not need to be applied to a site if proposed development is outside of flood risk areas from all sources of flooding. An update to Planning Practice Guidance paragraph 27 in September 2025 confirms that *'In applying paragraph 175 a proportionate approach should be taken. Where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied.'* This SFRA considers the sequential testing of proposed development allocations for employment and housing and also considers whether a sequential approach could be applied to the site based on flood risk from various sources. For windfall sites not considered as part of this SFRA, Section 175 could be applied to a proposed development such that the Sequential Test would not need to be applied. Additional context on the application of SuDs has been included in Section 182 considering multifunctional benefits of SuDS (facilitating improvements in water quality and biodiversity, as well as benefits for amenity).

2.2 The Sequential Test

The aims of the NPPF are to ensure that flood risk is considered at all stages in the planning process to avoid inappropriate development in areas at risk from flooding and to direct development away from areas at highest risk. By exception, where new development is necessary in high-risk areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.

Planning needs to be at the forefront of managing flood risk in a sustainable manner by steering development away from areas that are susceptible to flooding. The NPPF advocates a sequential approach that will guide the planning decision making process (i.e., the allocation of sites). The aim of the Sequential Test is to:

“Steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.”

The flood zones are the starting point for this sequential approach. Therefore, in the first instance development should be located within Flood Zone 1. In circumstances when there are no reasonable sites available within Flood Zone 1 the development may be permitted within Flood Zone 2 depending on the land use vulnerability classification and applying the Exception Test if required. Only in circumstances when there are no suitable sites within Flood Zone 1 or 2 should development within Flood Zone 3 be considered.

Whilst the overall aim of the Sequential Test is to steer new development to the lowest area at risk there are likely to be instances where development cannot be located in the lowest risk area and the vulnerability of development is not compatible with a particular Flood Zone so the Exception Test would be required to determine the suitability of that vulnerability of development to the Flood Zone (e.g. Essential Infrastructure, Highly Vulnerable and More Vulnerable development classifications as shown in Appendix A1).

Where a site is located within a range of different Flood Zones, a sequential approach should be applied within the site boundary. This would help ensure that the most vulnerable areas of the development are located within the lowest areas of risk as possible.

In addition, the risk of flooding from other sources and the impact of climate change must be considered when considering which sites are suitable to allocate. Since July 2021, the approach has adjusted the requirement for the Sequential Test (as defined in Paragraph 172 of the NPPF) so that all sources of flood risk are to be included in the consideration.

The September 2025 update to the PPG states in Paragraph 23 of the Flood Risk and Coastal Change guidance: *“Other forms of flooding need to be treated consistently with river and tidal flooding in mapping probability and assessing vulnerability, so that the sequential approach can be applied across all areas of flood risk”*.

2.3 The Exception Test

It will not always be possible for all new development to be located on land that is not at risk from flooding. Table 2 of the PPG within Appendix A2 sets out the requirements for the Exception Test based on flood risk from rivers and the sea. There is no guidance on how to consider other sources of flood risk. While the Exception Test is not explicitly required for sites at risk from other sources of flooding, the LPA should follow a similar principle where sites are proposed that are at risk from other sources of flooding, weighing up the wider benefits of development against the risk.

The Exception Test is split into two separate parts required to be satisfied before allowing development to be allocated as outlined in paragraph 164 of NPPF.

- Demonstrate that development that has to be in a flood risk area will provide wider sustainability benefits to the community that outweigh flood risk; and
- Demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

3. Data Collection and Review

3.1 Introduction

The purpose of the data collection and review phase of the SFRA is to identify and obtain information regarding flood risk. It is during this phase that existing knowledge is collated with regards to the sources and extent of flood risk; existing flood management measures; and the land use and development opportunities within the Bath and North East Somerset area.

Consultation has been undertaken with B&NESC, the Environment Agency and Wessex Water. The information gathered during this phase has been used to assess the potential extent and frequency of flood risk, the implications of this flood risk for development opportunities and the opportunities for flood management practices which may help mitigate or reduce future flood risk.

3.2 River networks

Main Rivers are represented by the Environment Agency's Statutory Main River layer. Ordinary Watercourses are represented by the OS Open Rivers dataset. Not all ordinary watercourses are covered by the datasets so for site specific developments, further site surveys should be undertaken to identify all Ordinary Watercourses within a site. River networks within Bath and North East Somerset are provided in Figure 3-1.

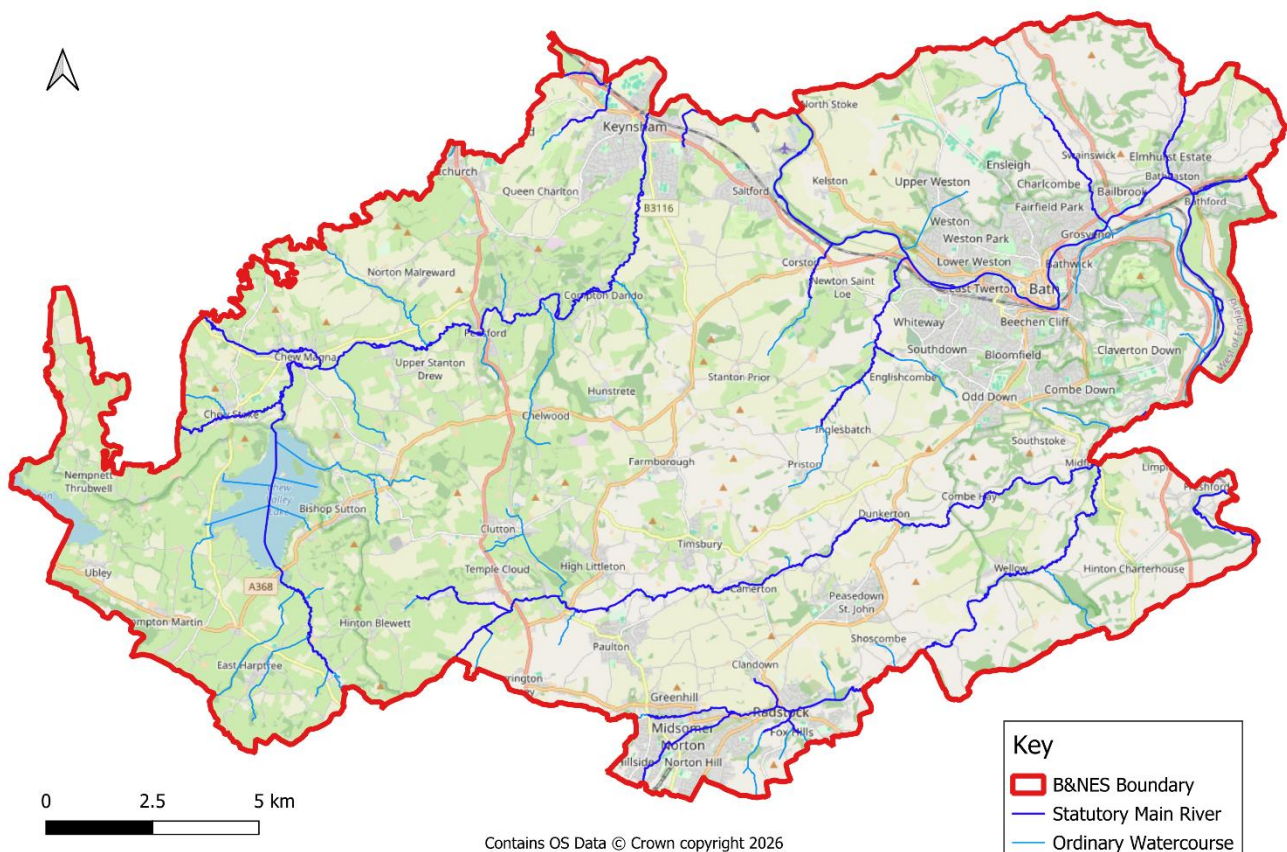


Figure 3-1 - River Networks

3.3 Historic flooding

Information on historical flood events can supplement the understanding of flooding mechanisms and flood extents determined through hydraulic modelling. The Environment Agency holds a publicly available data source of historical flood extents in the form of the Historic Flood Map and Recorded Flood Outlines. Historical flood mapping is shown in Figure 3-2. In addition, historical incidences of surface water and groundwater flooding have been obtained from B&NESC to understand whether historic flooding has been recorded at sites within the study area, these are summarised in the Level 1 SFRA.

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.

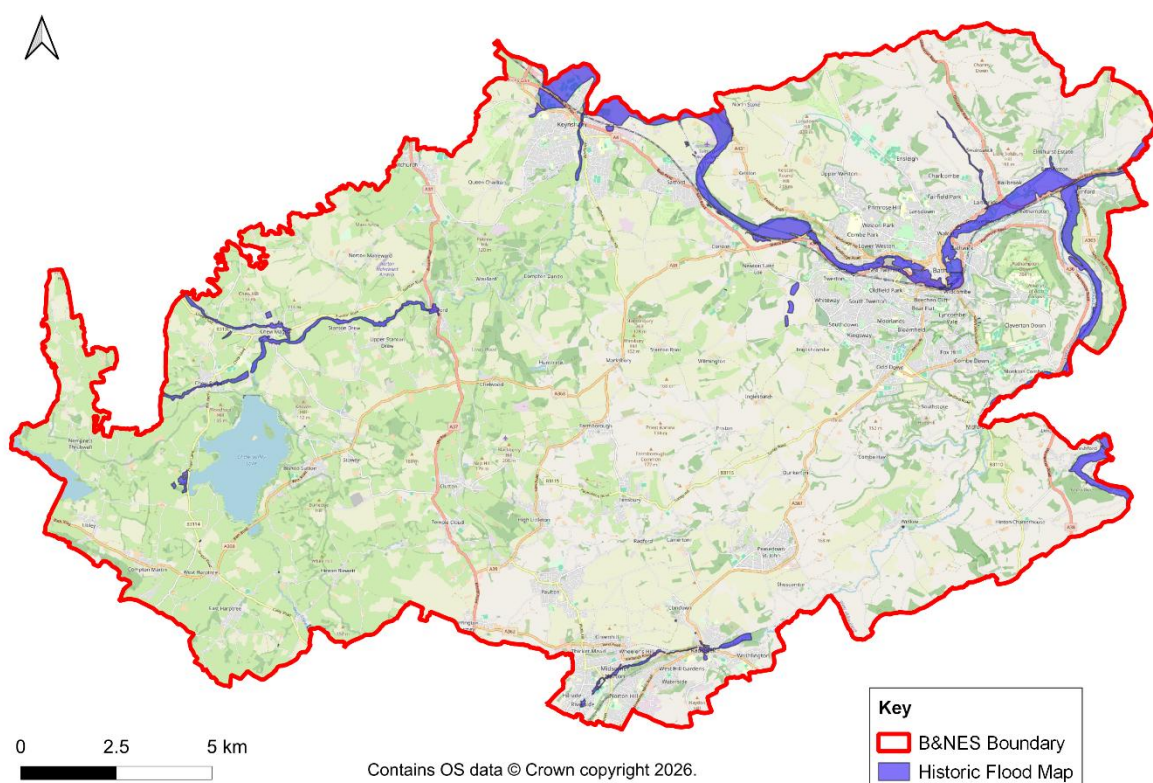


Figure 3-2 - Historic flood events in Bath and North East Somerset

3.4 Flood Zone definition

3.4.1 The NPPF Flood Zones

The NPPF makes use of four separate Flood Zones that should be considered when determining if proposed development is at an acceptable level of flood risk through the Sequential Test based on the land use vulnerability

classification (see Appendix A). These Flood Zones represent flooding without flood defences in place and are defined as follows:

- **Flood Zone 1** is defined as having a 'Low Probability' of flooding and incorporates areas where the annual probability of flooding is lower than 1 in 1,000 (0.1%). The NPPF imposes no constraints upon the type of development within this Flood Zone.
- **Flood Zone 2** is defined as having a 'Medium Probability' with an annual probability of flooding between 1 in 1,000 and 1 in 100 (0.1% and 1%) for fluvial flooding and between 1 in 1,000 and 1 in 200 (0.1% and 0.5%) for tidal flooding. The NPPF recommends that this area is acceptable for most types of development with the exception of Highly Vulnerable land uses, as listed within Table 2: 'Flood risk vulnerability and flood zone compatibility' taken from the NPPF flood risk planning practice guidance and included within Appendix A of this SFRA.
- **Flood Zone 3a** is defined as having a 'High Probability' of flooding and incorporates areas with an annual probability of flooding of 1 in 100 (1%) or more frequent for fluvial flooding or 1 in 200 (0.5%) or more frequent for tidal flooding. There are greater constraints associated with development in these areas, as described in Appendix A of this SFRA.
- **Flood Zone 3b** is defined as the functional floodplain. This is the area where water has to be stored during times of flooding and is defined as land with an annual probability of flooding of 1 in 30 (3.3%) or more frequent, or land that is designed to flood. The NPPF identifies that LPAs should identify in their SFRAs areas of functional floodplain and its boundaries. Only water compatible development is allowed in this area.

3.4.2 The Environment Agency Flood Map for Planning

The Environment Agency's Flood Map for Planning based on the new national flood risk assessment (NaFRA)³, December 2024 was used to identify the Flood Zones for this study. The Flood Map for Planning is the Environment Agency's best estimate of the areas at risk from fluvial flooding (not taking into account the presence of flood defences) for the 1 in 100 annual probability (1%) and 1 in 1,000 annual probability (0.1%) events. The Flood Map for Planning is updated on a quarterly basis as the Environment Agency's knowledge of flooding is improved through detailed modelling studies, recent flood events and data from river level and flow monitoring stations.

The Flood Zone outlines are not definitive and do not include all minor watercourse floodplains and they should not be assumed to be correct where a minor watercourse (ditch, brook, drain, dyke, etc.) is shown with no flood outlines, within or adjacent to a site.

The Flood Map for Planning presents flood risk in accordance with the NPPF Flood Zones 1, 2 and 3 (see Section 3.4.1). Whilst this Flood Map should be used as a starting point for allocating land for development, any sites that contain watercourses, or where a watercourse is adjacent to the site boundary, require further detailed assessment by the applicant to confirm flood risk. The Flood Map for Planning does not distinguish between Flood Zone 3a and 3b. Instead, Flood Zone 3b is generally included within the overall extent of Flood Zone 3 and is not shown independently

The Environment Agency Flood Map for Planning is shown in Figure 3-3. Any area outside of areas of Flood Zone 2 and 3 are classed as within Flood Zone 1.

³ [New national flood and coastal erosion risk information - GOV.UK](#)

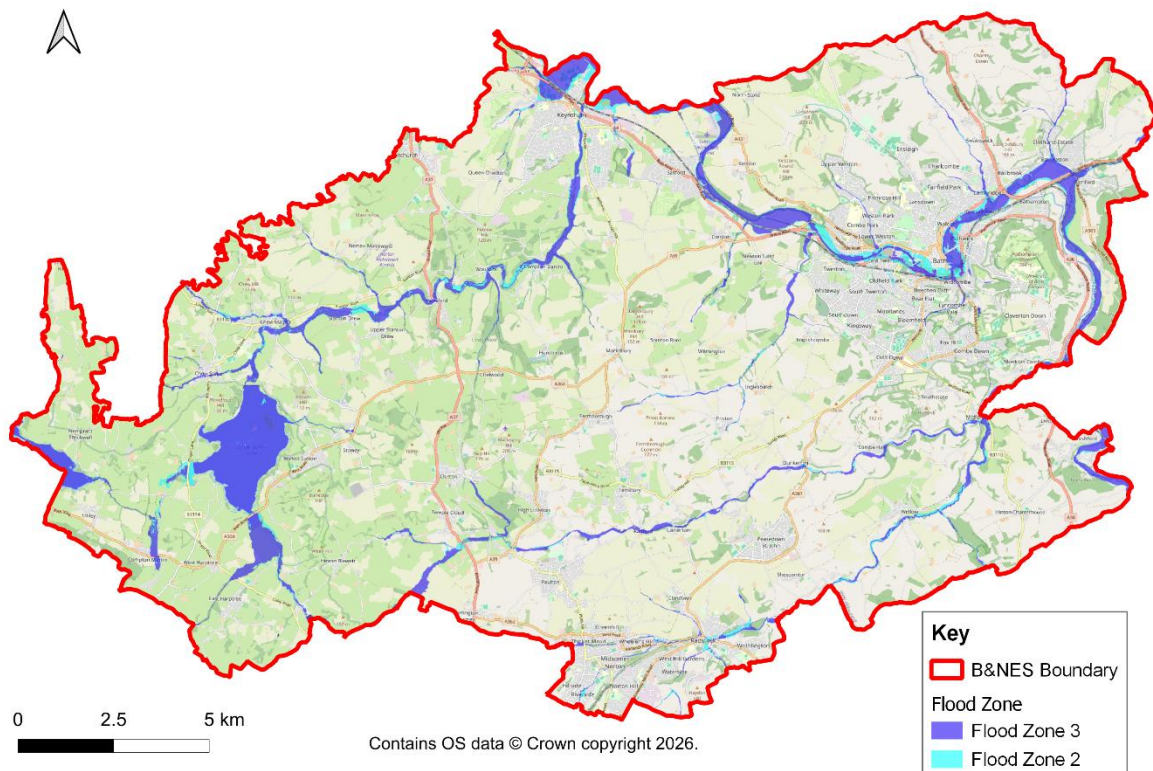


Figure 3-3 – Environment Agency Flood Map for Planning Flood Zones for Bath and North East Somerset

3.5 Environment Agency Risk of Flooding from Rivers Map

The Risk of Flooding from Rivers and the Sea (RoFRS) shows the chance of flooding from rivers and the sea taking into account the presence and condition of flood defences. While flood defences reduce the level of risk they do not completely remove it.

The Environment Agency's RoFRS outlines are based on a combination of specific detailed hydraulic modelling and river modelling and mapping method carried out nationally, to provide an indication of flood risk. Local modelling of flood risk captures important local features and the new national model is a significant improvement on previous national modelling and is applied to areas where no local high quality modelling is available. The new NaFRA flood maps provide greater consistency between local and national flood risk information; provide additional risk information including flood depth; and provide a finer spatial resolution for flood risk from rivers.

3.5.1 River Flooding Extent

The RoFRS outputs are a probabilistic product, meaning that it shows the overall risk, rather than the risk associated with a specific event or scenario. This risk is displayed as one of four likelihood bandings:

- High – represents greater than or equal to 3.3% chance in any given year (1 in 30)

- Medium – represents less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
- Low – represents less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1000) chance in any given year
- Very Low – represents less than 0.1% chance in any given year (1 in 1000)

The Environment Agency RoFRS map is shown in Figure 3-4.

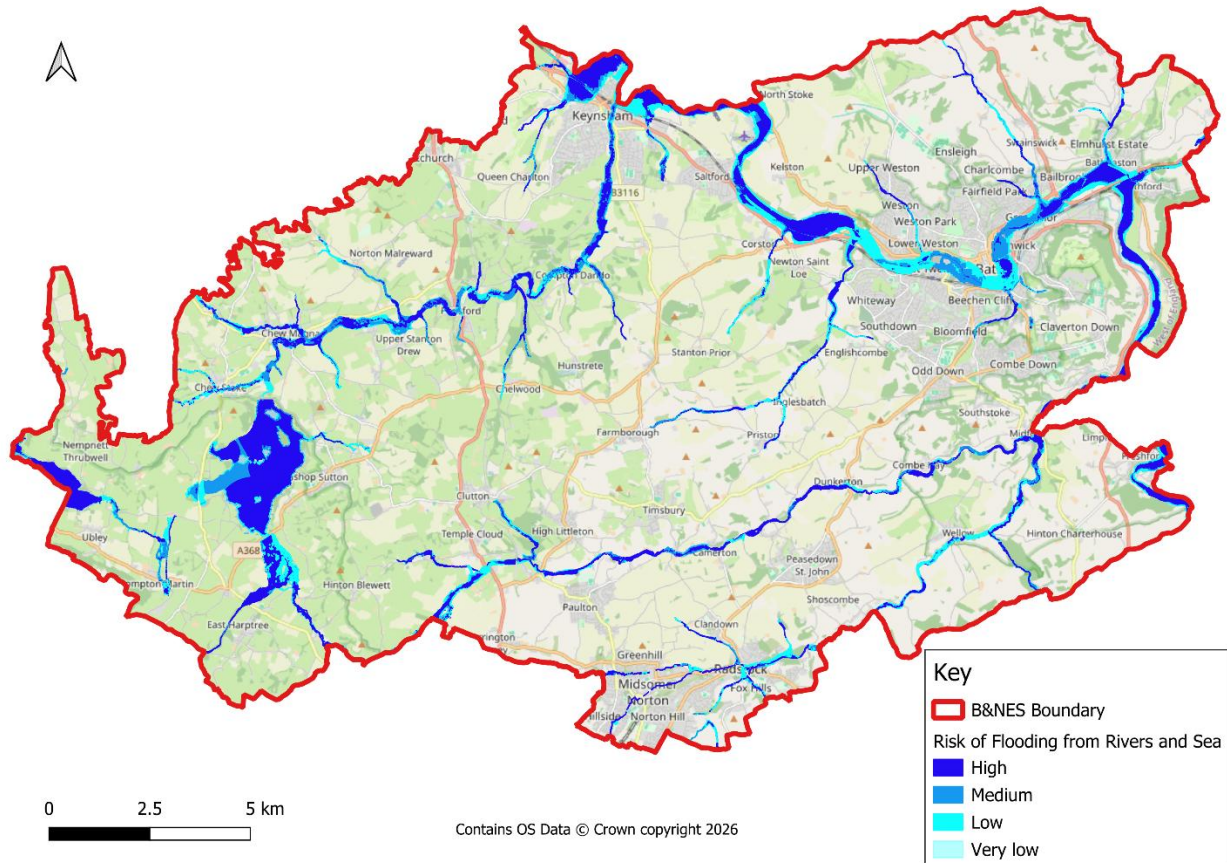


Figure 3-3

Figure 3-4 – Environment Agency Risk of Flooding from Rivers and Sea for Bath and North East Somerset

3.5.2 River Flooding Depth

The RoFRS outputs also presents the likelihood of flooding for the following depths:

- 0.2m
- 0.3m
- 0.6m
- 0.9m
- 1.2m

3.6 Hydraulic Modelling

Whilst the new NaFRA flood map outputs provide an improved understanding of risk, they have a varying degree of accuracy dependent on the quality of the inputs and, in particular, the availability of local detailed hydraulic modelling. More detailed hydraulic modelling may be required as part of a site-specific Flood Risk Assessment to provide further refinement of the available flood mapping.

The Environment Agency provided a number of hydraulic models covering Bath and North East Somerset.

- 2018 Bath to Bristol model of the River Avon provides undefended outlines
- 2019 Bristol City Council SFRA model of the River Avon which extends as far upstream as Keynsham
- 2023 Bristol Avon Flood Strategy model of the River Avon provides defended outlines
- 2021 Midford Brook Study includes Midford Brook and its tributaries Cam Brook and Wellow Brook
- 2015 River Chew and Winford Brook

The extent of the models is provided in Figure 3-5. Various return period scenarios are provided as model outputs including climate change scenarios.

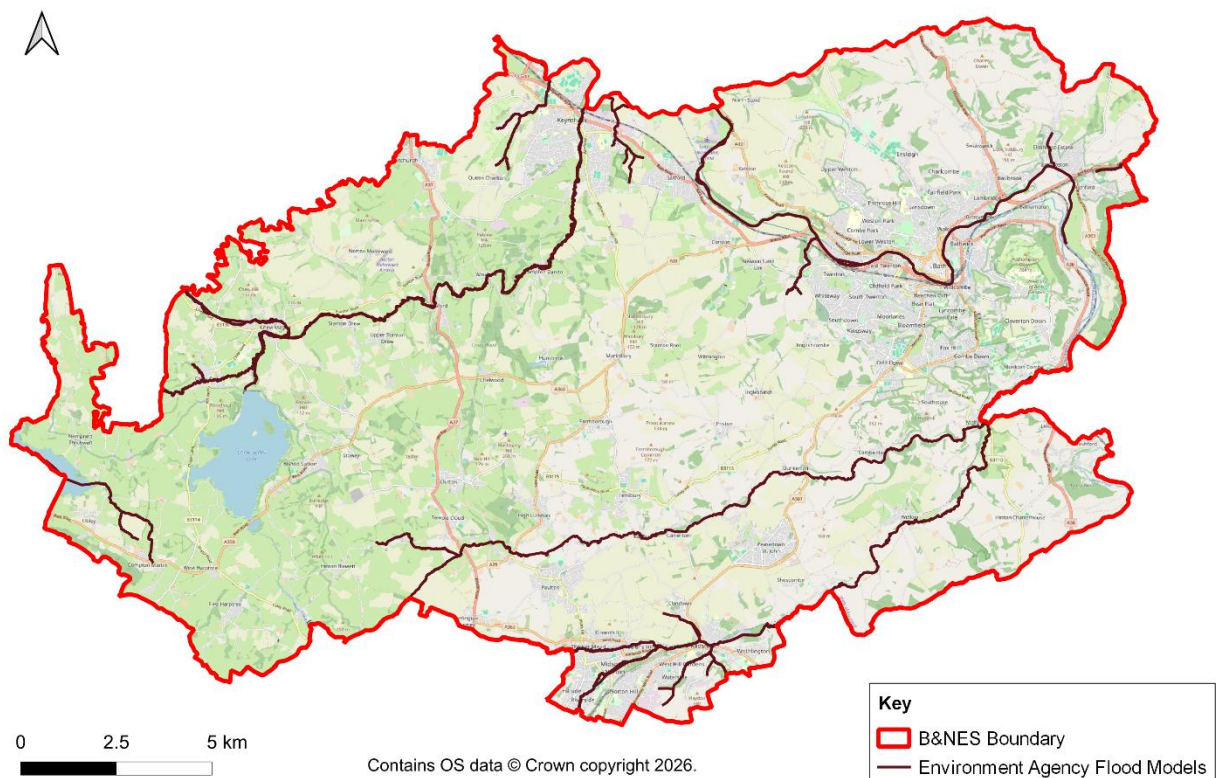


Figure 3-5 – Hydraulic Model Extents

Table 3-1 provides details of the models used for assessment of the site allocations considered as part of this Level 2 SFRA and the model runs for various annual exceedance probability (AEP) events.

To provide outlines representative of functional floodplain, defined as 3.3% (1 in 30) AEP modelled data was requested from the Environment Agency. Only the 2018 Bath to Bristol model and the 2021 Midford Brook model, had 3.3% (1 in 30) AEP extents. A comparison was undertaken between the modelled outlines and the new NaFRA RoFRS “High Risk” dataset and showed good similarity demonstrating that the new NaFRA datasets had

incorporated outputs from the detailed hydraulic models within Bath and North East Somerset. As the NaFRA datasets provide more extensive coverage of watercourses, the “High Risk” areas from the new NaFRA outputs have been used to delineate Functional Floodplain, Flood Zone 3b across Bath and North East Somerset.

Table 3-1 - Hydraulic Models

Model Name	Model Year	Runs (AEP)	Climate Change Uplift
Bath to Bristol	2018	50%, 20%, 10%, 5%, 3.33%, 2%, 1.33%, 1%, 0.5%, 0.1% defended and undefended	1% AEP +25%, 1% AEP +35%, 1% AEP +70%
Bristol Avon Strategy	2023	5%, 1.33%, 1%, 0.5%, 0.1%	1% AEP + 10%, 1% AEP + 12%, 1% AEP + 15%, 1% AEP + 19%, 1% AEP + 26%, 1% AEP + 39%
Midford Brook	2021	5%, 3.33%, 1%, 0.1%	1% AEP + 20%, 1% AEP + 35%, 1% AEP + 70%

3.7 Environment Agency Risk of Flooding from Surface Water

Surface water flooding occurs when rainfall intensities exceed the infiltration capacity such that water collects on the ground surface and has the potential to cause significant urban flood risk through rapid runoff rates. Developed land, specifically with large areas of impermeable surfacing, can be vulnerable to surface water flooding where an adequate drainage system is not present. Surface water flooding can also result from run-off associated with various agricultural practices. Certain arable farming practices in particular are likely to increase this risk of surface water flooding and excessive loss of topsoil; however, this is considered to only be a minor problem across Bath and North East Somerset.

In recent years surface water flooding has become more problematic within Bath and North East Somerset. Flood investigation reports have identified high intensity rainfall has exceeded drainage system capacities causing surface water flooding in parts of Bath and Keynsham as well as localised flooding in a number of villages.

3.7.1 Surface Water Flood Extent

The Environment Agency’s Risk of Flooding from Surface Water (RoFSW) map is a probabilistic dataset, meaning that it shows the overall risk, rather than the risk associated with a specific event or scenario. It categorises the likelihood into the following three annual probabilities:

- High – represents greater than or equal to 1 in 30 (3.3% AEP) chance of flooding in any year.
- Medium – represents less than 1 in 30 (3.3% AEP) but greater than or equal to 1 in 100 (1% AEP) chance of flooding in any given year.
- Low – represents less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1% AEP) chance of flooding in any given year.

The Environment Agency RoFSW map is shown in Figure 3-6Figure 3-4.Figure 3-3

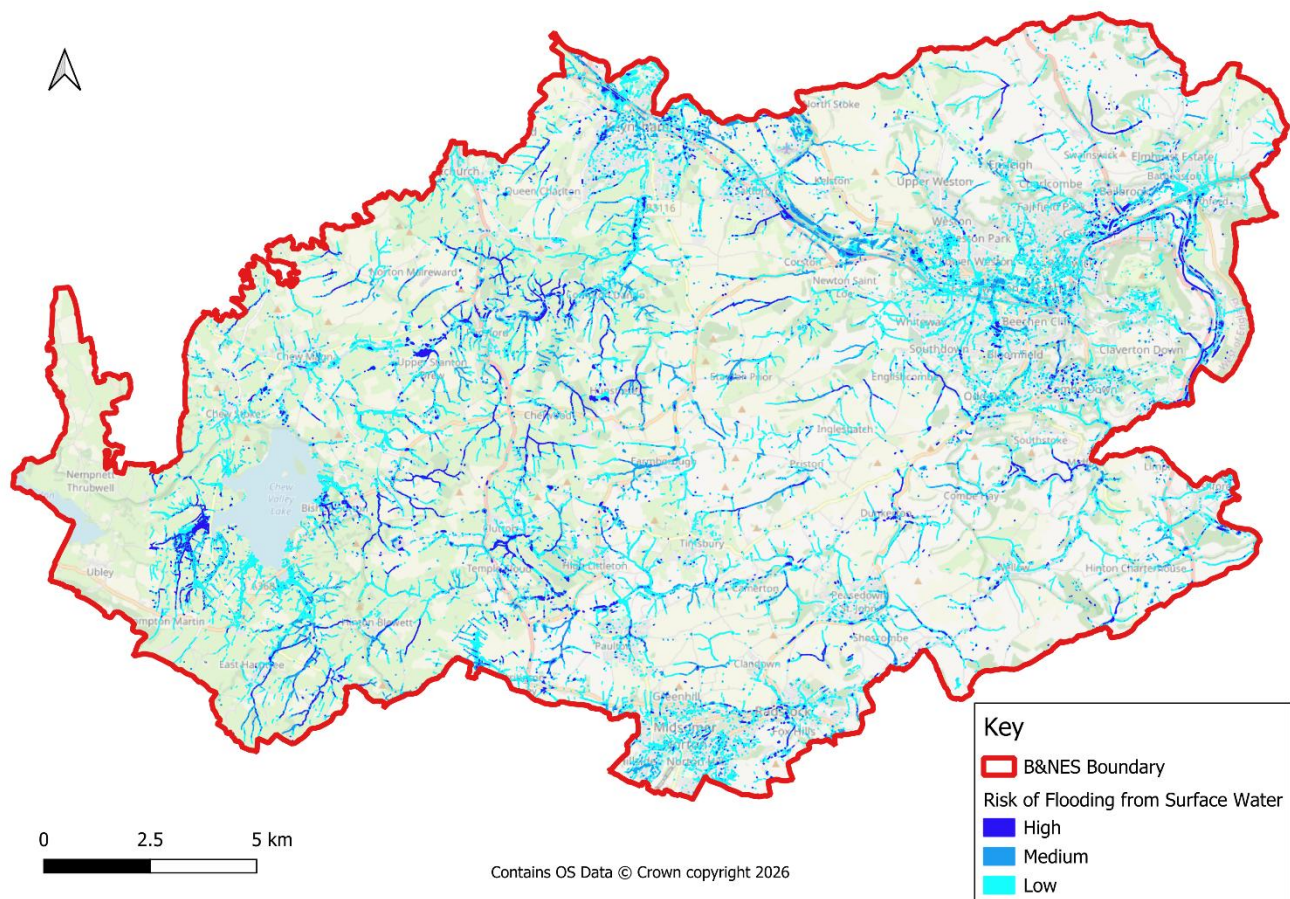


Figure 3-6 – Environment Agency Risk of Surface Water Flooding for Bath and North East Somerset

3.7.2 Surface Water Flood Depth

The RoFSW dataset presents the likelihood of a flood occurring with water at a given depth or higher. There are separate layers for the following depths:

- 0 m (i.e. flooding extent)
- 0.2m
- 0.3m
- 0.6m
- 0.9m
- 1.2m

3.7.3 Surface Water Flood Speed

The RoFSW dataset presents the likelihood of a flood occurring with water travelling at a given speed or higher. There are separate layers for the following speeds:

- 0 m/s (i.e. flooding extent)
- 0.25 m/s
- 0.5 m/s
- 1.0 m/s
- 2.0 m/s

3.7.4 Surface Water Flood Hazard

Flood hazard ratings indicate how dangerous flooding is by combining water depth, speed, and debris. The rating is calculated using the following equation based on Defra research:

$$\text{Hazard rating} = \text{depth} \times (\text{speed} + 0.5) + \text{debris factor}$$

Greater depth and faster flow both increase the hazard. A debris factor is applied to the RoFSW mapping to reflect additional risk as follows:

- 0.5 when water depth is ≤ 0.25 m
- 1.0 when water depth is > 0.25 m

The RoFSW dataset presents the likelihood of a flood occurring with a given flood hazard rating or higher. There are separate layers for the following hazard ratings:

- 0 (i.e. flooding extent)
- 0.25
- 0.5
- 0.75
- 1.25
- 2

The definition of each flood hazard rating in relation to the flood hazard to people is summarised in Table 3-2.

Table 3-2 - Flood Hazard Rating Definition

Flood Hazard Rating	Flood Hazard to People
0	No Hazard
< 0.75	Very Low Hazard (Caution)
0.75 – 1.25	Danger for Some
1.25 – 2.0	Danger for Most
> 2.0	Danger for all

3.8 Climate Change

Climate change allowances are predictions of anticipated change that should be considered for flood risk assessments to increase resilience to flooding. Peak river flow and peak rainfall intensity have been considered.

3.8.1 Peak river flow allowance

Peak river flow allowances show the anticipated changes to peak flow by management catchment. This is based on UK Climate Projection 2018 (UKCP18) data published by the Met Office.



The allowances are split by management catchment. Bath and North East Somerset is situated within the Avon Bristol and North Somerset Streams management catchment. The uplift allowances for the Central, Higher and Upper scenarios, for the 2020s, 2050s and 2080s epochs are outlined in Table 3-3.

Table 3-3 – Peak river allowances for the Central, Higher and Upper scenarios, for the 2020s, 2050s and 2080s epochs.

Scenario	Peak river flow allowances for the Avon Bristol and North Somerset Streams management catchments for the different epochs (%)		
	2020s	2050s	2080s
Central	10	12	26
Higher	15	19	39
Upper	27	38	71

The Flood risk assessments: climate change allowance guidance⁴ outlines which allowance should be used in a Flood Risk Assessment based on Flood Zone, and property vulnerability classification, and what should be used for floodplain storage compensation and off-site impacts.

The guidance also outlines how the allowances should be applied, as follows, and as shown in Figure 3-7:

- Interpolate (adjust) the peak river flow allowance between the current year and 2030
- Apply the peak river flow allowance to the hydrological estimate for the 2050s and 2080s

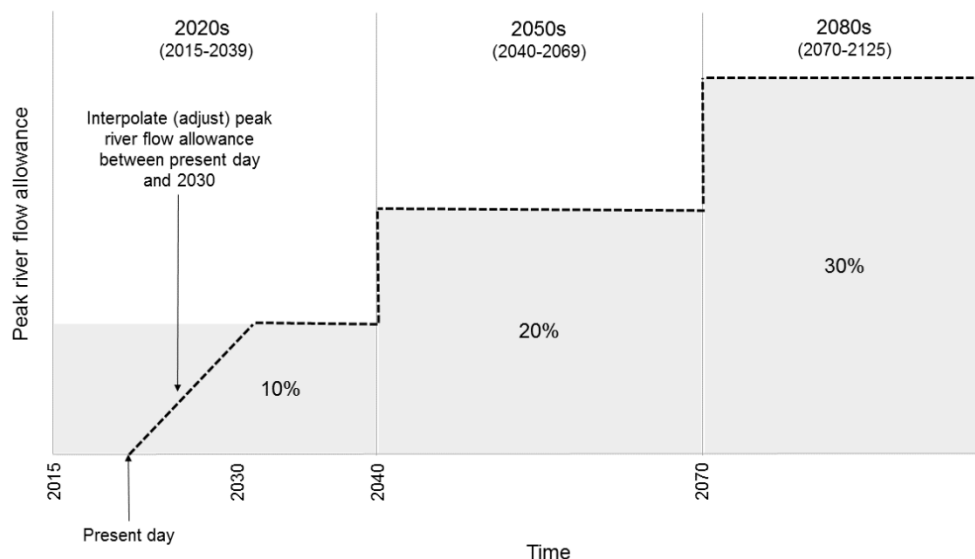


Figure 3-7 – Application of peak river flow allowances (Environment Agency, 2026)

⁴ [Flood risk assessments: climate change allowances - GOV.UK](https://www.gov.uk/government/publications/flood-risk-assessments-climate-change-allowances)

3.8.2 Peak rainfall intensity allowances

Peak rainfall intensity allowances anticipate the impact of increased rainfall on surface water flood risk. This is based on UKCP18 data.

The allowances are split by management catchment for the Central and Upper End scenarios, for the 2050s and 2080s epochs, and for both the 3.3% Annual Exceedance Probability (AEP) and the 1% AEP. The peak river allowances are provided in Table 3-4.

Table 3-4 – Peak rainfall allowances for the Central and Upper scenarios, for the 2020s, 2050s and 2080s epochs

Scenario	AEP (%)	Peak rainfall allowances for the Avon Bristol and North Somerset Streams management catchments for the different epochs (%)	
		2050s	2070s
Central	3.3%	20	25
Upper	3.3%	35	40
Central	1%	25	25
Upper	1%	40	45

The Flood risk assessments: climate change allowance guidance⁴ outlines which allowance should be used in a Flood Risk Assessment and Drainage Strategy.

3.8.3 NaFRA Flood Outputs and Climate Change

As part of the new NaFRA outputs an indicative climate change scenario is provided for a combined Flood Zone 2 and 3 extent for the peak river flow 'central' allowance, based on the 50th percentile for the 2080s epoch (2070 to 2125). A comparison was undertaken between the modelled outlines and the new NaFRA Flood Zone climate change outputs and showed good similarity for the Midford Brook catchments, however parts of the River Avon is noted as having "climate change data unavailable". A comparison was undertaken between the modelled outlines and the climate change outputs for the Risk of Flooding from Rivers and showed good similarity. Therefore, the climate change outlines from the new NaFRA outputs have been used to delineate future flood risk from rivers for the purposes of this Level 2 SFRA.

Climate change scenarios have been produced to indicate the predicted impacts of climate change on future surface water flood risk. NaFRA outputs are available for the 'central' allowance for the 2050s epoch (2040 – 2060). As there is no detailed surface water modelling available for Bath and North East Somerset the NaFRA Risk of Surface Water Flooding climate change extents have been used to delineate future flood risk from surface water for the purposes of this Level 2 SFRA.

3.9 Groundwater

Groundwater flooding normally occurs where the water table meets the ground surface in low lying areas which are underlain by permeable rock known as aquifers. This tends to follow long periods of sustained rainfall but can also be caused because of local obstructions to groundwater flow (e.g. following the placement of engineering

structures or buildings with foundations) or by the rebound of groundwater levels after a decrease in abstraction or dewatering.

It is important to recognise that the risk of groundwater flooding is typically highly variable and heavily dependent on local geological, topographical and weather conditions. Groundwater flooding is hard to predict and challenging to mitigate.

The Areas Susceptible to Groundwater Flooding (AStGWf) dataset has been utilised to assess potential groundwater flood risk areas. The AStGWf dataset is a strategic, 1 km-grid map with each grid square indicating the proportion of land where geological and hydrogeological conditions suggest groundwater could emerge. If a square has no recorded value, it means no part of that area is considered susceptible to groundwater emergence. The AStGWf dataset does not indicate how likely groundwater flooding is, nor does it account for flooding caused by groundwater rebound from reduced abstraction. Although the mapping identifies broad areas where groundwater could emerge, only small, localised parts of these areas are expected to experience groundwater flooding.

The AStGWf map is provided in Figure 3-8.

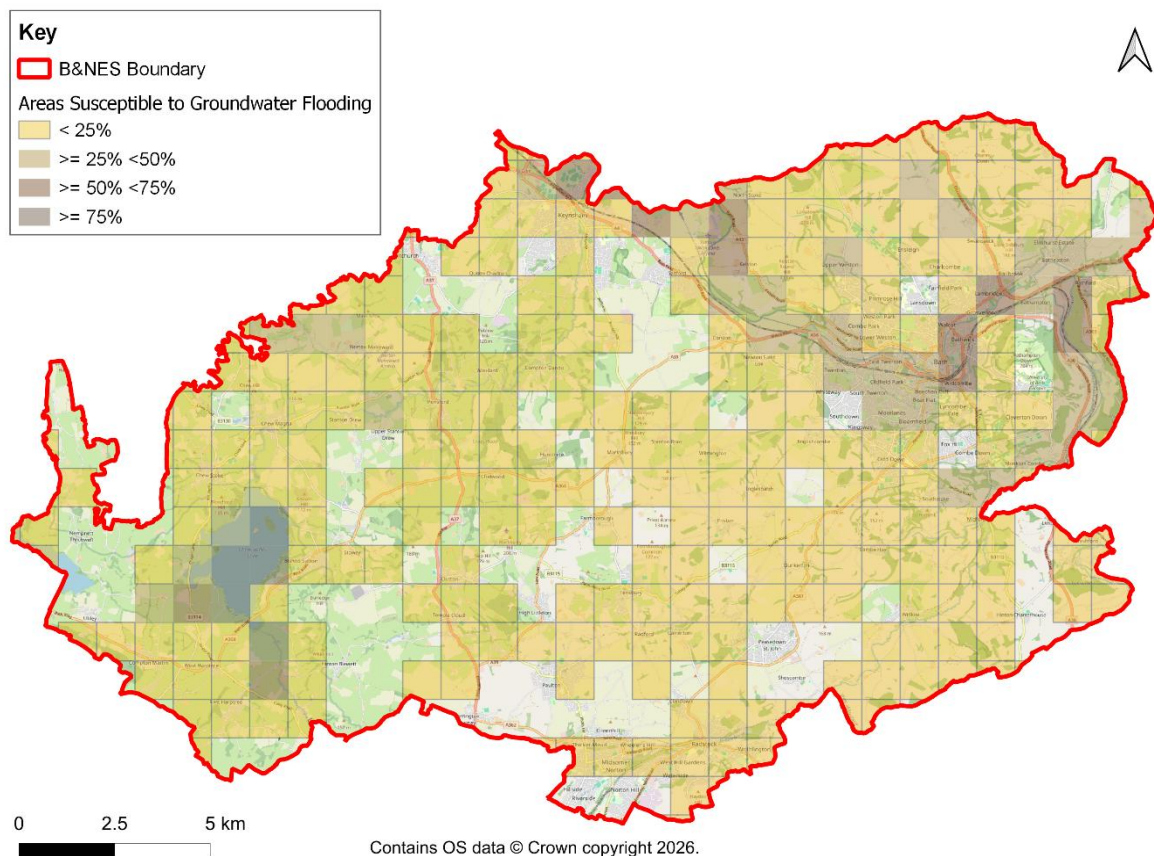


Figure 3-8 – Areas Susceptible to Groundwater Flooding in Bath and North East Somerset

3.10 Reservoirs

The Chew Valley Lake and Chew Magna Reservoir owned by Bristol Water Plc are two reservoirs located within Bath and North East Somerset and are potential sources of artificial reservoir flooding. Flooding from reservoirs

can occur when water retaining structures fail. All large reservoirs are covered by the Reservoirs Act and are subject, by law, to regular safety inspections. A very low residual risk of flooding from these reservoirs remains if they were to fail unexpectedly.

The most up to date Environment Agency flood risk data has been used to map reservoir breach flood risk to Bath and North East Somerset, this is shown in Figure 3-9 . The reservoir flood map shows where water may go in the unlikely event of a dam or reservoir failure. The outlines in the figure present failure from reservoirs including Lower Litton, Upper Litton, Chew Valley Lake (Stoke), Chew Magna, Monkswood, Huntstretre Lake, Newton Park Upper Lake, Orchardleigh. The 'dry-day' scenario predicts the flooding that would occur if the dam or reservoir failed when rivers are at normal levels. The 'wet day' scenario predicts how much worse the flooding might be if a river is already experiencing an extreme natural flood. Due to regular inspection, survey, and maintenance by the operating authorities - and extremely good safety record of no reservoir failure incidents resulting in the loss of life in the UK since 1925, it is very unlikely that a reservoir would fail.

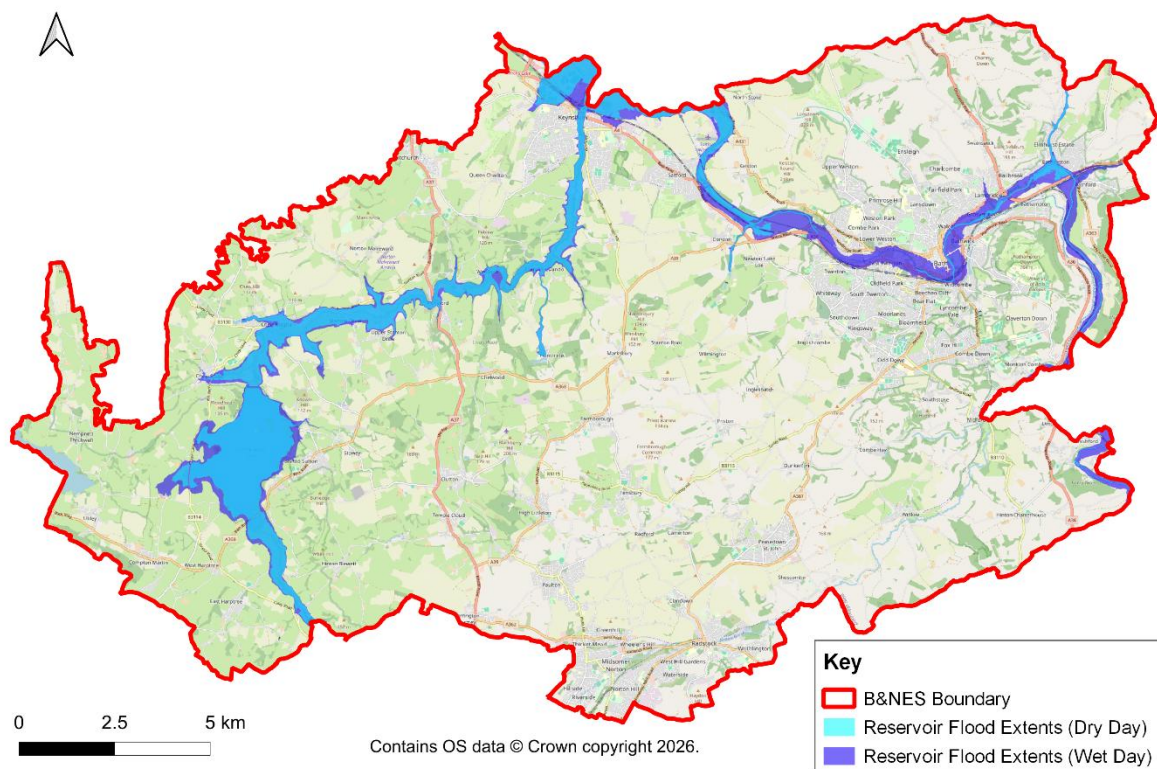


Figure 3-9 - Reservoir breach flood risk in Bath and North East Somerset

3.11 Existing flood risk management

Current flood defence information has been taken from the Environment Agency's Asset Information Management System (AIMS) Spatial Defences dataset. These datasets include all flood defences currently owned, managed or inspected by the Environment Agency and include information on their current condition and standard of protection.

The distribution of the flood defences including flood embankments and high ground is provided in Figure 3-10.

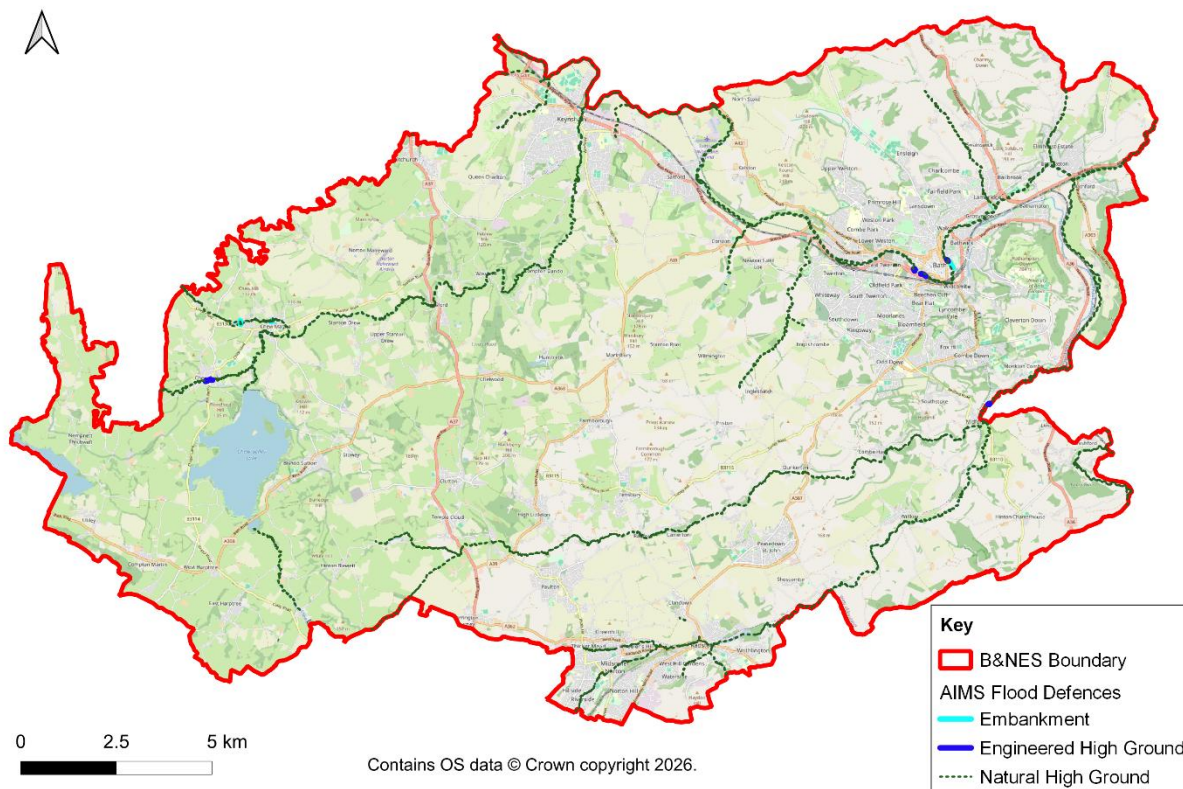


Figure 3-10 - Flood Defences

3.12 Flood warning

In addition to flood defences to reduce the probability of flooding, flood warning has been in operation in the River Avon catchment for a number of years as a means of reducing the impacts of flooding. A range of systems have been in operation in various parts of the catchment operated by the Environment Agency. Although flooding in the upper parts of the catchment is difficult to predict because of the rapid response of the smaller urbanised catchments, the lower reaches of the River Avon benefit from relatively accurate forecasts with good lead-times based on upstream water levels.

Data from the Environment Agency (2026) has been used to identify the flood warning services currently provided for areas at risk of flooding within Bath and North East Somerset. The location of the flood warning services is shown in Figure 3-11.

Flood Warning Areas are based on a combination of the Flood Zone 2 outline and the historic flood extent. This is because some known historic flooding has occurred outside of Flood Zone 2.

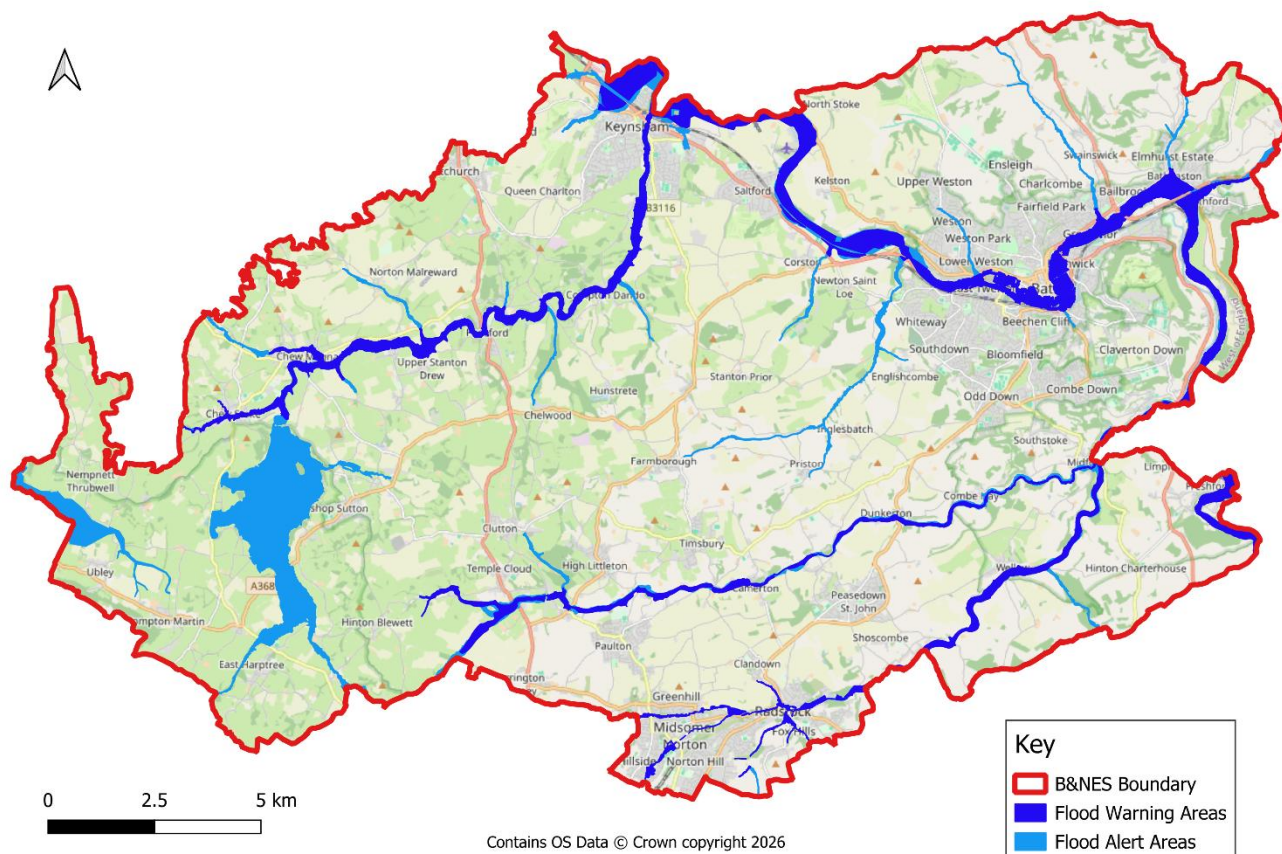


Figure 3-11 - Flood Warning and Flood Alert Areas for Bath and North East Somerset

4. Level 2 Assessment Methodology

4.1 Site Screening as part of Level 1 SFRA

The new Local Plan will identify sites for development. B&NESC provided a number of potential allocation sites that have been identified for both housing and employment. These potential sites have been assessed as part of the Level 1 SFRA for Bath and North East Somerset.

B&NESC have identified the most likely land uses for each of the potential development sites assessed within the SFRA. The application of the Sequential Test to each of these sites and the intended land uses has resulted in 3 groupings:

1. Sites where proposed land use is appropriate;
2. Sites which require application of the Exception Test, or where the sequential approach should be applied for planning the layout of the site; and
3. Sites where the intended land use is not considered appropriate at this stage and further justification as to why the development of the site would have benefits that outweigh the flood risk.

For Grouping 1 sites within the Level 1 SFRA have been considered as appropriate for land use based on the following criteria:

- Site located in Flood Zone 1;
- Less than 10% of the site has low, medium or high risk of surface water flooding with future climate change;
- Less than 10% of the site has areas susceptibility to groundwater flooding within 50-75% susceptibility or >75% susceptibility.

Allocated sites in Group 1 were identified as not requiring further assessment as part of a Level 2 SFRA.

For Grouping 2 above, sites within the Level 1 SFRA have been identified as requiring an Exception Test or a sequential approach to the masterplan layout of the site based on the following criteria:

- Site located in Flood Zone 2, 3a or 3b present day;
- Site located in combined Flood Zone 2 and 3 with future climate change;
- Greater than 10% of the site has low, medium or high risk of surface water flooding with future climate change;
- Greater than 10% of the site has areas susceptibility to groundwater flooding within 50-75% susceptibility or >75% susceptibility.

18 allocated sites in Group 2 were identified requiring further assessment as part of this Level 2 SFRA and are summarised in Figure 4-1.

No sites were identified as within Group 3 as part of the Level 1 SFRA.

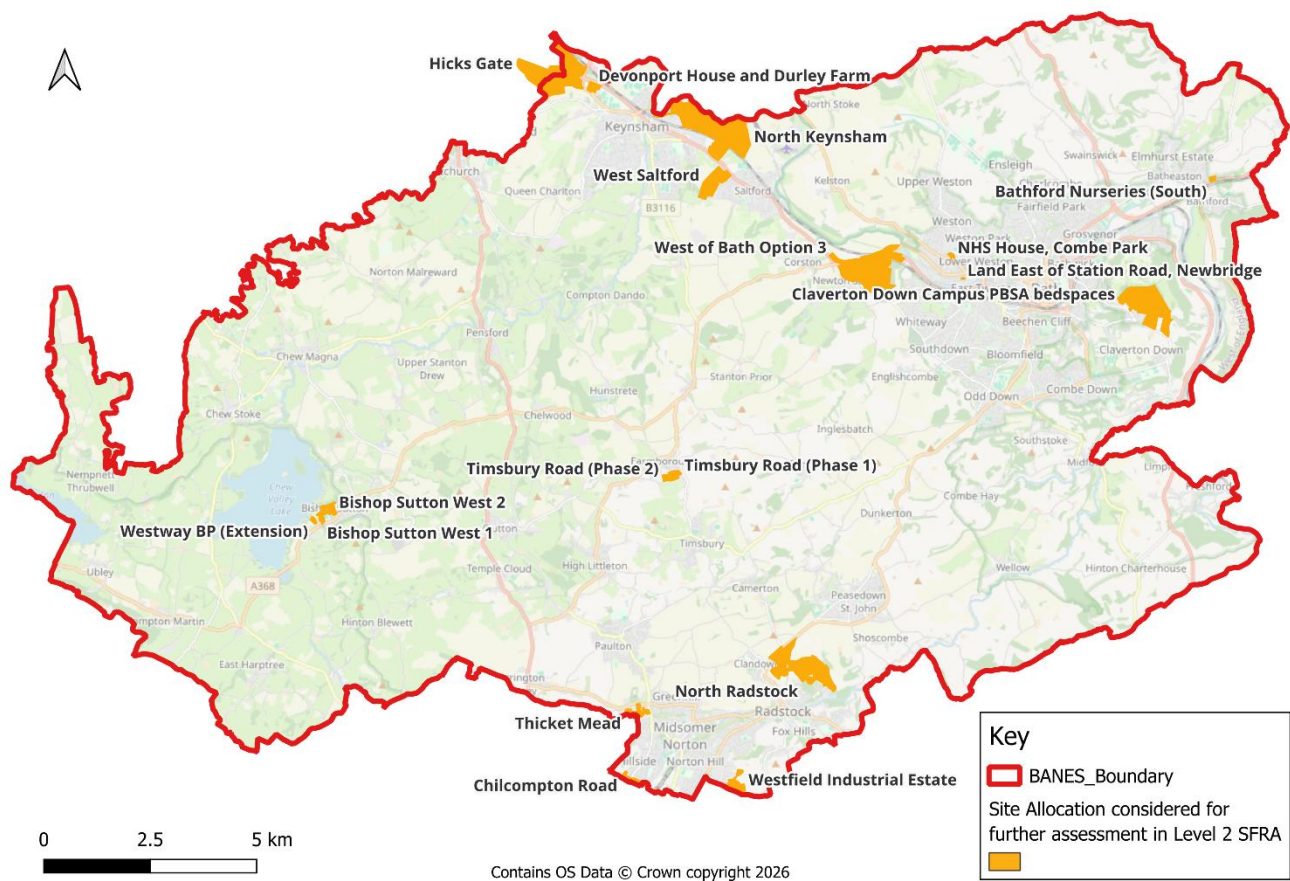


Figure 4-1 – Sites identified as requiring further assessment as part of the Level 1 SFRA

4.2 Initial Level 2 Assessment

An initial assessment of the 18 sites recommended as requiring further assessment as part of the Level 2 SFRA was undertaken. This identified whether the flood risk could be managed as part of a sequential approach to masterplan design, such that an Exception Test would not be required to assess whether the development of the site could remain safe for its lifetime. The criteria for the initial assessment included:

- Is the site in Flood Zone 2 or 3? If yes, can development be sequentially located outside of the floodplain without compromising the capacity assessment for the viability of the site?
- Is the site at high risk of surface water flooding? If yes, can development be sequentially located outside of the extent of surface water flooding for the high and medium risk with climate change without compromising the capacity assessment for the viability of the site?
- Are there watercourses within the site? If yes, can suitable buffers be provided within the site which would not compromise the capacity assessment for the viability of the site or affect access and egress to the site?
- Is there flood risk from rivers or surface water affecting potential access and egress to the site. If yes, are there alternative access routes with lower flood risk?

Table 4-1 provides a summary of the initial assessment with further details provided in Appendix B.

Table 4-1 - Initial Level 2 assessment of sites

Site ID	Site Name	Level 2 Assessment Required?	Reason
Bath			
-	Claverton Down Campus PBSA bedspaces	No	- Site is in Flood Zone 1 and only 4% of the site is at medium or high risk of surface water flooding so low risk from all sources. - Surface Water Drainage Strategy, masterplan layout and ground level management will be sufficient to manage surface water flood risk to any proposed development.
KING23	Land east of Station Road, Newbridge	No	- Only 6% of the site is located within Flood Zone 2 and 3 from the River Avon with climate change and low risk from other sources with climate change. - Masterplan layout providing a buffer along the southern boundary of the site will be sufficient to manage fluvial flood risk to any proposed development.
NEW05	NHS House, Combe Park	Yes	- Site is in Flood Zone 1 but 18% of the site is at medium or high risk of surface water flooding. - Large proportion of the site is at risk from surface water flooding and further assessment is required on the depth, velocity and hazard to determine whether the risk can be managed to enable appropriate development within the site.
-	West of Bath Option 3 - housing element only	No	- Only 4% of the site is located within Flood Zone 2 and 3 from Newton Brook with climate change and low risk from other sources with climate change. - Masterplan layout providing a buffer along the northern and eastern boundaries of the site will be sufficient to manage fluvial flood risk to any proposed development. - Surface Water Drainage Strategy and ground level management will be sufficient to manage surface water flood risk to any proposed development.
Keynsham			
K62, K54	Devonport House and Durley Farm	No	- Only 1% of the site is located within Flood Zone 2 and 3 from the River Avon with climate change and low risk from other sources with climate change. - Masterplan layout providing a buffer along the eastern boundary of the site will be sufficient to manage fluvial flood risk to any proposed development. - Surface Water Drainage Strategy and ground level management will be sufficient to manage surface water flood risk to any proposed development.
K29Z, K30	North Keynsham	Yes	24% of the site is in Flood Zone 3b with 38% located within Flood Zone 2 and 3 with climate change from the River Avon and its tributaries. - Large proportion of the site is at risk from the River Avon and its tributaries and further assessment is required on the depth, velocity and hazard to determine whether the risk can be managed to enable appropriate development within the site.

Site ID	Site Name	Level 2 Assessment Required?	Reason
K24, SAL27b, SAL28	West Saltford	No	- Only 1% of the site is located within Flood Zone 2 and 3 from the River Avon with climate change and low risk from other sources with climate change. - Masterplan layout providing a buffer along the western boundary of the site will be sufficient to manage fluvial flood risk to any proposed development. - Surface Water Drainage Strategy and ground level management will be sufficient to manage surface water flood risk to any proposed development.
Hicks Gate			
K53, K59	Hicks Gate	Yes	- Only 3% of the site is located within Flood Zone 2 and 3 from a tributary of the River Avon with climate change but there is surface water flooding associated with ordinary watercourses. - Large portions of the site are at risk from ordinary watercourses and further assessment is required on the depth, velocity and hazard associated with the ordinary watercourses to determine whether the risk can be managed to enable appropriate development within the site.
Somer Valley			
MSN38a, MSN38b, MSN38c	Chilcompton Road	No	- Only 3% of the site is located within Flood Zone 2 and 3 from the River Somer with climate change and low risk from other sources with climate change. - Masterplan layout providing a buffer along the River Somer on the eastern boundary will be sufficient to manage fluvial flood risk to any proposed development. - Surface Water Drainage Strategy and ground level management will be sufficient to manage surface water flood risk to any proposed development.
RAD16, RAD18, RAD19b	North Radstock	No	- Only 1% of the site is located within Flood Zone 2 and 3 from Wellow Brook with climate change and low risk from other sources with climate change. - Masterplan layout providing a buffer along the tributary of Wellow Brook on the eastern boundary will be sufficient to manage fluvial flood risk to any proposed development. - Surface Water Drainage Strategy and ground level management will be sufficient to manage surface water flood risk to any proposed development.
PAU24a, S2PS24, MSN23	Thicket Mead A and B	Yes	13% located within Flood Zone 2 and 3 with climate change from Wellow Brook and its tributaries. - Greater than 10% of the site is at risk from Wellow Brook and further assessment is required on the depth, velocity and hazard to determine whether the risk can be managed to enable appropriate development within the site.
WF01, WF36	Westfield Industrial Estate East	No	- Only 4% of the site is located within Flood Zone 2 and 3 from the tributary of Snail's Bottom with climate change and low risk from other sources with climate change. - Masterplan layout providing a buffer along the watercourse through the site will be sufficient to manage fluvial flood risk to any proposed development.

Site ID	Site Name	Level 2 Assessment Required?	Reason
			Surface Water Drainage Strategy and ground level management will be sufficient to manage surface water flood risk to any proposed development.
Rural			
BFD06	Bathford Nurseries (South)	Yes	- The site is in Flood Zone 1 but 15% is located within Flood Zone 2 and 3 with climate change from the River Avon. - Greater than 10% of the site is at risk from the River Avon with climate change and further assessment is required on the depth, velocity and hazard to determine whether the risk can be managed to enable appropriate development within the site including an assessment of access and egress to the site.
BIS10	Bishop Sutton West 1	Yes	- The site is in Flood Zone 1 but there is an ordinary watercourse bounding the east of the site and is at high risk of groundwater flooding. - To be considered with Bishop Sutton West 2, in particular regarding access and egress to the sites from the ordinary watercourses which bound the sites.
BIS03b, BIS03c, BIS03d	Bishop Sutton West 2	Yes	- Site is in Flood Zone 1 and low risk from all sources of flooding; however the site is bounded by a number of watercourses and extensive surface water flood risk which affect access and egress to the site. - To be considered with Bishop Sutton West 1, in particular regarding access and egress to the sites.
FAR08	Timsbury Road (Phase 1)	Yes	- Site is in Flood Zone 1 but 15% of the site is at medium or high risk of surface water flooding. - Large proportion of the site is at risk from surface water flooding and further assessment is required on the depth, velocity and hazard to determine whether the risk can be managed to enable appropriate development within the site.
-	Timsbury Road (Phase 2)	Yes	- Site is in Flood Zone 1 and low risk from all sources of flooding. - Whilst large proportion of the site is at low risk from all sources of flooding the site is to be considered with Timsbury Road (Phase 1) in particular regarding the risk from the ordinary watercourse in terms of depth, velocity and hazard to determine whether the risk can be managed to enable appropriate development within the site.
BIS10c (New Site)	Westway BP (extension)	Yes	- The site is in Flood Zone 1 but there is an ordinary watercourse bounding the east of the site and is at high risk of groundwater flooding. - Further assessment is required on the depth, velocity and hazard associated with the ordinary watercourse to determine whether the risk can be managed to enable appropriate development within the site.

Figure 4-2 shows the sites which have been excluded from further Level 2 assessment as development is acceptable and those which have been taken forward for further assessment.

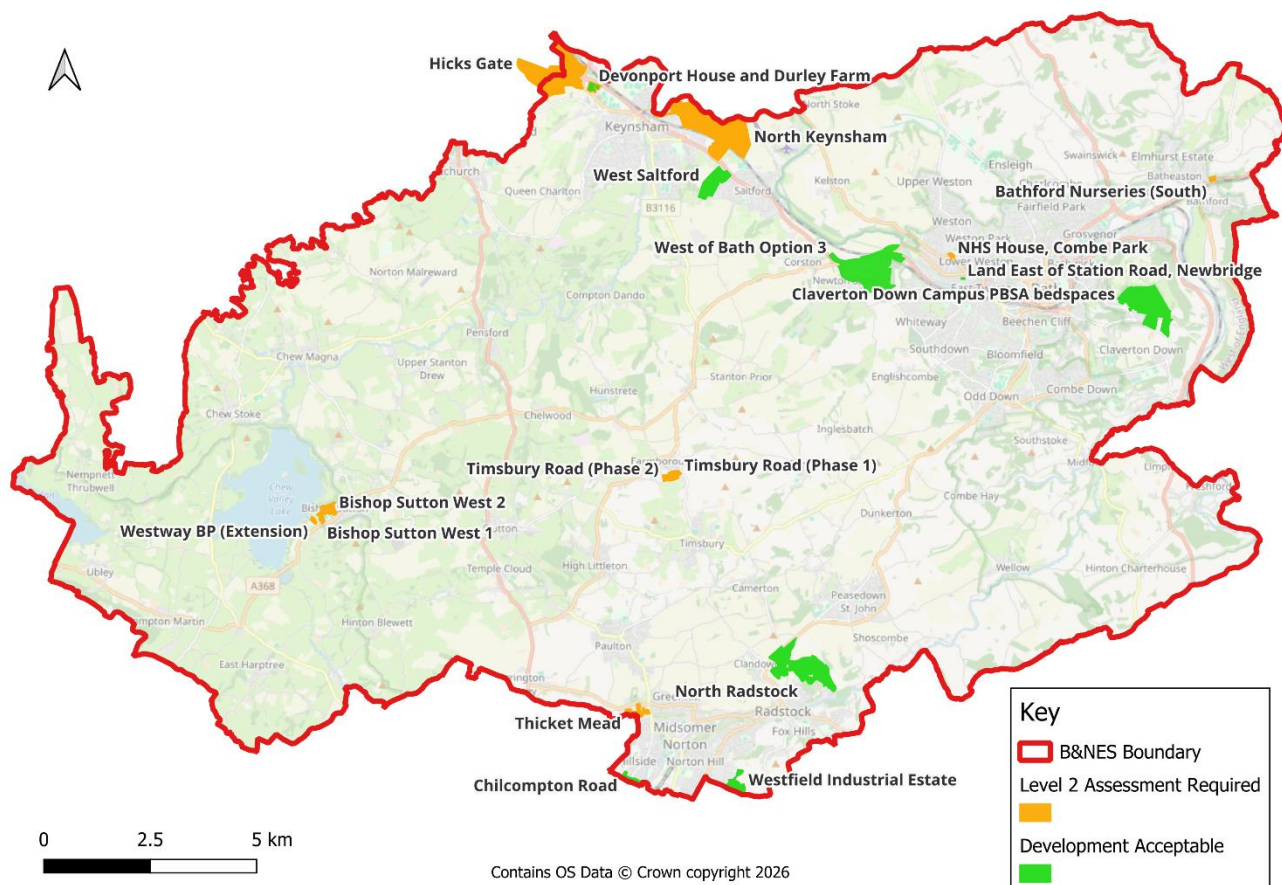


Figure 4-2 – Sites identified as requiring Level 2 assessment

4.3 Detailed Level 2 Assessment Methodology

A Level 2 assessment has been undertaken for the sites outlined in Section 4.2 to identify if the Sequential Test and Exception Test can be passed for the proposed development. The Level 2 assessment has been based on the data sets outlined in Section 3 and as follows:

1. **Topography** - identification of overland flow paths from 2022 LiDAR 1m DTM
2. **Geology and Soils** – identification of nature of the ground and whether there is likely impeded drainage based on:
 - BGS bedrock and Superficial Maps
 - LandIS SoilScape Maps
 - Groundwater Source Protection Zones
 - Groundwater Vulnerability Mapping
3. **Existing Watercourse and Drainage Features** – identification of main river (Environment Agency Statutory Main River Map) and ordinary watercourses (OS Open Rivers and OS historical mapping)
4. **Fluvial Flood Risk** - identification of fluvial flood risk from:
 - Flood Map for Planning

- Risk of Flooding from Rivers with Climate Change extent and flood depth
 - Environment Agency Hydraulic Modelling outputs
 - Historical Flood Map
 - Recorded Flood Outlines
- 5. Surface Water Flood Risk** - identification of surface water flood risk from:
- Risk of Flooding from Surface Water with Climate Change extent, flood depth, flood speed and flood hazard
- 6. Groundwater Flood Risk** - identification of groundwater flood risk from:
- Areas Susceptible to Groundwater Flooding Maps
- 7. Reservoir Flood Risk** - identification of reservoir flood risk from:
- Risk of Flooding from Reservoirs (wet day and dry day)
- 8. Flood Risk Management Measures** – identification of existing measures from AIMS Spatial Flood Defences
- 9. Emergency Planning** – identification of available flood warning and flood alert serving the site and safe access and egress.

5. Detailed Site Assessments

Detailed Level 2 Site Assessments are provided in Appendix C and the findings and recommendations are summarised in Table 5-1. The detailed assessment for Bishop Sutton West 1 and 2 sites have been combined along with the Timsbury Road (Phase 1 and 2) sites.

Table 5-1 – Summary of Level 2 Detailed Assessments

Site ID	Site Name	Summary
Bath		
NEW05	NHS House, Combe Park	- Whilst there is extensive surface water flood risk within the site it is generally shallow in nature (< 300m deep, with low velocity (< 0.25 m/s) and very low hazard rating. - The site is within Flood Zone 1 and the Exception Test is not required in accordance with NPPF Flood Vulnerability Classification. - The access and egress to the site is proposed to the south of the site onto Newbridge Hill. There are no flooding issues from any sources in this area which would affect safe access and egress of the site. - Development is able to progress with consideration of surface water in a site-specific FRA and Drainage Strategy. - A site-specific Flood Risk Assessment (FRA) should demonstrate that future users of the development will not be placed in danger from flood hazards throughout its lifetime. The risk from surface water flow routes should be quantified as part of a site-specific FRA. - A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes.
Keynsham		
K29Z, K30	North Keynsham	- There is fluvial flood risk associated with the River Avon and its tributaries including an ordinary watercourse with flood water up to 1.2m deep within the floodplain. - Whilst there is surface water flood risk within the site it is generally shallow in nature (< 300m deep, with low velocity (< 0.25 m/s) and very low hazard rating. - The access and egress to the site is likely from Pixash Lane and Broadmead Lane towards the Keynsham Bypass to the south. There is a risk of flooding to Broadmead Road as it passes under the Great Western Main Line Railway from both fluvial and surface water flooding. Whilst the depth of flooding is up to 300mm for both fluvial and surface water flood risk on Broadmead Road, there are high velocities (up to 2.0 m/s) which could make safe access and egress difficult. Further assessment of access and egress should be considered as part of a site-specific flood risk assessment to inform the masterplan layout. - Large parts of the site are within Flood Zone 2, 3a and 3b associated with the River Avon and its main river tributary. A sequential approach to the site layout by providing a suitable buffer to the watercourses should be undertaken with development located in Flood Zone 1. - Development is able to progress if the masterplan layout demonstrates only water compatible use within the functional floodplain and suitable buffers are provided for the watercourses. - A site-specific FRA should consider both parts of the Exception Test and demonstrate that future users of the development will not be placed in danger from flood hazards throughout its lifetime. The risk from main river, ordinary watercourses and groundwater emergence should be quantified as part of a site-specific FRA.

Site ID	Site Name	Summary
		A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes.
Hicks Gate		
K53, K59	Hicks Gate	- There is fluvial flood risk associated with Scotland Bottom and out of bank flow around Durley Hill associated with culverted reach under Durley Hill and Bath Road. - The site is generally at very low risk of surface water flooding except for along overland flow routes associated with watercourses and drainage ditches. - The access and egress to the site is proposed to Bath Road. There is a low risk of fluvial flooding to the access road however there is a high risk of surface water flooding along sections of Bath Road which would affect safe access and egress of the site. Assessment of the depth, velocity and hazard of the surface water along Bath Road demonstrates that the depth of flooding is shallow (< 300mm) with velocities that would allow safe passage of emergency vehicles into the site. A site-specific FRA should consider safe evacuation routes. - The site is partially in Flood Zone 2, 3a and 3b associated with Scotland Bottom. A sequential approach to the site layout by providing a suitable buffer to the watercourse should be undertaken with development located in Flood Zone 1. - Development is able to progress with consideration of Scotland Bottom and overland flow routes in a site-specific Flood Risk Assessment (FRA) and Drainage Strategy. - A site-specific FRA should demonstrate that future users of the development will not be placed in danger from flood hazards throughout its lifetime. The risk from surface water flow routes should be quantified as part of a site-specific FRA and development should be located in Flood Zone 1. - A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes.
Somer Valley		
PAU24a, S2PS24, MSN23	Thicket Mead A and B	- There is fluvial flood risk associated with Wellow Brook with flood water up to 600mm deep within the adjacent floodplain. - The site is generally at very low risk of surface water flooding except for along overland flow routes which are low risk. - There are no flooding issues from any sources which would affect safe access and egress to the site. - The site is partially in Flood Zone 2, 3a and 3b associated with Wellow Brook. A sequential approach to the site layout by providing a suitable buffer to the watercourse should be undertaken with development located in Flood Zone 1. - Development is able to progress with consideration of Wellow Brook in a site-specific Flood Risk Assessment (FRA) and Drainage Strategy. - A site-specific FRA should demonstrate that future users of the development will not be placed in danger from flood hazards throughout its lifetime and should be located in Flood Zone 1. - A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes.

Site ID	Site Name	Summary
Rural		
BFD06	Bathford Nurseries (South)	- There is extensive surface water flood risk within the site with some areas of high risk, but it is generally shallow in nature (< 300m deep, with low velocity (< 0.25 m/s) and very low hazard rating. - The access and egress to the site is proposed to Box Road but the depth of flooding for both fluvial and surface water flood risk is shallow (< 300mm) and access and egress to the site from Box Road is feasible. - Development is able to progress with consideration of surface water in a site-specific Flood Risk Assessment (FRA) and Drainage Strategy - A site-specific FRA should demonstrate that future users of the development will not be placed in danger from flood hazards throughout its lifetime. The risk from surface water flow routes should be quantified as part of a site-specific FRA. - A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes.
BIS10, BIS03b, BIS03c, BIS03d	Bishop Sutton West 1 and 2	- There is extensive surface water flood risk within the site with some areas of high risk but it is generally shallow in nature (< 300m deep, with low velocity (< 0.25 m/s) and very low hazard rating. Access and egress to the site should consider locations to the east of the surface water flood risk area on Stitchings Shord Lane where depth, velocity and hazard are lower. - A sequential approach to the masterplan layout should be undertaken providing suitable buffers to the ordinary watercourses within and bounding the sites. - Development is able to progress with consideration of surface water in a site-specific Flood Risk Assessment (FRA) in particular regarding access and egress to Stitchings Shord Lane along with a Drainage Strategy. - A site-specific FRA should demonstrate that future users of the development will not be placed in danger from flood hazards throughout its lifetime. The risk from surface water flow routes should be quantified as part of a site-specific FRA and groundwater emergence in Bishop Sutton West 1 site. - A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes.
FAR08	Timsbury Road (Phase 1 and 2)	- There is extensive surface water flood risk within the site with some areas of high risk but it is generally shallow in nature (< 300m deep, with low velocity (< 0.5 m/s) and very low hazard rating. - There is some minor surface water flooding on both Timsbury Road and Tilley Lane but this is shallow in nature and of low hazard so should not affect safe access and egress of the site. - The site is within Flood Zone 1 and the Exception Test is not required in accordance with NPPF Flood Vulnerability Classification. - Development is able to progress with consideration of surface water in a site-specific Flood Risk Assessment (FRA) and Drainage Strategy. - A site-specific FRA should demonstrate that future users of the development will not be placed in danger from flood hazards throughout its lifetime. The risk from surface water flow routes should be quantified as part of a site-specific FRA. - A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes.

Site ID	Site Name	Summary
BIS10c (New Site)	Westway BP (extension)	- There is extensive surface water flood risk within the site with some areas of high risk but it is generally shallow in nature (< 300m deep, with low velocity (< 0.25 m/s) and very low hazard rating. - A sequential approach to the masterplan layout should be undertaken providing suitable buffers to the ordinary watercourse within and bounding the site. The site is within Flood Zone 1 and the Exception Test is not required in accordance with NPPF Flood Vulnerability Classification. - The access and egress are proposed to the south of the site onto Wick Road. There is only a small area of shallow (<0.2m) surface water ponding in Wick Road which would not affect safe access and egress of the site to the east. - Development is able to progress with consideration of surface water and groundwater in a site-specific Flood Risk Assessment (FRA) and Drainage Strategy. - A site-specific FRA should demonstrate that future users of the development will not be placed in danger from flood hazards throughout its lifetime. The risk from surface water flow routes and risk of groundwater emergence within the site should be quantified as part of a site-specific FRA. - A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes and should take into consideration any elevated ground levels.

6. Planning Requirements and Flood Risk Management

6.1 Sequential Approach

A sequential approach to the masterplan layout should be undertaken to steer development towards Flood Zone 1 and areas at least risk.

Areas in Flood Zone 2 should be considered for the least vulnerable parts of the development in accordance with Appendix A2. No development should be permitted in Flood Zone 3b (aside from Essential Infrastructure).

Where development is considered within Flood Zone 3b, 'water compatible uses' should be applied, such as public open space, natural flood management measures and blue-green infrastructure.

Where watercourses are present suitable buffers should be provided within the masterplan layout.

Where a site is in Flood Zone 1 but is at risk of surface water flooding the developer should take cognisance of PPG paragraph 27, as follows:

PPG paragraph 27 in September 2025 confirms that *'In applying paragraph 175 a proportionate approach should be taken. Where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied.'*

6.2 Flood Risk Assessment

A site-specific FRA is required for the proposed development sites given the following:

- The site is larger than 1 Ha
- The site is at significant risk from other sources of flooding (e.g. surface water and groundwater).

The developer should demonstrate, through a site-specific FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. The risk from surface water flow routes and risk of groundwater emergence should be quantified as part of a site-specific FRA.

When 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.

A detailed site investigation should be undertaken of the underlying geology and groundwater levels to assess the risk to groundwater flooding to inform foundation design and flood resilient and resistant measures to be incorporated into the building design.

The applicant should demonstrate that the development meets the objectives of the NPPF's policy on flood risk.

Through the FRA, the developer should demonstrate that development will not increase risk either within the site or elsewhere.

It should be noted that the climate change allowances used in the design event scenario for this SFRA Level 2 are based on the 2050s epoch (2041-2069) and reflect the median estimate of rainfall increases. If the development has a lifetime beyond this time period, the site-specific FRA should consider the climate change impacts for the 2080s epoch (2075-2125).

As outlined in PPG, the Finished Floor Levels of the development should be raised to a minimum of whichever is highest of the following:

- above the fluvial 1% AEP event with an allowance for climate change and freeboard (either 300mm or 600mm depending on development)
- 600mm above the average ground level of the site
- 600mm above the adjacent road level to the building
- 300mm above the estimated surface water flood level

It is suggested that flood resilient design is adopted in the construction of development. The PPG sets out that flood resistant material that have low permeability should be used to at least 600mm above the estimated flood level; flood resilient materials to at least 600mm above the estimated flood level and raising of electrical equipment at least 600mm above the estimated flood level.

6.3 Drainage Strategy

A Drainage Strategy should demonstrate that runoff magnitudes from the development are not increased by the development across any surface water flow routes. A drainage strategy should help inform the site layout.

If levelling of the land is proposed as part of the development which may alter surface water flow paths and ponding, the drainage strategy should ensure that any new overland flow routes are directed towards soft landscaped areas and retained within the site with no offsite impacts.

The West of England SuDS guidance⁵ should be consulted when designing surface water management for proposed development within Bath and North East Somerset along with Paragraph 059 of PPG. Sustainable drainage systems should be designed in line with national Non-Statutory Technical Standards for SuDS⁶. The C753 CIRIA SuDS Manual⁷ provides guidance on planning, design, construction and maintenance of SuDS.

Surface water management for the site needs to follow the drainage hierarchy:

- Infiltration into ground
- Connection to the watercourse
- Connection to discharge water sewer and as a last resort
- Connection to the combined sewer

The underlying geology has varying permeability although the soils are free draining. There is also a risk of elevated groundwater levels within the site which requires further investigation. Where infiltration is proposed details of the site investigation (including details of ground water depths and land contamination) and test results in accordance with BRE 365 guidance⁸ to confirm infiltration rates is required.

SuDS should be designed to control surface water as close to its source as possible. The use of SuDS should also help achieve the sustainability objectives of the NPPF.

SuDS should be provided in accordance with Paragraph 182 of the NPPF to include multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity.

Surface water should be managed to ensure there is no increased surface water from the proposed development and runoff from extreme events should be retained within the site such that the adjacent third-party land is not affected.

⁵ [west of england developer guide.pdf](#)

⁶ [National standards for sustainable drainage systems \(SuDS\) - GOV.UK](#)

⁷ [The SuDS Manual C753F](#)

⁸ [BRE 365 Digest Soakaway Design](#)

Hydraulic calculations and drawings to support the design need to be provided to demonstrate the capacity of the existing drainage system along with an assessment of overland flow routes for extreme events that is diverted away from any key infrastructure.

Proposed runoff rates for a brownfield site should be agreed with the Lead Local Flood Authority (LLFA) (and Wessex Water if proposed connection is into the public sewer).

Where a new connection is proposed into a main river this will be subject to a Flood Risk Activity Permit from the Environment Agency. Where a new connection is proposed into an ordinary watercourse this will be subject to a Land Drainage Consent from the LLFA.

Maintenance of SuDS is essential for its proper operation and a clear management and maintenance plan for the lifetime of the development is required as part of the planning application.

6.4 Watercourses

Sites located adjacent to a Main River, including culverted sections, require a minimum 8m easement on both sides measured from the top of the bank. This constraint may limit development potential and must allow for access and maintenance, particularly where culverts are present. Developers are required to obtain appropriate environmental permits to ensure that activities within the easement do not increase flood risk.

Where recent detailed hydraulic modelling is unavailable, developers should undertake new or updated modelling as part of a site-specific FRA. This should incorporate channel, structural, and topographic survey data to accurately define flood risk and assess the potential impacts of development on flood flow paths and storage, both currently and under future climate change scenarios.

At the planning stage, further hydrological and hydraulic assessments may be necessary for unmodelled watercourses and surface water interactions to ensure that development does not increase flood risk elsewhere. Modelling should define flood extents, depths, velocities, and hazard, account for current climate change allowances, inform site layout, and support the Exception Test where required.

Where ordinary watercourses are present within or adjacent to a site, developers should consult B&NESC as the LLFA. Any proposed alterations or discharges will require land drainage consent.

Developers must also identify and assess all culverts within or near the site. This should include CCTV condition surveys to determine structural integrity and hydraulic assessments to evaluate capacity. Flood risk analysis should consider the potential for culvert blockage and be supported by site survey data.

6.5 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 assess how effective existing flood defences are, including their level of protection and how this may change over time (e.g. due to 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. It will need to be established that there are plans in place to manage and maintain defences throughout the development's lifetime.

Where relying on existing defences there will be a requirement to demonstrate there is a clear commitment to maintaining their standard of protection for the lifetime of the development.

6.6 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 LPAs and Emergency Services should be consulted when designing an Emergency Plan.

For proposed development within existing Environment Agency Flood Warning Areas, developers should consult the Environment Agency to ensure that adequate flood warning procedures and evacuation processes are in place and that Risk Management Authorities are not put under any additional burden.

7. Conclusion and Recommendations

7.1 Conclusions

This SFRA report provides an overview of the planning context in relation to flood risk and development within Bath and North East Somerset.

The data provided has been collated through consultation with B&NESC, the Environment Agency and Wessex Water.

Sources of flood risk in B&NESC include: fluvial (arising from the River Avon, River Chew, By Brook, Wellow Brook, Cam Brook and River Somer and their tributaries), surface water, sewers and groundwater.

There are existing flood risk management schemes in place, including formalised flood defences and flood storage areas. These flood risk management schemes fall under a range of responsibilities including the Environment Agency and private land owners and provide varying levels of protection.

Climate change is predicted to cause an increase in flood risk in the future and therefore needs to be considered when designing flood risk mitigation and surface water management systems for new development.

An initial assessment of the 18 sites considered requiring further assessment as part of the Level 1 SFRA recommendations identified that 8 of those sites are considered acceptable for development. A sequential approach to the masterplan layout can manage the level of flood risk from fluvial and surface water sources. 10 sites were identified as requiring a Level 2 SFRA.

In principle, it is feasible for the 10 sites assessed in the Level 2 SFRA to satisfy the flood risk element of the Exception Test by:

- Siting development away from the areas at highest risk and within Flood Zone 1 or very low risk of surface water flooding.
- Using areas in Flood Zone 2 for the least vulnerable parts of the development in accordance with Table 2 in the NPPF (Appendix A2). Residential development should not be permitted in Flood Zone 3 and no development at all should be permitted in Flood Zone 3b (aside from water compatible use or essential infrastructure).
- Designing buildings with finished floor levels above the estimated flood level (1% AEP with climate change) including an allowance for freeboard.
- Considering space for green infrastructure in the areas of highest flood risk where this is appropriate.
- Considering safe access and egress routes in the event of a flood.

The wider sustainability benefits to the community that outweigh flood risk element of the Exception Test shall be covered as part of the development of the Local Plan and be included within a site-specific FRA.

If larger sites are 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.

Windfall sites are potential development sites that are not allocated through the Local Plan and have not been individually sequentially tested for this SFRA. The Sequential Test will need to be applied to these sites and if necessary, evidence to meet the requirements of the Exception Test at the planning application stage would also be required.



7.2 Recommendations

The recommendations from this SFRA are as set out below and it is recommended that the list is considered when completing the Local Plan for Bath and North East Somerset.

7.2.1 Process

1. This SFRA should support the completion of site specific FRAs. FRAs are required for submission with the associated planning application for all development located within areas at risk from flooding.
2. The risk to and impact of new development should be minimised through careful planning considerations in relation to flood risk. This would be achieved through promoting development to be located within the lowest areas of flood risk, from all sources.
3. The Sequential Test will need to be carried out for windfall sites and applicants should provide sufficient information to the LPA to be able to assess it.
4. All sources of flood risk need to be considered when assessing the risk to new and proposed development. These sources of flood risk include fluvial, surface water, sewers and groundwater.

7.2.2 Mitigation

5. It is recognised that not all development could be located in areas at lowest risk from flooding, as in some cases the need for the proposed development will outweigh the risks of flooding. Where development is required in areas at risk from flooding it is necessary that new development will incorporate flood risk mitigation measures to ensure that both the site is at an acceptable level of risk, whilst preventing an increase in risk elsewhere. This would need to be demonstrated through the application of the Exception Test.
6. Where flood risk mitigation measures are required to ensure an acceptable level of flood risk associated with new development, these mitigation measures need to be agreed with the LPA (and potentially other statutory consultees) as appropriate to the level and nature of the flood risk. Furthermore, the measures need to be satisfactorily implemented and maintained.

7.2.3 SuDS

7. There is increased focus on suitable surface water management in new development, through the use of SuDS to prevent increased flood risk both on site and elsewhere. For development on greenfield sites surface water runoff from the site must be attenuated to the pre development rate. For development on brownfield sites, surface water runoff should be reduced as recommended by the West of England SuDS guide.
8. SuDS must be selected following the SuDS hierarchical approach and in accordance with national and local standards. The exception would only be if it can be clearly demonstrated that SuDS would not be technically, economically or operationally viable but other forms of surface water management would be possible, or in locations where SuDS would present health and safety concerns that could not be suitability addressed.
9. It is recommended that where appropriate, especially for larger development sites, SuDS should also be planned at a strategic scale and linked to wider sustainability benefits to enhance green infrastructure, improve water quality and provide wildlife and ecosystem benefits.
10. Development proposing SuDS needs to have a clear maintenance schedule outlining responsibilities for the management of the SuDS over the lifetime of the development to ensure the surface water drainage remains effective.

7.2.4 General

11. Where possible it is recommended that redundant watercourse crossings and culvert structures are removed to provide flood risk and ecological benefits. When proposing the removal of such structures, that have the potential to act as a constriction to flow, the downstream implications should be determined, and mitigation provided, to avoid detrimental downstream impacts.
12. It is recommended that this SFRA is considered to be a live document, which has been based on current understanding of flood risk and existing and available flood risk information. In the future as further flood events occur, as flood risk policy advances and as studies are completed to improve flood risk understanding, information in this SFRA will become outdated. To address these potential future changes, it is recommended that this SFRA is reviewed and updated as appropriate.

APPENDICES



Appendix A. NPPF Vulnerability Classification

A.1 Flood risk vulnerability classification – taken from Annex 3 in the NPPF flood risk planning practice guidance

Essential Infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

Highly Vulnerable

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').

More Vulnerable

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Less Vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).



- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

Water-Compatible Development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.

Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

*Information as of 08/06/2026. Please see <https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification> for the live document.



A.2 Flood risk vulnerability and Flood Zone ‘compatibility’ – taken from Table 2 in the NPPF flood risk planning practice guidance

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Flood Zone 1	✓	✓	✓	✓	✓
Flood Zone 2	✓	Exception Test required	✓	✓	✓
Flood Zone 3a [†]	Exception Test required [†]	x	Exception Test required	✓	✓
Flood Zone 3b*	Exception Test required*	x	x	x	✓*

Key

✓ Development is appropriate

x Development is not appropriate

†In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

*In Flood Zone 3b (functional floodplain) essential infrastructure must demonstrate a passed Exception Test. Water compatible development should be designed and constructed to remain operational and safe for users in times of flood; result in no net loss of floodplain storage; and not impede water flows and not increase flood risk elsewhere.

*Information as of 08/06/2026. Please see [Flood risk and coastal change - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/flood-risk-and-coastal-change) for the live document.



Appendix B. Initial Level 2 Assessment



Appendix C. Detailed Site Assessments



AtkinsRéalis

