

Wealden Level 1 Strategic Flood Risk Assessment

Final report

May 2022

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Revision History

Revision Ref/Date	Amendments	Issued to
S3-P01/ September 2021	Early Draft Report – incomplete climate change and cumulative impact assessment	Natalie Bumpus, Wealden District Council
S3-P02/ November 2021	Full Draft Report	Natalie Bumpus, Wealden District Council
S3-P03/ January 2022	Full draft report addressing WDC comments	Natalie Bumpus, Wealden District Council
S3-P04/ February 2022	Final Report for consultation with EA and LLFA	Natalie Bumpus, Wealden District Council
A1-C01/ April 2022	Final report	Natalie Bumpus, Wealden District Council
A1-C02/ May 2022	Final report	Natalie Bumpus, Wealden District Council

Contract

This report describes work commissioned by Wealden District Council, by a letter dated 21 April 2021. Wealden District Council's representative for the contract was Natalie Bumpus. Nia Vines, Jennifer Grist and Peter Rook of JBA Consulting carried out this work.

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Purpose

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Acknowledgements

We would like to acknowledge the assistance of

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- East Sussex County Council
- Environment Agency
- Southern Water

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Executive summary

Introduction

This report is a Level 1 Strategic Flood Risk Assessment (SFRA) for Wealden District and it will be used to inform decisions on the location of future development and the preparation of sustainable policies for the long-term management of flood risk. This report provides a comprehensive and robust evidence base on flood risk issues to support the production of the new Local Plan.

Definition of the study area

Wealden District Council's (WDC) administrative area covers an area of approximately 836 km² and has a population of approximately 161,475 (2019 estimate by the Office of National Statistics). This SFRA does not cover all of WDC's administrative area, as it excludes the southernmost section of the district (including the South Downs National Park). The southernmost section of Wealden District (excluding the South Downs National Park) will be covered in a separate SFRA. This SFRA study area covers approximately 759 km².

SFRA Objectives

This SFRA replaces the 2017 Level 1 SFRA for the study area. This study provides a comprehensive and robust evidence base to support the new Wealden District Local Plan. The key objectives are:

- To update and supersede the Council's 2017 SFRA.
- To consider the requirements of the NPPF (2021); climate change scenarios from the Environment Agency; planning guidance on flood risk management and projects being undertaken by East Sussex County Council as the Lead Local Flood Authority.
- To identify updates related to new datasets, including the Risk of Flooding from Surface Water (RoFSW), any local flood risk management strategies and any risks from groundwater flooding.
- To inform decisions in the emerging Local Plan, including the selection of development sites and planning policies.
- To provide evidence to support the application of the Sequential Test for the allocation of new development sites, to support the Council's preparation of the Local Plan.
- To provide a comprehensive set of maps presenting flood risk from all sources that can be used as an evidence base for use in the emerging Local Plan.
- To provide advice for applicants carrying out site-specific Flood Risk Assessments and outline specific measures or objectives that are required to manage flood risk.
- Dependent on the outcome of the Level 1 SFRA, to provide a Level 2 SFRA that is sufficiently detailed to allow Wealden District Council to apply the Exception Test to their site allocations.

Summary of flood risk in the study area

- There are recorded flooding incidents distributed across the district, with the highest numbers recorded in the areas around Forest Row, Crowborough, Uckfield, Heathfield, Lower Horsebridge and Durgates.
- Fluvial flood risk is most notable in the Pevensey Levels, posing a risk to Hailsham, Westham and Pevensey. The other four principal watercourses (Rivers Medway, Uck, Cuckmere and Shortbridge Stream) also pose a threat to Uckfield, Crowborough, Forest Row, Horam, Hailsham and Polegate as well as large rural areas.
- Flood risk from surface water predominantly follows topographical flow paths of existing watercourses or dry valleys with some isolated ponding in low lying areas.
- Herstmonceux and Hailsham have the greatest number of recorded sewer flooding incidents, however these are also recorded at Heathfield, Uckfield and Forest Row.
- Sea level rise with climate change is predicted to cause Flood Zone 3 to ingress further inland, covering all of the Pevensey Levels and threatening Hailsham.
- Due to the often-steep topography of river catchments in Wealden District, an increase in river flows with climate change is not predicted to increase the extent of flood risk in the district, with the exception of The River Cuckmere and Knockhatch Stream at Hailsham and the River Medway at Forest Row. However, climate change is likely to increase flood frequency and the impact of a flood event with a given probability is also likely to become more severe, as water depths, velocities and flood hazard increase.
- Large areas of Wealden are areas of groundwater concern, particularly in the north and south of the district, whereas in the High Weald, steep topography and impermeable geology limit the areas of groundwater concern to the fluvial river basins where high water tables can lead to groundwater flood risk.
- There is a potential risk of flooding from 21 reservoirs both within the district and those outside. There are no records of flooding from reservoirs in the study area to date. The level and standard of inspection and maintenance required under the Reservoirs Act 1975 means that the risk of flooding from reservoirs is relatively low. However, there is a residual risk of a reservoir breach and this risk should be considered in any site-specific Flood Risk Assessments (where relevant).

How to use this report

Planners

The SFRA provides recommendations regarding all sources of flood risk in Wealden District, which can be used to inform policy on flood risk within the Local Plan. This includes how the cumulative impact of development should be considered.

It provides the latest flood risk data and guidance to inform the Sequential Test and provides guidance on how to apply the Exception Test. The Council can use this

information to apply the Sequential Test to strategic allocations and identify where the Exception Test will also be needed.

The SFRA provides guidance for developers, which can be used by development management staff as well to assess whether site specific Flood Risk Assessments meet the required quality standard.

Developers

This SFRA provides guidance for the application of the Sequential and Exception Tests at a site level and for detailed site-specific Flood Risk Assessments.

For sites that are not strategic allocations, developers will need to use this SFRA to help apply the Sequential Test. For all sites, whether strategic allocations or windfall sites, developers will need to apply the Exception Test where the Sequential Test has not been passed, and use information in a site-specific Flood Risk Assessment to inform this test at planning application stage.

When assessing sites not identified in the Local Plan (windfall sites), developers should use evidence provided in this SFRA to apply the Sequential Test as well as providing evidence to show that they have adequately considered other reasonably available sites.

This is a strategic assessment and does not replace the need for site-specific Flood Risk Assessments where a development is either within Flood Zones 2 or 3, or greater than a hectare in Flood Zone 1. In addition, a surface water drainage strategy will be needed for all major developments in any Flood Zone to satisfy East Sussex County Council, the Lead Local Flood Authority (LLFA).

Developers can use the information in this SFRA, alongside site-specific research, to help to scope out what additional work will be needed in a detailed Flood Risk Assessment. To do this, they should refer to section 5, Appendix A, D-G (mapping) and Appendix B (Data sources used in the SFRA). At the planning application stage, developers may need to undertake more detailed hydrological and hydraulic assessments of the watercourses to verify flood extent (including latest climate change allowances, last updated by the Environment Agency in 2021), inform master planning and prove, if required, whether the Exception Test can be passed. As part of the Environment Agency's updated guidance on climate change, which must be considered for all new developments and planning applications, developers will need to undertake a detailed assessment of climate change as part of the planning application process when preparing FRAs.

Developers need to ensure that new development does not increase surface water runoff from a site. Section 9 provides information on the surface water drainage requirements of East Sussex County Council as LLFA. Sustainable Drainage Systems should be considered at the earliest stages that a site is developed which will help to minimise costs and overcome any site-specific constraints.

Flood Risk Assessments will need to identify how flood risk will be mitigated to ensure the development is safe from flooding and does not increase flood risk elsewhere. In high-risk areas, the Flood Risk Assessment will also need to consider emergency arrangements, including how there will be safe access and egress from the site.

Any developments located within an area protected by flood defences where the standard of protection is not sufficient to mitigate flood risk over the proposed lifetime of the development (either now or in the future), the use of developer contributions should be considered to fund improvements. This would be necessary to ensure that development is feasible and would remain safe throughout its lifetime.

Cumulative impacts

A cumulative impact assessment has been carried out which has identified which catchments in Wealden District are more sensitive to the cumulative impact of development and where more stringent policy regarding flood risk is recommended. Any development in these areas should seek to contribute to work that reduces wider flood risk in those catchments.

Neighbourhood plans

The SFRA provides information on the sources of flooding and the variation in the risk across the district, which organisations are involved in flood risk management and their latest strategic plans, current plans for major flood defences, the requirements for detailed Flood Risk Assessments and to inform the site selection process.

Neighbourhood planners can use this information to assess the risk of flooding to sites within their community, using section 5, the sources of flooding in Wealden District and the flood mapping in the appendices. The SFRA will also be helpful for developing community level flood risk policies in high flood risk areas.

These maps highlight on a broadscale where flood risk from fluvial, surface water, groundwater and the effects of climate change are most likely. These maps are useful to provide a community level view of flood risk but may not identify if an individual property is at risk of flooding or model small scale changes in flood risk. Local knowledge of flood mechanisms will need to be included to complement this broadscale mapping. Similarly, all known recorded historical flood events for the district are listed in Section 5.1 and this can be used to supplement local knowledge regarding areas worst hit by flooding. Ongoing and proposed flood alleviation schemes planned by East Sussex County Council are outlined in Section 6.4 and Section 8.4 discusses mitigations, resistance and resilience measures, which can be applied to alleviate flood risk to an area.

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Abbreviations and definitions

Term	Definition
AEP	Annual Exceedance Probability
AStGWF	Areas Susceptible to Groundwater Flooding
CFMP	Catchment Flood Management Plan- A high-level planning strategy through which the Environment Agency works with their key decision makers within a river catchment to identify and agree policies to secure the long-term sustainable management of flood risk.
CIRIA	Construction Industry Research and Information Association
Defra	Department for Environment, Food and Rural Affairs
Design flood	This is a flood event of a given annual flood probability, which is generally taken as: fluvial (river) flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year), or; tidal flooding with a 0.5% annual probability (1 in 200 chance each year), against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.
EA	Environment Agency
EU	European Union
Exception Test	Set out in the NPPF, the Exception Test is a method used to demonstrate that flood risk to people and property will be managed appropriately, where alternative sites at a lower flood risk are not available. The Exception Test is applied following the Sequential Test.
FCERM	Flood and Coastal Erosion Risk Management

Term	Definition
Flood defence	Infrastructure used to protect an area against floods such as floodwalls and embankments; they are designed to a specific standard of protection (design standard).
Flood Map for Planning	The Environment Agency Flood Map for Planning (Rivers and Sea) is an online mapping portal which shows the Flood Zones in England. The Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences and do not account for the possible impacts of climate change.
Flood Risk Area	An area determined as having a significant risk of flooding in accordance with guidance published by Defra and WAG (Welsh Assembly Government).
Flood Risk Regulations	Transposition of the EU Floods Directive into UK law. The EU Floods Directive is a piece of European Community (EC) legislation to specifically address flood risk by prescribing a common framework for its measurement and management.
Flood and Water Management Act	Part of the UK Government's response to Sir Michael Pitt's Report on the Summer 2007 floods, the aim of which is to clarify the legislative framework for managing surface water flood risk in England.
FWA	Flood Warning Area
Fluvial Flooding	Flooding resulting from water levels exceeding the bank level of a River
FRA	Flood Risk Assessment - A site-specific assessment of all forms of flood risk to the site and the impact of development of the site to flood risk in the area.
FRM	Flood Risk Management
FRMP	Flood Risk Management Plan
FSA	Flood Storage Area
FWMA	Flood and Water Management Act
Ha	Hectare
IDB	Internal Drainage Board
JBA	Jeremy Benn Associates
LFRMS	Local Flood Risk Management Strategy
LIDAR	Light Detection and Ranging
LLFA	Lead Local Flood Authority - Local Authority responsible for taking the lead on local flood risk management
LPA	Local Planning Authority
m AOD	metres Above Ordnance Datum
Main River	A watercourse shown as such on the Main River Map, and for which the Environment Agency has responsibilities and powers
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NRD	National Receptor Database
NRIM	National Reservoir Inundation Mapping
NVZs	Nitrate Vulnerability Zones
Ordinary Watercourse	All watercourses that are not designated Main River. Local Authorities or, where they exist, IDBs have similar permissive powers as the Environment Agency in relation to flood defence work. However, the riparian owner has the responsibility of maintenance.

Term	Definition
PFRA	Preliminary Flood Risk Assessment
Pluvial flooding	Flooding as a result of high intensity rainfall when water is ponding or flowing over the ground surface (surface runoff) before it enters the underground drainage network or watercourse or cannot enter it because the network is full to capacity.
RBMP	River Basin Management Plan
Resilience Measures	Measures designed to reduce the impact of water that enters property and businesses; could include measures such as raising electrical appliances.
Resistance Measures	Measures designed to keep flood water out of properties and businesses; could include flood guards for example.
Return Period	Is an estimate of the interval of time between events of a certain intensity or size, in this instance it refers to flood events. It is a statistical measurement denoting the average recurrence interval over an extended period of time.
Riparian owner	A riparian landowner, in a water context, owns land or property, next to a river, stream or ditch.
Risk	In flood risk management, risk is defined as a product of the probability or likelihood of a flood occurring, and the consequence of the flood.
RoFfSW	Risk of Flooding from Surface Water (formerly known as the Updated Flood Map for Surface Water (uFMfSW))
Sequential Test	Set out in the NPPF, the Sequential Test is a method used to steer new development to areas with the lowest probability of flooding.
Sewer flooding	Flooding caused by a blockage or overflowing in a sewer or urban drainage system.
SFRA	Strategic Flood Risk Assessment
SoP	Standard of Protection - Defences are provided to reduce the risk of flooding from a river and within the flood and defence field standards are usually described in terms of a flood event return period. For example, a flood embankment could be described as providing a 1 in 100-year standard of protection.
SPZ	(Groundwater) Source Protection Zone
Stakeholder	A person or organisation affected by the problem or solution or interested in the problem or solution. They can be individuals or organisations, includes the public and communities.
SuDS	Sustainable Drainage Systems - Methods of management practices and control structures that are designed to drain surface water in a more sustainable manner than some conventional techniques
Surface water flooding	Flooding as a result of surface water runoff as a result of high intensity rainfall when water is ponding or flowing over the ground surface before it enters the underground drainage network or watercourse or cannot enter it because the network is full to capacity, thus causing what is known as pluvial flooding.
SWMP	Surface Water Management Plan - The SWMP plan should outline the preferred surface water management strategy and identify the actions, timescales and responsibilities of each partner. It is the principal output from the SWMP study.

Term	Definition
WFD	Water Framework Directive – Under the WFD, all waterbodies have a target to achieve Good Ecological Status (GES) or Good Ecological Potential (GEP) by a set deadline. River Basin Management Plans (RBMPs) set out the ecological objectives for each water body and give deadlines by when objectives need to be met.

1 Introduction

Purpose of the Strategic Flood Risk Assessment

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

(National Planning Policy Framework, paragraph 160)

- 1 Wealden District Council (WDC) are the Local Planning Authority (LPA) for the Wealden District, excluding the South Downs National Park, as illustrated in Figure 1-1. As part of their role as the LPA, WDC are currently preparing a new Local Plan, which will set out the vision and spatial development strategy for Wealden District for the period 2019-2039. A Strategic Flood Risk Assessment (SFRA) is required to provide a robust evidence base to support WDC in the production of their new Local Plan and specifically in the application of the Sequential and Exception tests required by the National Planning Policy Framework (NPPF) 2021.
- 2 This SFRA replaces the Level 1 SFRA published by the Council in 2017 and will be used to inform decisions on the location of future development and the preparation of sustainable policies for the long-term management of flood risk.

1.1 Local Plan context

- 3 Wealden District Council adopted its current Local Plan in February 2013 – titled the Wealden District Core Strategy Local Plan. The Council also adopted its Affordable Housing Delivery Local Plan in May 2016 that contained a single policy on affordable housing provision and continues to use 'saved' policies from its Wealden Local Plan (1998) for development management purposes.
- 4 An updated Wealden Local Plan was submitted in 2019, using the former National Planning Policy Framework (NPPF) 2012 to establish the evidence base; however, the Council chose to withdraw this Local Plan at full Council in February 2020 and is now preparing a new Local Plan.
- 5 The new Local Plan is to be a single plan, containing both strategic and non-strategic policies, so will require planning policies on flood risk as well as information to inform site allocations and site-specific flood risk policies where appropriate. The plan will identify site allocations for different land uses such as housing, employment, retail and leisure, health, education, open spaces as well as seek to address climate change and protect the natural and built environment. It will also provide development management policies to achieve the vision and ensure growth within the district is sustainable.

1.2 SFRA study area

- 6 Wealden District Council's administrative area covers an area of approximately 836 square kilometres and has a population of approximately 161,475 (2019 estimate by the Office of National Statistics). Wealden is the largest district in East Sussex. It is a semi-rural catchment with five main market towns - Crowborough, Hailsham, Heathfield, Polegate and Uckfield.
- 7 This SFRA does not cover the South Downs National Park, which is a Local Planning Authority in its own right with its own Local Plan. Furthermore, the southern section of Wealden district will be covered in a separate SFRA which will also consider Eastbourne Borough, taking into account the most recent fluvial modelling and mapping. This SFRA will therefore cover an area of approximately 759 square kilometres.
- 8 Wealden District is bordered by Tandridge District Council, Sevenoaks District Council, Tunbridge Wells Borough Council, Rother District Council, Eastbourne Borough Council, Lewes District Council and Mid Sussex District Council (Figure 1-1), as well as the South Downs National Park Authority.
- 9 There are a number of key watercourses classified as Main Rivers in the district; the River Medway flows through the north of the district; Shortbridge Stream and the River Uck are tributaries of the River Ouse that flow through the west of Wealden; the Cuckmere River is entirely contained within Wealden district and drains a large proportion of Southern Wealden and a number of Main Rivers drain the Pevensey Levels.
- 10 Tributaries of these watercourses include smaller ordinary watercourses, such as Framfield Stream and numerous unnamed drains. There are also a number of ponds and lakes within the study area. A map of the key watercourses can be found in Figure 1-1.
- 11 Southern Water are the sole providers of sewerage services across the district. South East Water provides drinking water, with the exception of a small section in the north east which is served by Mid Kent Water.

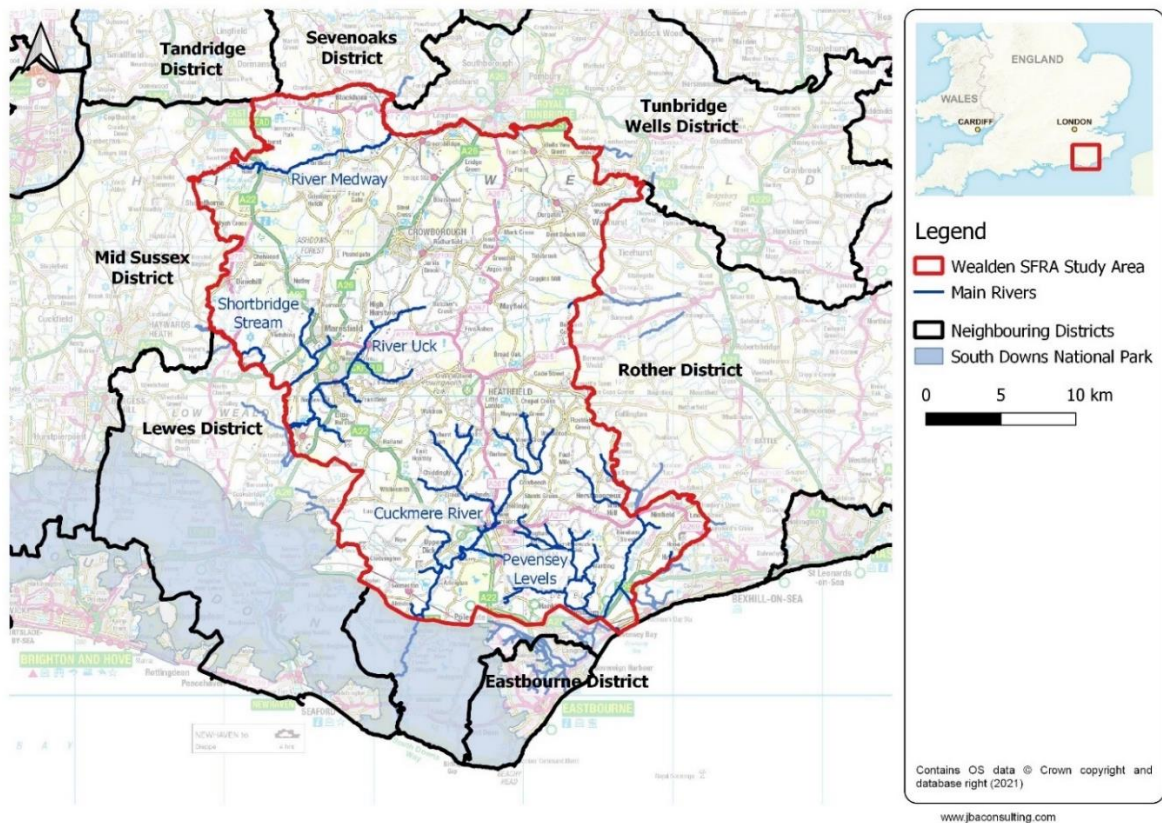


Figure 1-1: The SFRA study area

1.3 Topography, geology and soils

12 The topography, geology and soil are all important in influencing the way the catchment responds to a rainfall event. The degree to which a material allows water to percolate through it, the permeability, affects the extent of overland flow and therefore the amount of run-off reaching the watercourse. Steep slopes or clay rich (low permeability) soils will promote rapid surface runoff, whereas gentle gradients and more permeable rock, such as limestone and sandstone, may result in a more subdued response.

1.3.1 Topography

13 The topography of Wealden District ranges from the High Weald in the north to Pevensey Bay in the south. Elevations range from over 200m Above Ordnance Datum (AOD) at Crowborough to 20m AOD at Hailsham and 2m AOD at Pevensey Levels Figure 1-2 shows the topography of the Wealden study area.

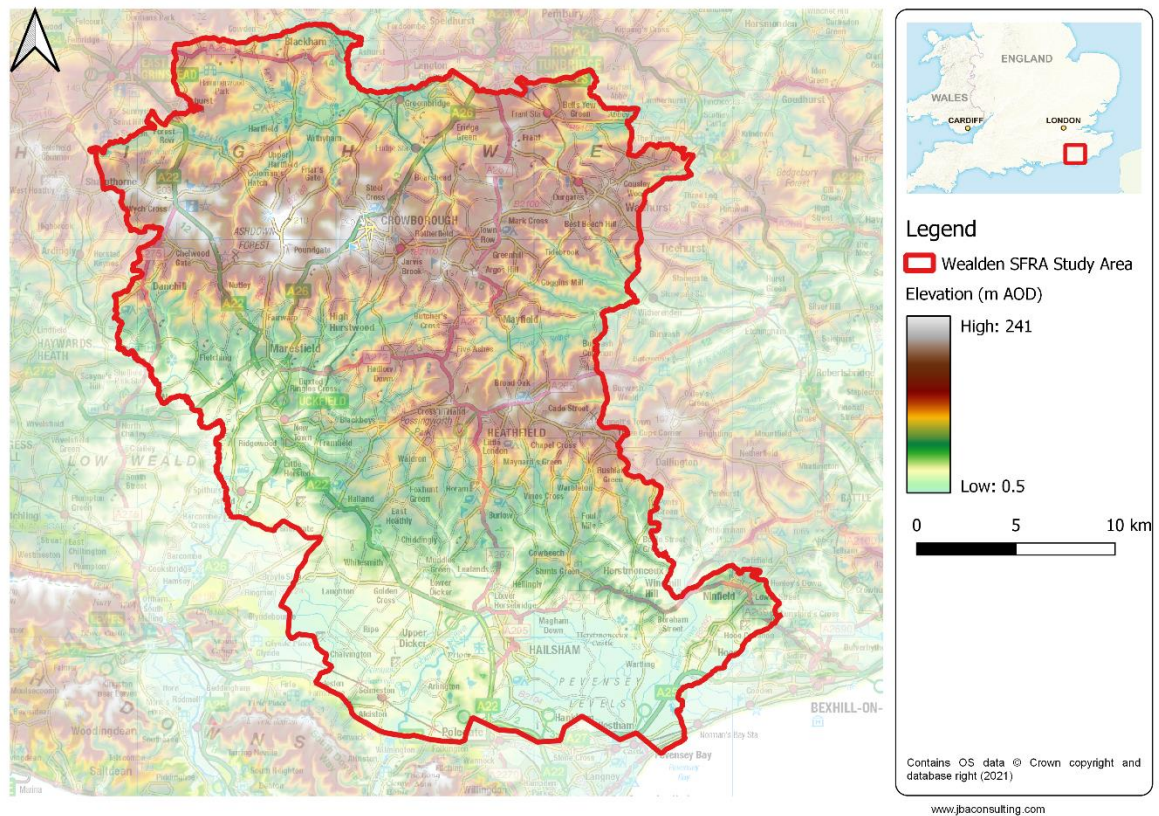


Figure 1-2: The topography of the study area

1.3.2 Geology

- 14 The bedrock in Wealden District is predominantly *Wealden Group Sandstone and Siltstone, Interbedded*, which is designated as Secondary A: rock layers capable of supporting water supplies at a local level and, in some cases, forming an important source of base flow to rivers.
- 15 Outcrops of Wealden Group Mudstone, Siltstone and Sandstone are found mostly in the south of the district around the River Medway and to the south-east of Crowborough but with bands also present in the north-east and around Blackham.
- 16 A band of Gault Formation and Upper Greensand Formation - Mudstone, Sandstone and Limestone geology is found in the south-west of the study area. Mudstone tends to have a low porosity and these rock types are therefore classified as unproductive strata: rock layers with low permeability and therefore a negligible significance for water supply or river base flow.
- 17 A thin band of Sandstone and Mudstone is found in the south west of the district and is classified as a Principal rock layer, with high permeability and high levels of water storage, leading to lower run off rates relative to the rest of the district. The bedrock geology can be viewed through the [British Geological Survey](#) and in Figures 1-3 and 1-4.

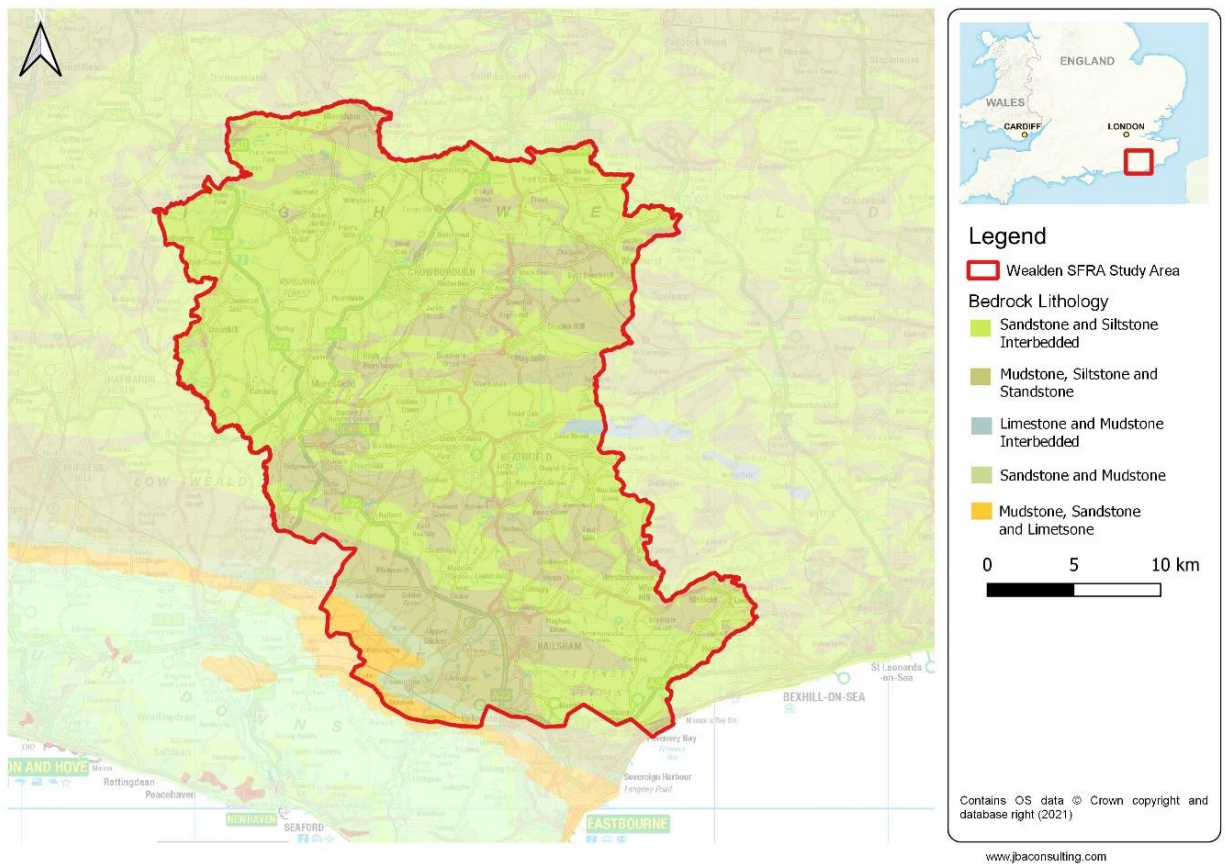


Figure 1-3: Bedrock lithology of the study area

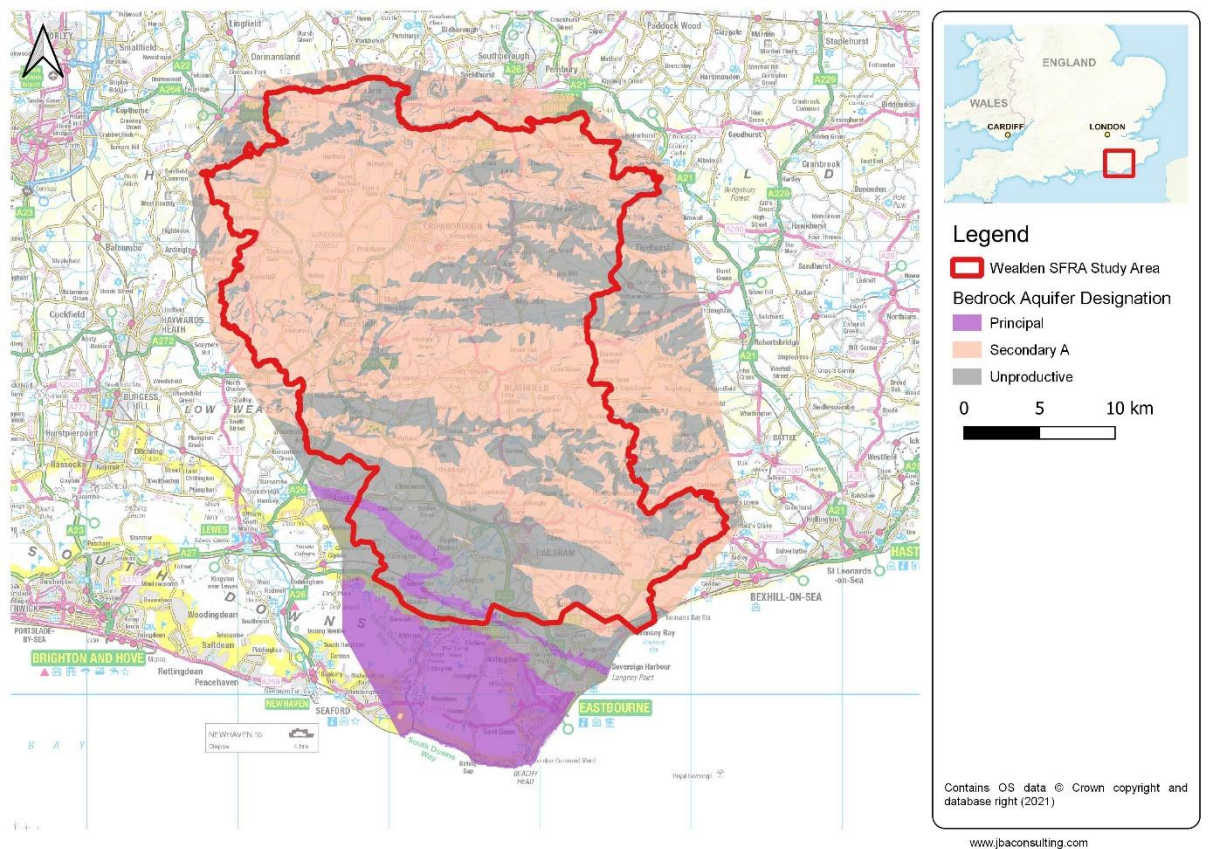


Figure 1-4: The aquifer designation of the bedrock in the study area

1.3.3 Soils

- 18 **UK Soil Observatory data** indicates that most of the central and north areas of the district are covered in either slightly acid, loamy and clayey soils with impeded drainage or slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils with slightly impeded drainage. Two areas in the north of the district -one south of Tunbridge Wells and another in the west in Ashdown Forest- are covered with naturally wet, very acid, sandy and loamy soils.
- 19 The southern area of the district west of Eastbourne is split between two freely draining soil types: lime-rich loamy soils and shallow lime-rich soils over chalk or limestone. The flood plains and coastal flats of the River Cuckmere are loamy and clayey soils with naturally high ground water.

1.4 Levels of SFRA

- 20 The **Planning Practice Guidance (PPG)** identifies the following two levels of SFRA:
- **Level 1:** where flooding is not a major issue in relation to potential site allocations and where development pressures are low. The assessment should be of sufficient detail to enable application of the Sequential Test.
 - **Level 2:** where land outside Flood Zones 2 and 3 cannot appropriately accommodate all necessary development, creating the need to apply the NPPF's Exception Test. In these circumstances the assessment should consider the detailed nature of the flood characteristics within a Flood Zone and assessment of other sources of flooding.
- 21 This Level 1 SFRA is intended to aid Wealden District Council in applying the Sequential Test for their site allocations and identify where the application of the Exception Test may be required via a Level 2 SFRA.

1.5 SFRA outputs

- 22 This Level 1 SFRA will generate the following outputs, in accordance with the latest Planning Practice Guidance. This will include the following:
- Appraisal of all potential sources of flooding, including main river, ordinary watercourse, surface water, sewers, groundwater, reservoirs and canals.
 - Review of historic flooding incidents.
 - Identification of any strategic flooding issues which may have cross boundary implications.
 - Reporting on the standard of protection provided by existing flood risk management infrastructure.
 - Mapping showing distribution of flood risk across all Flood Zones from all sources of flooding including climate change allowances.
 - Assessment of the potential increase in flood risk due to climate change.
 - Identification of policy and technical updates.
 - Flood Risk Assessment guidance for developers.

- Assessment of surface water management issues, how these can be addressed through development management policies and the application of Sustainable Drainage Systems.
- Recommendations of the criteria that should be used to assess future development proposals and the development of a Sequential Test and sequential approach to flood risk.
- Assessment of strategic flood risk solutions that can be implemented to reduce risks.

1.6 Consultation

23 The following parties (external to Wealden District Council) were consulted to inform the SFRA:

- Environment Agency
- Southern Water
- East Sussex County Council
- Pevensey and Cuckmere Water Level Management Board
- Neighbouring Local Planning Authorities¹

1.7 Use of SFRA data

24 Level 1 SFRAs are high-level strategic documents and do not go into detail on an individual site-specific basis. The primary purpose is to provide an evidence base to inform the Local Plan and any future flood risk policies.

25 Developers will still be required to undertake site-specific Flood Risk Assessments to support Planning Applications. Developers will be able to use the information in the SFRA to scope out the sources of flood risk that will need to be explored in more detail at site level.

26 Appendix C presents a SFRA User Guide, further explaining how SFRA data should be used, including reference to relevant sections of the SFRA, how to consider different sources of flood risk and recommendations and advice for Sequential and Exception Tests.

Hyperlinks to external guidance documents/ websites are provided in Green throughout the SFRA.

Advice to users has been highlighted in amber boxes throughout the document.

27 On the date of publication, the SFRA contains the latest flood risk information. Over time, new information will become available to inform planning decisions, such as updated hydraulic models (which then update the Flood Map for Planning),

¹ Tandridge District Council, Sevenoaks District Council, Tunbridge Wells Borough Council, Rother District Council, Eastbourne Borough Council, Lewes District Council and Mid Sussex District Council

flood event information, new defence schemes and updates to policy and legislation.

28 Developers should check the online Environment Agency's [Flood Map for Planning](#) in the first instance to identify any major changes to the Flood Zones.

29 More specific information, for example the impacts of climate change on the flood zones and identification of the Functional Floodplain can be found in this SFRA.

1.8 How to use this report

Table 1-1: The structure of this report

Section	Contents	How to use
Executive Summary	Focuses on how the SFRA can be used by planners, developers and neighbourhood planners	Summarises the Level 1 findings and recommendations.
1. Introduction	Provides a background to the study, the Local Plan stage the SFRA informs, the study area, the roles and responsibilities for the organisations involved in flood management and how they were involved in the SFRA Provides a short introduction to how flood risk is assessed and the importance of considering all sources Includes this table of the contents of the SFRA	For general information and context.
2. Flood risk policy and strategy	Sets out the relevant legislation, policy and strategy for flood risk management at a national, regional and local level.	Users should refer to this section for any relevant policy which may underpin strategic or site-specific assessments.
3. Planning policy for flood risk management	Provides an overview of both national and existing Local Plan policy on flood risk management This includes the Flood Zones, application of the Sequential Approach and Sequential/Exception Test process. Provides guidance for the Council and Developers on the application of the Sequential and Exception Test for both allocations and windfall sites, at allocation and planning application stages.	Users should use this section to understand and follow the steps required for the Sequential and Exception Tests.
4. Impact of climate change	Outlines the latest climate change guidance published by the Environment Agency and how this was applied to the SFRA	This section should be used to understand the climate change allowances for a range of epochs and conditions, linked to the vulnerability of a

Section	Contents	How to use
	Sets out how developers should apply the guidance to inform site specific Flood Risk Assessments	development.
5. Understanding flood risk in Wealden District	Provides an overview of the characteristics of flooding affecting the study area and key risks including historical flooding incidents, flood risk from all sources and flood warning arrangements.	This section should be used to understand all sources of flood risk in the district, including where has flooded historically. This section may also help identify any data gaps, in conjunction with Appendix B.
6. Flood alleviation schemes and assets	Provides a summary of current flood defences and asset management and future planned schemes. Introduces actual and residual flood risk.	This section should be used to understand if there are any defences or flood schemes in a particular area, for further detailed assessment at site-specific stage.
7. Cumulative impact of development and strategic solutions	This section provides a summary of the catchments with the highest flood risk and development pressures, considers opportunities for strategic flood risk solutions and makes recommendations for local planning policy based on these.	Planners should use this section to help develop policy recommendations for the cumulative impact of development.
8. Flood risk management for developers	Guidance for developers on Flood Risk Assessments, considering flood risk from all sources	Developers should use this section to understand requirements for FRAs and what conditions/ guidance documents should be followed, as well as mitigation options.
9. Surface water management and Sustainable Drainage Systems	An overview of Sustainable Drainage Systems, Guidance for developers on Surface Water Drainage Strategies, considering any specific local standards and guidance for Sustainable Drainage Systems (SuDS) from the Lead Local Flood Authority.	Developers should use this section to understand what national, regional and local SuDS standards are applicable. Hyperlinks are provided.
10. Summary and recommendations	Summarises sources of flood risk in the study area and outlines planning policy recommendations	Developers and planners should use this as a summary of the SFRA. Developers should refer to the Level 1 SFRA recommendations when considering requirements for site-specific assessments.
Appendices	Appendix A: Fluvial Flood Risk Appendix B: Data sources used in the SFRA Appendix C: SFRA User Guide Appendix D: Flood Alert and Flood Warning Areas Appendix E: Risk of surface water flooding across the district Appendix F: Areas of groundwater concern Appendix G: Impact of Climate	Planners should use these appendices to understand what data has been used in the SFRA, to inform the application of the Sequential and Exception Tests, as relevant, and to use these maps and tabulated summaries of flood risk to understand the nature and location of flood risk.

Section	Contents	How to use
	change on fluvial flood risk in the district Appendix H: Summary of flood risk across the district	

This section sets out the flood risk management roles and responsibilities for different organisations and relevant legislation, policy and strategy.

2 Flood risk policy and strategy

2.1 Roles and responsibilities for Flood Risk Management in the study area

30 There are different organisations that cover Wealden District that have responsibilities for flood risk management, known as Risk Management Authorities (RMAs). These are shown in Table 2-1, with a summary of their responsibilities.

31 It is important to note that land and property owners are responsible for the maintenance of watercourses either on or next to their properties. Property owners are also responsible for the protection of their properties from flooding as well as other management activities, for example by maintaining riverbeds/ banks, controlling invasive species and allowing the flow of water to pass without obstruction. More information can be found in the Environment Agency publication **'Owning a Watercourse' (2018)**.

32 When it comes to undertaking works to reduce flood risk, the Environment Agency and East Sussex County Council as Lead Local Flood Authority have permissive powers and limited resources are prioritised and targeted to where they can have the greatest effect. Permissive powers mean that Risk Management Authorities are permitted to undertake works on watercourses but are not obliged.

Table 2-1: Roles and responsibilities for Risk Management Authorities

Risk Management Authority	Strategic Level	Operational Level	Planning role
Environment Agency	- Strategic overview for all sources of flooding - National Strategy - Reporting and general supervision	- Main rivers (e.g. The River Medway) - Reservoirs	- Statutory consultee for development in Flood Zones 2 and 3
East Sussex County Council as Lead Local Flood Authority (LLFA)	- Preliminary Flood Risk Assessment - Local Flood Risk Management Strategy	- Surface Water - Groundwater - Ordinary Watercourses (consenting and enforcement) - Ordinary watercourses (works)	- Statutory consultee for major developments

Risk Management Authority	Strategic Level	Operational Level	Planning role
Wealden District Council as Local Planning Authority (LPA)	- Local Plans as Local Planning Authorities (LPA)	- Determination of Planning Applications as LPA - Production of the Local Plan as the LPA - Managing open spaces under District Council ownership	- As left
Wealden District Council as Coastal Protection Authority (CPA)	- Shoreline Management Plans	- Lead on coastal erosion risk management	- NA
Southern Water	- Asset Management Plans, supported by Periodic Reviews (business cases) - Develop Drainage and Wastewater management plans	- Public sewers	- Non-statutory consultee
Highways Authorities Highways England (motorways and trunk roads) East Sussex County Council (for non-trunk roads)	- Highway drainage policy and planning	- Highway drainage	- Internal planning consultee regarding highways design standards and adoptions

2.2 Relevant legislation

33 The following legislation is relevant to development and flood risk in Wealden District:

- **Flood Risk Regulations (2009)** - these transpose the European Floods Directive (2000) into law and require the Environment Agency and LLFAs to produce Preliminary Flood Risk Assessments and identify where there are nationally significant Flood Risk Areas. For the Flood Risk Areas, detailed flood maps and a **Flood Risk Management Plan** is produced; this is done in a six-year cycle. FRMP cycle 2 is currently underway with the new FRMPs expected to be published later in 2022.
- **Town and Country Planning Act (1990), Water Industry Act (1991), Land Drainage Act (1991), Environment Act (1995), Flood and Water Management Act (2010)** – as amended and implemented via secondary legislation. These set out the roles and responsibilities for organisations that have a role in FRM.
- **The Land Drainage Act (1991, as amended) and Environmental Permitting Regulations (2018)** also set out where developers will need to apply for additional permission (as well as planning permission) to undertake works to an Ordinary Watercourse or Main River. Applicants for Consent are also required to comply with

the IDB's Byelaws (section 2.5.7), which protect the water corridor to ensure the watercourse is accessible for inspection and maintenance.

- The **Water Environment Regulations (2017)** – these transpose the European Water Framework Directive (2000) into law and require the Environment Agency to produce River Basin Management Plans (RBMPs). These aim to ensure that the water quality of aquatic ecosystems, riparian ecosystems and wetlands reach 'good' status.
- Other environmental legislation such as the Conservation of Habitats and Species Regulations (2017) (as amended), Town and Country Planning (Environmental Impact Assessment) Regulations 2017, the Environmental Assessment of Plans and Programmes Regulations (2004), also apply as appropriate to strategic and site-specific developments to guard against environmental damage.

2.3 Relevant flood risk policy and strategy documents

34 Table 2-2 summarises relevant national, regional and local flood risk policy and strategy documents and how these apply to development and flood risk. Hyperlinks are provided to external documents. These documents may:

- Provide useful and specific local information to inform Flood Risk Assessments within the local area.
- Set the strategic policy and direction for Flood Risk Management (FRM) and drainage – they may contain policies and action plans that set out what future flood mitigation and climate change adaptation plans may affect a development site. A developer should seek to contribute in all instances to the strategic vision for FRM and drainage in the district.
- Provide guidance and/or standards that informs how a developer should assess flood risk and/or design flood mitigation and SuDS.

35 Changes to the documents listed above, or changes to climate change allowances, could occur before the next scheduled update to this SFRA. An SFRA addendum should be issued if major changes to national or local planning policy or climate change allowances occur, detailing where the SFRA is no longer relevant.

Table 2-2: National, regional and local flood risk policy and strategy documents

	Document, lead author and date	Information	Policy and measures	Development design requirements	Next update due
National	Flood and Coastal Erosion Risk Management Strategy (Environment Agency) 2020	No	Yes	No	Due to be reviewed in 2026
National	National Planning Policy Framework and Guidance (MHCLG) 2021	No	No	Yes	-
National	Building Regulations Part H (MHCLG) 2010	No	No	Yes	-
Regional	Cuckmere and Sussex Havens: Catchment flood management plan (Environment Agency) 2009	Yes	Yes	No	-
Regional	Ouse, Sussex: Catchment flood management plan (Environment Agency) 2009	Yes	Yes	No	-
Regional	South East River Basin District Management Plan (Environment Agency) 2016 updated 2018	No	Yes	No	2022/23
Regional	Cuckmere and Pevensey Levels catchment Drainage and Wastewater Management Plan (Southern Water) due January 2023	Yes	Yes	Yes	2023
Regional	Climate Change guidance for development and flood risk (Environment Agency) 2021	No	No	Yes	2022/23 for peak rainfall intensity allowances

	Document, lead author and date	Information	Policy and measures	Development design requirements	Next update due
Local	Guide to Sustainable Drainage Systems in East Sussex	Yes	Yes	Yes	-
Local	Water. People. Places. A guide for master planning sustainable drainage into developments	Yes	Yes	Yes	-
Local	Local Flood Risk Management Strategy (2016)	Yes	Yes	No	2022
Local	East Sussex Preliminary Flood Risk Assessment 2011	Yes	Yes		

2.4 Key legislation for flood and water management

2.4.1 Flood Risk Regulations (2009)

- 36 The **Flood Risk Regulations 2009** translate the EU Floods Directive into UK law. The regulations require the following to be repeated on a 6-year cycle: the completion of a Preliminary Flood Risk Assessment (PFRA) to identify areas where there is a significant risk of flooding, followed by the creation of Flood Risk and Hazard Maps and Flood Risk Management Plans for these Flood Risk Areas.
- 37 The Flood Risk Regulations direct the Environment Agency to do this work for river, sea and reservoir flooding. LLFAs must do this work for surface water, Ordinary Watercourse and Groundwater flooding. This is a six-year cycle of work and the second cycle started in 2017.
- 38 **The East Sussex Preliminary Flood Risk Assessment (PFRA) (2011)**, provides information on significant past and future flood risk from localised flooding in East Sussex, including Wealden District. No nationally significant Flood Risk Areas for localised flooding have been identified in the Wealden District.
- 39 The **English PFRA (2018)** provides information on significant past and future flood risk from river and sea flooding across all of England, including Wealden District. Flood risk areas are areas where the risk of flooding is likely to be significant for people, the economy and the environment including cultural heritage. In this context, risk encompasses both the probability that flooding will occur and the impact and consequence. There are two Flood Risk Areas in East Sussex, Eastbourne and Hastings. However, despite flood risk mapping indicating there are areas in Southern Wealden at high risk of flooding, no Flood Risk Areas have been identified in Wealden.

2.4.2 Flood and Water Management Act (FWMA) 2010

- 40 The Flood and Water Management Act (FWMA) was passed in April 2010. It aims to improve both flood risk management and the way we manage our water resources.
- 41 The FWMA has created clearer roles and responsibilities and has helped to define a more risk-based approach to dealing with flooding. This included the creation of a lead role for LAs, as LLFAs, designed to manage local flood risk (from surface water, ground water and ordinary watercourses) and to provide a strategic overview role of all flood risk for the EA.
- 42 The content and implications of the FWMA provide considerable opportunities for improved and integrated land use planning and flood risk management by LAs and other key partners. The integration and synergy of strategies and plans at national, regional and local scales, is increasingly important to protect vulnerable communities and deliver sustainable regeneration and growth.

2.4.3 Water Framework Directive & Water Environment Regulations

- 43 The purpose of the Water Framework Directive (WFD), which was transposed into English Law by the Water Environment Regulations (2003), is to deliver improvements across Europe in the management of water quality and water resources through a series of plans called River Basin Management Plans (RBMP), which were last published in 2015 and are currently being updated. Wealden District lies within the South East River Basin District. Revised **River Basin Management Plans** were published as drafts for consultation in October 2021 and are expected to be published in 2022.

2.5 Key national, regional and local policy documents and strategies

2.5.1 The National Flood and Coastal Erosion Risk Management Strategy for England (2020)

- 44 The National Flood and Coastal Erosion Risk Management Strategy (FCERM) for England provides the overarching framework for future action by all risk management authorities to tackle flooding and coastal erosion in England. The new Strategy has been in preparation since 2018. The Environment Agency brought together a wide range of stakeholders to develop the strategy collaboratively. The Strategy is much more ambitious than the previous one from 2011 and looks ahead to 2100, considering specific actions needed to address the challenge of climate change.
- 45 The Strategy has been split into 3 high level ambitions: climate resilient places; today's growth and infrastructure resilience in tomorrow's climate; and a nation ready to respond and adapt to flooding and coastal change. Measures include:
- Updating the national river, coastal and surface water flood risk mapping.
 - Improved understanding of long-term investment needs for flood and coastal infrastructure.
 - Trialling new and innovative funding models.
 - Flood resilience pilot studies.
 - Developing an adaptive approach to the impacts of climate change.
 - Seeking nature-based solutions towards flooding and erosion issues.
 - Integrating natural flood management into the new Environmental Land Management scheme.
 - Considering long term adaptive approaches in Local Plans.
 - Maximising the opportunities for flood and coastal resilience as part of contributing to environmental net gain for development proposals.
 - Investing in flood risk infrastructure that supports sustainable growth.
 - Aligning long term strategic planning cycles for flood and coastal work between stakeholders, mainstreaming property flood resilience measures and 'building back better' after flooding.
 - Consistent approaches to asset management and record keeping.

- Updating guidance on managing high risk reservoirs in light of climate change.
- Critical infrastructure resilience, education, skills and capacity building.
- Research, innovation and sharing of best practise.
- Supporting communities to plan for flood events.
- Develop world leading ways of reducing the carbon and environmental impact from the construction and operation of flood and coastal defences.
- Development of digital tools to communicate flood risk.
- Transforming the flood warning service and increasing flood response and recovery support.

46 The Strategy was published in July 2020 alongside a New **National Policy Statement for Flood and Coastal Erosion Risk Management**. The statement sets out five key commitments which will accelerate progress to better protect and better prepare the country for the coming years:

- Upgrading and expanding flood defences and infrastructure across the country.
- Managing the flow of water to both reduce flood risk and manage drought.
- Harnessing the power of nature to not only reduce flood risk, but deliver benefits for the environment, nature, and communities.
- Better preparing communities for when flooding and erosion does occur.
- Ensuring every area of England has a comprehensive local plan for dealing with flooding and coastal erosion.

2.5.2 Updated Strategic Flood Risk Assessment guidance

47 Planning Practice Guidance on '**How to prepare a Strategic Flood Risk Assessment guidance**' was updated in August 2019, which had some key additions to both Level 1 and Level 2 assessments, including:

48 The requirement to assess cumulative impacts of development and land-use change, including:

- strategically planned development
- windfall development
- permitted development
- significant changes in land use, such as paving over domestic gardens or reforestation of uplands

49 Specific details on what recommendations should be considered, such as:

- how flood risk should be addressed in new developments and changes of use,
- property level resilience measures
- access and escape issues
- what emergency provision is needed in flood risk areas
- how residual risks should be managed

- Consideration of opportunities to reduce the causes and impacts of flooding, including:
 - the identification of any land likely to be needed for flood risk management features and structures
 - building new or improved flood defences
 - funding for new or improved defences
 - area-wide sustainable drainage systems to remove surface water from combined sewers
 - natural flood management
 - changes to land management
 - surface water storage areas
 - removal of culverts or other restrictions on flow
 - river restoration, such as removing canalisation and re-introducing meanders
 - removing permitted development rights in sensitive areas

2.5.3 River Basin Management Plans

- 50 The **South East River Basin Management Plan** (RBMP), managed by the EA, has been updated since the first cycle in 2009. The latest version was published in December 2015 with an updated version that has recently gone out for consultation ahead of expected publication later in 2022.
- 51 The RBMP describes how development and land-use planning needs to consider a number of issues relevant to the RBMP including sustainable drainage systems, green and blue infrastructure, sewage treatment options (tertiary phosphate treatments), water efficiency measures, infrastructure and development locations and the reduction of nutrients from diffuse pollution. The RBMP provides a summary of measures to protect and improve the water environment in the river basin district.

2.5.4 Flood Risk Management Plans

- 52 Flood Risk Management Plans (FRMPs) are part of the six-year cycle of assessment, mapping and planning required under the Flood Risk Regulations. The final **South East River Basin District Flood Risk Management Plan (FRMP)** was issued in March 2016 and covers the period of 2015 to 2021. The draft FRMP for 2021 to 2027 is currently out for consultation, this includes reference to ongoing work in southern Wealden as part of the Flood and Coastal Resilience Innovation Programme (FCRIP) led by East Sussex County Council.

2.5.5 Catchment Flood Management Plans

- 53 Catchment Flood Management Plans (CFMPs) are a high-level strategic plan providing an overview of flood risk across each river catchment. The Environment Agency use CFMPs to work with other key-decision makers to identify and agree long-term policies for sustainable flood risk management. There are six pre-defined national policies provided in the CFMP guidance and these are applied to specific locations through the identification of 'Policy Units'. These policies are intended to cover the full range of long-term flood risk management options that can be applied to different locations in the catchment.

54 The six national policies are:

- No active intervention (including flood warning and maintenance). Continue to monitor and advise.
- Reducing existing flood risk management actions (accepting that flood risk will increase over time).
- Continue with existing or alternative actions to manage flood risk at the current level (accepting that flood risk will increase over time from this baseline).
- Take further action to sustain the current level of flood risk (responding to the potential increases in risk from urban development, land use change and climate change).
- Take action to reduce flood risk (now and/or in the future).
- Take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits, locally or elsewhere in the catchment.

The study area is covered by two CFMPS, **Cuckmere and Sussex Havens** and **Ouse, Sussex**, which both use a combination of all of the above national policies.

2.5.6 East Sussex County Council Local Flood Risk Management Strategy

55 The **East Sussex County Council Local Flood Risk Management Strategy** (LFRMS) was published in 2016. The LFRMS is used as a means by which the LLFA coordinates Flood Risk Management on a day-to-day basis. The guiding principle of the East Sussex LFRMS is:

‘To provide local leadership and work in partnership with public bodies, businesses, communities, and voluntary sector organisations to manage the risk and associated social, economic and environmental impacts of localized flooding and to support where appropriate, partners managing the risk from the coast and rivers.’

56 The high-level objectives proposed in the Strategy for managing flood risk are:

- Establish and maintain effective partnership with key organisations and local communities in order to develop collective knowledge, share best practice and secure funding for local flood risk management measures.
- Improve the evidence base and understanding of local flood risk to ensure that limited resources are targeted in the areas of highest risk and vulnerability.
- Empower local communities and landowners to take action in order to be prepared for and limit the impacts of flooding.
- Avoid increasing flood and coastal erosion risk by encouraging best practice for maintenance of assets and preventing inappropriate development.
- Work in partnership to deliver cost-effective flood and coastal erosion risk management measures which take a catchment wide approach and contribute to wider social, economic and environmental benefits.

57 The Strategy also sets out an action plan of how the LLFA intends to achieve these objectives. The Strategy should be updated regularly or when key triggers are activated. An example of a key trigger would be issues such as amendments to partner responsibilities, updates to legislation, alterations in the nature or understanding of flood risk or a significant flood event, may also require the update of the Strategy and action plan.

58 Once the new National Strategy has been published, LLFAs will need to update their Local Strategies so that they reflect how national objectives for flood risk management will be delivered locally.

2.5.7 LLFAs, surface water and SuDS

59 The 2021 NPPF states that: 'Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate' (Para 169). When considering planning applications, local planning authorities should consult the LLFA on the management of surface water to satisfy that:

- The proposed minimum standards of operation are appropriate.
- There are clear arrangements for on-going maintenance over the development's lifetime through planning conditions or planning obligations

60 East Sussex County Council's requirements for SuDS on new developments are set out on their website, alongside supporting documents. At the time of writing this SFRA, documents and policies relevant to SuDS and surface water in Wealden District are:

- **Local Flood Risk Management Strategy**
- **Guide to Sustainable Drainage in East Sussex**
- **Water. People. Places. A guide for master planning sustainable drainage into developments**
- The SuDS Manual (C753), published in 2007, updated in 2015
- **DEFRA Non-statutory technical standards for sustainable drainage systems, 2015**
- **DEFRA National Standards for sustainable drainage systems Designing, constructing (including LASOO best practice guidance), operating and maintaining drainage for surface runoff, 2011**
- **Planning Practice Guidance: Flood Risk and Coastal Change**

61 The 2021 NPPF states that flood risk should be managed "using opportunities provided by new development and improvements in green and other infrastructure to reduce causes and impacts of flooding." As such, East Sussex County Council as LLFA expects SuDS to be incorporated on minor development as well as major development, this is covered in more detail in Section 10.

2.5.8 Surface Water Management Plans

- 62 A Surface Water Management Plan (SWMP) is a study to understand the flood risks that arise from local flooding, which is defined by the Flood and Water Management Act 2010 as flood risk from surface runoff, groundwater, and ordinary watercourses. SWMPs are led by a partnership of flood risk management authorities who have responsibilities for aspects of local flooding, including the LLFA, Local Authority, Sewerage Undertaker and other relevant authorities.
- 63 The purpose of a SWMP is to identify what the local flood risk issues are, what options there may be to prevent them or the damage they cause and who should take these options forward. This is then presented in an Action Plan that the stakeholders and partners agree. SWMPs are intended to influence future capital investment, drainage maintenance, public engagement and understanding, land-use planning, emergency planning and future developments. The action plan from SWMPs should be reviewed and updated as a minimum every six years.
- 64 Surface Water Management Plans applicable in the Wealden District are:
- **Forest Row Surface Water Management Plan** – January 2015
 - **Crowborough Surface Water Management Plan** – April 2015
 - **Heathfield Surface Water Management Plan** – April 2015
 - **Hailsham and Hellingly Surface Water Management Plan** – June 2015
 - **Eastbourne/Polegate/Willingdon Surface Water Management Plan** – January 2012
 - **Uckfield Surface Water Management Plan** – June 2016
- 65 The outcomes and actions from each of these SWMPs should be considered in the context of proposed developments within the administrative area of the Wealden District.

3 Planning policy for flood risk management

This section summaries national planning policy for development and flood risk.

National Planning Policy Framework and Guidance

66 The revised National Planning Policy Framework (**NPPF**) was published in July 2021. The NPPF sets out Government's planning policies for England. It must be taken into account in the preparation of local plans and is a material consideration in planning decisions. The NPPF defines Flood Zones, how these should be used to allocate land and flood risk assessment requirements. The NPPF states that:

*"Strategic policies should be informed by a strategic flood risk assessment and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards"*²

67 **Planning Practice Guidance** on flood risk was published in June 2021 and sets out how the policy should be implemented. **Diagram 1 in the PPG** and Figure 3-1 sets out how flood risk should be considered in the preparation of Local Plans.

3.1 The risk-based approach

68 The NPPF takes a risk-based approach to development in flood risk areas. The suitability of development is based on both the vulnerability of the end user(s) and the likelihood of flooding. Whilst the risk-based approach has historically been based on the probability of flooding from rivers and the sea, applicants are now expected to consider all sources of flooding in their assessment of risk.

3.1.1 The Flood Zones

69 The Flood Zones are defined in Planning Practice Guidance (Table 1, Paragraph 065) and it is this definition that has been used in the SFRA. The Flood Zones do not take into account defences and represented undefended flood risk. This is important for planning long-term developments as long-term policy and funding for maintaining flood defences over the lifetime of a development may change over time.

70 The Flood Zones identify flood risk from fluvial and tidal sources and do not take into account surface water, sewer or groundwater flooding or the impacts of canal or reservoir failure. They do not consider climate change, however the impacts of climate change have been mapped separately for the SFRA (Appendix H). Hence there could still be a risk of flooding from other sources and that the level of flood risk will change over time during the lifetime of a development.

² National Planning Policy Framework (July 2021) accessed 01 February 2022:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

71 The Flood Zones are:

- **Flood Zone 1 – Low probability:** less than a 0.1% chance of river and sea flooding in any given year.
- **Flood Zone 2 – Medium probability:** between a 1% and 0.1% chance of river flooding in any given year or 0.5% and 0.1% chance of sea flooding in any given year.
- **Flood Zone 3a – High probability:** greater or equal to a 1% chance of river flooding in any given year or greater than a 0.5% chance of sea flooding in any given year. Excludes Flood Zone 3b.
- **Flood Zone 3b – Functional Floodplain:** land where water has to flow or be stored in times of flood. SFRAs identify this Flood Zone in discussion with the LPA and the Environment Agency. The identification of functional floodplain takes account of local circumstances. Only water compatible and essential infrastructure are permitted in this zone and should be designed to remain operational in times of flood, resulting in no loss of floodplain or blocking of water flow routes.

Important note on Flood Zone information in this SFRA

The Flood Zones (Flood Zone 2 and 3a) in the Appendix A are the same as those shown on the Environment Agency's '**Flood Map for Planning**' (which incorporates latest modelled data), where available. These flood zones are present-day flood zones and do not account for future climate change. Planning applicants need to demonstrate that they have considered the flood risk for the life of the development and therefore must also consider future climate change in site-specific FRAs, including the extent of future flood zones.

The Environment Agency Flood Zones do not cover all catchments or ordinary watercourses with areas <3km². As a result, whilst the Environment Agency Flood Zones may show an area is in Flood Zone 1, there may be a flood risk from smaller watercourses not shown in the Flood Zones.

Functional floodplain (Flood Zone 3b) is identified as where water has to flow or be stored in times of flood. For the purposes of this assessment, this has been defined as land that would have an annual probability of flooding of 5% or greater (otherwise referred to as a 1 in 20 year event) where detailed hydraulic modelling exists. The 1 in 20-year defended modelled flood extents have been used to represent Flood Zone 3b (or 25-years where no 20-year output), where available from the Environment Agency. For areas outside of the detailed model coverage, or where no outputs were available, Flood Zone 3a can be used as a conservative indication. Further work should be undertaken as part of a detailed site-specific Flood Risk Assessment to define the extent of Flood Zone 3b where no detailed modelling exists.

As Flood Zones only consider fluvial and tidal sources of flooding, a site in Flood Zone 1 cannot be considered 'risk free'. However, it should be noted that as of July 2021, the sequential test must consider all sources of flood risk.

3.1.2 The Sequential Test

- 72 Firstly, land at the lowest risk of flooding from all sources, should be considered for development i.e land in Flood Zone 1 with no surface water or other sources of flood risk. In line with the NPPF, the impacts of climate change over the lifetime of the development should be taken into account when considering actual and residual flood risk. A test called the 'Sequential Test' is applied to ensure that land at the lowest risk of flooding is considered first. Figure 3-1 summarises the Sequential Test. The LPA will apply the Sequential Test in determining their spatial strategy and potential site allocations as well as to any strategic allocations within their Local Plan. For all other developments, in Flood Zones 2 and 3 (or in Flood Zone 1 on land with other flooding/drainage issues), developers must supply evidence to the LPA, with a Planning Application, that the development has passed the Sequential test.
- 73 The Sequential Test should apply to all forms of flood risk and consider flooding issues at present and in the future, resulting from climate change. For example, a site may currently be within Flood Zone 1, but may not be suitable if it is at high risk of flooding in the future as a result of climate change³.
- 74 The LPA should work with the Environment Agency to define a suitable area of search for the consideration of alternative sites in the Sequential Test. A local planning authority should demonstrate through evidence that it has considered a range of options in the site allocation process, using the Strategic Flood Risk Assessment to apply the Sequential Test and the Exception Test where necessary. This can be undertaken directly or, ideally, as part of the Sustainability Appraisal. Where other sustainability criteria outweigh flood risk issues, the decision-making process should be transparent with reasoned justifications for any decision to allocate land in areas at high flood risk in the Sustainability Appraisal report. The Sequential Test can also be demonstrated in a free-standing document, or as part of the Strategic Housing and Economic Land Availability Assessment (SHELAA).
- 75 Whether any further work is needed to decide if the land is suitable for development will depend on both the vulnerability of the development and the Flood Zone it is proposed for. **Table 2 of the PPG** defines the vulnerability of different development types to flooding. **Table 3 of the PPG** shows whether, having applied the Sequential Test first, that vulnerability of development is suitable for that Flood Zone and where further work is needed.
- 76 Figure 3-1 illustrates the Sequential and Exception Tests as a process flow diagram using the information contained in this SFRA to assess potential development sites against the EA's Flood Map for Planning Flood Zones and development vulnerability compatibilities. It is the role of the Local Planning Authority to apply the Sequential Test to strategic allocations, for example sites allocated as part of the Local Plan.

77 For sites not allocated in the Local Plan, the sequential test should be undertaken by the developer. In either case, it is recommended that Figure 3-1 is referred to as a guide for undertaking this. It should be noted that the 2021 NPPF indicates that the Sequential Test should apply to all forms of flood risk rather than just fluvial or tidal sources. The process must be documented, and evidence used to support decisions recorded. 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 or to permit. The SFRA User Guide in Appendix C shows where the Sequential and Exception Test may be required for the datasets assessed in this SFRA, and how to interpret different levels of concern with the datasets, recommending what development might be appropriate in what situations.

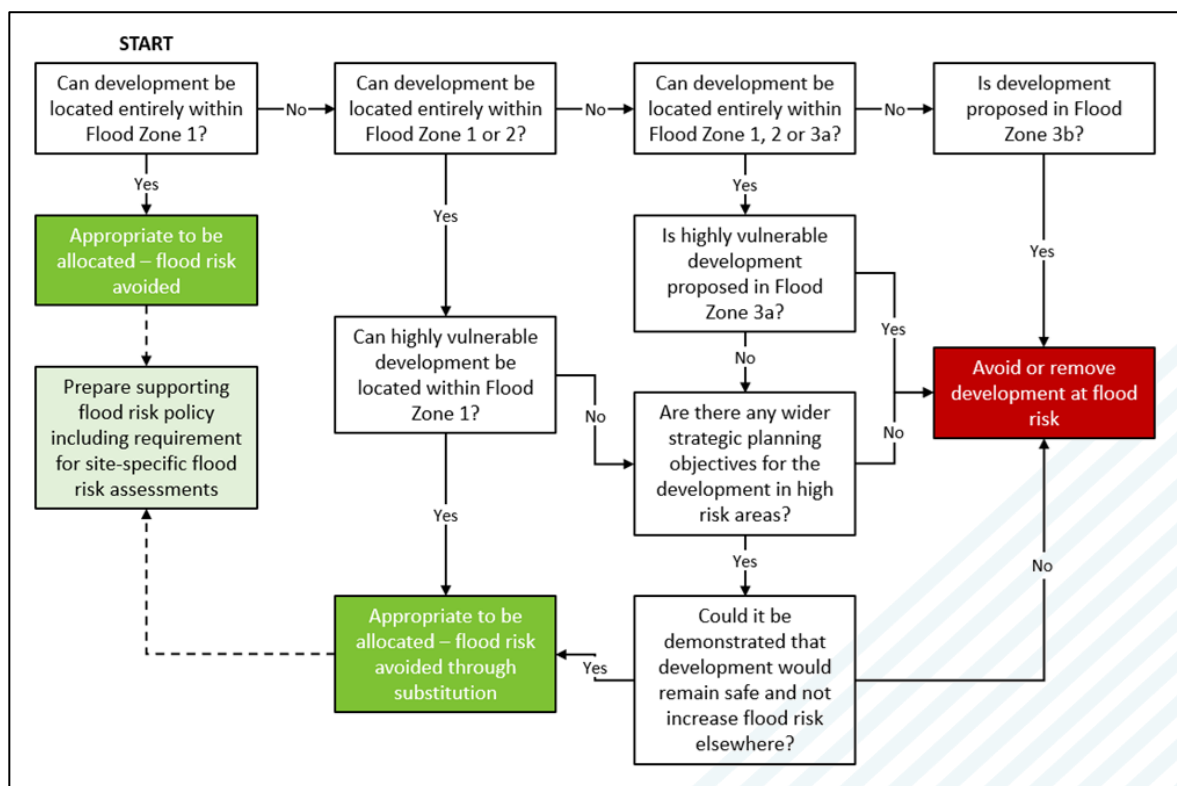


Figure 3-1: The Local Plan sequential approach to site allocation

3.1.3 The Exception Test

78 It will not always be possible for new development to be allocated on land that is not at risk from flooding. To further inform whether land should be allocated, or Planning Permission granted, a greater understanding of the scale and nature of the flood risks is required. In these instances, the Exception Test will be required.

79 The Exception Test should only be applied following the application of the Sequential Test. It applies in the following instances:

- More vulnerable development (as defined in the NPPF) e.g hospitals and landfill sites in Flood Zone 3a
- Essential infrastructure in Flood Zone 3a or 3b

- Highly vulnerable development (as defined in the NPPF) e.g ambulance and fire stations, basement dwellings, installations requiring hazardous substances consent in Flood Zone 2 (this is NOT permitted in Flood Zone 3a or 3b)

80 The Exception Test is summarised in Figure 3-2 overleaf.

81 For sites allocated within the Local Plan, the Local Planning Authority should use the information in the Level 2 SFRA to inform the Exception Test. At planning application stage, the developer must design the site such that it is appropriately flood resistant and resilient in line with the recommendations in National and Local Planning Policy and supporting guidance and those set out in this SFRA. This should demonstrate that the site will still pass the flood risk element of the Exception Test based on the detailed site level analysis.

82 Following the application of the Sequential Test, where it is not possible to allocate development on sites at low risk of flooding, the Exception Test may be required to support the principle of development. The Level 2 SFRA considers this for strategic allocations, other sites should prepare an exception test and present this information to the Local Planning Authority for approval. This Level 1 SFRA can be used to scope the flooding issues that a site-specific FRA should look into in more detail to inform the Exception Test for windfall sites.

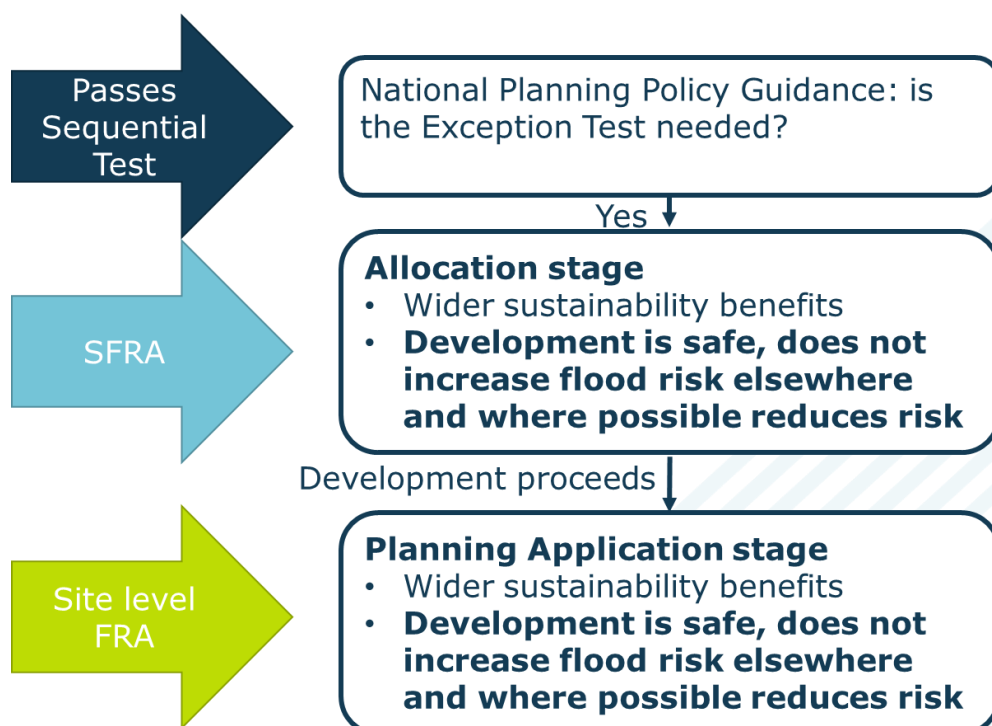


Figure 3-2 The Exception Test

3.1.4 Demonstrating that the development would provide wider sustainability benefits to the community that outweigh the flood risk

- 83 Local planning authorities will need to consider what criteria they will use to assess whether this part of the Exception Test has been satisfied and give advice to enable applicants to provide evidence to demonstrate that it has been passed.
- 84 At the stage of allocating development sites, Local Planning Authorities should consider wider sustainability objectives, such as those set out in Local Plan Sustainability Appraisals. These generally consider matters such as biodiversity, green infrastructure, historic environment, climate change adaptation, flood risk, green energy, pollution, health, transport etc.
- 85 The Local Planning Authority should consider the sustainability issues the development will address and how doing so will outweigh the flood risk concerns for the site, e.g. by facilitating wider regeneration of an area, providing community facilities, infrastructure that benefits the wider area etc.

3.1.5 Demonstrating 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.

- 86 A Level 2 SFRA should inform the Exception Test in these circumstances for strategic allocations. At Planning Application stage, a site-specific Flood Risk Assessment will be needed. Both would need to consider the actual and residual risk and how this will be managed over the lifetime of the development.

3.1.6 Making a site safe from flood risk over its lifetime

- 87 Local Planning Authorities will need to consider the actual and residual risk of flooding and how this will be managed over the lifetime of the development:
- The actual risk is the risk to the site considering existing flood mitigation measures. The fluvial 1% chance flood in any year event is a key event to consider because the National Planning Policy Guidance refers to this as the 'design flood' against which the suitability of a proposed development should be assessed and mitigation measures, if any, are designed.
 - Safe access and egress should be available during the design flood event. Firstly, this should seek to avoid areas of a site at flood risk. If that is not possible then access routes should be located above the design flood event levels. Where that is not possible, access through shallow and slow flowing water that poses a low flood hazard may be acceptable.
 - Residual risk is the risk that remains after the effects of flood defences have been taken into account and/ or from a more severe flood event than the design event. The residual risk can be:
 - The effects of an extreme 0.1% chance flood in any year event. Where there are defences this could cause them to overtop, which may lead to failure if this causes them to erode, and/ or
 - Structural failure of any flood defences, such as breaches in embankments or walls.

- Flood resistance and resilience measures should be considered to manage any residual flood risk by keeping water out of properties and seeking to reduce the damage it does, should water enter a property. Emergency plans should also account for residual risk, e.g. through the provision of flood warnings and a flood evacuation plan where appropriate.

3.2 Applying the Sequential Test and Exception Test to individual planning applications

3.2.1 Sequential Test

- 88 Wealden District Council, with advice from the Environment Agency, are responsible for considering the extent to which Sequential Test considerations have been satisfied.
- 89 Developers are required to apply the Sequential Test to all development sites, unless the site relates to one or more of the following criteria:
- A strategic allocation and the test has already been carried out by the LPA;
 - A change of use (except to a more vulnerable use);
 - A minor development (householder development, small non-residential extensions with a footprint of less than 250m²); or
 - A development in Flood Zone 1, unless there are other flooding issues in the area of the development (i.e. surface water, ground water, sewer flooding).
- 90 The SFRA contains information on all sources of flooding and taking into account the impact of climate change. This should be considered when a developer undertakes the Sequential Test, including the consideration of reasonably available sites at lower flood risk.
- 91 Local circumstances must be used to define the area of application of the Sequential Test (within which it is appropriate to identify reasonably available alternatives). The criteria used to determine the appropriate search area relate to the catchment area for the type of development being proposed. For some sites this may be clear e.g. school catchments, in other cases it may be identified by other Local Plan policies. For some sites e.g. regional distribution sites, it may be suitable to widen the search area beyond LPA administrative boundaries.
- 92 The sources of information on reasonably available sites may include:
- Site allocations in Local Plans;
 - Sites with Planning Permission but not yet built out;
 - Strategic Housing and Economic Land Availability Assessments (SHELAAs)/ five-year land supply/ annual monitoring reports; and
 - Locally listed sites for sale.
- 93 It may be that a number of smaller sites or part of a larger site at lower flood risk form a suitable alternative to a development site at high flood risk.
- 94 Ownership or a landowner agreement is not an acceptable reason to discount alternative sites in the sequential test.

95 The SFRA User Guide in Appendix C shows where the Sequential and Exception Test may be required for the datasets assessed in the SFRA, and how to interpret different levels of concern with the datasets, recommending what development might be appropriate in what situations.

3.2.2 The Exception Test

96 If, following application of the Sequential Test it is not possible for the development to be located in areas with a lower probability of flooding, the Exception Test must then be applied (as set out in **Table 3 of the PPG**). Developers are required to apply the Exception Test to all applicable sites (including strategic allocations).

97 The applicant will need to provide information that the application can pass both parts of the Exception test:

- *Demonstrating that the development would provide wider sustainability benefits to the community that outweigh the flood risk.*

98 Applicants should refer to wider sustainability objectives in Local Plan Sustainability Appraisals. These generally consider matters such as biodiversity, green infrastructure, historic environment, climate change adaptation, flood risk, green energy, pollution, health, transport etc.

99 Applicants should detail the sustainability issues the development will address and how doing so will outweigh the flood risk concerns for the site e.g. by facilitating wider regeneration of an area, providing community facilities, infrastructure that benefits the wider area etc.

- *Demonstrating 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.*

100 The site-specific Flood Risk Assessment should demonstrate that the site will be safe, and the people will not be exposed to hazardous flooding from any source. The FRA should consider actual and residual risk and how this will be managed over the lifetime of the development, including:

- The design of any flood defence infrastructure;
- Access and egress;
- Operation and maintenance;
- Design of the development to manage and reduce flood risk wherever possible;
- Resident awareness;
- Flood warning and evacuation procedures, including whether the developer would increase the pressure on emergency services to rescue people during a flood event; and
- Any funding arrangements required for implementing measures.

4 The impact of climate change

101 Climate change projections show an increased chance of warmer, wetter winters and hotter, drier summers with a higher likelihood of more frequent and intense rainfall. This is likely to make severe flooding happen more often.

The NPPF sets out that flood risk should be managed over the lifetime of a development, taking climate change into account. This section sets out how the impact of climate change should be considered.

4.1 Revised Climate Change Guidance

102 The Climate Change Act 2008, amended in 2019, creates a legal requirement for the UK to put in place measures to adapt to climate change and to reduce carbon emissions by at least 100% below 1990 levels by 2050.

103 In 2018, the government published new UK Climate Projections (UKCP18). The Environment Agency has translated these projections into published **updated climate change guidance in 2021** on how allowances for climate change should be included in both strategic and site specific FRAs. The guidance adopts a risk-based approach considering the vulnerability of the development. The Environment Agency's guidance was updated on 10 May 2022 to include the new allowances for peak rainfall intensity which have been included in this SFRA. These allowances are provided on a catchment basis and use the same catchments as the peak river flow allowances.

4.2 Applying the climate change guidance

104 To apply the climate change guidance, the following information needs to be known:

- The vulnerability of the development – see the **NPPG**
- The likely lifetime of the development – in general 60 years is used for commercial development and 100 for residential, but this needs to be confirmed in an FRA
- The River Basin District that the site is in – The South East River Basin
- The Management Catchment that the site is in – see the **guidance**
- Likely depth, speed and extent of flooding for each allowance of climate change over time considering the allowances for the relevant epoch (2020s, 2050s and 2080s)
- The 'built in' resilience measures used, for example, raised floor levels
- The capacity or space in the development to include additional resilience measures in the future, using a 'managed adaptive' approach

105 It should be noted that guidance on climate change allowances is regularly updated and allowances listed in this SFRA are based on the current guidance at the time of publication. However, the latest guidance should always be considered.

4.3 Relevant climate change allowances for the Wealden District

106 There are different climate change allowances that can be applied to understand the potential impacts of climate change from different sources of flood risk. Where allowances are expressed as a percentage, this represents a percentage change in the variable in the future, as a result from climate change in comparison to an equivalent 'present day' event.

- Peak river flows – used to understand the impacts of climate change on fluvial (river) flood risk on a catchment basis;
- Peak rainfall intensity – used to understand the impacts of climate change on surface water flood risk and to estimate surface water storage requirements on a catchment basis.
- Sea level rise allowance – used to understand the impacts of climate change on tidal flood risk on a regional basis

107 Figure 4-1 shows the four Water Management Catchments in Wealden District and Table 4-1 shows the peak river flow allowances that apply in these catchments for fluvial flood risk. Table 4-2 shows the peak rainfall intensity allowances that apply for surface water flood risk for each of the catchments in Figure 4-1. The guidance states that the peak river flow allowances should be applied to understand surface water flood risk if looking at large rural catchments. Both the central and upper end allowances should be considered to understand the range of impact.

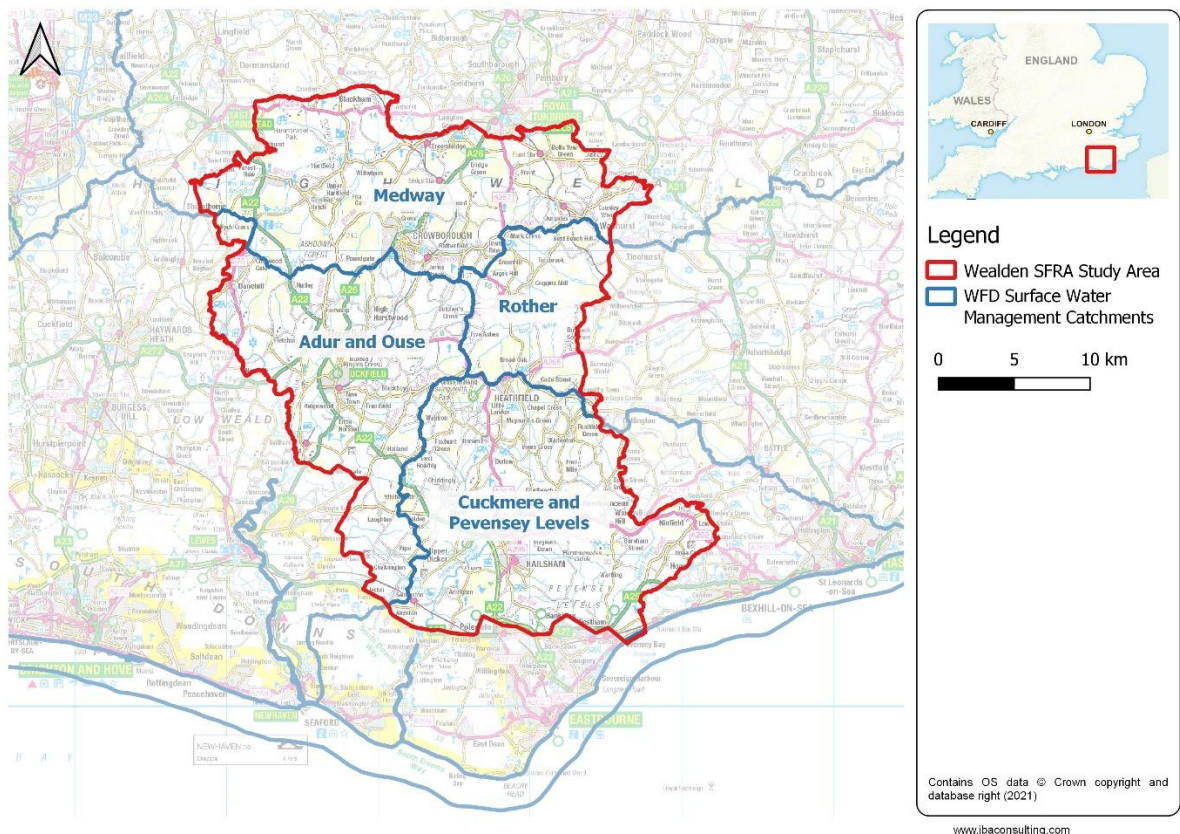


Figure 4-1: Water Management Catchments in Wealden District

Table 4-1: The peak river flow allowances in the four Water Management Catchments in Wealden District

Area	Allowance Category	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Cuckmere and Pevensey Levels	Upper end	35%	44%	76%
	Higher central	24%	26%	43%
	Central	18%	19%	32%
Adur and Ouse	Upper end	40%	57%	107%
	Higher central	23%	28%	55%
	Central	16%	18%	37%
Rother	Upper end	29%	38%	66%
	Higher central	19%	23%	38%
	Central	15%	16%	28%
Medway	Upper End	29%	37%	62%
	Higher central	19%	21%	37%
	Central	14%	15%	27%

Table 4-2: The peak rainfall intensity allowances in the four Water Management Catchments in Wealden District

Area	Allowance Category	2050s epoch (3.3% AEP)	2070s epoch (3.3% AEP)	2050s epoch (1% AEP)	2070s epoch (1% AEP)
Cuckmere and Pevensey Levels	Upper end	40%	40%	45%	45%
	Central	20%	20%	20%	25%
Adur and Ouse	Upper end	35%	40%	45%	45%
	Central	20%	20%	20%	25%
Rother	Upper end	40%	40%	45%	45%
	Central	20%	20%	20%	20%
Medway	Upper end	35%	35%	45%	40%
	Central	20%	20%	20%	20%

108 The latest guidance for peak rainfall intensity allowances is to use the upper end allowance to assess the impacts of climate change for development with a lifetime beyond 2100, and to use allowances for both the 3.3% AEP and 1% AEP events. Development should be designed so that there is no increase in flood risk elsewhere and that the development is safe from surface water flooding during the 1% AEP. The following allowances should be used in the situations outlined below:

- Lifetime between 2061 and 2100 - use the central allowance for the 2070s epoch
- Lifetime of development is up to 2060 - use the central allowance for the 2050s epoch (2022 to 2060).
- In some locations the allowance for the 2050s epoch is higher than that for the 2070s epoch. If so, and development has a lifetime beyond 2061, use the higher of the two allowances.
- For large rural drainage catchments use the [peak river flow allowances](#)

Table 4--3: Sea level allowances in the South East river basin district for each epoch in mm for each year (based on a 1981 to 2000 baseline) – the total sea level rise for each epoch is in brackets

Allowance Category	2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 (metres)
Upper End	6.9 (242)	11.3 (339)	15.8 (474)	18.2 (546)	1.60
Higher Central	5.7 (200)	8.7 (261)	11.6 (348)	13.1 (393)	1.20

4.4 The impact of climate change in the study area

109 The **UKCP18** provides a number of future projections for different variables across the UK.

South East England

- Increased mean summer temperatures of over 8°C by 2099.
- Increased mean winter temperatures of up to 7°C or a decrease of up to 1°C by 2099.
- Summer rainfall could decrease by over 80% or it could increase up to 10% by 2099.
- Winter rainfall could decrease by up to 10% or it could increase over 60% by 2099.

110 Whilst changes in trends and mean values is important, the more influential effect of climate change with respect to flood risk and drought is to increase the probability and severity of more extreme wet and dry events.

4.5 Impact of climate change on flood risk

111 Guidance from the Environment Agency states that in Wealden, under a 'Upper End' climate change scenario we can expect peak river flows to increase by up to 107% by 2080 and sea levels to rise by 1.60 m by 2125. Increased sea levels and river flows increase the extent of predicted future Flood Zones under climate change and are likely to increase the frequency of flooding and the likelihood of current defences being overtopped. These future flood zones have been mapped and can be found in Appendix H. Impacts of climate change on flood risk in Wealden District are discussed further in Section 5.9.

4.6 Adapting to and mitigating climate change

112 The **PPG Climate Change guidance** contains information and guidance for how to identify suitable mitigation and adaptation measures in the planning process to address the impacts of climate change. Examples of adapting to and mitigating climate change include:

- Considering future climate risks when allocating development sites to ensure risks are understood over the development's lifetime.
- Considering the impact of and promoting design responses to flood risk and coastal change for the lifetime of the development.
- Considering availability of water and water infrastructure for the lifetime of the development and design responses to promote water efficiency and protect water quality.
- Promoting adaptation approaches in design policies for developments and the public realm, for example by building in flexibility to allow future adaptation if needed, such as setting new development back from watercourses.
- Identifying no or low-cost responses to climate risks that also deliver other benefits, such as green infrastructure that improves adaptation, biodiversity and amenity, for example by leaving areas shown to be at risk of flooding as public open space.
- Considering the standard of protection of defences and sites for future development, in relation to sensitivity to climate change. The Council and developers will need to work with RMAs and use the SFRA datasets to understand whether development is affordable or deliverable. Locating development in such areas of risk may not be a sustainable long-term option, such as at the defence locations mentioned in section 6.
- Promoting low carbon design approaches to reduce energy consumption in buildings, such as passive solar design.
- Identifying opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems.

113 It is recommended that the differences in flood extents between present day and future Flood Zone 3a are compared by the Council when allocating sites, to understand how much additional risk there could be in the future as a result of climate change. Potential issues will need to be considered such as the extent of the risk, whether the increase is marginal or leads to significantly greater flooding, whether it affects access/ egress and how much land could still be developable overall. Recommendations for development are made for the levels of risk in the SFRA User Guide in Appendix C.

5 Understanding flood risk in the Wealden District

This section explores the key sources of flooding in the study area and the factors that affect flooding including topography, soils and geology. The main sources of flooding are from watercourses, surface water and sewers.

114 This is a strategic summary of the risk in Wealden District. Developers should use this section to scope out the flood risk issues they need to consider in greater detail in a site-specific Flood Risk Assessment to support a Planning Application.

115 Appendix B contains a list of the sources of data used in the SFRA.

5.1 Historical flooding

116 East Sussex County Council's (ESCC) Historic Flooding Incidents register includes recorded historical flood events within the district. There is a history of documented flood events, with the main sources recorded as being fluvial, pluvial, surface water and sewer flooding.

117 Figure 5-1 shows the number of flooding incidents recorded by ESCC across the district between 1965 and 2020. The map shows that Forest Row, Crowborough, Uckfield, Heathfield, Lower Horsebridge, and Durgates are hotspots for flooding, with a greater number of recorded flood incidents in these areas relative to the rest of the district.

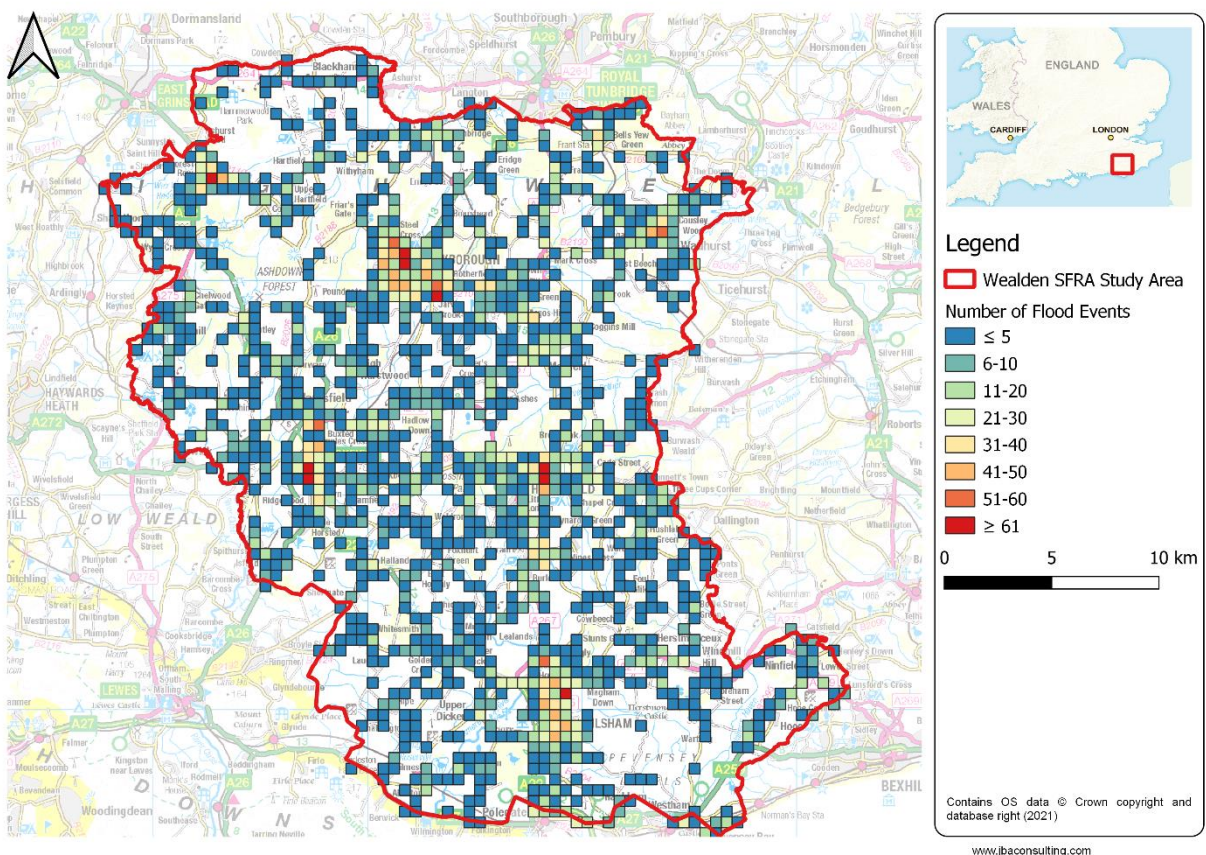


Figure 5-1: Wealden District's flooding hotspots from the number of recorded flood points, LLFA records

118 The Environment Agency recommended conducting a media search of flood history in the area. As part of this media search **historical flood alert messages** detailing recent flooding events (2017 and 2021) were found. The alert messages describe how heavy rainfall, leading to increased river flow in The Cuckmere and Bull Rivers, is often responsible for flooding around Alfriston and Hellingly. The flooding event around the 20th of October 2019 received a significant amount of media coverage, with **drone images** showing the extensive flooding affecting agricultural land in Cuckmere Haven and reports of some roads being impassable for weeks. Polegate's MP Maria Caulfield **called for the river to be dredged**.

5.2 Hydrology

119 The principal watercourses found in the district are:

- River Medway
- Shortbridge Stream
- River Uck
- Cuckmere River
- Pevensey Level Drains

Tributaries of these watercourses include smaller ordinary watercourses, such as Framfield Stream and numerous unnamed drains. There are also a number of ponds and lakes within the study area.

A map of the key watercourses can be found in Figure 1-2.

5.3 Fluvial flood risk

120 Fluvial flood risk is most notable on the Pevensey Levels but is also found to a lesser extent along the other four principal watercourses (Rivers Medway, Uck, Cuckmere and Shortbridge Stream), resulting in predicted flooding in Uckfield, Crowborough, Forest Row, Horam, Hailsham and Polegate as well as large rural areas. A summary of fluvial flood risk in the district can be found in Appendix A.

121 In addition to flood risk shown by the flood risk mapping, there are a number of small watercourses and field drains which may pose a risk to development. The Flood Map for Planning Flood Zone mapping (where more detailed modelling investigations are not available) has only been prepared for watercourses with a catchment greater than 3km². Therefore, whilst these smaller watercourses may not be shown as having flood risk on the flood risk mapping, it does not necessarily mean that there is no flood risk. As part of a site-specific Flood Risk Assessment, the potential flood risk and extent of Flood Zones should be refined for these smaller watercourses and this information used as appropriate to perform the Sequential and Exception Tests. The Risk of Flooding from Surface Water (RoFSW) mapping can be used to indicate where this is likely to be an issue.

5.4 Coastal flood risk

122 Coastal flood risk in this context considers the base sea-level, often referred to as the still water sea-level, but can be comprised of the underlying astronomical tide (as affected by the gravity forces of the sun and moon) and the passage of a large-scale storm surge. These two components determine the average sea-level for a particular location at a particular time. Whilst the 'still water' components are very important in terms of coastal flooding, the direct effects are only applicable to sheltered locations such as tidal rivers and harbours. Not surprisingly, the sea is not "still" during a storm event at more exposed locations, such as the East Sussex coastline. For exposed locations, most flooding occurs through wave action in addition to that of tide levels.

123 The coastline in the study area comprises a shingle beach at Pevensey Bay. The Pevensey Levels are potentially vulnerable to coastal flooding given the low-lying topography and the reliance on flood defences. The Pevensey defence is provided solely by a large shingle ridge and is managed by Pevensey Coastal Defence Ltd, a public private partnership (PPP) set up to provide long term maintenance of defences. Pevensey is defended to a 1 in 400-year standard of protection which makes "still water" flooding unlikely, even during extreme surge events. However, there is still a residual risk of tidal flooding if the defences were to fail, which is of particular concern when considering the rising sea levels under climate change.

124 In addition, the area is vulnerable to wave over topping as illustrated by the flood history which shows most coastal flooding resulted from wave action and defence overtopping. Mapping for tidal flood risk is incorporated into the SFRA flood zones and climate change uplifts have been mapped and assessed as part of the SFRA based on the impacts of cumulative sea level rise.

5.4.1 Flood Alert and Flood Warnings

125 The Pevensey Levels is located in a Flood Alert area, as are the areas surrounding the Rivers Cuckmere, Uck and Medway.

126 Lower Horsebridge, a small area north east of Spithurst, Uckfield, Hartfield and the Pevensey Levels are all found in Flood Warning Areas.

127 Maps showing Flood Alert and Flood Warning areas in the district can be found in Appendix D.

5.5 Surface water flood risk

128 Surface water flooding (or 'pluvial flooding') occurs when rainfall fails to infiltrate to the ground or enter the drainage system. Ponding generally occurs at low points in the topography. The likelihood of flooding is dependent on not only the permeability of the surface, but also saturation of the receiving soils, the groundwater levels and the condition of the surface water drainage system (i.e., surface water sewers, ESCC highway authority drains and gullies, open channels, ordinary watercourses and SuDS).

129 The updated Risk of Flooding from Surface Water (RoFSW) map predominately follows topographical flow paths of existing watercourses or dry valleys, with some isolated ponding located in low lying areas. The RoFSW for Wealden District can be found in Appendix E.

130 The RoFSW shows surface water flood risk in Wealden is concentrated along watercourses or fluvial corridors.

131 Surface water flood risk should not form a constraint to development, if it can be appropriately managed. The RoFSW indicates where surface water flood risk considerations should be made as part of the planning process. Where there is a surface water flow path through the site, East Sussex County Council's advice is that:

- the developer must understand the source of the flow path;
- where possible the flow path should be managed in a green corridor; and
- if diversion of the flow path is required, then the impact upstream, downstream and at the site must be understood.

5.6 Groundwater flood risk

132 In general, less is known about groundwater flooding than other sources. Groundwater flooding can be caused by:

- High water tables - influenced by the type of bedrock and superficial geology.
- Seasonal flows in dry valleys, which are particularly common in areas of chalk geology.
- Rebounding groundwater levels, where these have been historically lowered for industrial or mining purposes.
- Where there are long culverts that prevent water easily getting into watercourses.

133 Groundwater flooding is different to other types of flooding. It can last for days, weeks or even months and is much harder to predict and warn for. Monitoring does occur in certain areas, for example where there are major aquifers or when mining stops.

134 Mapping of groundwater flood risk in Wealden District can be found in Appendix F and has been based on data provided by East Sussex County Council showing areas of groundwater concern. This shows where geological and hydrogeological conditions indicate that groundwater might emerge or impact basements or subterranean infrastructure. It does not show the likelihood of groundwater flooding for any particular return period.

135 The ESCC dataset covers a large area of land, and only isolated locations within the overall susceptible area are likely to suffer the consequences of groundwater flooding. However, it is expected that the areas of groundwater concern can be used to help to identify areas for assessment. As part of the local assessment, the areas of groundwater concern should be used in combination with other information, for example local data or historical data. It should not be used as sole evidence for any specific flood risk management, land use planning or other decisions at any scale.

136 There are large areas of Wealden that are shown to be areas of groundwater concern. In the High Weald, the steep topography and impermeable geology limit the areas of groundwater concern to the fluvial river basins, where high water tables in alluvial deposits can lead to groundwater flood risk. However, the groundwater concern is more prevalent in the north and south of the district. In the north of Wealden, a sandstone geology acts as a secondary aquifer with the potential to hold water within the rock. During high water table periods these areas are at risk of groundwater flooding to basements and at the surface. To the south of the district, large areas of the Low Weald are shown to be in an area of groundwater concern. Here a permeable geology coupled with low lying topography presents conditions which could cause groundwater to emerge.

137 Groundwater flood risk is considered the most prevalent source of flood risk across Wealden and as such, special consideration of this should be made as part of development management decisions within the District. The areas of groundwater concern should be used to indicate where groundwater flood risk considerations should be made as part of the planning process. East Sussex County Council advice is that:

- consultation should be made with the LLFA at an early stage of the planning process;
- groundwater monitoring over winter should be included; and
- the development design should be resilient to groundwater flood risk.

5.7 Sewer flooding

138 Sewer flooding occurs when intense rainfall overloads the sewer system capacity (surface water, foul or combined), and/or when sewers cannot discharge freely into watercourses due to high water levels.

139 Sewer flooding can also be caused when problems such as blockages, collapses or equipment failure occur in the sewerage system. Infiltration, entry of soil or groundwater into sewer systems via faults within the fabric of the sewerage system, is another cause of sewer flooding. Infiltration is often related to shallow groundwater and may cause high flows for prolonged periods of time.

140 Since 1980, the Sewers for Adoption guidelines have meant that most new surface water sewers have been designed to have capacity for a rainfall event with a 1 in 30 chance of occurring in any given year, although until recently this did not apply to smaller private systems. This means that even where sewers are built to current specification, they are likely to be overwhelmed by larger events of the magnitude often considered when looking at river or surface water flooding (e.g. a 1 in 100 chance of occurring in any given year). Existing sewers can also become overloaded as new development adds to their catchment, or due to incremental increases in roofed and paved surfaces at the individual property scale (urban creep). Sewer flooding is therefore a problem that could occur in many locations across the District.

141 Historical incidents of flooding are detailed by Southern Water in their Sewer Incident Report Form (SIRF). This database records incidents of flooding relating to public foul, combined or surface water sewers and displays which properties suffered flooding. For confidentiality reasons, this data has been supplied on a postcode basis. The information from the SIRF database is shown in Figure 5-2, which shows the number of sewer flood events recorded by Southern Water across the district between January 2011 and April 2021. The map shows Heathfield, Uckfield, Forest Row and particularly Herstmonceux and Hailsham have the greatest number of recorded sewer flooding incidents.

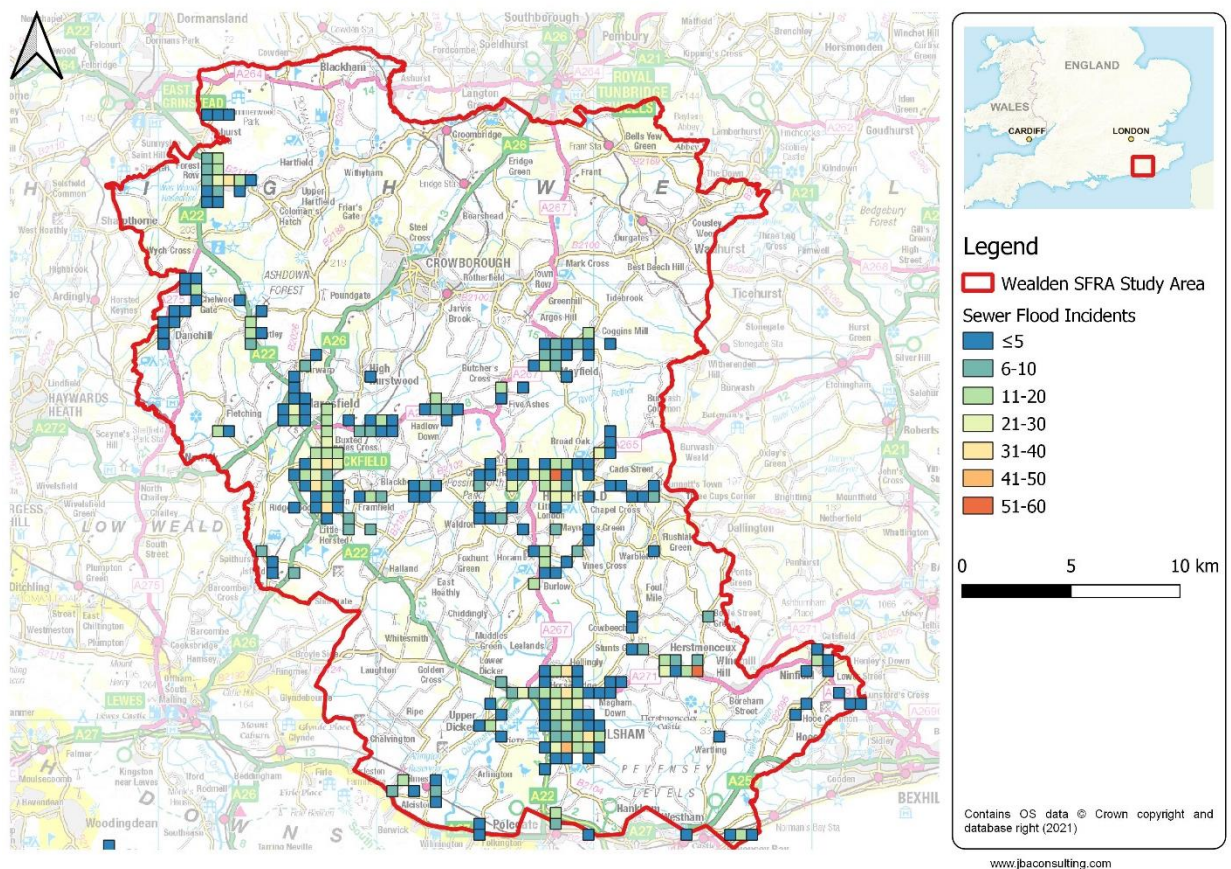


Figure 5-2: Wealden District's Southern Water sewer flood incidents

5.8 Flooding from reservoirs

142 Reservoirs with an impounded volume greater than 25,000 cubic metres are governed by the **Reservoir Act 1975** and are on a register held by the Environment Agency. The level and standard of inspection and maintenance required by a Supervising Panel of Engineers under the Act means that the risk of flooding from reservoirs is very low.

143 The **Flood Plan (Reservoirs Emergency Planning) Direction 2021** had led to the introduction of further flood planning requirements for Reservoir undertakers. They must now prepare a flood plan for each large, raised reservoir in England (both built and under construction). This includes a clear plan of actions that the undertaker will take to prevent an uncontrolled escape of water and a clear plan of actions to control or mitigate an uncontrolled escape of water. At the time of writing, these plans are still being prepared.

144 Flooding from reservoirs occurs following partial or complete failure of the control structure designed to retain water in the artificial storage area. Reservoir flooding is very different from other forms of flooding; it may happen with little, or no warning and evacuation will need to happen immediately. The likelihood of such flooding is difficult to estimate but is extremely low compared to flooding from other sources. It may not be possible to seek refuge upstairs from floodwater as buildings could be unsafe or unstable due to the force of water from the reservoir breach or failure.

145 The Environment Agency hold mapping showing what might happen if reservoirs fail. Developers and planners should check the **Long-Term Risk of Flooding** website before using the reservoir data shown in this SFRA to make sure they are using the most up to date mapping. Existing or new hydraulic models in locations where there are reservoirs should represent the effect of reservoirs, for example the attenuation effect on flood response, which will either be represented in the hydrology or as part of the model itself.

146 There are several waterbodies designated as reservoirs in Wealden District including Arlington, Weirwood, Possingworth Park Lake, Framfield Upper. The Outlines from the Risk of Flooding from Reservoirs dataset (informed from the National Inundation Reservoir Mapping (NIRIM) study) show worst case inundation extents of 21 reservoirs impacting the district, as detailed in Figure 5-3 and Table 5-2.

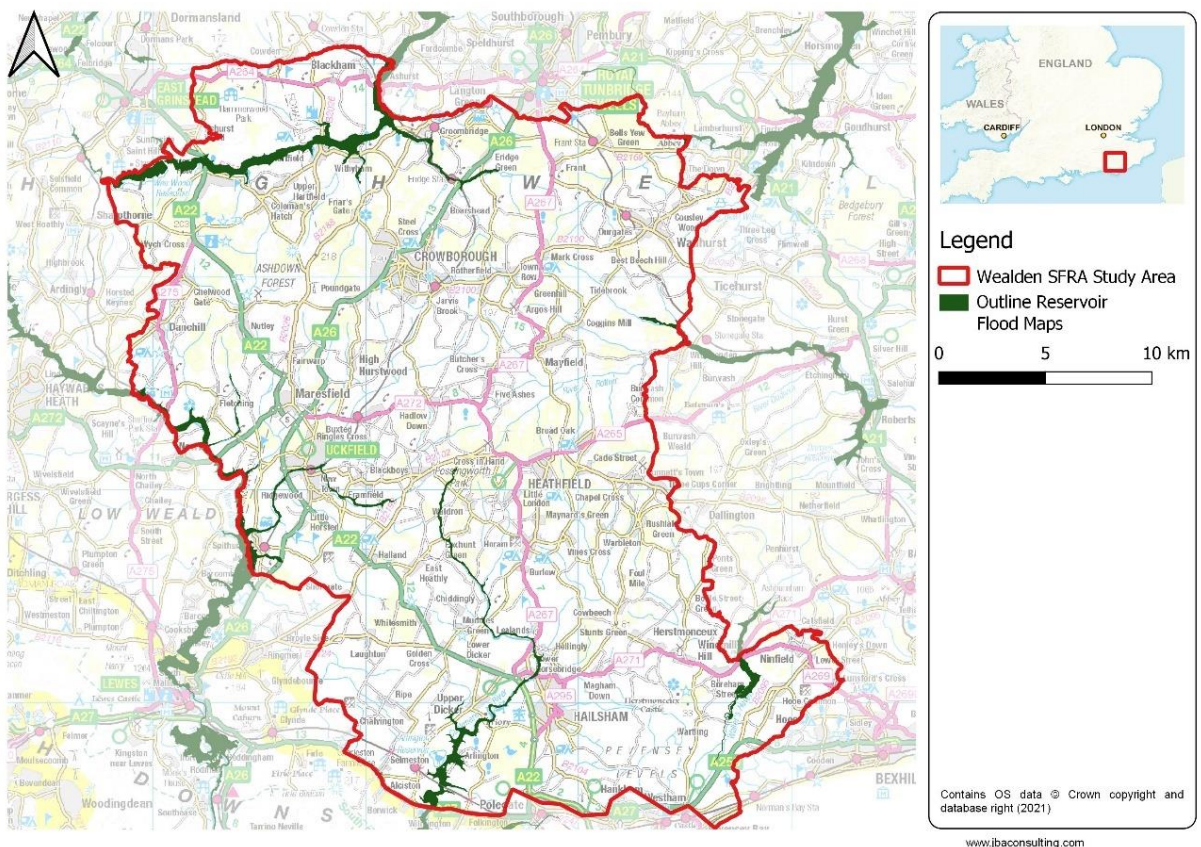


Figure 5-3: Risk of Flooding from Reservoirs

Table 5-1: Reservoirs with potential risk to Wealden District

Reservoir Name	Reservoir Owner	Location (grid reference)	Local Authority
Folkington	South East Water plc	556541, 103566	East Sussex
Lower Woman's Way Pond	The National Trust	541816, 123471	East Sussex
Upper Woman's Way Pond	The National Trust	541855, 123826	East Sussex
Plashett Park, Upper Lake	Ian Askew Charitable Trust	546060, 116650	East Sussex
Main Lake, Eridge Park	The Nevill Estate Co. Ltd	556134, 135014	East Sussex
Buckhurst Park Lake	Trustees of the Buckhurst Park Fund	549797, 135106	East Sussex
Fen Place Mill Lakes	Vaughan	536276, 136661	West Sussex
Searle's Lake	Sachon	543654, 125340	East Sussex
Framfield Upper (Newplace Estate) (ID95)	Edmondson	551106, 119509	East Sussex
Ashburnham Lakes – Frontwater	Ashburnham Christian Trust	569136, 114462	East Sussex
Ashburnham Lakes – Broadwater	Ashburnham Christian Trust	568557, 114317	East Sussex
Ashburnham Lakes - Reservoir Pond	Ashburnham Christian Trust	569392, 114812	East Sussex
Wadhurst Park Lake	Wadhurst Park Ltd	563741, 127902	East Sussex
Bayham Lake	Bayham Lake Management Limited	564315, 136595	Kent
Weirwood	Southern Water Services Ltd	540713, 135333	East Sussex
Dunorlan Park Lake	Tunbridge Wells Borough Council	560191, 139563	Kent
Barcombe	South East Water plc	543764, 114793	East Sussex
Ardingly	South East Water plc	533457, 128700	West Sussex
Arlington	South East Water plc	553422, 106990	East Sussex
Possingworth Park Lake	Pearce Country Partnership	554099, 120719	East Sussex
Lake Hart	Saatchi	529476, 128023	West Sussex

5.9 Impact of climate change on flood risk

147 This section explores which areas of the District are most sensitive to increases in flood risk due to climate change. It should be noted that areas that are already at high risk will also become at increasing risk in future and the frequency of flooding will increase in such areas.

148 It is recommended that the Council works with other Risk Management Authorities to review the long-term sustainability of existing and new development in these areas when developing climate change plans and strategies for the District.

5.9.1 Impact of climate change on coastal and fluvial flood risk

149 Guidance from the Environment Agency states that in Wealden, under a 'Upper End' scenario we can expect river flows to increase by up to 107% by 2080 and sea levels to rise by 1.6 m by 2125. Under a 'High Central' scenario river flow is expected to increase by up to 55% while sea levels are expected to rise by 1.21 m. The impact of these increases on flood risk in Wealden can be visualised on maps provided in Appendix H.

5.9.2 Impact of climate change on Flood Zones (the undefended case)

Coastal

150 Under the High Central scenario, sea level rise is predicted to cause Flood Zone 3a to ingress up to 3km further into Wealden District by 2125, with a flood extent very similar to current day Flood Zone 2. Flood Zone 3a's extent under the Upper End emissions scenario is similar to that of the High Central with additional coverage in the south-west of the Pevensey Levels to the north west of Hankham. Flood Zone 3a will therefore cover all of the Pevensey Levels by 2125, causing it to encroach on the southern and western fringes of Hailsham.

Fluvial

151 Due to the often-steep topography of river catchments in the Wealden District, an increase in river flows is not predicted to significantly extend Flood Zone 3a. However, there are notable extensions in Flood Zone 3a at:

- The Pevensey Levels
- Hailsham (on the River Cuckmere and Knockhatch Stream)
- Lower Horsebridge (River Cuckmere)
- Arlington (River Cuckmere)
- Isfield where the River Uck and Longford Stream meet the River Ouse
- Uckfield (River Uck)
- Forest Row (River Medway)

152 It is important to note that climate change does not just affect the extent of flooding. Even where flood extents do not significantly change, flooding is likely to become more frequent under a climate change scenario. The impact of an event with a given probability is also likely to become more severe. For example, as water depths and velocities increase, so will the hazard to people and property. Although qualitative statements can be made as to whether extreme events are likely to increase or decrease over the UK in the future, there is still considerable uncertainty regarding the magnitude of the localised impact of these changes.

Impact of climate change on Flood Zones (the defended case)

153 As discussed in section 6, the Pevensey levels are defended from flooding from the sea up to and including a 1 in 400-year event. However, the sea level rise predicted due to climate change would see the current defence overtopped by high tides in a 1 in 200-year event, which would put Pevensey Bay and Westham at risk. Therefore, to maintain the current level of protection, the Pevensey coastal defence level would have to be raised in pace with sea level rise.

5.9.3 Impact of climate change on groundwater flood risk

154 The effect of climate change on groundwater flooding problems, and those watercourses where groundwater has a large influence on winter flood flows, is uncertain. The updated climate change guidance released in July 2021 does not provide information on expected changes to groundwater flooding under future climate change. Milder, wetter winters may increase the frequency of groundwater flooding incidents in areas that are already susceptible, but warmer drier summers may counteract this effect by drawing down groundwater levels to a greater extent during the summer months.

155 The mechanism of flooding will also determine the impact of climate. For example, flood risk could increase when groundwater is already high or emerged, causing additional overland flow paths or areas of still ponding. As the uncertainty surrounding the impact of climate change of groundwater flood risk, this SFRA does not attempt to predict climate change impacts on groundwater.

5.9.4 Impact of climate change on surface water flood risk

156 In the absence of modelling surface water flood risk with climate change uplifts, the 0.1% annual probability (1,000-year) surface water flood extent available online at gov.uk can be used as an indication of climate change (as well as for smaller watercourses; some of which are not included in the Flood Zones).

157 Areas of Wealden District most sensitive to changes between the 100-year and 1,000-year surface water extents are:

- The Pevensey Levels around Hailsham, Magham Down, Herstmonceux Castle;
- Flow paths widen significantly along Waller's Haven south of Ninfield;
- Flow paths widen along the River Medway; and
- Between Framfield and Waldron.

6 Flood alleviation schemes and assets

This section provides a summary of existing flood alleviation schemes and assets in Wealden District. Planners should note the areas that are protected by defences where further work to understand the actual and residual flood risk through a Level 2 SFRA may be beneficial. Developers should consider the benefit they provide over the lifetime of a development in a site-specific Flood Risk Assessment.

6.1 Asset management

158 Risk Management Authorities hold databases of flood risk management and drainage assets:

- The Environment Agency holds a national database that is updated by local teams
- The LLFA holds a database of significant local flood risk assets, required under Section 21 of the Flood and Water Management Act (2010)
- Highways Authorities hold databases of highways drainage assets, such as gullies and connecting pipes
- Water Companies hold records of public surface water, foul and combined sewers, the records may also include information on culverted watercourses.

159 The databases include assets RMAs directly maintain and third-party assets. The drainage network is extensive and will have been modified over time. It is unlikely that any RMA contains full information on the location, condition and ownership of all the assets in their area. They take a prioritised approach to collecting asset information, which will continue to refine the understanding of flood risk over time.

160 Developers should collect the available asset information and undertake further survey as necessary to present an understanding of current flood risk and the existing drainage network in a site-specific Flood Risk Assessment.

6.2 Standards of Protection

161 Flood defences are designed to give a specific Standard of Protection (SoP), reducing the risk of flooding to people and property in flood prone areas. For example, a flood defence with a 100-year SoP means that the flood risk in the defended area is reduced to at least a 1% chance of flooding in any given year.

162 Over time the actual SoP provided by the defence may decrease, for example due to deterioration in condition or increases in flood risk due to climate change. The understanding of SoP may also change over time as RMAs undertake more detailed surveys and flood modelling studies.

163 It should be noted that the Environment Agency's on-going hydraulic modelling programme may revise flood risk datasets and as a consequence, the standard of protection offered by flood defences in the area may differ from those discussed in this report. Developers should consider the standard of protection provided by defences and residual risk as part of a detailed FRA using the most up to date information.

6.3 Maintenance

164 The Environment Agency, local authorities and IDBs have permissive powers to maintain and improve Main Rivers and Ordinary Watercourses, respectively. There is no legal duty to maintain watercourses, defences or assets and maintenance and improvements are prioritised based on flood risk. The ultimate responsibility for maintaining watercourses rests with the landowner.

165 Highway authorities have a duty to maintain public roads, making sure they are safe, passable and the impacts of severe weather have been considered.

166 Water companies have a duty to effectually drain their area. What this means in practise is that assets are maintained to common standards and improvements are prioritised for the parts of the network that do not meet this standard e.g. where there is frequent highway or sewer flooding.

167 There is potential for the risk of flooding to increase in areas where flood alleviation measures are not maintained regularly. Breaches in raised flood defences are most likely to occur where the condition of a flood defence has degraded over time. Drainage networks in urban areas can also frequently become blocked with debris and this can lead to blockages at culverts or bridges.

168 Developers should not assume that any defence, asset or watercourse is being or will continue to be, maintained throughout the lifetime of a development. They should contact the relevant RMA about current and likely future maintenance arrangements and ensure future users of the development are aware of their obligations to maintain watercourses.

169 Formal structural defences are given a rating based on a grading system for their condition. A summary of the grading system used by the Environment Agency for condition is provided in Table 6-1.

Table 6-1: Grading system used by the Environment Agency to assess flood defence condition

Grade	Rating	Description
1	Very good	Cosmetic defects that will have no effect on performance
2	Good	Minor defects that will not reduce the overall performance of the asset.
3	Fair	Defects that could reduce the performance of the asset.
4	Poor	Defects that would significantly reduce the performance of the asset. Further investigation required.
5	Very Poor	Severe defects resulting in complete performance failure.

Source: Condition Assessment Manual – Environment Agency 2006

6.4 Major flood risk management assets in the district

170 The Environment Agency's Flood Map for Planning contains information on 'Areas Benefiting from Defences' (ABD). This shows areas that benefit from the defences that provide a SoP of at least a 100-year river flood event. It does not show areas that benefit from protection for more frequent events. Wealden District has no areas benefiting from defences in the EA's 'ABD' mapping, although a beach along the south east coast does provide a 1 in 400-year standard of protection to the coastal area at the Pevensey Levels.

171 The Environment Agency 'AIMS' flood defence dataset also gives information on all flood defence assets within the district, providing a more comprehensive overview of flood risk management assets within Wealden. Figures 6-1 and 6-2 show locations benefitting from flood defences at a lower (or unknown) standard of protection in Wealden.

172 All of the main rivers in west Wealden are only protected up to a 1 in 5-year standard by high ground, with the exception of a section of the River Uck where an embankment, flood wall and flood gate provide Uckfield with a 1 in 25-year standard of protection and high ground provides a 1 in 10-year SoP. The flood gate and embankment are in very good condition, while the flood wall is classified as good, and the majority of the high ground is fair (See Figure 6-1).

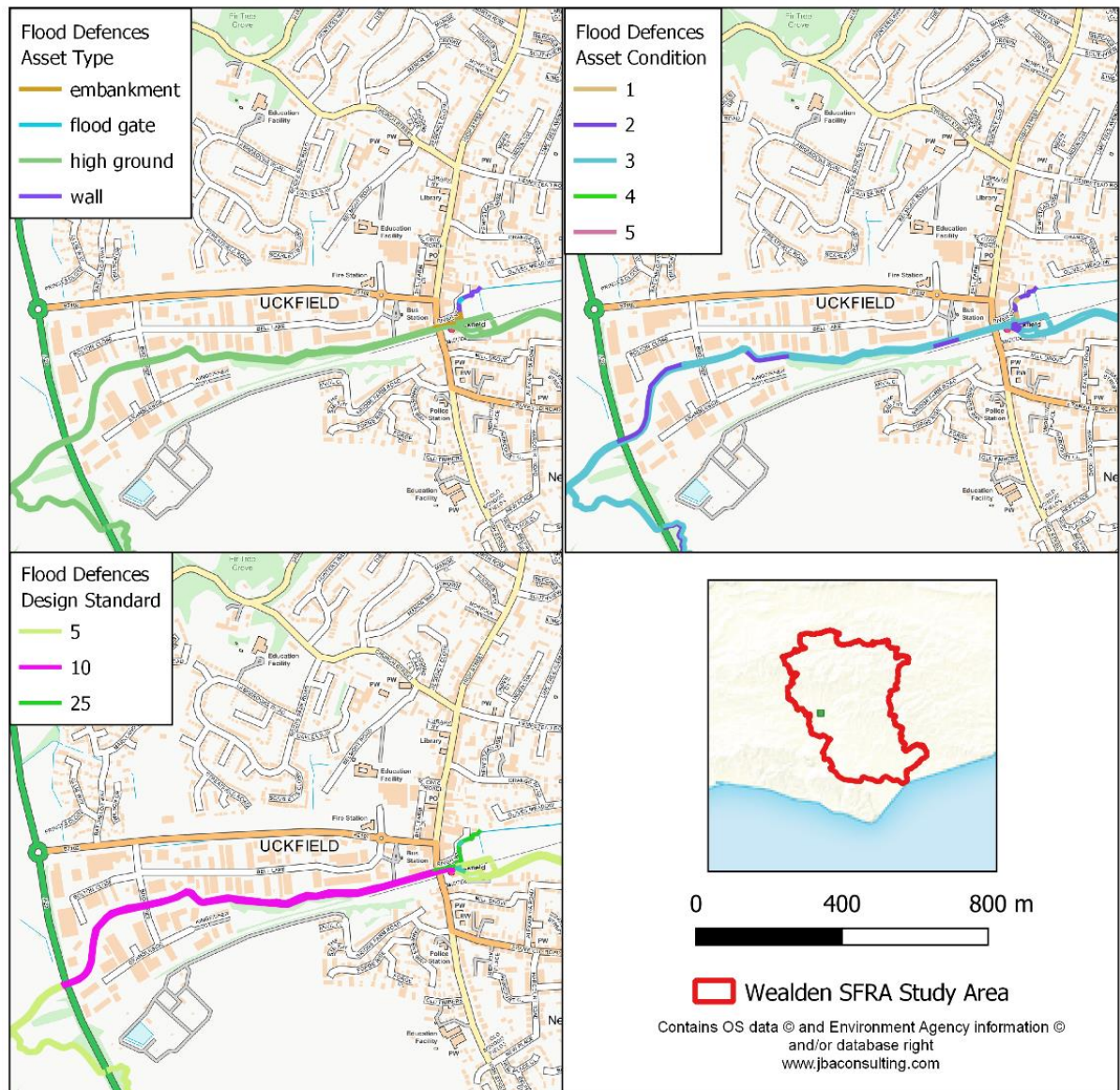


Figure 6-1: Flood defences in Uckfield

173 There are no flood defences are found in the north east of the district.

174 In the south-east of the district, the Pevensey Levels benefit from defences, including embankments along the banks of Hurst Haven and Puckeridge Stream to the east of Hailsham and along Iron Stream and the Hurst, Pevensey, Wallers and Old Haven rivers. These embankments provide a 1 in 30-year SoP and are found in at least fair condition with the exception of the embankments along Wallers Haven, which are poor.

175 High ground in fair condition provides a 1 in 30-year SoP along the Kentland Fleet, while the remainder of the high ground in the area only provides up to a 1 in 5-year SoP.

176 A shingle beach in fair condition to the north east of Pevensey Bay provides a 1 in 400-year SoP from coastal flooding.

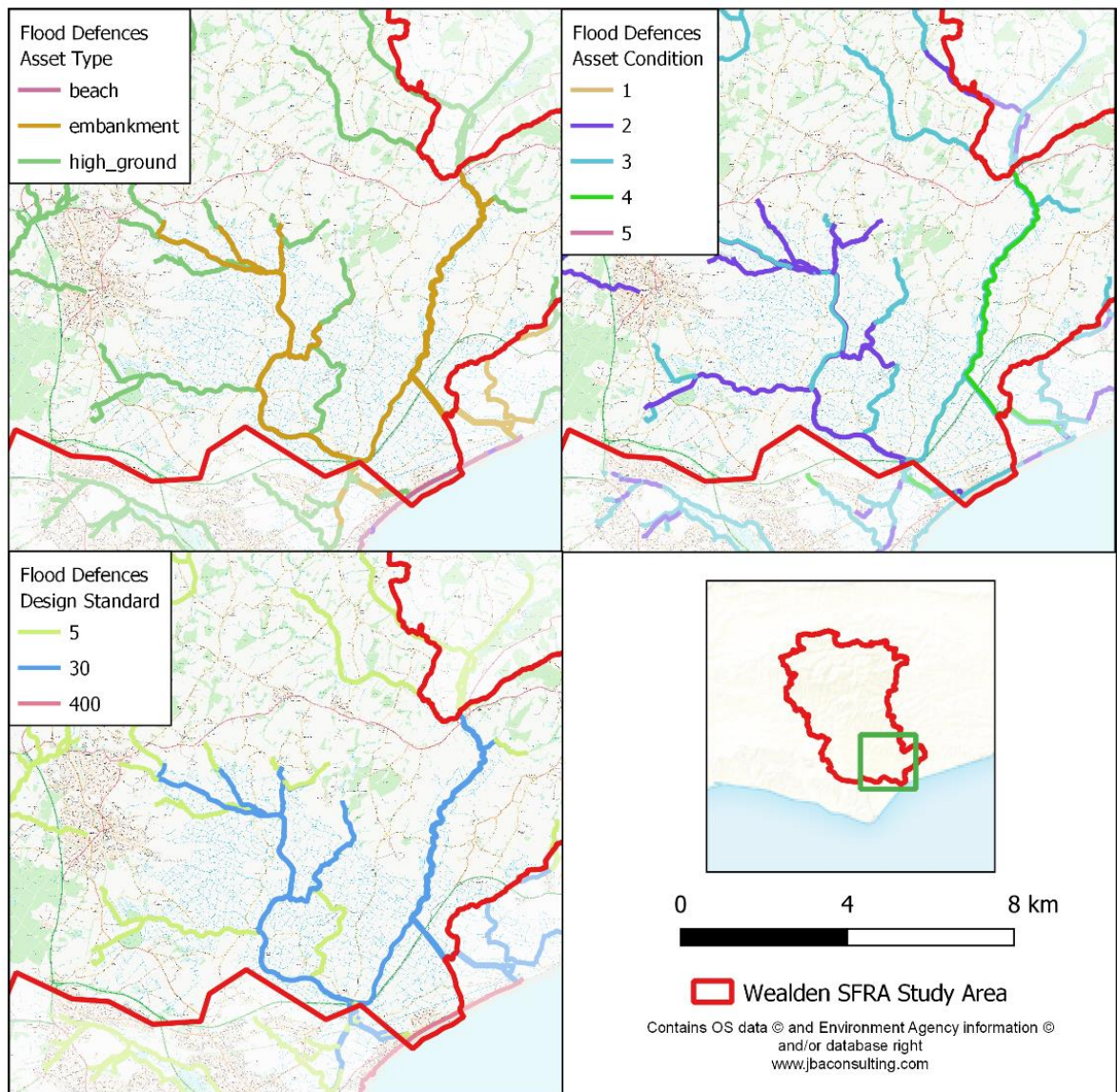


Figure 6-2: Flood defences in the Pevensey Levels

6.5 Existing and future flood alleviation schemes

6.5.1 Wealden Property Flood Resilience Project 2017-2019

177 In partnership with the Environment Agency, Wealden District Council ran a project that helped Wealden residents most at risk of flooding to protect their properties. Homeowners at the highest risk of property flooding were offered a free property survey to identify how their property could be made more flood resilient. Grant funding was then available for homeowners to purchase the recommended flood resilience products. In total, £127,000 worth of flood resilience products were installed across 94 properties. Although the scheme has now ended, the products installed will continue to provide protection to 94 of Wealden's most at risk properties.

6.6 Actual and residual flood risk

178 Where an area is identified as being at risk from flooding, a Level 2 SFRA (for strategic allocations) or developer site-specific Flood Risk Assessment will need to consider the actual and residual flood risk due to the presence of flood and drainage assets in greater detail.

6.6.1 Actual flood risk

179 This is the risk to the site considering existing flood mitigation measures and any planned to be provided through new development. Note that it is not likely to be acceptable to allocate developments in existing undefended areas on the basis that they will be protected by developer works, unless there is a wider community benefit that can be demonstrated.

180 The assessment of the actual risk should take into account that:

- The level of protection afforded by existing defences might be less than the appropriate standards and hence may need to be improved if further growth is contemplated.
- The flood risk management policy for the defences will provide information on the level of future commitment to maintain existing standards of protection. If there is a conflict between the proposed level of commitment and the future needs to support growth, then it will be a priority for this to be reviewed.
- The standard of safety must be maintained for the intended lifetime of the development. Over time the effects of climate change will erode the present-day standard of protection afforded by defences and so commitment is needed to invest in the maintenance and upgrade of defences if the present-day levels of protection are to be maintained and where necessary, land secured and safe-guarded that is required for affordable future flood risk management measures.
- By understanding the depth, velocity, speed of onset and rate of rise of floodwater it is possible to assess the level of hazard posed by flood events from the respective sources.

6.6.2 Residual risk

181 Residual risk is the risk that remains after the effects of flood risk infrastructure have been taken into account. It is important that these risks are quantified to confirm that the consequences can be safely managed. The residual risk can be:

- The effects of a larger flood than defences were designed to alleviate (the 'design flood'). This can cause overtopping of flood banks, failure of flood gates to cope with the level of flow or failure of pumping systems to cope with the incoming amount of water.
- Failure of the defences or flood risk management measures, such as breaches in embankments or walls, failure of flood gates to open or close or failure of pumping stations.

182 It is the responsibility of the developer to fully assess flood risk, propose measures to mitigate it and demonstrate that any residual risks can be safely managed.

183 This SFRA does not assess the probability of failure other than noting that such events are very rare. However, in accordance with the NPPF (2021), all sources of flooding need to be considered. If a breach or overtopping event were to occur, the consequences to people and property could be high.

184 Developers should be aware that any site that is at, or below, defence level may be subject to flooding. This can occur if a flood event exceeds the design capacity of the defences (overtopping), or the defences fail (breach) The residual risk of overtopping or breach should be considered in a detailed Flood Risk Assessment. Additional information is included in sections 6.6.3 and 6.6.4 below.

185 The assessment of residual risk should take into account:

- The flood hazard, depth and velocity that would result from overtopping or breach of defences. Flood gate or pumping station failure and/ or culvert blockage (as appropriate). The Environment Agency can provide advice at site-specific development level for advice on breach/ overtopping parameters for flood models.
- The design of the development to take account of the highest risk parts of the site e.g. allowing for flood storage on parts of the site and considering the design of the development to keep people safe e.g. sleeping accommodation above the flood level.
- A system of warning and a safe means of access and egress from the site in the event of a flood for users of the site and emergency services.

6.6.3 Overtopping

186 The risk from overtopping of defences is based on the relative heights of property or defence, the distance from the defence level and the height of water above the crest level of the defence. The Defra and Environment Agency [Flood Risks to People](#) guidance document provides standard flood hazard ratings based on the distance from the defence and the level of overtopping.

187 Any sites located next to defences or perched ponds/reservoirs, may need overtopping modelling or assessments at the site-specific FRA stage.

6.6.4 Defence breach

188 A breach of a defence occurs when there is a failure in the structure and a subsequent ingress of flood water.

189 Where defences are present, risk of breach events should be considered as part of the site-specific flood risk assessment. Flood flows from breach events can be associated with significant depths and flow velocities in the immediate vicinity of the breach location and so FRAs must include assessment of the hazards that might be present so that the safety of people and structural stability of properties and infrastructure can be appropriately taken into account. Whilst the area in the immediate vicinity of a breach can be subject to high flows, the whole flood risk area associated with a breach must also be considered as there may be areas remote from the breach that might, due to topography, involve increased depth hazards.

190 Considerations include the location of a breach, when it would occur and for how long, the depth of the breach (toe level), the loadings on the defence and the potential for multiple breaches. There are currently no national standards for breach assessments and there are various ways of assessing breaches using hydraulic modelling. Work is currently being undertaken by the Environment Agency to collate and standardise these methodologies. It is recommended that the Environment Agency are consulted if a development site is located near to a flood defence, to understand the level of assessment required and to agree the approach for the breach assessment.

191 Breach modelling, for the large shingle ridge which provides a 400-year SoP against coastal flooding at the Pevensey Levels, was completed as part of the previous SFRA. The breach assessment concluded that most of the land between the shoreline and the A259 would be at risk of flooding should a breach occur. In addition, areas of the Pevensey Level adjacent to the Pevensey Haven, upstream of the A259 would be at risk. The results from the breach modelling assessment are shown in Appendix G. As the breach modelling completed to date does not consider every potential breach location, a breach assessment will be required as part of the FRA if the development falls within one of the low-lying areas of the study area, as shown in Figure 6-3.

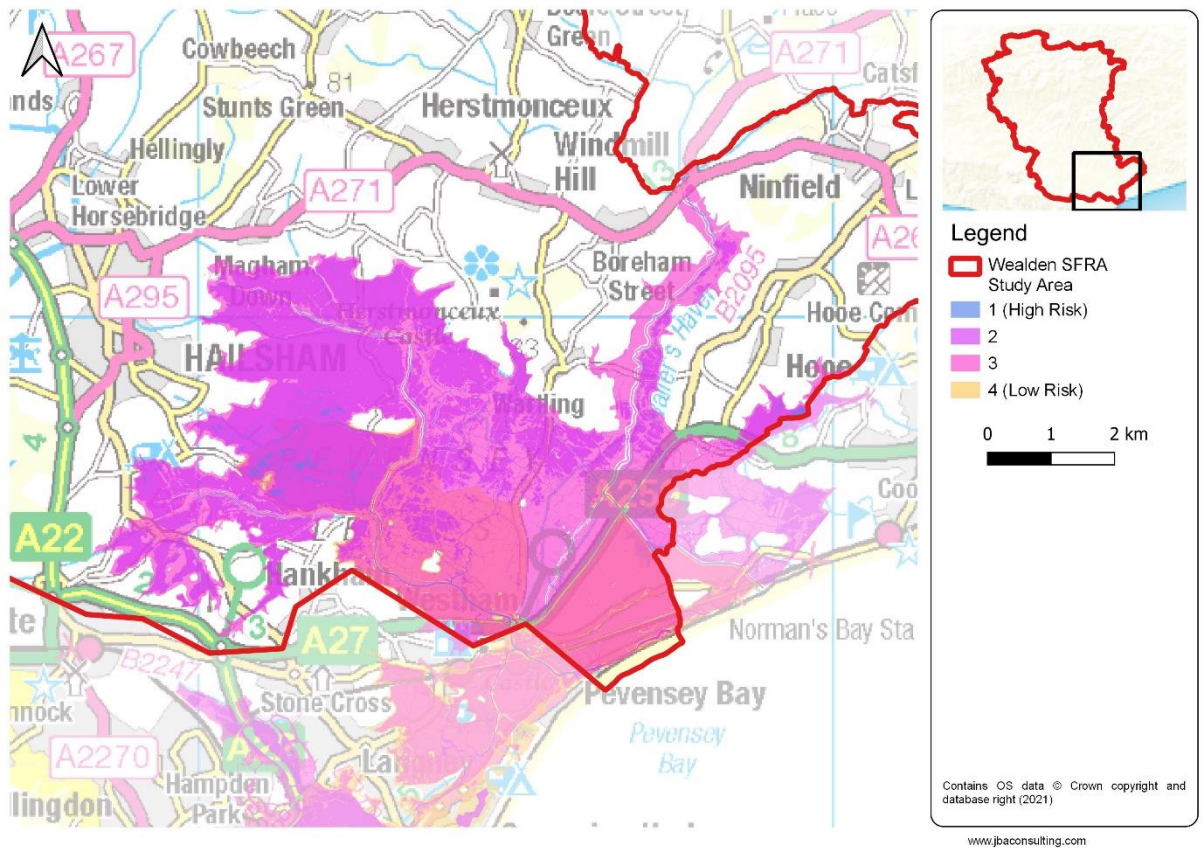


Figure 6-3: Breach risk zone, where a breach assessment is required as part of a Flood Risk Assessment

7 Cumulative impact of development and strategic solutions

This section provides a summary of the catchments with the highest flood risk and development pressures and then makes recommendations for local planning policy based on these.

7.1 Introduction

192 Under the NPPF (2021), strategic policies and their supporting Strategic Flood Risk Assessments (SFRAs), are required to 'consider cumulative impacts in, or affecting, local areas susceptible to flooding' (para.160), rather than just to or from individual development sites. Cumulative impacts are defined as the effects of the past, current and future activities on the environment.

193 When allocating land for development, consideration should be given to the potential cumulative impact on flood risk within a catchment. Development increases the impermeable area within a catchment, which if not properly managed, can cause loss of floodplain storage, increased volumes and velocities of surface water runoff, and result in heightened downstream flood risk. Whilst individual development with appropriate site mitigation measures should not result in measurable local effects with respect to hydrology and flood risk, the cumulative effect of multiple developments may be more severe at downstream locations in the catchment. Locations where there are existing flood risk issues with people, property or infrastructure will be particularly sensitive to cumulative effects.

194 The cumulative impact should be considered throughout the planning process, from the allocation of sites within the Local Plan, to the planning application and development design stages. The cumulative impacts will be considered in more detail on an individual site basis in a Level 2 SFRA, if this is required. In addition, site-specific FRAs must consider the cumulative impact of the proposed development on flood risk within the wider catchment area if there are potentially material effects.

195 As part of the Level 1 SFRA, an assessment of the cumulative effects within the catchments in Wealden District has been undertaken.

196 Catchments within the study area that have the potential to influence existing flood risk issues in neighbouring Local Authorities were identified, as well as catchments in the study area that may be influenced by development in catchments in neighbouring Local Authorities.

197 Catchments were identified where development may have the greatest impact on flood risk, and where further assessment would be required within a Level 2 Strategic Flood Risk Assessment (SFRA) or site-specific Flood Risk Assessment (FRA). The potential change in developed area within each catchment and communities sensitive to increased risk of surface water and fluvial flooding, alongside evidence of historic flooding incidents were considered to identify catchments at the highest risk. Where catchments have been identified as sensitive to the cumulative impact of development, the assessment concludes with recommended strategic planning policy suggestions to manage the risk.

7.2 Strategic flood risk solutions

198 The East Sussex Local Flood Risk Management Strategy sets out specific actions for Wealden district for 2016-2026. This vision needs to be delivered by new development alongside retrofitting and enhancing green infrastructure and flood defence schemes in the existing developed area. Within Wealden District, strategic solutions include suggestions to

- Work with the Pevensey & Cuckmere Water Level Management Board and Local Planning Authorities to assess flood risk implications of major planning applications and local planning policy in the Board's catchment.
- Provide evidence base and policy proposals for managing groundwater flood risk and development in Southern Wealden.
- Develop a policy approach to manage both the water quantity and quality impacts of new development in the Pevensey Levels catchment.
- Develop a fluvial flood risk model for the Polegate, Eastbourne, Mountney Sewer catchments to inform the development of the Wealden District and the Eastbourne Borough local plans.
- Develop, secure funding and implement a programme of studies to increase the understanding of flood risk and water management within the Pevensey hydrological catchment and in turn inform development management and planning policy decisions.
- Deliver the Wealden Community Resilience Project.
- Deliver soft engineering solutions to managing surface water at Tompsets Bank, Forest Row.
- Secure funding for and deliver an update of surface water flood models in Eastbourne and Hailsham.
- Secure funding for and deliver the evidence base and policy responses necessary to manage the water quality and quantity impacts of new development on the Pevensey Levels.
- Accommodate existing surface water flow paths to prevent increased surface water risk in settlements.
- Identify the means and location of surface water outfall prior to the submission of the drainage strategy. Including providing evidence that the accepting watercourse has the capacity to receive additional surface water flows.
- Allow for urban creep; developments must use calculations that allow for a 10% increase in the impermeable area of the site.
- Undertake on-site infiltration tests.
- Maintain drainage strategies for the lifetime of the development.
- Mitigate the impact of proposed developments on water quality.
- Reinstate culverted watercourses to open channels where possible and practical.

7.3 Assessment of cross-boundary issues

199 Wealden District has boundaries with the following local authority areas:

- Mid Sussex District
- Tandridge District
- Sevenoaks District
- Tunbridge Wells Borough
- Rother District
- Eastbourne Borough
- Lewes District

200 Figure 7-1 shows the catchments in Wealden District mapped against the topography and the direction that they drain into or out of neighbouring authorities. Overall flow direction means that the neighbouring authorities of Sevenoaks and Rother have the potential to be affected by development in Wealden District. Similarly, some WFD catchments in Mid Sussex, Tunbridge Wells and Lewes may be affected by development in Wealden as well. Conversely, development in some catchments in these neighbouring authorities have the potential to affect flood risk in Wealden. The following catchments are considered at high risk of cumulative impacts:

- | | |
|--|----------------------------------|
| • Langney Sewer at Eastbourne | • Horse Eye Sewer |
| • shortbridge stream | • Hurst Haven Halisham |
| • Tickerage Stream | • Pevensey Haven |
| • Upper Rother Five ashes to Coggins Mill Stream | • Bewl |
| • Bartley Mill Stream | • Dudwell |
| • Cuckmere from Warbleton to Lower Horsebridge | • Jarvis Brook |
| • Edridge Stream | • Nunning Steam |
| • Friars Gate Stream | • Ouse between Isfield and Coast |
| • Middle Ouse | • Glynde Stream |

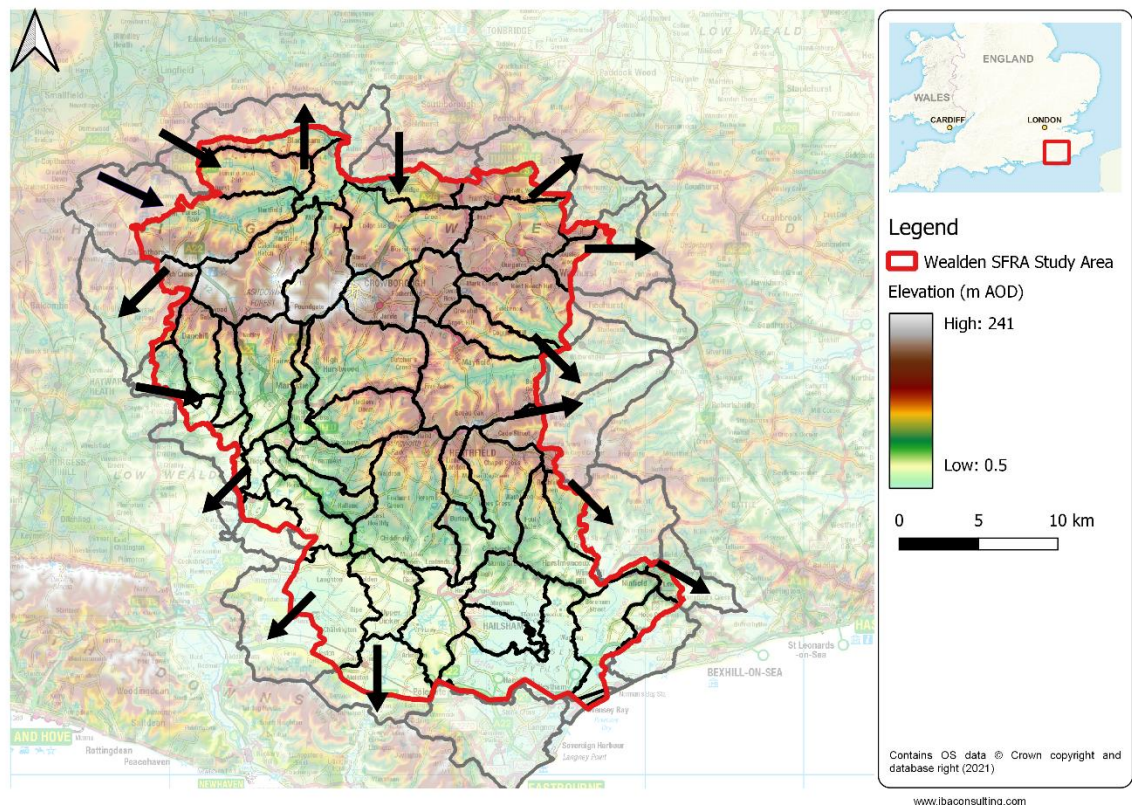
201 Future development both within and outside of Wealden District can have the potential to affect flood risk to existing communities and surrounding areas depending on the effectiveness of SUDS and drainage implementation. Developments in catchments that already have existing flood risk issues are particularly likely to impact flood risk.

202 The following Local Plans have been or are soon to be adopted by neighbouring Local Authorities and include policies relevant to flood risk and drainage:

- **Mid Sussex District Plan** 2014-2031
- **Tandridge District Core Strategy** (2008) which will be replaced with **Tandridge District Council Local Plan** 2033 (currently being developed)
- **Sevenoaks Emerging Local Plan**
- Tunbridge Wells **Local Plan** 2006, the **Core Strategy** (2010) and the **Site Allocations Local Plan** (2016) set to be replaced by the **Tunbridge Wells Draft Local Plan** 2022 – 2038
- **Rother Core Strategy** soon to be replaced with the **Rother New Local Plan** 2019 – 2039
- **Eastbourne Core Strategy** 2013 to be replaced with the **New Eastbourne Plan** 2018 – 2038
- **Lewes Core Strategy** 2016 – 2030 (currently being updated)
- **South Downs Local Plan** (2014 -2033)

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

Figure 7-1 Cross boundary catchments and the direction they drain in or out of the district.



7.4 Cumulative Impact Assessment Approach and Methodology

204 The approach is based on providing an assessment of catchments where the allocation of more than one site could result in effects that increase the flood risk to third parties. At a strategic level this involves comparison of catchments, to assess the quantum of proposed development and the sensitivity of the catchment to changes in flood risk. Historic flooding incidents are also included in the assessment, as these are an indicator of the actual sensitivity of locations within a catchment to flood events.

205 The methodology deploys a range of metrics to assess the potential cumulative impacts, which provide a balance between predicted and observed flooding data recorded by Wealden Council and the Environment Agency. In addition, it was considered important to identify those catchments where an increase in flows (as a result of development) would potentially have the greatest impact upon downstream flood risk.

7.4.1 Datasets

Catchments

206 Wealden District was divided into river catchments using the Water Framework Directive 'River Waterbody Catchments Cycle 2' polygon dataset. These catchments are defined as an area of land from which all surface run-off flows through a series of streams, rivers and, possibly, lakes to a point in the watercourse such as a river confluence.

Current developed area

207 Building outlines from Ordnance Survey MasterMap were used to understand the currently developed area.

Proposed level of growth

208 To understand areas of Wealden District that are likely to experience the greatest pressure for future growth, sites submitted to the SHELAA for consideration through the Call for Sites have been analysed.

209 This allowed the calculation of the overall increase in development from the existing scenario to identify catchments likely to be under the greatest pressure for development. The context for this being that in circumstances where the proportion of proposed new development is greater, then it is more likely to give rise to cumulative effects.

210 It should be noted that it was assumed that all sites will be developed, and that the entire site footprint would be developed.

Historic Flood Risk

211 A historic flood risk score was derived for each catchment within the study area using the total current number of properties within the Environment Agency's historic flood map extent and the total number of flood incidents recorded by ESCC in each catchment.

Properties sensitive to increased flood risk

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

- Total number of properties within the merged 1% AEP surface water flooding extent and Flood Zone 3 for each catchment
- Total number of NRD properties within the merged 0.1% AEP surface water flooding extent and Flood Zone 2

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

7.4.2 Ranking of catchments

214 To identify which catchments are more sensitive to cumulative impacts, each catchment was given a ranking for each of the three metrics (proposed level of growth, historic flood risk and properties sensitive to growth). These rankings were then combined to give an overall ranking which was divided into three categories - high, medium, and low according to how sensitive each catchment is to cumulative impacts relative to one another.

7.4.3 Conclusions of the Cumulative Impact Assessment

215 A summary of the Cumulative Impact Assessment is shown in Figure 7-2. The CIA highlights areas where there is a high chance of encountering cumulative effects of planned development. In these catchments this should be considered by developers and specifically addressed within FRAs for proposed development.

Including consideration of cumulative effects requires that FRAs should assess:

- The location and sensitivity of receptors to cumulative effects and the mechanisms that potentially result in flooding (e.g. locations that are reliant on the performance of pumped drainage systems to manage flood risk, locations where existing flooding is experienced and can be exacerbated by relatively small changes in flood flow magnitude, volume or flood duration, etc).
- The potential quantum of proposed cumulative development within a River Basin and assessment of the effect on sensitive receptors of the cumulative benefit afforded by piecemeal mitigation at the respective allocation sites.
- The requirement for measures to address potential cumulative effects (these can be both 'on-site' measures and contributions to strategic 'off-site' measures).
- The opportunity to integrate site mitigation measures with strategic flood risk management measures planned in the River Basin.
- The long-term commitments to management and maintenance.

7.4.4 Next steps

216 The Cumulative Impact Assessment is used in the following ways:

- The assessment highlights the catchments in Wealden where the cumulative impacts of development on flood risk could potentially be greatest. Developers and Wealden District Council should take the assessment into consideration when identifying appropriate sites for development.
- For sites in catchments identified as being at high or medium risk of cumulative impacts FRAs should contain an assessment of the potential cumulative impacts of development further as outlined within Section 13.4.4.
- If sites are taken forward to a Level 2 SFRA, the cumulative impacts of development will be considered in further detail.

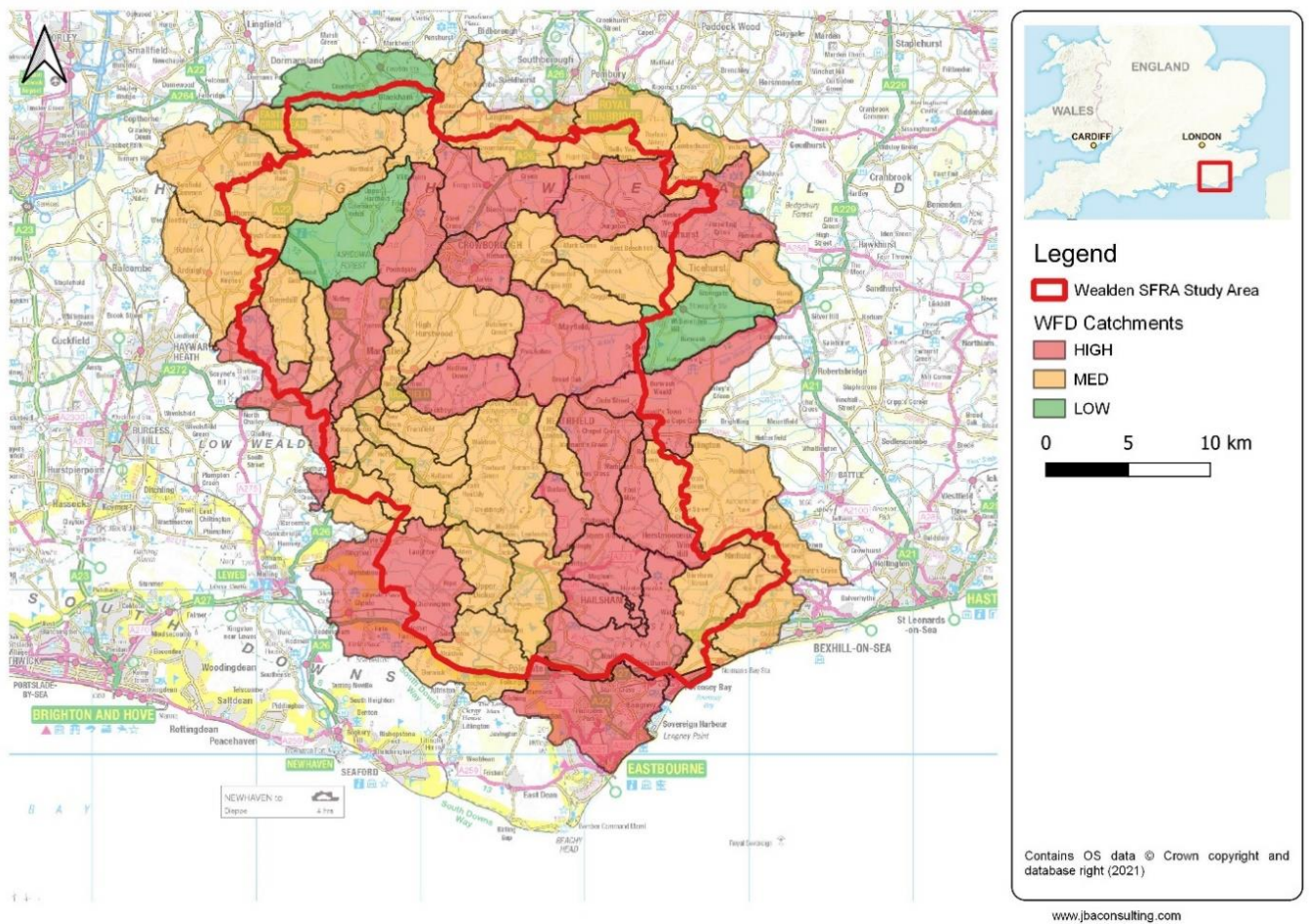
7.4.5 Water quality considerations

217 In addition to cross-boundary issues regarding flood risk, there are also cross-boundary issues relating to water quality. Development or changes to land management practises in the upper catchments of watercourses that flow across boundaries into Wealden District can potentially impact the quality of watercourses within the study area. Development should consider the quality of the water that is released from sites and the impact it may have on the water quality on any receiving waterbodies.

218 Future development should ensure there is no adverse impact on the quality of watercourses within the Council administrative area. Any impacts identified should then be considered in relation to the WFD Ecological, Hydromorphological and Chemical Status of the waterbody and the status objectives. Opportunities to improve the status of watercourses should also be considered. This is particularly important for Wealden District as there are several watercourses within the area which have not achieved a good status, including the River Cuckmere and River Uck primarily due to diffuse pollution, and levels of phosphate, zinc and lead.

219 Information can be viewed at the Environment Agency **Catchment Data Explorer** website.

Figure 7-2 Cumulative Risk Assessment of WFD catchments within Wealden District



8 Level 1 summary assessment of SHELAA sites

This section details the screening of sites submitted to Wealden District Council as part of their Strategic Housing and Economic Land Availability Assessment (SHELAA) which was carried out as part of the Level 1 SFRA, as well as the cumulative impact assessment. Refer to Appendix D for recommendations and details on how to apply the Sequential and Exception tests using the data set out in this section.

8.1 Introduction

220 A total of 992 sites were provided by Wealden Council as shown in Figure 8-1. They have been screened against a suite of flood risk information and spatial data to provide a summary of risk to each site.

221 The information considered includes the flood risk datasets listed below:

- Environment Agency Flood Zones 1 and 2.
- Flood Zones 3a and 3b.
- Environment Agency Risk of Flooding from Surface Water.
- Environment Agency Historic Flood Map.
- East Sussex County Council Flooding Incidents.
- Future Flood Zone 3a (based on climate change data)

222 A site screening spreadsheet has been prepared which identified the proportion of each site that is affected by the different sources of flooding. The information provided is intended to enable a more informed consideration of the sites when applying the sequential approach to determine whether more detailed assessment of sites is needed to further identify those that should be taken forward as part of a Level 2 assessment.

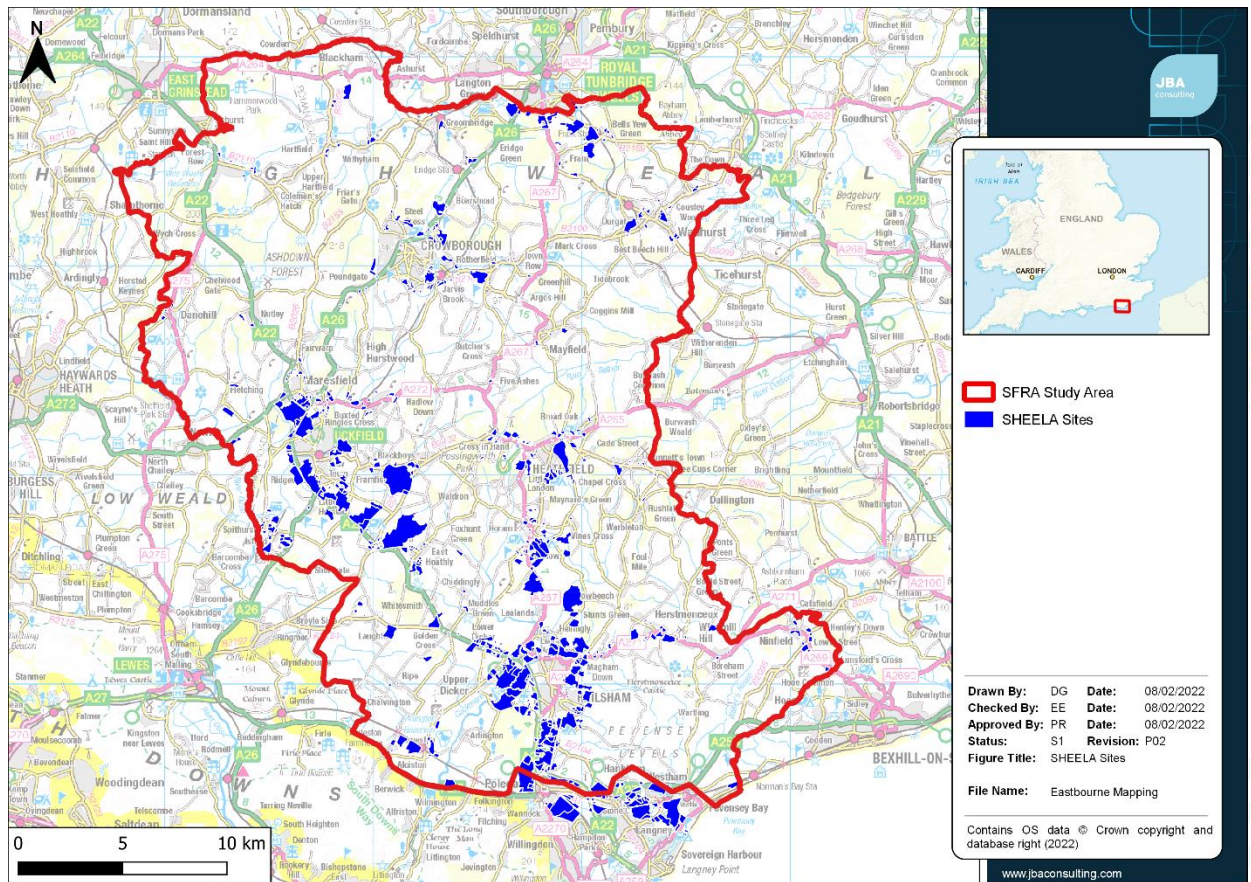


Figure 8-1 SHEELA Sites

8.2 Overview of flood risk at identified sites

223 A summary of flood risk at each of the sites in light of the screening is provided below:

- The majority of the sites have Flood Zone 1 comprising the largest proportion of their area, with 848 sites completely located within Flood Zone 1.
- 125 sites are partially located in Flood Zone 2
- 1 site is entirely within Flood Zone 2
- 113 sites are partially located in Flood Zone 3a
- 8 sites are entirely located in Flood Zone 3a
- 57 sites are partially located in Flood Zone 3b (the functional floodplain)
- 708 sites are predicted to be at risk during a current day 0.1% AEP surface water flood event
- 407 sites are predicted to be at risk during a current day 1% AEP surface water flood event
- 377 sites are predicted to be at risk during a current day 3.33% AEP surface water flood event
- 51 sites intersect the Environment Agency's historic flood outlines
- 203 sites have more than 5 recorded flood incidents within a 50m radius of the site

8.3 Sequential Testing

224 The SFRA does not include the Sequential Test of the sites that were screened. However, Appendix I summarises the flood risk to the sites and provides evidence for use in the completion of the Sequential Test.

225 NPPF Planning Practice Guidance for Flood Risk and Coastal Change describes how the Sequential Test should be applied in the preparation of a Local Plan Review. The assessments undertaken for this SFRA will assist Wealden District Council in the preparation of the Sequential Test.

9 Flood risk management requirements for developers

This section provides guidance on site-specific Flood Risk Assessments (FRAs). These are carried out by (or on behalf of) developers to assess flood risk to and from a site. They are submitted with Planning Applications and should demonstrate how flood risk will be managed over the development's lifetime, considering climate change and vulnerability of users.

226 This SFRA provides a strategic assessment of flood risk within Wealden. Prior to any construction or development, site-specific assessments will need to be undertaken so all forms of flood risk and any defences at a site are considered in more detail. Developers should, where required, undertake more detailed hydrological and hydraulic assessments of the watercourses to verify flood extent (including latest climate change allowances), to inform the sequential approach within the site and prove, if required, whether the Exception Test can be satisfied.

227 A detailed Flood Risk Assessment (FRA) may show that a site, windfall or otherwise, is not appropriate for development of a particular vulnerability, or even at all. The Sequential and Exception Tests in the NPPF apply to all developments and an FRA should not be seen as an alternative to proving these tests have been met.

9.1 Principles for new developments

9.1.1 Apply the Sequential and Exception Tests

228 Developers should refer to Section 3 for more information on how to consider the Sequential and Exception Tests. For allocated sites, Wealden District Council should use the information in this SFRA to apply the Sequential Test. For windfall sites a developer must undertake the Sequential Test, which includes considering reasonable alternative sites at lower flood risk. Only if it passes the Sequential Test should the Exception Test then be applied if required.

229 Developers should also apply the sequential approach to locating development within the site. The following questions should be considered:

- can risk be avoided through substituting less vulnerable uses or by amending the site layout?
- can it be demonstrated that less vulnerable uses for the site have been considered and reasonably discounted? and
- can the site layout be varied to reduce the number of people, the flood risk vulnerability or the building units located in higher risk parts of the site?

9.1.2 Consult with statutory consultees at an early stage to understand their requirements

230 Developers should consult with the Environment Agency, Wealden District Council, East Sussex County Council as LLFA and Southern Water at an early stage to discuss flood risk, including requirements for site-specific FRAs, detailed hydraulic modelling and drainage assessment and design.

9.1.3 Consider the risk from all sources of flooding and that they are using the most up to date flood risk data and guidance

231 The SFRA can be used by developers to scope out what further detailed work is likely to be needed to inform a site-specific Flood Risk Assessment. At a site level, developers will need to check before commencing on a more detailed Flood Risk Assessment that they are using the latest available datasets. Developers should apply the latest Environment Agency climate change guidance and uplifts and ensure the development has taken into account climate change adaptation measures.

9.1.4 Ensure that the development does not increase flood risk elsewhere

232 Section 9 sets out these requirements for taking a sustainable approach to surface water management. Developers should also ensure mitigation measures do not increase flood risk elsewhere and that floodplain compensation is provided where necessary.

9.1.5 Ensure the development is safe for future users

233 Consideration should first be given to minimising risk by planning sequentially across a site. Once risk has been minimised as far as possible, only then should mitigation measures be considered. Developers should consider both the actual and residual risk of flooding to the site, as discussed in section 3. Mitigation measures should be considered for any residual risk from breach and overtopping of flood defence.

9.1.6 Enhance the natural river corridor and floodplain environment through new development

234 Developments should demonstrate opportunities to create, enhance and link green assets. This can provide multiple benefits across several disciplines including flood risk and biodiversity/ ecology and may provide opportunities to use the land for amenity and recreational purposes. Development that may adversely affect green infrastructure assets should not be permitted. Where possible, developers should identify and work with partners to explore all avenues for improving the wider river corridor environment.

235 Developers should seek to open up existing old culverts and should not construct new culverts on site, except for short lengths to allow essential infrastructure crossings. Evidence would need to be provided showing there is no other economically viable alternative and that appropriate mitigation measures are being implemented to offset any ecological or flood risk impacts. Permission from the Environment Agency is unlikely to be granted without these requirements.

9.1.7 Consider and contribute to wider flood mitigation strategy and measures in the district and apply the relevant local planning policy

236 Wherever possible, developments should seek to help reduce flood risk in the wider area e.g. by contributing to a wider community scheme or strategy for strategic measures, such as defences or natural flood management or by contributing in-kind by mitigating wider flood risk on a development site. More information on the contribution developers are expected to make towards achieving the wider vision for FRM and sustainable drainage in the district can be

found in section 7.3. Developers must demonstrate in an FRA how they are contributing towards this vision.

9.2 Requirements for site-specific Flood Risk Assessments

9.2.1 When is an FRA required?

237 Site-specific FRAs are required in the following circumstances:

- Proposals of 1 hectare or greater in Flood Zone 1.
- Proposals for new development (including minor development such as non-residential extensions, alterations which do not increase the size of the building or householder developments and change of use) in Flood Zones 2 and 3.
- Proposals for new development (including minor development and change of use) in an area within Flood Zone 1 which has critical drainage problems (as notified to the LPA by the Environment Agency).
- Where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.
- An FRA may also be required for some specific situations:
- If the site may be at risk from the breach of a local defence (even if the site is actually in Flood Zone 1)
- Where evidence of historical or recent flood events have been passed to the LPA
- In an area of significant surface water flood risk.

9.2.2 Objectives of a site-specific FRA

238 Site-specific FRAs should be proportionate to the degree of flood risk and the scale, nature and location of the development. Site-specific FRAs should establish:

- Whether a proposed development is likely to be affected by current or future flooding from any source.
- Whether a proposed development is at residual risk of flooding, should an existing defence fail.
- Whether a proposed development will increase flood risk elsewhere.
- Whether the measures proposed to deal with the effects and risks are appropriate.
- The evidence, if necessary, for the local planning authority to apply the Sequential Test; and
- Whether, if applicable, the development will be safe and pass the Exception Test.

239 FRAs should follow the approach recommended by the NPPF (and associated guidance) and guidance provided by the Environment Agency and Wealden District Council. Guidance and advice for developers on the preparation of site-specific FRAs include:

- **Standing Advice on Flood Risk** (Environment Agency)

- **Flood Risk Assessment for Planning Applications** (Environment Agency); and
- **Site-specific Flood Risk Assessment: CHECKLIST** (NPPF PPG, Defra)

240 Guidance for local planning authorities for reviewing Flood Risk Assessments submitted as part of planning applications was published by Defra in 2015 – [Review individual flood risk assessments: standing advice for local planning authorities](#)

9.3 Local requirements for mitigation measures

9.3.1 Site layout and design

241 Flood risk should be considered at an early stage in deciding the layout and design of a site to provide an opportunity to reduce flood risk within the development.

242 The NPPF states that a sequential, risk-based approach should be applied to try to locate more vulnerable land use away from Flood Zones to higher ground, while more flood-compatible development (e.g. vehicular parking, recreational space) can be located in higher risk areas. Whether parking in floodplains is appropriate will be based on the likely flood depths and hazard, evacuation procedures and availability of flood warning.

243 Waterside areas, or areas along known flow routes, can act as green infrastructure, being used for recreation, amenity and environmental purposes, allowing the preservation of flow routes and flood storage, and at the same time providing valuable social and environmental benefits contributing to other sustainability objectives. Landscaping should ensure safe access to higher ground from these areas and avoid the creation of isolated islands as water levels rise.

9.3.2 Modification of ground levels

244 Any proposal for modification of ground levels will need to be assessed as part of a detailed flood risk assessment.

245 Modifying ground levels to raise the land above the required flood level is an effective way of reducing flood risk to a particular site in circumstances where the land does not act as conveyance for flood waters. However, care must be taken as raising land above the floodplain could reduce conveyance or flood storage in the floodplain and could adversely impact flood risk downstream or on neighbouring land. Raising ground levels can also deflect flood flows, so analyses should be performed to demonstrate that there are no adverse effects, including cumulative effects, on third party land or property.

246 Compensatory flood storage should be provided, and would normally be on a level for level, volume for volume basis on land that does not currently flood but is adjacent to the floodplain (in order for it to fill and drain). It should be in the vicinity of the site and within the red line of the planning application boundary (unless the site is strategically allocated). Guidance on how to address floodplain compensation is provided in Appendix A3 of the **CIRIA Publication C624**.

247 Where proposed development results in a change in building footprint, the developer should ensure that it does not impact upon the ability of the floodplain to store or convey water and seek opportunities to provide floodplain betterment.

248 Raising levels can also create areas where surface water might pond during significant rainfall events. Any proposals to raise ground levels should be tested to ensure that it would not cause increased ponding or build-up of surface runoff on third party land.

9.3.3 Raised floor levels

249 If raised floor levels are proposed, these should be agreed with Wealden District Council and the Environment Agency. The minimum Finished Floor Level (FFL) may change dependent upon the vulnerability and flood risk to the development.

250 The Environment Agency advises that minimum finished floor levels should be set 600mm above the 100-year plus climate change peak flood level, where the new climate change allowances have been used (see section 4 for the climate change allowances). An additional allowance may be required because of risks relating to blockages to the channel, culvert or bridge and should be considered as part of an FRA.

251 Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels. Single storey buildings such as ground floor flats or bungalows are especially vulnerable to rapid rise of water (such as that experienced during a breach). This risk can be reduced by use of multiple storey construction and raised areas that provide an escape route.

252 Similarly, the use of basements should be avoided. Habitable uses of basements within Flood Zone 3 should not be permitted, whilst basement dwellings in Flood Zone 2 will be required to pass the Exception Test. Access should be situated 300mm above the design flood level and waterproof construction techniques used.

9.3.4 Development and raised defences

253 Construction of localised raised floodwalls or embankments to protect new development is not a preferred option, as a residual risk of flooding will remain. Compensatory storage must be provided where raised defences remove storage from the floodplain.

254 Where development is located behind, or in an area benefitting from defences, the residual risk of flooding must be considered.

9.3.5 Developer contributions

255 In some cases, and following the application of the Sequential Test, it may be appropriate for the developer to contribute to the improvement of flood defence provision that would benefit both proposed new development and the existing local community. Developer contributions can also be made to maintenance and provision of flood risk management assets, flood warning and the reduction of surface water flooding (i.e. SuDS).

9.4 Buffer strips

256 The provision of a buffer strip to 'make space for water', allows additional capacity to accommodate climate change and ensure access to the watercourse, structures and defences is maintained for future maintenance purposes. It also enables the avoidance of disturbing riverbanks, adversely impacting ecology and having to construct engineered riverbank protection. Building adjacent to riverbanks can also cause problems to the structural integrity of the riverbanks and the building itself, making future maintenance of the river much more difficult.

9.5 Making space for water

257 The **PPG** sets out a clear aim in Flood Zone 3 to create space for flooding by restoring functional floodplain and generally development should be directed away from these areas.

258 All new development close to rivers should consider the opportunity to improve and enhance the river environment. Developments should look at opportunities for river restoration and enhancement as part of the development. Options include backwater creation, de-silting, in-channel habitat enhancement and removal of structures. When designed properly, such measures can have benefits such as reducing the costs of maintaining hard engineering structures, reducing flood risk, improving water quality and increasing biodiversity. Social benefits are also gained by increasing green space and access to the river.

259 Developers should:

- Not build within 8m from the edge of a bank of any Ordinary Watercourse within the District
- Not build within 8m from the edge of a bank of any Main River within the District in accordance with the **Environment Permitting Regulations (2016)**.
- Maintain a minimum distance of 9m between development and the edge of a bank of any Ordinary Watercourse within the Pevensey and Cuckmere Water Level Management Board maintained by the board, in accordance with local Byelaws.
- Maintain a minimum distance of 8m between development and the edge of a bank of any Ordinary Watercourse within the Upper Medway Internal Drainage Board maintained by the board, in accordance with local Byelaws.
- Seek opportunities on a site-by-site basis to increase these buffer distances to 'make space for water', allowing additional capacity to accommodate climate change.

9.6 Resistance and resilience measures

260 The consideration of resistance and resilience measures should not be used to justify development in inappropriate locations.

261 Having applied planning policy, there will be instances where developments, such as those that are water compatible and essential infrastructure, are permitted in high flood risk areas. The above measures should be considered before resistance and resilience measures are relied on. The effectiveness of these forms of measures are often dependant on the availability of a reliable forecasting and warning system and the use of back up pumping to evacuate water from a property as quickly as possible. The proposals must include details of how the temporary measures will be erected and decommissioned, responsibility for maintenance and the cost of replacement when they deteriorate. Available resistance and resilience measures are shown in Table 9-1.

Table 9-1: Available temporary measures

Measures	Description
Permanent barriers	Permanent barriers can include built up doorsteps, rendered brick walls and toughened glass barriers
Temporary barriers	Temporary barriers consist of moveable flood defences which can be fitted into doorways and/or windows. The permanent fixings required to install these temporary defences should be discrete and keep architectural impact to a minimum. On a smaller scale, temporary snap on covers for airbricks and air vents can also be fitted to prevent the entrance of flood water.
Community resistance measures	These include demountable defences that can be deployed by local communities to reduce the risk of water ingress to a number of properties. The methods require the deployment of inflatable (usually with water) or temporary quick assembly barriers in conjunction with pumps to collect water that seeps through the systems during a flood.
Flood resilience measures	These measures aim to ensure no permanent damage is caused, the structural integrity of the building is not compromised and the clean up after the flood is easier. Interior design measures to reduce damage caused by flooding can include electrical circuitry installed at a higher level and water-resistant materials for floors, walls and fixtures.

9.7 Reducing flood risk from other sources

9.7.1 Groundwater

262 Groundwater flooding has a very different flood mechanism to any other and so many conventional flood mitigation methods are not suitable. The only way to fully reduce flood risk would be through building design (development form), ensuring floor levels are raised above the water levels caused by a 1 in 100-year plus climate change event. Site design would also need to preserve any flow routes followed by the groundwater overland to ensure flood risk is not increased downstream.

263 Infiltration SuDS can cause increased groundwater levels and subsequently may increase flood risk on or off a site. Developers should provide evidence and ensure that this will not be a significant risk.

9.7.2 Surface water and sewer flooding

264 Developers should discuss public sewerage capacity with the water utility company at the earliest possible stage. It is important that a Surface Water Drainage Strategy (often done as part of a Flood Risk Assessment) shows that this will not increase flood risk elsewhere, and that the drainage requirements regarding runoff rates and SuDS for new development are met.

265 If residual surface water flood risk remains, the likely flow routes and depths across the site should be modelled. The site should be designed so that these flow routes are preserved and building design should provide resilience against this residual risk.

266 When redeveloping existing buildings, the installation of some permanent or temporary flood-proofing and resilience measures could protect against both surface water and sewer flooding. Non-return valves prevent water entering the property from drains and sewers. Non-return valves can be installed within gravity sewers or drains within a property's private sewer upstream of the public sewerage system. These need to be carefully installed and must be regularly maintained.

267 Consideration must also be given to attenuation and flow, ensuring that flows during the 100-year plus climate change storm event are retained within the site if any flap valves shut. This should be demonstrated with suitable modelling techniques.

9.7.3 Reservoirs

268 As discussed in Section 5.9, the risk of reservoir flooding is extremely low. However, there remains a residual risk to development from reservoirs which developers should consider during the planning stage:

269 Developers should contact the reservoir owner for information on:

- the Reservoir Risk Designation
- reservoir characteristics: type, dam height at outlet, area/volume, overflow location
- operation: discharge rates / maximum discharge
- discharge during emergency drawdown; and
- inspection / maintenance regime.

270 The Environment Agency online Reservoir Flood Maps contain information on the extents, depths and velocities following a reservoir breach (note: only for those reservoirs with an impounded volume greater than 25,000 cubic metres are governed by the Reservoir Act 1975). Consideration should be given to the extent, depths and velocities shown in these online maps.

271 The GOV.UK website on **Reservoirs**: owner and operator requirements provides information on how to register reservoirs, appoint a panel engineer, produce a flood plan and report and incident. In addition, developers should consult the **East Sussex Emergency Plan** website about emergency plans.

272 Developers should use the above information to:

- Apply the sequential approach to locating development within the site.
- Consider the impact of a breach and overtopping, particularly for sites proposed to be located immediately downstream of a reservoir. This should consider whether there is sufficient time to respond, and whether in fact it is appropriate to place development immediately on the downstream side of a reservoir.
- Assess the potential hydraulic forces imposed by sudden reservoir failure event and check that the proposed infrastructure fabric could withstand the structural loads.
- Develop site-specific Emergency Plans and/ or Off-site Plans if necessary and ensure the future users of the development are aware of these plans. This may need to consider emergency drawdown and the movement of people beforehand, similar to the response to the Toddbrook Reservoir incident in Whaley Bridge, Derbyshire, 2019.

9.8 Emergency planning

273 Emergency planning covers three phases: before, during and after a flood. Measures involve developing and maintaining arrangements to reduce, control or mitigate the impact and consequences of flooding and to improve the ability of people and property to absorb, respond to and recover from flooding. National Planning Policy takes this into account by seeking to avoid inappropriate development in areas of flood risk and considering the vulnerability of new developments to flooding.

274 The 2021 NPPF requires site level Flood Risk Assessments to demonstrate that

"d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan."

275 Certain sites will need emergency plans:

- Sites with vulnerable users, such as hospitals and care homes
- Camping and caravan sites
- Sites with transient occupants e.g. hostels and hotels
- Developments at a high residual risk of flooding from any source e.g. immediately downstream of a reservoir or behind raised flood defences
- Situations where occupants cannot be evacuated (e.g. prisons) or where it is safer to remain "in-situ" and / or move to a higher floor or safe refuge area (e.g. at risk of a breach).

276 Emergency Plans will need to consider:

- The characteristics of the flooding e.g. onset, depth, velocity, hazard, flood borne debris
- The vulnerability of site occupants.
- Structural safety
- The impact of the flooding on essential services e.g. electricity, drinking water
- Flood warning systems and how users will be encouraged to sign up for them
- Safe access and egress for users and emergency services
- How to manage the consequences of events that are un-foreseen or for which no warnings can be provided e.g. managing the residual risk of a breach.
- A safe place of refuge where safe access and egress and advance warning may not be possible, having discussed and agreed this first with emergency planners. Proposed new development that places an additional burden on the existing response capacity of the Council will not normally be appropriate.

277 East Sussex County Council **Flooding Advice** website provides emergency planning relevant information that is both general and flood specific. This includes practical advice before, during and after flooding has occurred including, preparation, understanding warnings, actions to limit exposure to risk and recovery. Further information is available from:

- **2004 Civil Contingencies Act**
- **DEFRA (2014) National Flood Emergency Framework for England**
- **FloodRe – Flood re-insurance scheme**
- The **Environment Agency and DEFRA's** standing advice for FRAs
- East Sussex **County Council Flooding Advice**
- **East Sussex Emergency Plan**
- Environment Agency's "**How to plan ahead for flooding**"
- Sign up for Flood Warnings with the Environment Agency
- The **National Flood Forum**
- **GOV.UK** - Make a Flood Plan guidance and templates

10 Surface water management and SuDS

This section provides guidance and advice on managing surface water runoff and flooding.

10.1 Role of the LLFA and Local Planning Authority in surface water management

278 In April 2015, East Sussex County Council as LLFA was made a statutory planning consultee on the management of surface water. They provide technical advice on surface water drainage strategies and designs put forward for major development proposals, to ensure that onsite drainage systems are designed in accordance with the current legislation and guidance.

279 When considering planning applications, East Sussex County Council as LLFA will provide advice to the Planning Department on the management of surface water. As LPA, Wealden District Council should satisfy themselves that the development's proposed minimum standards of operation are appropriate and ensure through the use of planning conditions or planning obligations, that there are clear arrangements for on-going maintenance over the lifetime of the development.

280 It is essential that developers consider sustainable drainage at an early stage of the development process – ideally at the master-planning stage.

10.2 Sustainable Drainage Systems (SuDS)

281 Sustainable Drainage Systems (SuDS) are designed to maximise the opportunities and benefits that can be secured from surface water management practices.

282 SuDS provide a means of dealing with the quantity and quality of surface water and can also provide amenity and biodiversity benefits. Given the flexible nature of SuDS they can be used in most situations within new developments as well as being retrofitted into existing developments. SuDS can also be designed to fit into most spaces. For example, permeable paving could be used in parking spaces or rainwater gardens as part of traffic calming measures.

283 It is a requirement for all new major development proposals to ensure that sustainable drainage systems for management of runoff are put in place. Likewise, minor developments should also ensure sustainable systems for runoff management are provided. The developer is responsible for ensuring the design, construction and future/ongoing maintenance of such a scheme is carefully and clearly defined, and a clear and comprehensive understanding of the existing catchment hydrological processes and current drainage arrangements is essential.

10.3 Sources of SuDS guidance

10.3.1 C753 CIRIA SuDS Manual (2015)

284 The **C753 CIRIA SuDS Manual** (2015) provides guidance on planning, design, construction and maintenance of SuDS. The manual is divided into five sections ranging from a high-level overview of SuDS, progressing to more detailed guidance with progression through the document.

10.3.2 Non-Statutory Technical Guidance, Defra (March 2015)

285 **Non-Statutory Technical guidance** provides non-statutory standards on the design and performance of SuDS. It outlines peak flow control, volume control, structural integrity, flood risk management and maintenance and construction considerations.

286 In February 2021, Defra published its **research project** to review and recommend updates to the Non-Statutory Technical guidance. The proposals have not yet been adopted, but would bring the standards in line with current best practice according to the construction industry research and information association (CIRIA) SuDS Manual.

10.3.3 Guide to Sustainable Drainage East Sussex County Council

287 In 2015, East Sussex County Council prepared an additional **local guidance document**, setting SuDS into an East Sussex context. This guide is aimed at applicants, architects, developers and planners who want to design and put in place sustainable drainage systems (SuDS) in East Sussex. This guide explains what SuDS are, why they are important and the process of designing and implementing SuDS within the East Sussex environment. It also sets out the drainage approval process and its requirements in relation to SuDS. In addition, the multiple benefits of SuDS to developers, residents and the environment of East Sussex are highlighted. The Guide to Suitable Drainage Systems in East Sussex includes checklists to help applicants provide all the information required to support an outline or detailed application.

288 For small scale development in East Sussex, developer's should make use of the **East Sussex Small Scale Sustainable Drainage Systems (SuDS) Tool** which is designed to assist Local Planning Authorities and developers in assessing the suitability of SuDS provision within small scale development proposals. The main focus of the tool is to enable planning authorities to ensure that the flood risk requirements for SuDS are met by development proposals. The tool does not give definitive attenuation volumes that will be achieved by a specific SuDS solution and a final design will be required to determine the actual performance of the proposed system.

289 ESCC has noted that there may be situations where discharging at greenfield runoff rates may not go far enough, for example where there is impermeable geology. In these instances, it may be appropriate to improve upon greenfield runoff rates.

10.3.4 Water. People. Places: A guide for master planning sustainable drainage into developments

290 The guide for master planning sustainable drainage into developments was published in 2013 by the LLFAs of the South East of England, of which East Sussex County Council is a part, to outline the process for integrating SuDS into the master planning of large and small developments. The South East LLFAs expect this guidance to be used as part of the initial planning and design plans for all types of residential, commercial and industrial development. The guidance complements existing guidance on SuDS design, maintenance and operation which should also be used to inform detailed design and delivery of SuDS.

291 Although SuDS can be applied to any site, there are a variety of conditions and constraints that could restrict the suitability of different types of SuDS or trigger the need for bespoke design. Therefore, consideration of the movement of water and its interaction with site-specific conditions (e.g. soil types) at the earliest stage of design is crucial to the success of a SuDS scheme.

292 Section 4 of the 'Water. People. Places' document provides detailed SuDS design guidance for a range of commonly encountered site conditions. A summary of this guidance is provided in the SuDS Selection Matrix, whereby the suitability of each type of SuDS is presented for each common site condition.

293 It is noted in the guidance document that SuDS design should be fully integrated into a master plan as an essential part of land use and development planning, and considered in conjunction with other aspects of the design. Although there is no formal process for master planning, a typical design process for SuDS is outlined in Sections 5 and 6 of the guidance documents. The process is designed to allow planners and designers to scope and embed opportunities for SuDS as land use and design ideas evolve.

10.3.5 SuDS tool

294 For minor developments, East Sussex County Council have designed a local tool which advises what SuDS techniques are appropriate at the site according to local drainage characteristics. It is recommended that this tool, available at <http://www.eastsussex.suds-tool.co.uk/> is used during the development process.

10.4 Other surface water considerations

10.4.1 Groundwater Source Protection Zone (GSPZ)

295 The Environment Agency published new groundwater vulnerability maps in 2015. These maps provide a separate assessment of the vulnerability of groundwater in overlying superficial rocks and those that comprise of the underlying bedrock. The map shows the vulnerability of groundwater at a location based on the hydrological, hydro-ecological and soil properties within a one-kilometre grid square.

296 The groundwater vulnerability maps should be considered when designing SuDS. Depending on the height of the water table at the location of the proposed development site, restrictions may be placed on the types of SuDS appropriate to certain areas. Groundwater vulnerability maps can be found on **Defra's interactive mapping**.

297 The majority of Wealden District is outside of a Source Protection Zone. Except for areas near Forest Row, Groombridge, Eridge, Frant, Wadhurst, Mayfield, Bodle Street Green, Ninfield and Hooe where areas of Zone I are surrounded by Zones II and III. Depending on the nature of the proposed development and the location of the development site with regards to GSPZs, restrictions may be in place on the types of SuDS used within appropriate areas. For example, infiltration SuDS are generally accepted within Zone 3, whereas in Zones 1 (Inner Protection Zone) or 2 (Outer Protection Zone), the Environment Agency will need to be consulted and infiltration SuDS may only be accepted if the correct treatments and permits are put in place.

298 Any restrictions imposed on the discharge of the site generated runoff by the Environment Agency will be determined on a site-by-site basis using a risk-based approach.

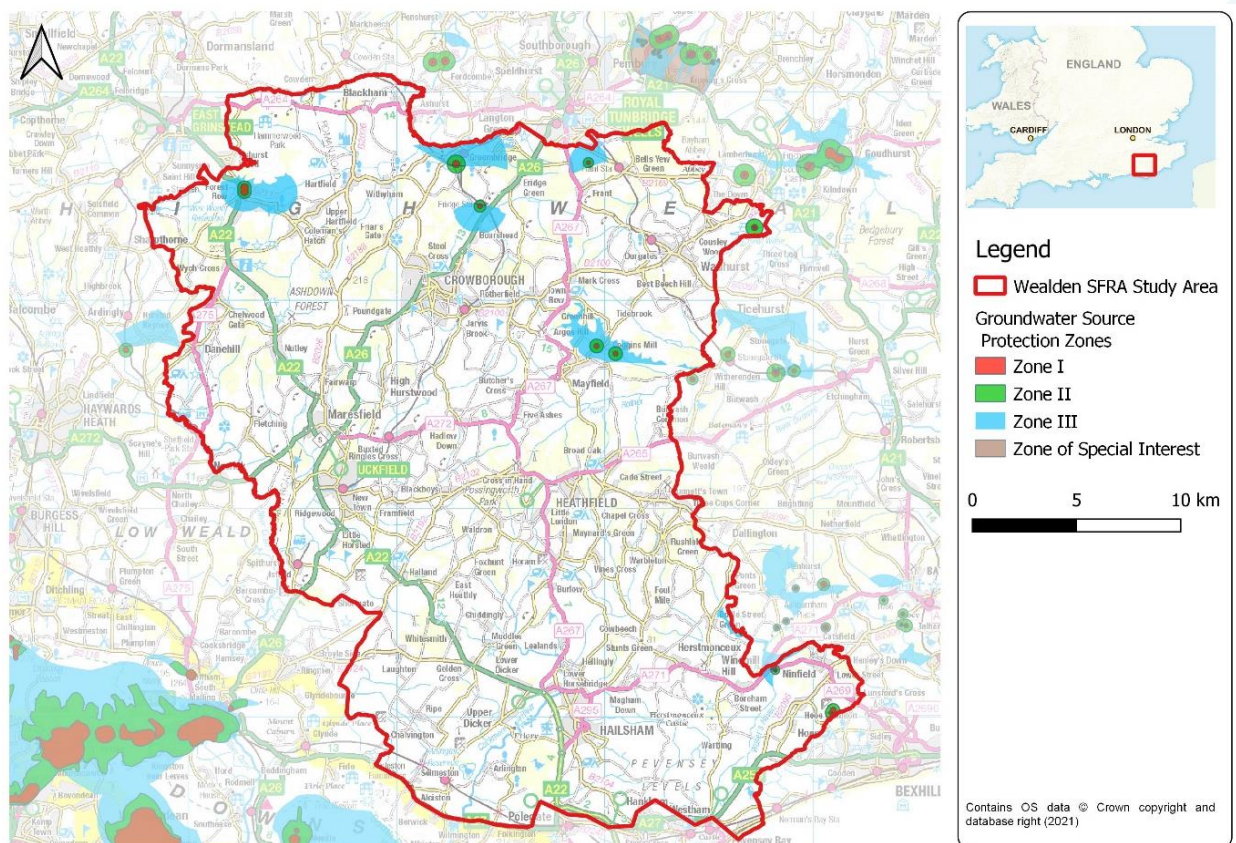


Figure 10-1: Groundwater Source Protection Zones in the Wealden District

10.4.2 Nitrate Vulnerable Zones

299 Nitrate Vulnerable Zones (NVZs) are areas designated as being at risk from agricultural nitrate pollution. Nitrate levels in waterbodies are affected by surface water runoff from surrounding agricultural land entering receiving waterbodies. The level of nitrate contamination will potentially influence the choice of SuDS and should be assessed as part of the design process.

300 Wealden District comprises of only Surface Water NVZ's. These cover Heathfield, Hailsham, Uckfield, Best Beech Hill, Groombridge and Forest Row. None of the district falls within the Groundwater or Eutrophic NVZ.

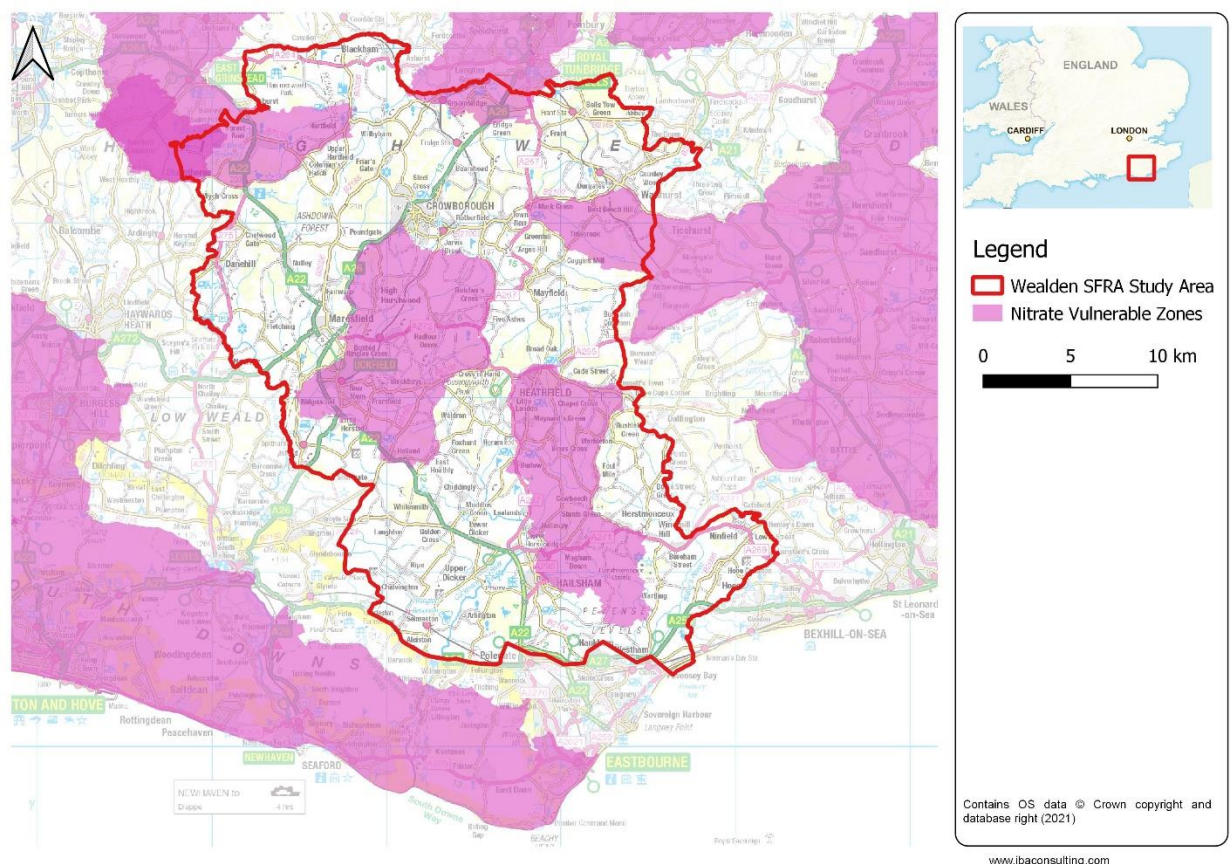


Figure 10-2: Nitrate Vulnerable Zones in the Wealden District

11 Summary and Recommendations

11.1 Summary

301 The most affected areas for historic flooding recorded by East Sussex County Council are distributed around the main urban areas of the district including

- Forest Row,
- Crowborough,
- Uckfield,
- Heathfield,
- Lower Horsebridge and
- Durgates

302 Fluvial flood risk is most notable on the Pevensey Levels but is also present along the River Medway, River Uck, River Cuckmere and Shortbridge Stream. This results in predicted flooding for large rural areas as well as flooding at the urban centres of

- Uckfield,
- Crowborough,
- Forest Row,
- Horam,
- Hailsham, and
- Polegate

303 A large shingle ridge provides protection from coastal flooding up to a 1 in 400-year standard of protection, however there is still a residual risk of over topping or defence breach, especially under rising sea levels with climate change.

304 Surface water flood risk is the most common source of flooding across the district and predominantly follows topographical flow paths of existing watercourses or dry valleys. The steep topography and impermeable geology in north Wealden leads to high surface water flood risk in the topographic depressions.

305 Groundwater flood risk is prevalent across the district, particularly in Southern Wealden and relating to superficial deposits but also in locations such as Uckfield, Lower Horsebridge, Hellingly, Alfriston.

306 Areas most frequently flooded from sewer flooding, as recorded by Southern Water, are

- Heathfield,
- Uckfield,
- Forest Road
- Herstmonceux and
- Hailsham

307 Areas at risk of flooding are likely to become an increasing risk in the future and the frequency of flooding will increase in such areas as a result of climate change. Flood extents will increase especially in low-lying areas, particularly around the Pevensey Levels. In some locations, flood extents may not increase by very much, but flood depth, velocity and hazard may have more of an impact due to climate change. It is recommended that the Council works with other Risk Management Authorities to review the long-term sustainability of existing and new development in these areas when developing climate change plans and strategies for the District.

308 There is a potential risk of flooding from 21 reservoirs both within the district and those outside. There are no records of flooding from reservoirs in the study area to date. The level and standard of inspection and maintenance required under the Reservoirs Act 1975 means that the risk of flooding from reservoirs is relatively low. However, there is a residual risk of a reservoir breach and this risk should be considered in any site-specific Flood Risk Assessments (where relevant).

11.2 Recommendations

11.2.1 Reduction of flood risk through site allocations and appropriate site design

309 The following recommendations provide additional detail to the requirements of the National Planning Policy Framework (NPPF) regarding future development location and site-specific considerations

- To fulfil the requirements of the NPPF by locating new development according to the Sequential and Exception Test requirements. Applicants for non-allocated developments must demonstrate that they have used a suitable search area for the sequential test, in consultation with the Local Planning Authority.
- After application of the Exception Test, a sequential approach must be taken within the site boundary, demonstrating that the highest vulnerability uses are situated in the areas at lowest risk of flooding.
- Identification of long-term opportunities to remove development from the floodplain and to make space for water.
- Where there is an unknown risk from an ordinary watercourse which is not included in national or local flood maps, applicants must demonstrate that they have adequately assessed the risk of flooding to the development site. Where it is identified that flood risk could be a potential issue (ie by review of surface water flow routes as a proxy), flooding should be modelled to an appropriate level of detail to enable a sequential approach to the layout of the development. In this case, the developer would be expected to provide the model and outputs to the LLFA to update their flood maps, as well as the LPA.
- Ensure development is 'safe', dry pedestrian egress from the floodplain and emergency vehicular access should be possible for all residential development. If at risk, then an assessment should be made to detail the flood duration, depth, velocity and flood hazard rating in the 1 in 100-year plus climate change flood event, in line with FD2320 Flood Risk Assessment Guidance for New Development.

- Where there is a residual risk of flooding (from any source) to properties within a development, residential and commercial finished floor levels should be raised above whichever is higher of either 300mm above the 1% AEP plus climate change fluvial flood level, 300mm above the 0.5% AEP plus climate change coastal flood level or 300mm above the general ground level of the site. Finished floor levels for sleeping accommodation should be raised above whichever is higher of either 600mm above the 1% AEP plus climate change fluvial flood level, 600mm above the 0.5% AEP plus climate change coastal flood level or 300mm above the general ground level of the site.
- Raise residential and commercial finished floor levels 600mm above the 1 in 100-year plus climate change flood level. Protect and promote areas for future flood alleviation schemes.
- Safeguard functional floodplain from future development
- Identify opportunities to reduce the risk from flooding and "build back better" in known areas of flood risk, including the restoration of functional floodplain where practical and feasible
- Identify opportunities to help fund future flood risk management through developer contributions to reduce risk for surrounding areas.
- Seek opportunities to make space for water to accommodate climate change.

11.2.2 Promote SuDS to mimic natural drainage characteristics to improve water quality

310 The following recommendations indicate how water quality should be incorporated into sustainable drainage design.

- SuDS design should demonstrate how site-specific constraints have been considered and how the design provides multiple benefits e.g. landscape enhancement, biodiversity, recreation, amenity, leisure and the enhancement of historical features.
- Planning applications for phased developments should be accompanied by a drainage strategy which takes a strategic approach to drainage provision across the entire site and incorporates adequate provision for SuDS within each phase. A drainage strategy should be submitted at each stage of development showing that the phase is in accordance with the outline strategy.
- Use of the SuDS management train to prevent and control pollutants to prevent the 'first flush' polluting the receiving waterbody.
- SuDS are to be designed so that they are easy to maintain, and it should be set out who will maintain the system, how the maintenance will be funded and should be supported by an appropriately detailed maintenance and operation manual.

11.2.3 Reduce Surface Water Runoff from New Developments and Agricultural Land

311 The recommendations below include additional detail on what should be expected from applicants for outline, full and reserved matters planning applications:

- Space should be provided for the inclusion of SuDS for all major development (as defined in The Town and Country Planning (Development Management Procedure) (England) Order 2015). For outline and strategic allocations, applicants should demonstrate that
 - the proposed SuDS will be situated in a feasible location within the site (e.g where gravity connections to an attenuation ponds are proposed, it would not be feasible to have the pond at the highest point in the site boundary)
 - the outline proposals have considered the land take required for their proposed method, based on assumptions over the proposed density of development and land usage. The justification for the indicative impermeable area used in outline calculations should be clearly demonstrated in the surface water strategy.
 - for full applications and reserved matters, applicants will need to demonstrate in detail how their drainage system will meet the requirements for sustainable drainage, supported by calculations based on the planned impermeable areas. The calculations and drainage layouts must be modified to incorporate any revisions to site layouts and impermeable areas.
 - SuDS features should be implemented as part of the first stage of site works both for the site-wide enabling works and each subsequent phase to reduce the risk of flooding during the construction phase.
 - Promote biodiversity, habitat improvements and **Countryside Stewardship schemes** to help prevent soil loss and to reduce runoff from agricultural land.

11.2.4 Enhance and Restore River Corridors and Habitat

312 Working in partnership with other organisations, the following measures could be incorporated into future planning and strategic policies:

- Promote biodiversity, habitat improvements and **Countryside Stewardship schemes** to help prevent soil loss and to reduce runoff from agricultural land.
- Assess condition of existing assets and upgrade, if required, to ensure that the infrastructure can accommodate pressures/flows for the lifetime of the development.
- Natural drainage features should be maintained and enhanced.
- Identify opportunities for river restoration/enhancement to make space for water.
- A presumption against culverting of open watercourses except where essential to allow highways and/or other infrastructure to cross, in line with CIRIA's Culvert design and operation guide, (C689) and to restrict development over culverts.
- There should be no built development within 8m from the top of a watercourse or Main River for the preservation of the watercourse corridor, wildlife habitat, flood flow conveyance and future watercourse maintenance or improvement.

11.2.5 Mitigate Against Risk, Improved Emergency Planning and Flood Awareness

313 The following measures are recommended to mitigate against residual flood risk, improve emergency planning and raise flood awareness in the community,

- Work with emergency planning colleagues and stakeholders to identify areas at highest risk and locate most vulnerable receptors.
- Exceedance flows, both within and outside of the site, should be appropriately designed to minimise risks to both people and property.
- For a partial or completely pumped drainage system, an assessment should be undertaken by the applicant / developer to assess the risk of flooding due to any failure of the pumps. The design flood level should be determined if the pumps were to fail, if the attenuation storage was full, and if a design storm occurred.
- An emergency overflow should be provided for piped and storage features above the predicted water level arising from a 100-year rainfall event, inclusive of climate change and urban creep.
- Consideration and incorporation of flood resilience measures up to the 1 in 1,000-year event.
- Ensure robust emergency (evacuation) plans are produced and implemented for major developments.
- Increase awareness and promote sign-up to the Environment Agency Flood Warnings Direct (FWD) within Wealden District.

11.2.6 Recommendations from the cumulative impact analysis

314 The following Planning Policy recommendations have been made for the 18 catchments identified as high-risk:

- Further studies could be carried out in greater detail to assess the cumulative impacts of potential peak rates and volumes of water from development sites and identify where there are opportunities within allocated sites to reduce flood risks off-site. This includes the identification of storage solutions such as online/ offline flood storage and safeguarding of land for this purpose. This is considered in a number of strategic plans, for example:
 - Level 2 SFRAs- Led by Local Planning Authorities
 - Drainage and Wastewater Management Plans (DWMPs)- led by Southern Water in this area and currently in the initial stages of development
 - Surface Water Management Plans (SWMPs)- Ordinarily led by Lead Local Flood Authorities in areas at risk of surface water flooding, but can be led by Local Planning Authorities where new development is the main driver
- Where appropriate, that the opportunity for Natural Flood Management in rural areas, SuDS retrofit in urban areas and river restoration should be maximised in these catchments. Where possible culverting should be opposed, and day-lighting existing culverts promoted through new developments.

- Developers should explore through site-specific FRAs opportunities to provide wider community flood risk benefit through new developments. Measures that can be put in place to contribute to a reduction in flood risk downstream should be considered. This may be either by provision of additional storage on site e.g. through oversized SuDS, natural flood management techniques, green infrastructure and green-blue corridors, and/or by providing a Partnership Funding contribution towards any flood alleviation schemes. Consultation on the site-specific requirements should be undertaken with Wealden District Council; East Sussex County Council (as LLFA) and the Environment Agency at the earliest opportunity.
- Developers should contribute to community flood defences outside of their red line boundary in these catchments to provide wider benefit and help offset the cumulative impact of development.
- That the LLFA and other RMAs should use this information to inform a long-term pipeline of flood alleviation studies and schemes to help inform points 2 to 5 above.
- That the Environment Agency, in consultation with Wealden District Council, should consider whether to formally designate these catchments as Critical Drainage Areas. This would mean that a detailed Flood Risk Assessment would be required for all developments that are proposed, regardless of their size.
- A Surface Water Drainage Strategy will be required for all developments within these catchments, regardless of development size.
- For high-risk catchments that lie mostly outside of Wealden District, Wealden Council should work closely with neighbouring authorities to ensure that runoff is attenuated through the upper catchments through SuDS implementation to minimise and mitigate flood risk downstream. This could include opportunities for Natural Flood Management techniques in the upper catchment and the installation of storage areas to attenuate water and slow flows downstream.

315 The following policies are applicable to catchments across the district that have received a medium or low-risk rating in the Cumulative Impact Assessment in order to minimise cumulative impacts:

- Wealden District Council should work closely with neighbouring Local Authorities to develop complementary local planning policies for catchments that drain into and out of the district through other local authorities in order to minimise cross boundary issues of cumulative impacts of development.
- Developers should incorporate SuDS and provide details of adoption, ongoing maintenance and management on all development sites. Proposals will be required to provide reasoned justification for not using SuDS techniques, where ground conditions and other key factors show them to be technically feasible. Preference will be given to systems that contribute to the conservation and enhancement of biodiversity and green infrastructure in the district where practicable.

- East Sussex County Council as LLFA will review Surface Water Drainage Strategies in accordance with their local requirements for major and non-major developments. These should consider all sources of flooding to ensure that future development is resilient to flood risk and does not increase flood risk elsewhere.

Appendices

A Flood Risk from Rivers and the Sea

A.1 Flood Zones

B Data sources used in the SFRA

C SFRA User Guide

D Flood Alerts Flood Warnings

D.1 Flood alert and warning areas in the north west

D.2 Flood alert and warning areas in the north east

D.3 Flood alert and warning areas in the south west

D.4 Flood alert and warning areas in the south east

E Risk of surface water flooding across the district

E.1 Surface water flood risk in the north west

E.2 Surface water flood risk in the north east

E.3 Surface water flood risk in the south west

E.4 Surface water flood risk in the south east

F Areas of groundwater concern

F.1 Areas of groundwater concern in the north west

F.2 Areas of groundwater concern in the north east

F.3 Areas of groundwater concern in the south west

F.4 Areas of groundwater concern in the south east

G Areas at risk of flooding in a breach scenario

H Impact of climate change on flood risk in the district

H.1 Impact of climate change on Flood Zone 3a in the north west

H.2 Impact of climate change on Flood Zone 3a in the north east

H.3 Impact of climate change on Flood Zone 3a in the south west

H.4 Impact of climate change on Flood Zone 3a in the south east

I Site Screening

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