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West Sussex Local Flood Risk Management Strategy: 2025 - 2030

July 2025

Foreword

Flooding can have a devastating impact on our communities, businesses, infrastructure, and environment, and the rapid pace of climate change means that the likelihood and severity of flooding in West Sussex is increasing.

The County is affected by multiple sources of flood risk, including from rivers and watercourses, the sea, and from surface and groundwater. Furthermore, water does not respect administrative boundaries or organisational structures, which makes managing flood risk a complex business.

Effective flood risk management will only be possible through partnership working and everyone in West Sussex working together. This includes the County Council (as the Lead Local Flood Authority), other Risk Management Authorities (including the Environment Agency, the district and borough councils, and the water companies), local communities, landowners, and property owners.

Our strategy sets the long-term direction to better manage flood risk in West Sussex, whilst also identifying specific actions for the next five years. The focus is on understanding flood risk at a strategic scale and considering interactions between the multiple sources of flooding, with the aim of identifying holistic solutions.

Although it will not always be possible to prevent flooding, we will work with our partners to maximise opportunities for collaboration and project delivery across organisations, and seek to make the greatest impact with the funding and resource available. We will also support our communities to increase their resilience to flood events.

Councillor Deborah Urquhart

Cabinet Member for the Environment and Climate Change

Executive Summary

West Sussex County Council has produced an updated Local Flood Risk Management Strategy as part of our duties as a Lead Local Flood Authority. The development process for the Strategy follows a circular approach that allows for continuous review of our understanding of flood risk and how that reflects our objectives and overall action plan for tackling local flood risk management.

West Sussex is affected by multiple sources of flood risk, which vary across the County but can have severe impacts on our communities, property, businesses, critical services, and environment. The Strategy focuses on the management of local sources of flooding, which includes surface water, groundwater and smaller 'ordinary' watercourses. However, this requires an understanding of interactions with flooding from rivers and the sea, the sewer network, and other artificial features such as reservoirs or canals.

This strategy update is centred around understanding and addressing flood risk at a catchment scale, considering how multiple sources of flooding may be interacting, with the aim of identifying more holistic solutions, and maximising opportunities for collaborative funding and project delivery across organisations.

Working in partnership is key to successful flood management. Southern Water, Thames Water, the Environment Agency, District and Borough Councils, and National Highways are all Risk Management Authorities under the Flood and Water Management Act 2010. However, many other stakeholders have a vital role to play including local communities and landowners.

We have developed an action plan to take the strategy forward in collaboration with local stakeholders and informed by feedback from the public. This is based around four key objectives:

1. Use a catchment-based approach to understand and manage flood risk.
2. Create a common, informed framework for sustainable development that improves safety and resilience for people, property, infrastructure, and the environment through long-term thinking.
3. Adopt collaborative approaches to understanding and managing flood risk assets and systems, prioritising the implementation of nature-based solutions.
4. Empower our communities to increase their resilience and ability to adapt to flood risk now, and in the future.

Each objective has a set of measures and actions to support their delivery. Whilst some actions will be considered higher priority, delivery will always be influenced by where we can make the greatest impact with the funding and resource available. It is not always possible to prevent flooding, but we will work with partners to better understand the sources and support our communities in increasing their resilience to the impacts.

We will continue to regularly monitor progress against the strategy action plan, adapting where priorities change, or we gain better understanding of flood mechanisms. The strategy will be fully reviewed and updated after five years.

Contents

Introduction

Overview

West Sussex County Council (WSCC) as the Lead Local Flood Authority (LLFA) has a range of duties to manage local flood risk in the county in accordance with the Flood and Water Management Act (2010). Local flooding is defined as flooding from surface water, ordinary watercourses, and groundwater; the management of these relies further on WSCC and Risk Management Authorities (RMAs), working in a collaborative manner.

As the LLFA, WSCC must produce a Local Flood Risk Management Strategy (LFRMS) to set out a strategy for managing local flood risk. This must be developed in accordance with the Environment Agency's National Strategy for Flooding and Coastal Erosion Risk Management.

The LFRMS (herein referred to as 'the Strategy') sets the direction of travel for managing flood risk long term, with objectives, measures and actions for the first five years. This will outline clear priorities on how local flood risk will be managed by WSCC and other RMAs. This strategy also considers the impact of climate change on flooding in the future and attempts to minimise these risks.

The new Strategy, which replaces the 2013 Strategy, will be used to guide decision-making by WSCC and its partners about interventions and investment in flood risk management.

Understanding the process

The graphic below depicts the process for developing the Strategy (Figure 1). The process is shown as a cycle, demonstrating that the Strategy will be continuously monitored and updated to take account of flood risk modelling updates, major flooding events, changes in policies, and updates to mapping and legislation.

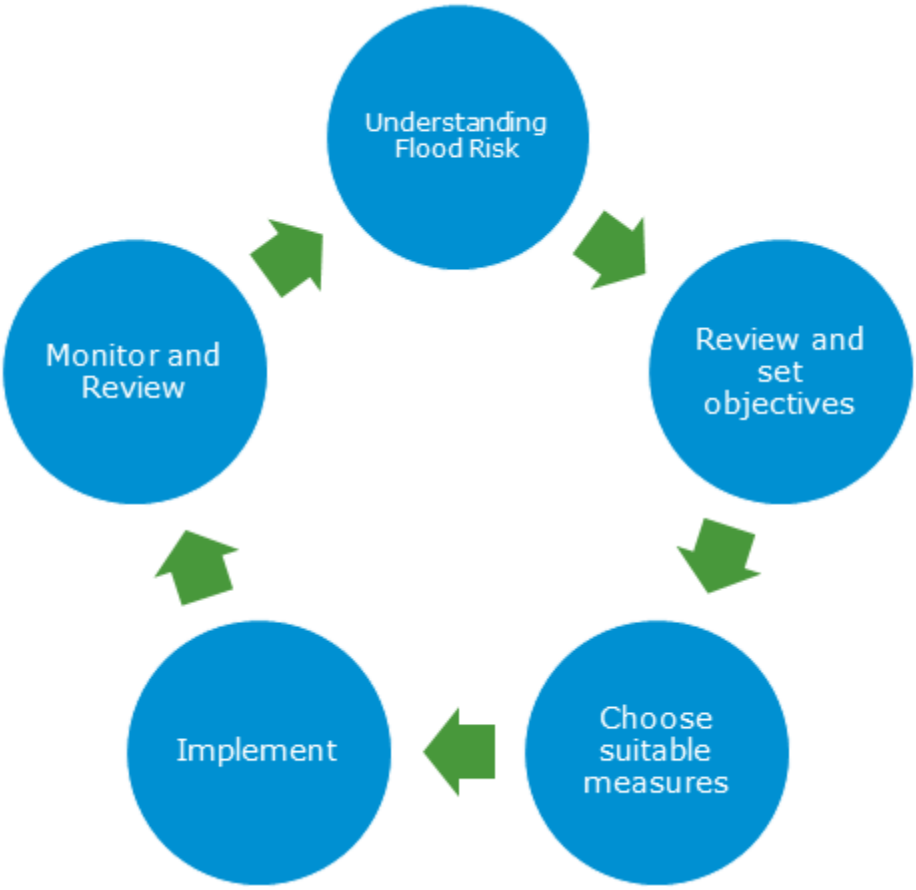

Figure 1 - Development Process for the Strategy

Additional Assessments

The Strategy must be assessed through both a Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA).

The Strategy has been screened in accordance with the SEA requirements to determine if it will have a likely significant environmental effect. Completion of a SEA is a requirement of plans and strategies under the Environmental Assessment of Plans and Programmes Regulations (2004) (which implements the European SEA Directive (2001). The SEA screening report can be found in Appendix A.

A HRA determines if delivery of the Strategy will have any negative effects on protected European habitat sites. Undertaking a HRA is a requirement for plans and strategies under the Conservation of Habitats and Species Regulations (2017). The HRA screening report can be found in Appendix B.

Roles and Responsibilities

To effectively manage local flood risk across West Sussex, a coordinated and collaborative approach is required, between WSCC, other Risk Management Authorities (RMA) and several other stakeholders. A RMA is an organisation that has a key strategic role in managing flood risk. Figure 2 provides a high-level summary of the roles of each RMA including who is responsible for different sources of flooding. Further detail on RMA roles and responsibilities can be found in Appendix C.

Organisation	Role and Responsibilities
west sussex county council	**WSCC (as Lead Local Flood Authority)** Responsible for the management of flood risk from surface water, groundwater and ordinary watercourses.
Environment Agency	**Environment Agency** Strategic overview of the management of all sources of flooding and coastal erosion, with an operational focus on flooding from all main rivers and sea. Publishes a National Flood and Coastal Erosion Risk Management Strategy which provides a clear national framework for all forms of flood risk management.
Southern Water	**Southern Water/Thames Water** Responsible for the maintenance and operation of the public sewer systems, including the maintenance of all drains which serve more than one property, or which extend beyond the curtilage of a property.
national highway	**National Highways/West Sussex Local Highway Authority** As a highway authority, National Highways is responsible for the management of local flood risk including the surface water and drainage on motorways and major A-roads. WSCC, as the Local Highway Authority, is responsible for managing drainage on all other public roads, including gullies and drains.
	**Internal Drainage Boards (IDB)** An IDB's primary role is to manage water levels and reduce flood risk in their districts, where they have responsibility for maintenance and improvements to watercourses and related infrastructure including issuing consents to do works on a watercourse. In West Sussex, there is one Internal Drainage District: the Arun Internal Drainage District, where the Environment Agency is currently acting as the IDB.

Figure 2 - Risk Management Authority roles for different sources of flood risk

While it is not possible to prevent all flooding, this Strategy will guide WSCC to work with its partners and community in managing the impacts of flooding on communities across the county.

The district & boroughs and South Downs National Park Authority have some responsibility for local flood risk management, particularly as Local Planning Authorities

and asset owners. Adur & Worthing Councils, Arun District Council, and Chichester District Council also have powers as Coastal Protection Authorities.

Other stakeholders and partners

The following key partners are not formally defined as RMAs under the Flood and Water Management Act 2010; however, they play an important role in managing flood risk in West Sussex:

Stakeholder/Partner	Role
Regional Flood & Coastal Committees	**Regional Flood and Coastal Committee (RFCC):** Established under the Flood and Water Management Act (2010), the Regional Flood and Coastal Committee (RFCC), work with the Environment Agency on Flood and Coastal Erosion Risk Management work in their region. In West Sussex, two RFCCs operate (Southern and Thames).
Canal & River Trust	**Canal and Rivers Trust:** Owns and manages canals in West Sussex.
NetworkRail	**Network Rail:** Network Rail maintains assets and drainage systems within their land.
NATURAL ENGLAND	**Natural England:** Whilst not directly intersecting Flood Risk Management, Natural England promote a sustainable use of natural environment and Biodiversity Net Gain (BNG).
rspb giving nature a home	**Royal Society for Protection of Birds (RSPB):** Promotes nature based solutions to reduce flood risk.
The Rivers Trust	**Rivers Trust - Adur & Ouse and Western Streams:** Aim is to work together to improve the water environment and surrounding landscape of our catchment for both people and wildlife.
SALC	**Parish Councils:** Parish Councils prepare community flood plans, raise additional funding for local flood resilience and flood defence measures. Parish councils also report any flood incidents in the area.

Riparian Owners

When a landowner has a watercourse, ditch, stream, river or culvert on or next to their land, they are known as a riparian owner[1]. Riparian owners are responsible for the maintenance and repair of watercourses under their ownership to ensure that flood risk is not increased within their property or elsewhere. Further information on the role of a riparian owner can be found online. WSCC work with landowners to ensure watercourses are kept clear.

Riparian owners have a duty to complete the following:

- Obtain permission or licenses to repair, build or remove anything that would obstruct the flow of water in an ordinary watercourse;
- Let water flow naturally;
- Prevent pollution;
- Protect wildlife.

As LLFA, WSCC has permissive powers to require riparian landowners (excluding main rivers and IDBs) to maintain watercourses where increased flood risk is evident. Enforcement will be proportionate.

[1] For further detail on riparian ownership, see Your Watercourse: Rights and Roles and Ditch The Problem (PDF).

Flooding in West Sussex

Local Context

This Strategy covers the county of West Sussex, which covers an area of 1,991 km2 (Figure 3).

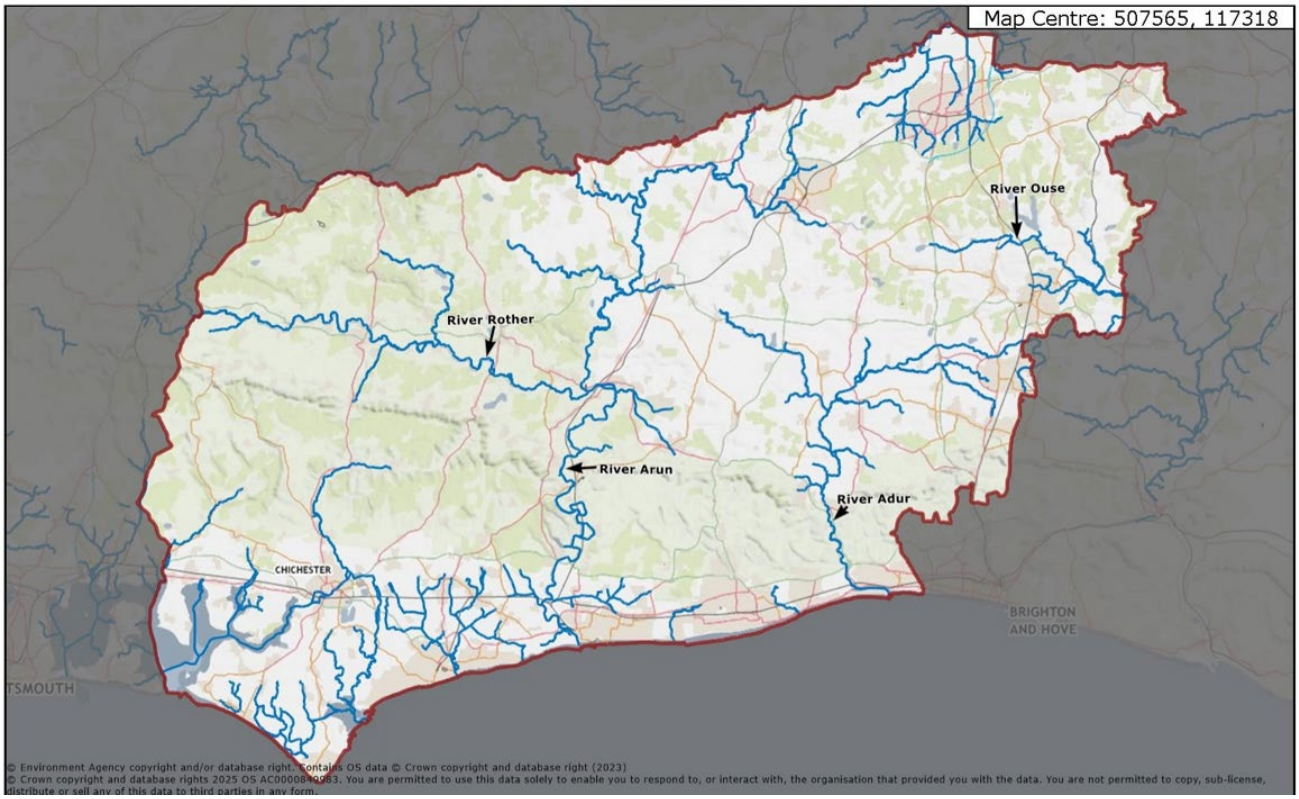

Figure 3 - Overview map of West Sussex including the main rivers

The total population of West Sussex is approximately 887,000 (2021)[2], divided between seven District and Boroughs. For reference, the District and Boroughs populations are as follows:

- Adur– 64,500 total[3];
- Arun – 164,900 total[4];
- Chichester – 124,000 total[5];
- Crawley – 119,509 total[6];

[2] West Sussex Census (2021) - Census Briefing 1: Population (PDF)

[3] Adur and Worthing Census (2021) – Census data - Adur & Worthing Councils

[4] Arun Census (2021) – District and population | Arun District Council

[5] Chichester Census (2021) – Census 2021 - Chichester District Council

[6] Crawley Census (2021) – Census | Crawley GOV

- Horsham – 146,800 total[7];
- Mid Sussex – 154,930 total[8];
- Worthing – 111,400 total[9]

Although West Sussex is predominantly rural, there has been significant development along the coast and in the north and east of the county. West Sussex is home to scenic landscapes, including the South Downs National Park, and the Chichester Harbour and High Weald National Landscapes (formerly Areas of Outstanding Natural Beauty), historic assets such as Arundel Castle, rural towns and villages, and significant aviation infrastructure, including Gatwick and Brighton City Airports. West Sussex also has important road, rail and sea infrastructure such as the M23 and A27, Southern, Thameslink and Gatwick Express railway services, and Shoreham Port and Littlehampton Harbour. West Sussex is a water stressed area as of 2021[10], meaning forecast demand for water is greater than supply.

Flooding Impacts

Flooding poses a threat to the safety, livelihoods and wellbeing of communities. Flooding shapes the natural environment and interacts with the built landscape. The impacts of flooding can include:

- Damages to property and businesses, agricultural and industrial land, critical services, and infrastructure
- Health-related impacts to residents (both physical and mental)
- Negative impacts on consumer and business confidence
- Increases in the costs of, or ability to access, flood insurance and other financial products
- Environmental harm, such as pollution of watercourses, and habitat damage and/or loss
- Increased pressure on the emergency services
- Disruption of transportation (i.e. flooding of highways or active travel routes, disruption of railway network)

Managing flood risk can rarely be limited to a single source, as multiple sources of flooding often combine to cause a flood event. Flooding is also unique to each location. Although it is not possible to stop all flooding, this Strategy will guide WSCC to work with its partners and the community in managing the impacts of flooding on communities across the county.

In low impact areas, flooding can have benefits. Water storage in the right areas can provide nature-based solutions to reduce flood risk elsewhere, creating new habitats and providing amenity areas.

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[7] Horsham (2021) – The first results from Census 2021 are in – see how Horsham has grown | Horsham District Council

[8] Mid Sussex Census (2023) – Mid Sussex Statistics and Data - Mid Sussex District Council

[9] Adur and Worthing Census (2021) – Census data - Adur & Worthing Councils

[10] EA Water Stressed Areas – Final Classification 2021 – Water Stressed Areas: Final Classification 2021 (ODT document)

Sources of Flooding

Flooding in West Sussex can be the result of several causes. For risk to arise, there must be a hazard that consists of 'source' or initiator event (i.e. high rainfall event), a 'receptor' (i.e. properties) and a pathway between the source and the receptor (i.e. overland flow routes). In West Sussex, different organisations are responsible for different sources of flooding (see 'Roles and responsibilities' Chapter).

Table 1– Source of Flooding Definitions

Source of Flooding	**Description**
Surface Water (Pluvial)	Flooding from surface water, also known as pluvial flooding, occurs when the volume of rainwater exceeds the capacity of drainage systems or is unable to drain quickly enough into the ground through the process of infiltration.
Rivers (Fluvial)	Flooding from rivers happens when the volume of flow in a river exceeds its capacity and the excess water spills out or overflows out of storage areas. In West Sussex, main rivers are managed by the Environment Agency. Excess water spills out over the areas alongside rivers and watercourses. These are known as floodplains.
Groundwater	Groundwater flooding occurs when water present in the ground rises to the surface. Areas such as floodplains, where the water table is close to the surface, or regions where the water can be raised by river levels or high tide, can be particularly susceptible to groundwater flooding.
Coastal/Tidal	High tides or storm surges can cause coastal flooding, when tidal water from the sea breaches or overtops the defences.
Sewers	Flooding from the sewer network can happen when the volume of rainwater exceeds the capacity of the network. This can be the result of rainfall events exceeding the capacity that the sewer network was designed to cope with, or as a result of a failure, such as a blockage or collapse, within the system. These issues can result in the surcharging of water from the network, causing overland flow.
Artificial Sources	Flooding from artificial sources occurs when built infrastructure, such as reservoirs, canals, or flood storage areas fail. There are several areas at risk of artificial flooding in West Sussex, both when river levels are normal, and when there is also flooding from rivers.

Challenges for flood risk management

Climate Change

Climate change is likely to increase current and future flood risk across West Sussex. Increased rainfall during winter will increase water levels in rivers and watercourses. Wetter winters may increase groundwater flood risk, as heavier rainfall could lead to more significant groundwater recharge. Between October 2022 and March 2024, it was the wettest 18-month period in England since records began.

Summers are predicted to be drier, which may increase local flood risk. When soils dry out, they lose their ability to absorb water effectively. As a result, intense summer storms can lead to flash flooding, as rainwater runs off the ground rather than soaking into it. These events are challenging to predict or model due to their localised nature[11].

Due to its coastal location, sea level rise will affect West Sussex, increasing the risk of coastal flooding. This will also alter how effectively rivers and watercourses can discharge water into the sea.

It is essential to take a proactive approach to climate change when managing flood risk, ensuring West Sussex becomes more resilient to its impacts.

Resourcing

Resource constraints and a lack of funding for local flood risk management is currently affecting both the delivery of new projects and the maintenance of existing assets.

As a public body, the county council, along with other RMAs, must ensure that the financial benefits of any project or other spending outweigh the costs of delivery and maintenance. This means that, in some cases, it may not be possible to secure funding to manage flood risk in a way that is considered cost-effective under current sources of funding. Sometimes, consideration of projects with multiple benefits can create an opportunity for additional funding mechanisms, although this can have resource implications.

Funding is also required to ensure WSCC and other RMAs have sufficient staff, of the right skills and technical knowledge.

Capacity of existing drainage systems

Lots of drainage infrastructure in the county, such as sewers, drains and culverts, are not designed or constructed to modern standards. Historically, watercourses were often culverted and buried as populations grew and areas became urbanised. Older developments were built before flood risk and surface water drainage were given adequate consideration in the planning process. Rural towns and villages often rely on

[11] Further information about climate change and increased flood risk can be found here: Progress in adapting to climate change: 2025 report to Parliament - Climate Change Committee

ditch networks for drainage, which are sufficient for the drainage of existing housing. These issues mean that there is often insufficient capacity within the existing drainage network, increasing surface water flood risk. The LLFA has no power to require the relevant owners to upsize any assets or watercourses.

Flood risk in West Sussex

Flood risk varies across the county; extracts from the district and borough councils' Strategic Flood Risk Assessments (SFRAs) have been provided below for context. Full SFRA reports can be accessed directly via the District and Borough council websites.

Individuals can check their flood risk by visiting: Check your long term flood risk - GOV.UK.

District	Extract from SFRA
Adur & Worthing (2024)	Information collated from the Environment Agency's recorded flood outlines, WSCC's recorded flood incidents and Southern Water's SIRF datasets were assessed to understand the historic flooding the Local Plan areas. The data shows surface water flooding is the most frequent cause of flooding within Adur District and Worthing Borough, with recorded incidents in Worthing, Goring, Durrington, Salvington, Lancing, Shoreham and Southwick.
Arun (2016)	Arun District has a long history of flood events, with multiple sources of flooding. In particular, three notable flood events have affected the district in the last 60 years and these have been associated primarily with heavy rainfall, high groundwater levels, high river flows and high tides (but not necessarily in combination). The most recent events of 1974, 2000 and 2012 caused widespread flooding in the district after significantly high rainfall over an extensive period.
Chichester (2023)	Information collated from the Environment Agency's flood outline and West Sussex County Council recorded flood incidents data sets, were assessed to understand the historic flooding in the Local Plan area. The data shows that there have been a number of fluvial floods in the area including along the River Lavant, the Earnley Rife, River Ems, the Ham Brook, River Lox and River Kird.
Crawley (2020)	The SFRA has identified that areas of Crawley Borough are at high risk of flooding from fluvial (River Mole, Gatwick Stream, Ifield Brook and Tilgate Brook), surface water (pluvial) (locations include neighbourhoods of Southgate, Three Bridges, West Green, Langley Green and Broadfield) and sewer flooding (Pound Hill, Maidenbower, Ifield and Rusper).
Horsham (2020)	Surface Water is the most common source of historic flooding within the HDC area. A high majority of recorded incidents have occurred within Billingshurst, however these areas have likely been targeted for maintenance and improvements, and as such areas that experienced flooding in the past may no longer be at greatest risk of flooding in the future.

District	Extract from SFRA
Mid Sussex (2024)	Generally Mid Sussex is an area of low flood risk however there are areas affected by specific issues and careful management is necessary to ensure flood risk is not increased now or in the future. Analysis undertaken for the West Sussex Local Flood Risk Management Strategy identifies 'priority areas' where a limited number of properties are considered to be at risk. These are Burgess Hill, East Grinstead, Haywards Heath/Lindfield and Sayers Common (mostly surface water flood risk) and Copthorne and Hassocks (both surface water and fluvial flood risk).

Improving our flood records

A public engagement survey (Appendix D) was undertaken to understand the current risk of flooding to people, property, and the environment in West Sussex. This included surface water, groundwater, main river, and coastal flood risk data, alongside available historical flood records and reported information from local communities.

Fluvial flooding

The Environment Agency is responsible for managing flood risk from main rivers (see 'Working in partnership' chapter for more detail on responsibilities). However, many sources of local flood risk are directly linked to the main rivers that flow through West Sussex. Examples of main rivers in West Sussex include the Adur, Arun, Lavant, Ouse, and Rother as well as several larger streams such as the Aldingbourne Rife. The most extensive areas of fluvial flood risk are concentrated in the south of the county, where they can also be tidally influenced. The low-lying coastal plain is often at higher flood risk, such as in Bognor Regis (Figure 4 and 5).

Figure 6 outlines some of these areas as mapped in the Environment Agency's flood map for planning. The highest risks are represented in darker blue (greater than 1% annual chance for fluvial or greater than 0.5% annual chance for tidal).

Any watercourse not classified as a main river is considered an ordinary watercourse. Whilst the LLFA have an overall flood management role for these watercourses, condition and maintenance is the responsibility of the riparian owner, which could be a large number of parties, including private residents, landowners, parish councils, or Highway Authorities. At a national scale, flood risk mapping is not available for ordinary watercourses.

Figure 4 - Bognor Regis bypass. (Source: Eddie Mitchell on behalf of West Sussex Fire & Rescue Service)

Figure 5 - Fluvial Flooding, Riverside, Bognor Regis. (Source: Eddie Mitchell on behalf of West Sussex Fire & Rescue Service)

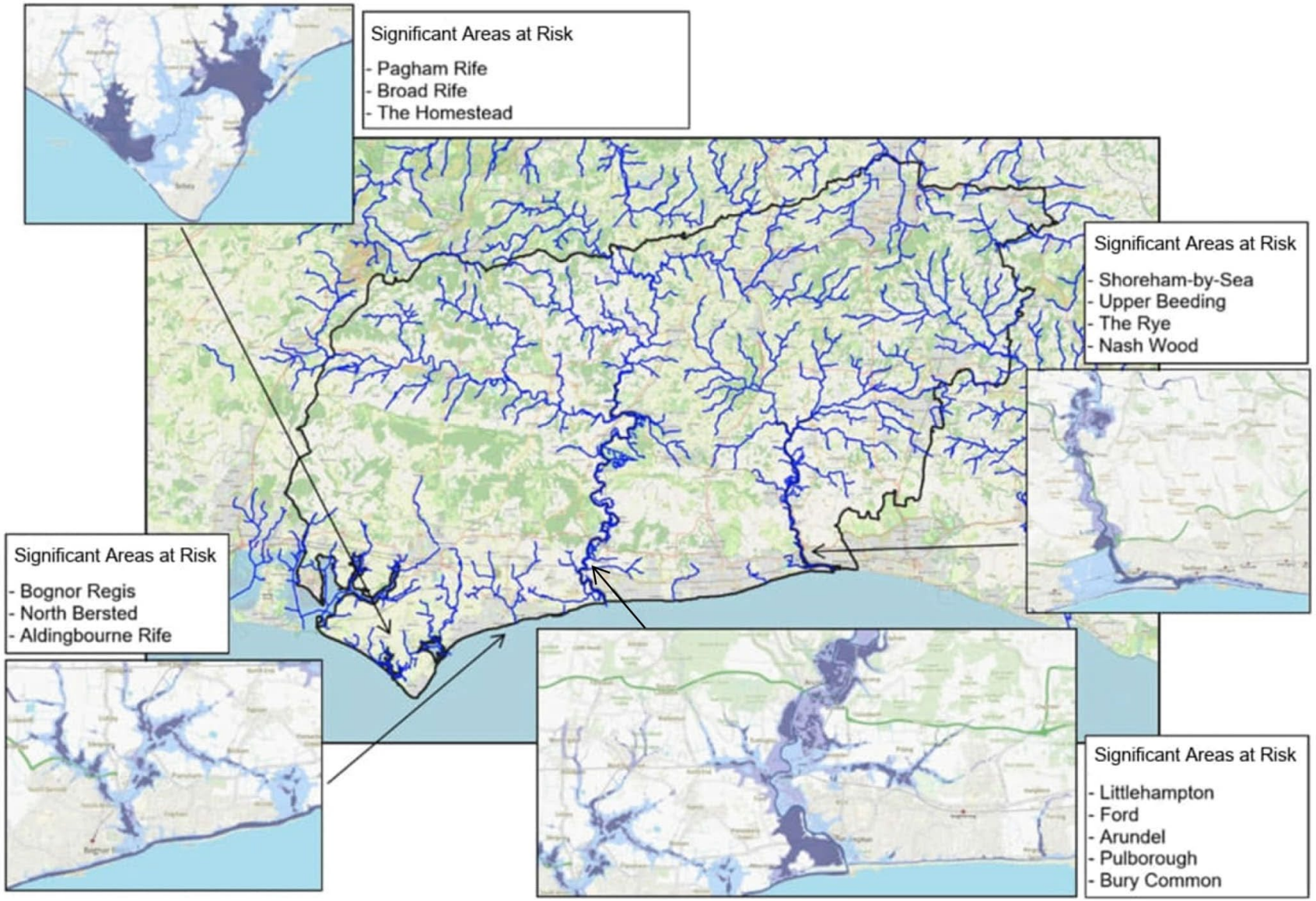

Figure 6 - Extracts from the Environment Agency Risk of Flooding from Rivers and Seas mapping

Coastal flooding

The Environment Agency is the lead authority for managing coastal flooding, which can result from a variety of different causes, including tidal surges and storm-driven wave overtopping, and is predicted to increase with sea level rise. It is commonly defined as when land is submerged by seawater. West Sussex includes low lying urbanised coastal locations, such as Selsey, Bognor Regis, Littlehampton, Worthing, and Shoreham-by-Sea. Forecasts presented at the UN Climate Change Conference (COP26) claimed that, with increasing climate change, much of the West Sussex coastline could be impacted (unmanaged scenario) by 2050.

Impacted areas include the A27, along the River Adur, along the River Arun (Littlehampton (Figure 8), Climping, Lyminster and Wick), Bognor Regis (Felpham), Bracklesham (Figure 7), Shoreham, Selsey, and Pagham. Using the National Coastal Erosion Risk Mapping, published by the Environment Agency, it can be seen that the majority of West Sussex has the Shoreline Management Plan approach of 'hold the line' deployed, with small areas of no active intervention.

The prevailing south-westerly wind has a significant fetch12[12] reaching the West Sussex coastline after travelling across the Atlantic Ocean. Wave conditions can be significant during storm events. Where storm events coincide with high tides, West Sussex is particularly at risks of coastal flooding, whether from overtopping of defences, or storm surge overtopping. Spray from storm conditions can be disruptive to roads and public spaces; however, it often does not pose a risk of flooding to properties and business.

[12] length of open water over which the wind acts on the sea surface from the same direction

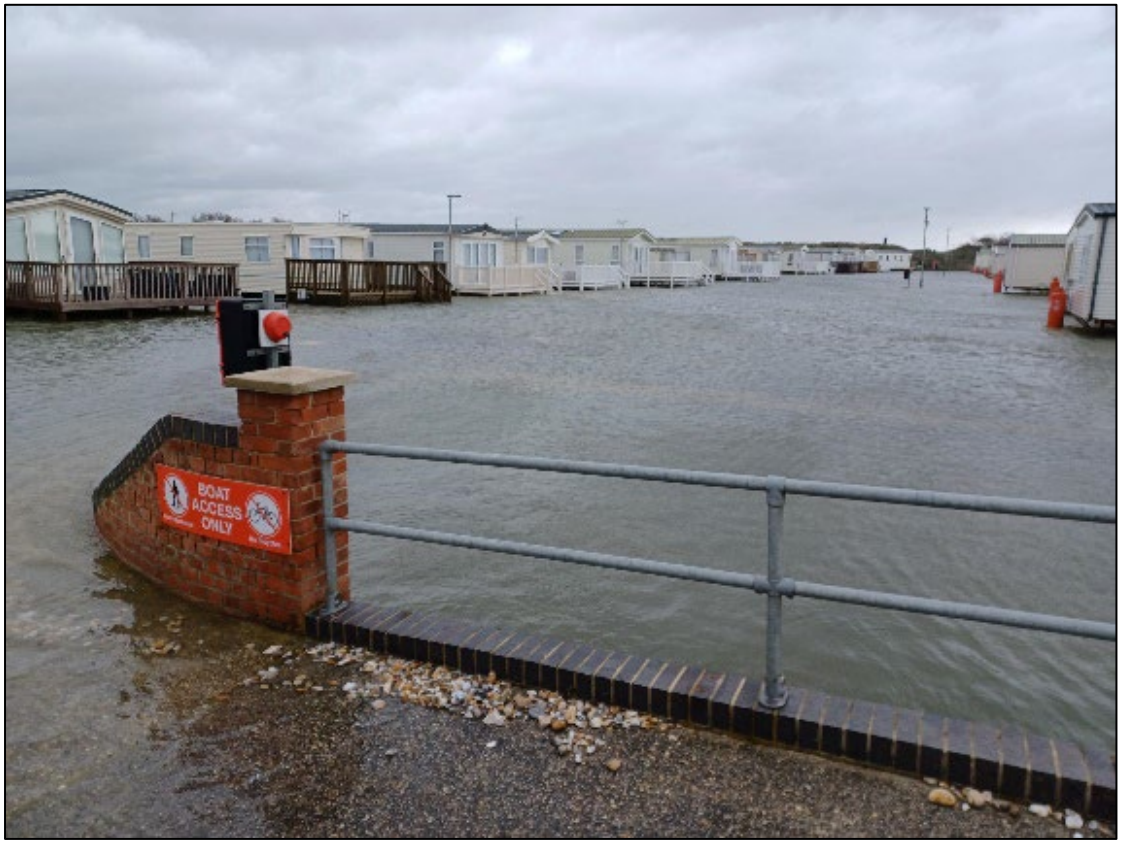

Figure 7 - Coastal Flooding Bracklesham April 2024. (Source - Chichester District Council)

Figure 8 - Coastal Flooding at Rope Walk, Littlehampton, Arun District Source: Sussex Express (online)

Surface water flood risk

Much of West Sussex is at risk of surface water flooding. Over 65,000 properties are in areas susceptible to surface water flood risk. Chichester, Crawley, and Bognor Regis experience high levels of surface water flood risk. In these areas, impermeable land cover, typical of urban settlements, limits the ability of surfaces to absorb heavy rainfall, while underground drainage systems may also reach capacity, or be unable to convey heavy rainfall, during storm events.

In settlements on the coastal plain, localised flooding can be increased as a result of tide locking, whereby surface water drainage system outfalls become blocked by high tide levels and rainwater is unable to drain to the sea and backs up to the surface.

Highway flooding is prevalent across West Sussex with notable examples being the A27 between Worthing and Shoreham-by Sea and the A29 at Shripney. Highway flooding results from the capacity of the drainage system being exceeded during heavy rainfall events. This can be exacerbated by blocked or collapsed gullies, pipes, sewers or ditches.

Surface water flooding in West Sussex can also be influenced by the interconnectivity of flood sources, such as ground water interaction, sewer flooding, and overtopping or failure of the banks of ordinary watercourses.

Surface water flooding can be exacerbated by the condition of watercourses and the capacity of highway drainage (Figure 9 and 10).

As the Lead Local Flood Authority, West Sussex County Council are the lead responsible party for the management of surface water.

Figure 9 - Surface Water Flooding in South Mundham – January 2024 (Source: Chichester District Council)

Figure 10 - Surface Water Flooding in South Mundham – November 2023 (Source: Chichester District Council)

Groundwater flood risk

Typically, groundwater level is measured in an observation borehole to reflect the amount of water in storage in the monitored aquifer. Due to the chalk geology running across West Sussex, the coastal plains and lower slopes of the South Downs are more susceptible to groundwater flooding. The most notable areas at risk of groundwater flooding in West Sussex, from historical flood records are the Lavant Valley (West Dean and Charlton specifically), Bosham Stream (Woodend and Funtington), River Ems (Walderton, Stoughton, Compton and West Marden), North Lancing, and Durrington. Other areas might be at risk on a localised level due to geology or topography.

Groundwater levels can be influenced by a variety of factors. For example, in the Lavant Valley, the river exhibits the characteristics of a winterbourne stream. The chalk geology results in the storage of higher rainfall during the winter and can act to increase groundwater levels and flows in adjacent watercourses. Bands of chalk geology run through West Sussex from Havant to Littlehampton. The bedrock geology is Seaford Chalk Formation (Chalk) and Newhaven Chalk Formation (Chalk), overlain by Clay-with-flints formation (Clay, silt, sand and gravel).

The information in Figure 10 has been derived from the British Geological Survey (BGS) with some of the main areas of chalk geology in the county annotated. For a full detailed view of the geology consult: [BGS Geology Viewer].

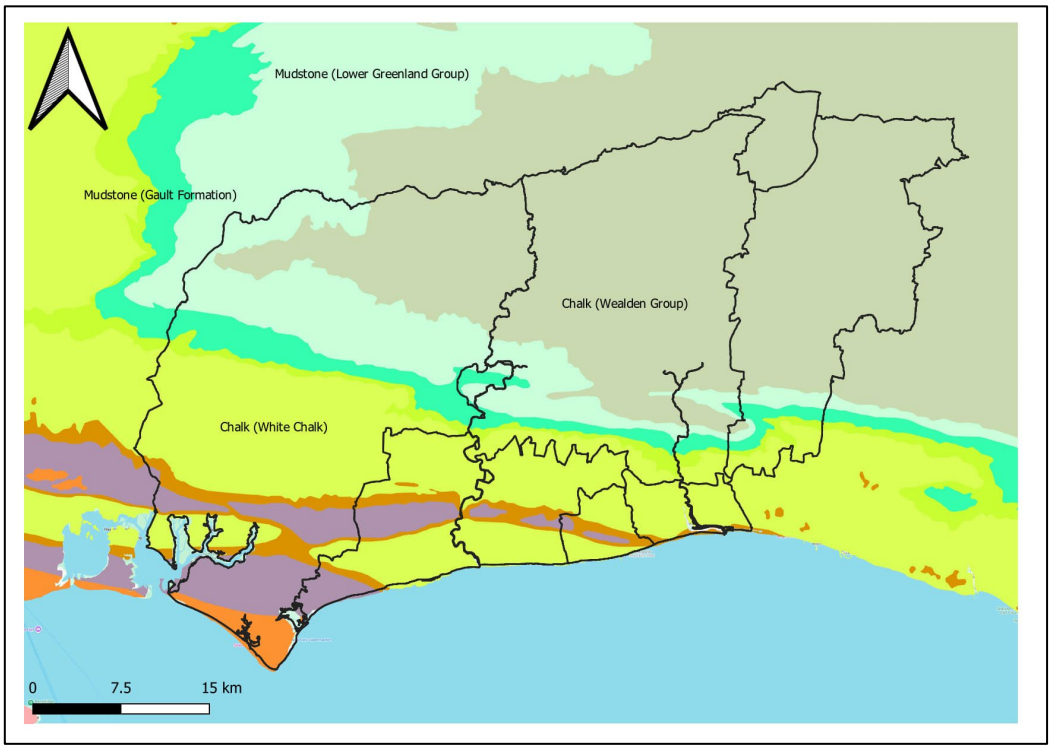

Figure 10: Bedrock Geology of West Sussex (BGS) with main areas of chalk geology annotated

Anecdotal data from stakeholders has identified several areas with recent reported groundwater flooding events, including incidents in the South Downs National Park and Chichester. Prolonged rainfall, as experienced during late 2023 and early 2024, can result in extended periods of groundwater flooding, affecting the basements of properties and businesses, or even rising to the surface. This can exacerbate surface water, sewer, and ordinary watercourse flooding, as there is no capacity in the ground

to retain excess rainfall. In some cases, groundwater can infiltrate into the drainage network affecting capacity to drain surface water and overload the foul drainage system.

Identifying Priority Areas

We will be using the most recent data and reports from local communities and other RMAs to improve understanding of the areas at greatest risk of flooding. This is likely to lead to the identification of 'priority areas' on a catchment-by-catchment basis, although these may develop and change through the life of the strategy.

Responding to Flood Events

West Sussex County Council is a Category 1 Responder under the Civil Contingencies Act 2004. West Sussex Fire & Rescue Service's Resilience and Emergencies Team (RET) develop multi-agency flood plans, and work with other organisations in the Sussex Resilience Forum to ensure communities have support before, during and after flood events. RET also run the 'What if?' programme[13], to encourage community resilience to emergencies, including flood events. For further details about who is responsible for responding to flood events, see Appendix C.

Recording and investigating flooding in West Sussex

Flooding is frequent and widespread across West Sussex. Insights from the public engagement survey, alongside other data sources, will be fully reviewed as part of our action plan (Action 1.2.1).

As LLFA, WSCC is required to investigate flood events when a significant number of properties or receptors (such as businesses or critical infrastructure) are affected. These are known as Section 19 investigations under the Flood and Water Management Act 2010. We use recently released guidance when deciding whether to carry out a flood investigation[14].Following severe flood events in June 2012, WSCC investigated and found that storm frequencies of 0.5% Annual Exceedance Probability (AEP) or 1-in-200 years return period were recorded. The worst affected area of West Sussex was the coastal plain between Worthing and the county boundary with Hampshire. The highest rainfall totals were recorded in Bognor Regis and Chichester[15]. The average rainfall total was 100mm of rain in 16 hours. Bognor Regis rainfall gauge recorded 114mm of rainfall, whilst Pagham recorded 171mm. This extremely heavy, localised rainfall caused increased surface water ponding and flow, and river breaches. This event caused flooding of 780 properties, primarily along the south coast.

[13] What If programme: Preparing your community - West Sussex County Council

[14] Investigating a flood: guidance for lead local flood authorities - GOV.UK

[15] West Sussex Section 19 reports: Flood reports, projects and policies - West Sussex County Council

In recent years, there are numerous, anecdotal accounts of flooding across West Sussex. Three Section 19 investigations in response to flooding during Storm Ciaran in 2023 and Storms Kathleen and Pierrick in 2024 have been published on the council's website. The measures and actions in the Strategy take account of the findings of the Section 19 reports. Several recent events have been highlighted below:

- April 2024 – Storm Kathleen triggered a S19 report. Locations include Medmerry and Bracklesham. For Medmerry, 200 people evacuated from Medmerry Cove Seaside Park due to tidal flooding. For Bracklesham Caravan and Boat Club, tidal flooding backed up into Earnley Rife causing river flooding.
- April 2024 – Storm Kathleen triggered another S19 report. The locations include Littlehampton, specifically Rope Walk. This was due to the River Arun overtopping its banks, coupled with low lying land. In Rope Walk, mass evacuations were undertaken over the River Arun footbridge.
- End of October/Beginning November 2023 – Storm Ciarán caused heavy rainfall, leading to river overtopping, combined with high surface water. Several locations were affected, including but not limited to Bognor Regis, Shripney and Yapton.

Recent flood events:

April 2024 – Storm Kathleen triggered a S19 report. Locations include Medmerry and Bracklesham. For Medmerry, 200 people evacuated from Medmerry Cove Seaside Park due to tidal flooding. For Bracklesham Caravan and Boat Club, tidal flooding backed up into Earnley Rife causing river flooding.

Source: Photo (left) taken 9 April 2024 post Storm Kathleen. Provided by Bracklesham Caravan and Boat Club.

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Source: Photo (above) taken 9 April 2024 post Storm Kathleen. Provided by Medmerry Cove Seaside Park

End of October/Beginning November 2023 – Storm Ciarán caused heavy rainfall, leading to river overtopping, combined with high surface water. Several locations were affected, including but not limited to Bognor Regis, Shripney and Yapton.

Source: Drone Photograph (above) of Riverside Caravan Centre. Provided by ADC.

Managing Flood Risk in West Sussex

The Strategy focuses on a catchment-based approach, which is driven by thinking and working with the river catchment as a whole, adopting a collaborative, community-led approach to improving the water environment[16]. This approach seeks to capture all contributing flood risk sources within a catchment and take action in an integrated, proportionate and efficient way.

Catchments are defined by the Environment Agency as *'the area from which precipitation contributes to the flow from a borehole spring, river or lake. For rivers and lakes this includes tributaries and the areas they drain'*. The Strategy focuses on the river basin catchments intersecting with West Sussex.

A push towards a national catchment-based approach began in 2011 to support the Water Framework Directive Activities (2016) (WFD). WFD focuses on ensuring good qualitative and quantitive health of waterbodies and supporting surrounding wildlife[17]. On a national scale, there are 139 hydrological units across England and parts of Wales[18]. These operational catchments are derived from the Environment Agency's Catchment Data[19].

Taking a catchment-based approach encourages sustainable management of water, which considers capture and control of water closer to its' source, using nature-based solutions where practical. In some locations, implementation of solutions to reduce flood risk is challenged by complex constraints, such as urban impermeable landscapes, interactions between sources of flood risk, and the need to deliver on West Sussex's sustainable development priorities. Understanding these constraints at a catchment scale helps identify opportunities for collaborative funding and delivering multiple benefits for West Sussex.

The river basins that cover West Sussex are the Southeast and the Thames. For the Strategy, the 12 operational (hydrological) catchments, eight in the Southeast River Basin and four in The Thames River Basin, that overlap or serve West Sussex are outlined in the following sections and in Figure 11. Additional detailed maps can be found in Appendix E.

[16] CaBA: The Catchment Based Approach: Working together for a healthy water environment

[17] Water Framework Directive - European Commission

[18] Home - CaBA (catchmentbasedapproach.org)

[19] EA Hydrological Boundaries (data.gov.uk)

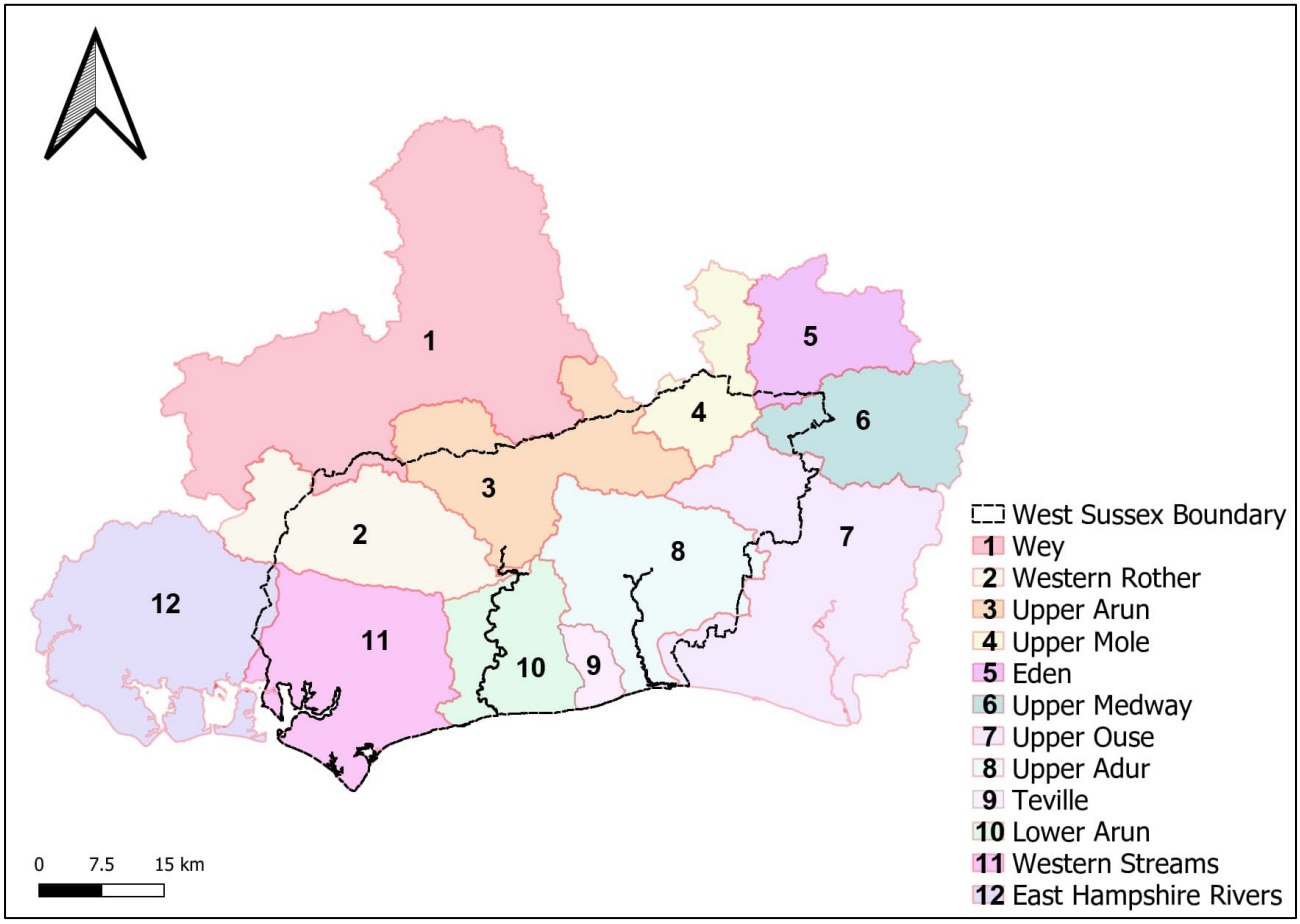


Figure 11 - Overview of river basin catchments interacting with West Sussex

Surface water risk by catchment

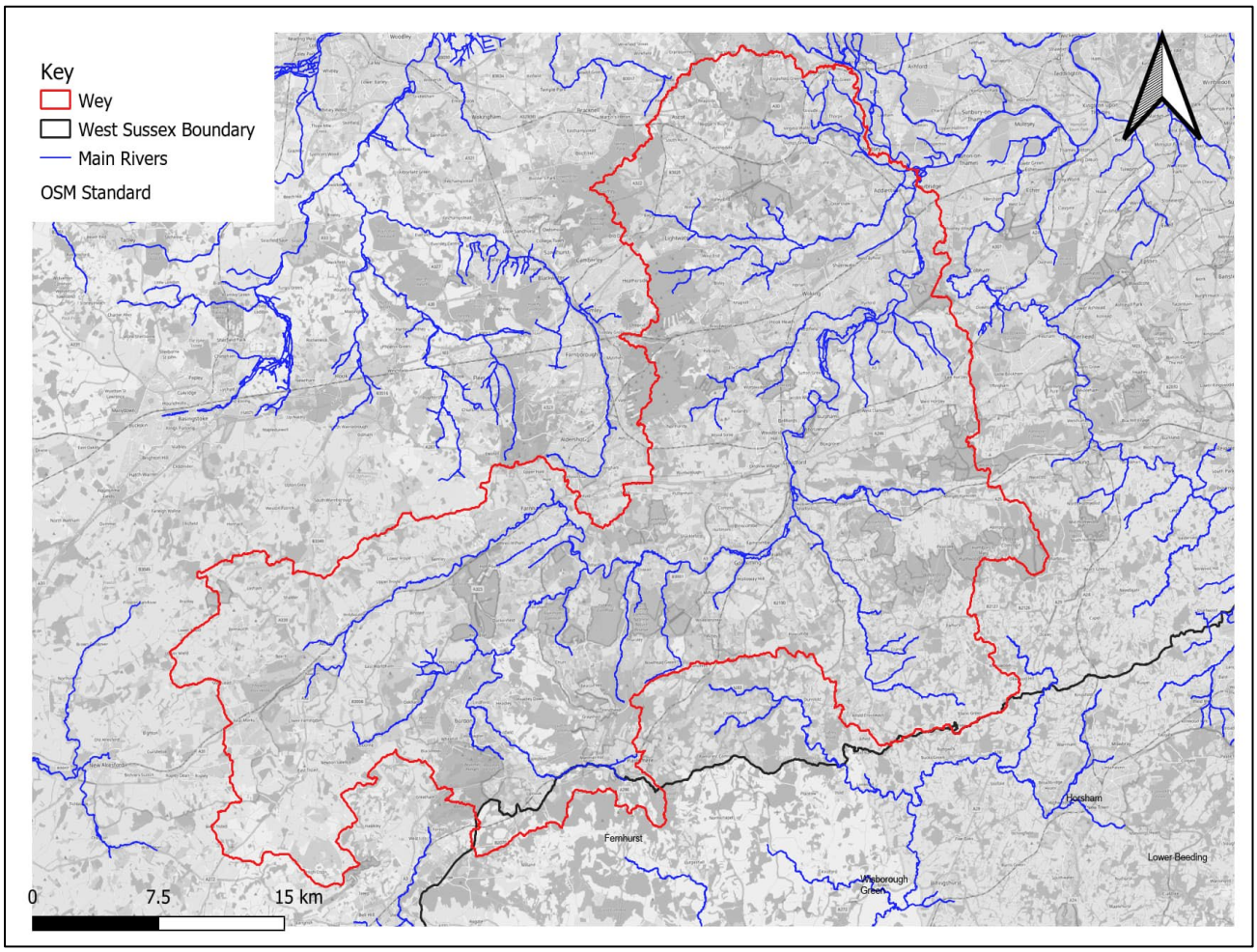
A mapping exercise was undertaken to investigate the areas with the greatest number of residential properties at risk of surface water flooding. Using the Environment Agency risk of flooding from surface water mapping and the National Receptor Database (NRD), the number of residential properties at high, medium or low risk of surface water flooding were identified by hydrological catchment. The results are shown below in Table 2.

Table 2 - Numbers of residential properties mapped at high, medium or low risk from surface water flooding by Catchment.

Catchment	Number of residential properties (% of risk total)			Total Properties at risk (% of West Sussex total at risk)
	High risk (> 3.3% chance each year)	Medium risk (between 1% - 3.3% chance each year)	Low risk (between 0.1% - 1% chance each year)	
Wey	17 (0%)	53 (0%)	85 (0%)	155 (0%)
Western Rother	375 (4%)	744 (4%)	784 (2%)	1,903 (3%)
Upper Arun	1,099 (11%)	2,560 (15%)	2,858 (7%)	6,517 (10%)
Upper Mole	1,926 (19%)	1,614 (10%)	5,717 (14%)	9,257 (14%)
Eden	59 (1%)	63 (0%)	374 (1%)	496 (1%)
Upper Medway	336 (3%)	634 (4%)	1,061 (3%)	2,031 (3%)
Upper Ouse	539 (5%)	1,069 (6%)	1,437 (4%)	3,045 (5%)
Upper Adur	2,138 (21%)	5,533 (33%)	8,712 (22%)	16,383 (25%)
Teville	2,104 (21%)	1,387 (8%)	7,150 (18%)	10,551 (16%)
Lower Arun	715 (7%)	1,978 (12%)	7,659 (19%)	10,352 (16%)
Western Streams	817 (8%)	895 (5%)	4,292 (11%)	6,004 (9%)
East Hampshire Rivers	5 (0%)	13 (0%)	19 (0%)	37 (0%)
Total	10,130 (100%)	16,543 (100%)	40,148 (100%)	66,731 (100%)

Wey Operational Catchment

(Wey and Trib Management Catchment)



Catchment Summary

The Wey catchment area covers 904km^2. The River Wey is a tributary of the River Thames, flowing through Hampshire and north to Surrey. The main headwater of the Wey (around Alton in Hampshire) is a chalk stream, making it slightly soluble to rainfall. The stretches around Aldershot are underlain by impermeable clay, making the river very reactive to rainfall variations.

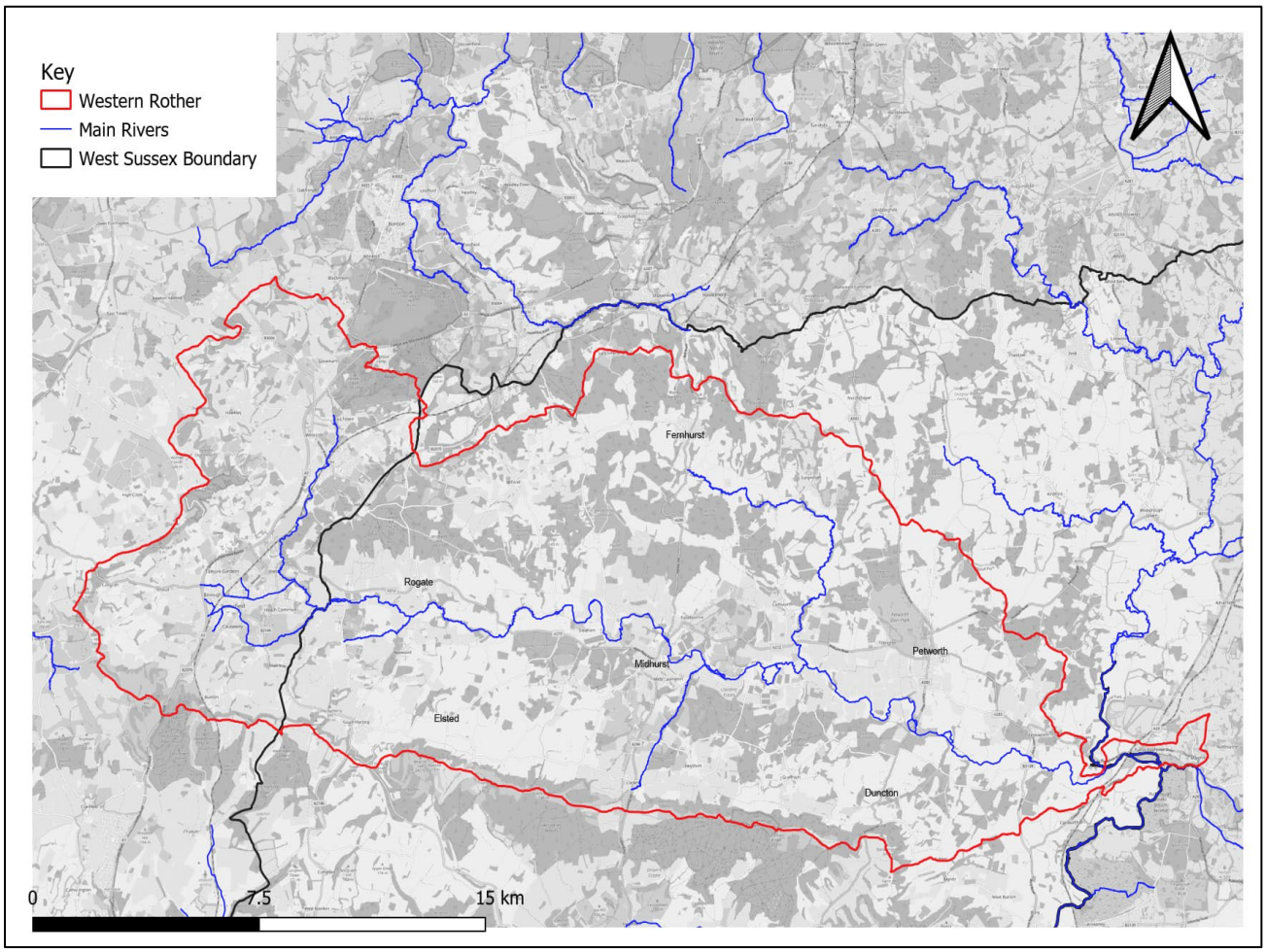
There are 42 water bodies in this catchment, including key statutory main rivers such as the River Wey and River Tillingbourne.

Known areas of flood risk

The Wey catchment only interacts with a small rural area of West Sussex towards the north-western edge, just south of Liphook and Haslemere in Hampshire. There is a small tributary of the River Wey flowing into Haslemere. There are no known areas of flooding in West Sussex from the Wey Operational Catchment.

Western Rother Operational Catchment

(Arun and Western Streams Management Catchment)



Catchment Summary

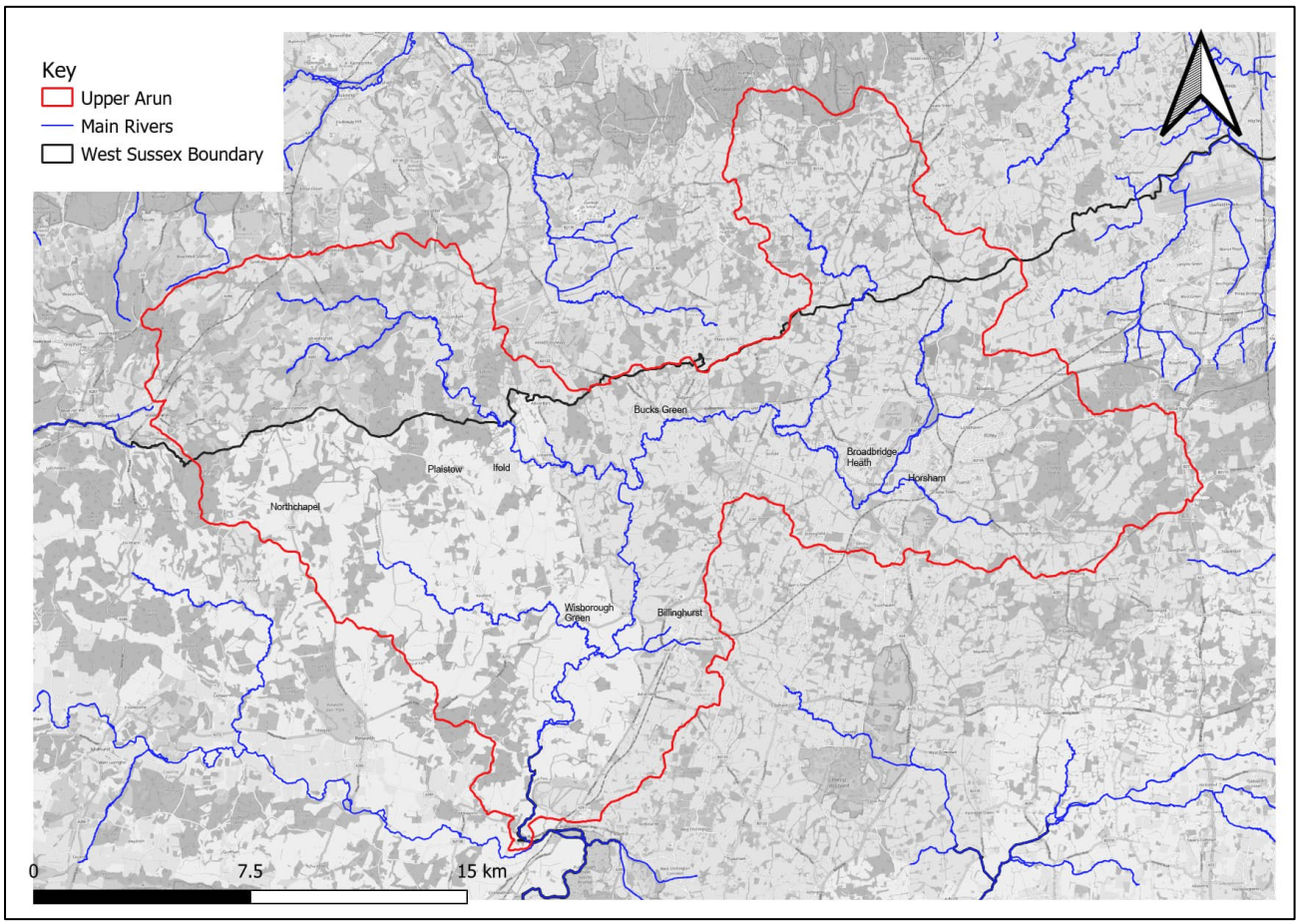
The Western Rother Operational Catchment area covers 360km2 of predominately rural areas, extending from Petersfield to Pulborough. Due to its location and geology, the catchment suffers from diffuse pollution and is particularly prone to severe sedimentation. The Western Rother is characterized by underlying geology – chalk scarp at the southern and western edges and greensand ridge to the north. The majority of the inner catchment runs across sandstone making the waterbodies highly productive and vulnerable to erosion. There are 11 water bodies in this catchment, including key statutory main rivers such as the River Rother/Western Rother.

Known areas of flood risk

The known areas of risk include Midhurst and South Ambersham, which are likely to be influenced by high groundwater and fluvial interactions. Pulborough also suffers from fluvial flooding in the east of the catchment.

Arun Upper Operational Catchment

(Arun and Western Streams Management Catchment)



Catchment Summary

The Upper Arun operational catchment is predominately the non-tidal reach rising to the northeast of Horsham and flowing south until Pulborough at its confluence with the river Rother. Apart from the town of Horsham, the catchment area is largely rural, with most land under agricultural use. Predominately, the Upper Arun catchment is underlain by Weald Clay Formation making the river very reactive to rainfall variations.

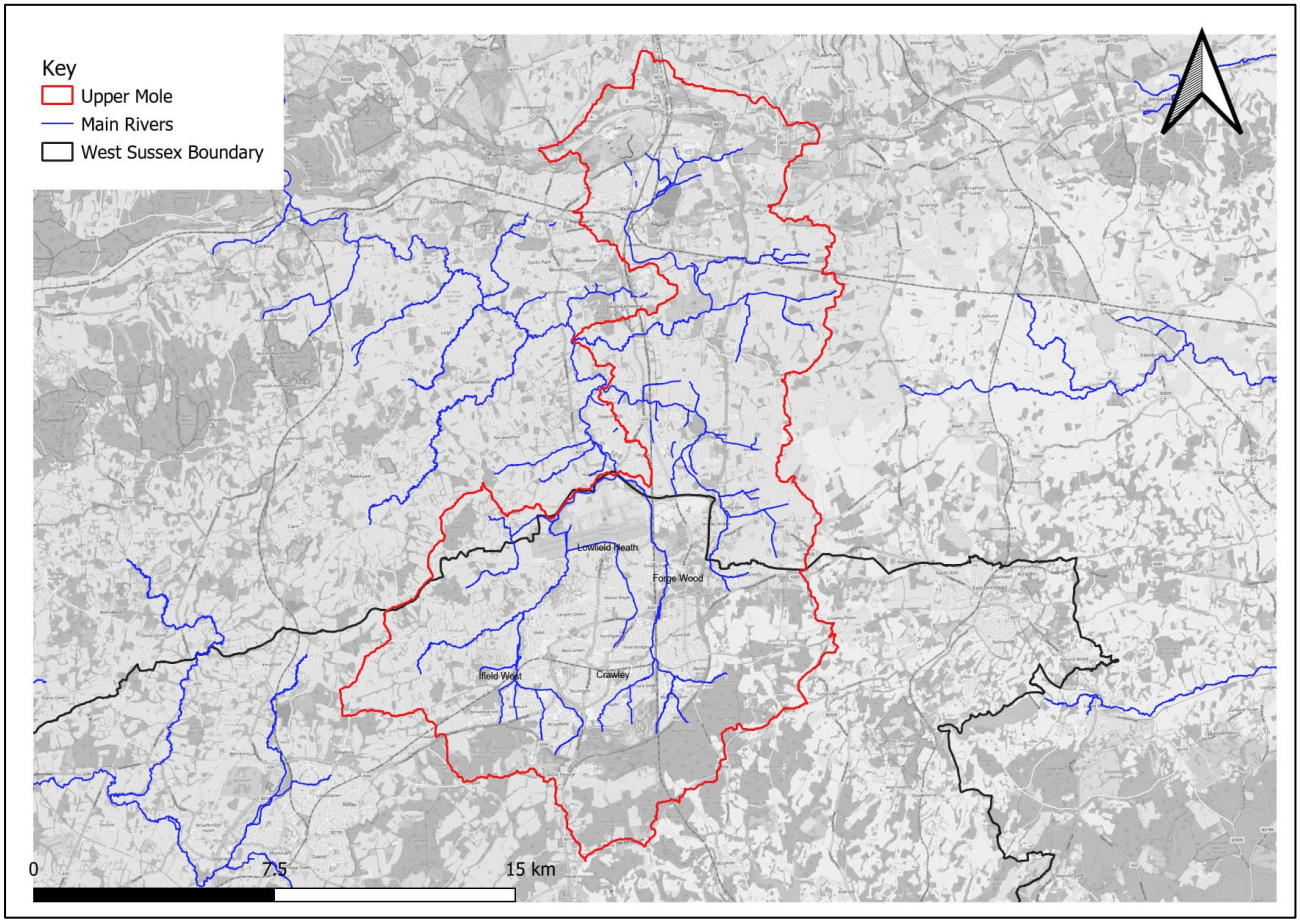
There are 14 water bodies in this catchment, including key statutory main rivers such as the River Arun and its tributaries.

Known areas of flood risk

The known areas of risk are particularly concentrated around Billinghurst and Horsham where a number of surface water and sewer incidents are recorded in addition to known issues around Loxwood.

Mole Upper Operational Catchment

(Mole Management Catchment)



Catchment Summary

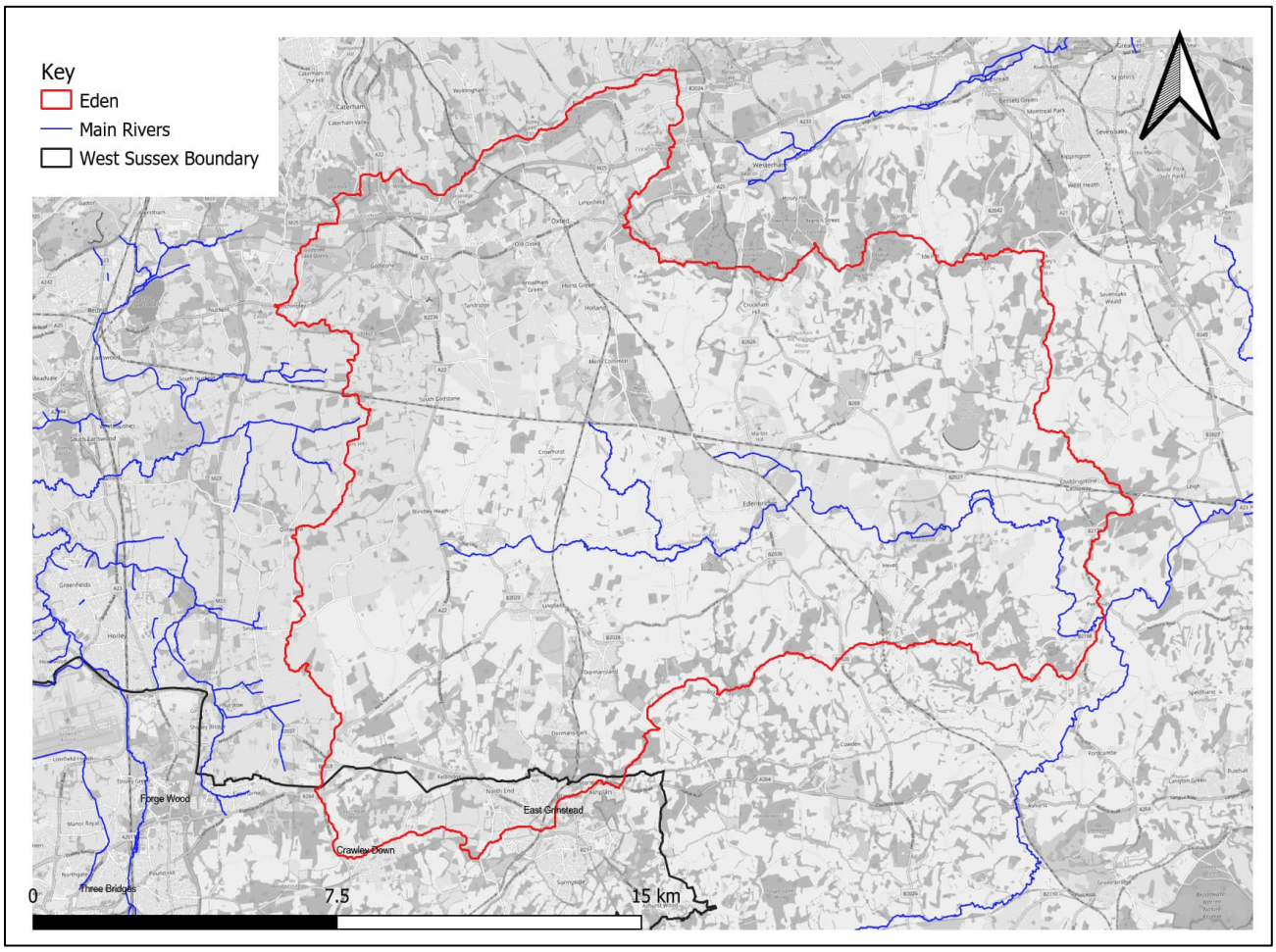
The River Mole catchment area is 512km2 and overlaps parts of Surrey and West Sussex, flowing in a general northerly direction. The Upper Mole operational Catchment includes the head waters of the Mole, south of Crawley, which form into two larger channels, the Mole and the Gatwick Stream. These two channels combine just to the north of Gatwick airport. Two further tributaries join the Mole downstream of Horley, Burstow Stream and Salfords Stream, which includes the Redhill Brook. Much of the catchment is underlain by London and Wealden Clays. There are 10 water bodies in this catchment, including key statutory main rivers such as the Salford Stream, Redhill Brook and Burstow Stream.

Known areas of flood risk

A number of flood incidents are recorded across the urban areas of Crawley and Copthorne. Whilst causes are not always defined, the main sources are understood to be a combination of surface water and fluvial flooding.

Eden Operational Catchment

(Medway Management Catchment)



Catchment Summary

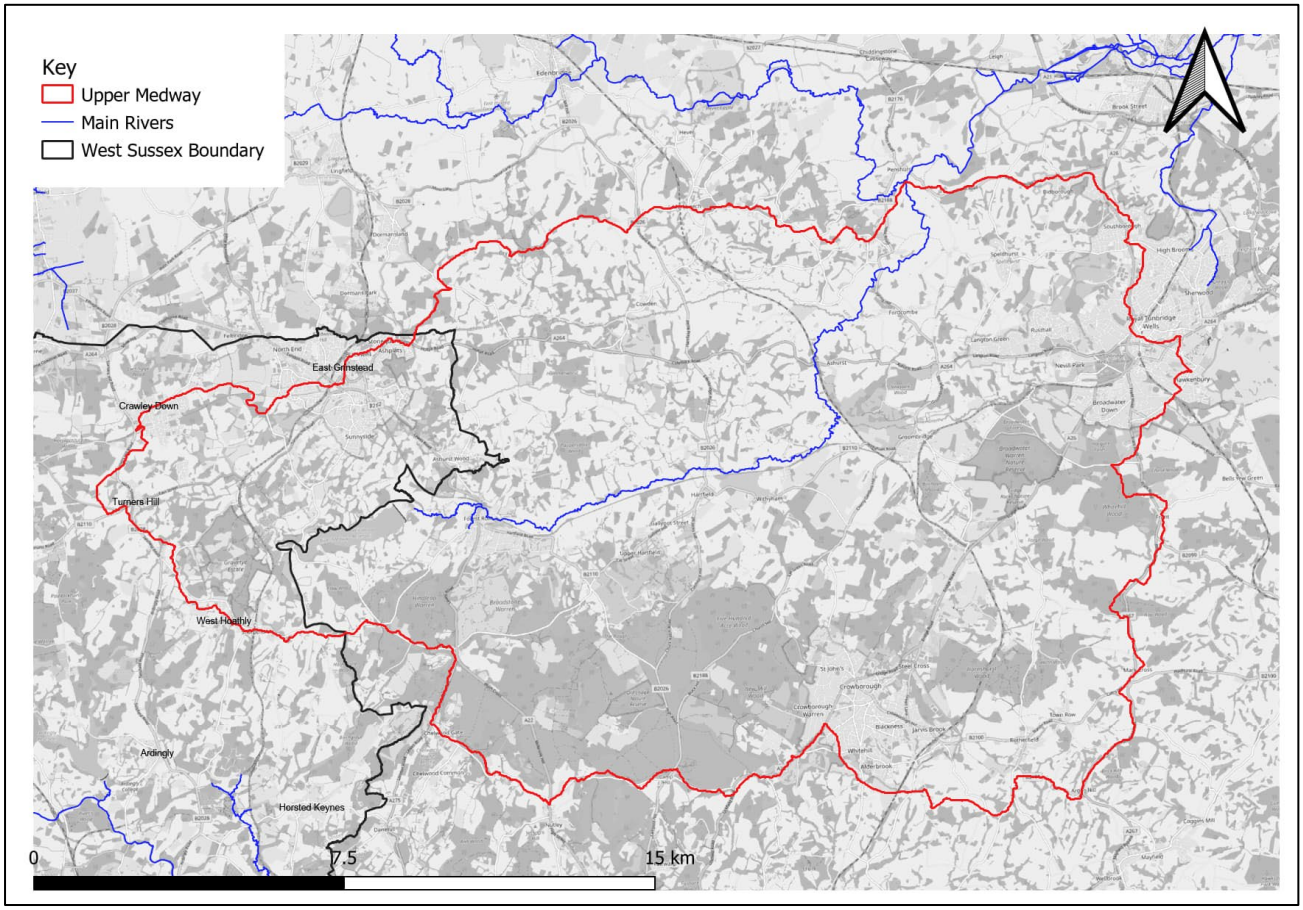
The Eden catchment is approximately 230 km2 and lies across the counties of Surrey, Kent and a small area of West Sussex. This largely rural catchment has some urban pockets and is important for agriculture. The underlying geology of the catchment is characterised by heavy Wealden clay, with an outcropping of Greensand and thin band of Chalk deposits forming the North Downs along the northern boundary of the catchment. There are 11 water bodies in this catchment, including key statutory main rivers such as the Eden and its tributaries.

Known areas of flood risk

This catchment only interacts with a small area in the north east of West Sussex between Crawley and East Grinstead. There are no known areas of flood risk in West Sussex associated with the Eden Operational Catchment.

Upper Medway Operational Catchment

(Mole Management Catchment)



Catchment Summary

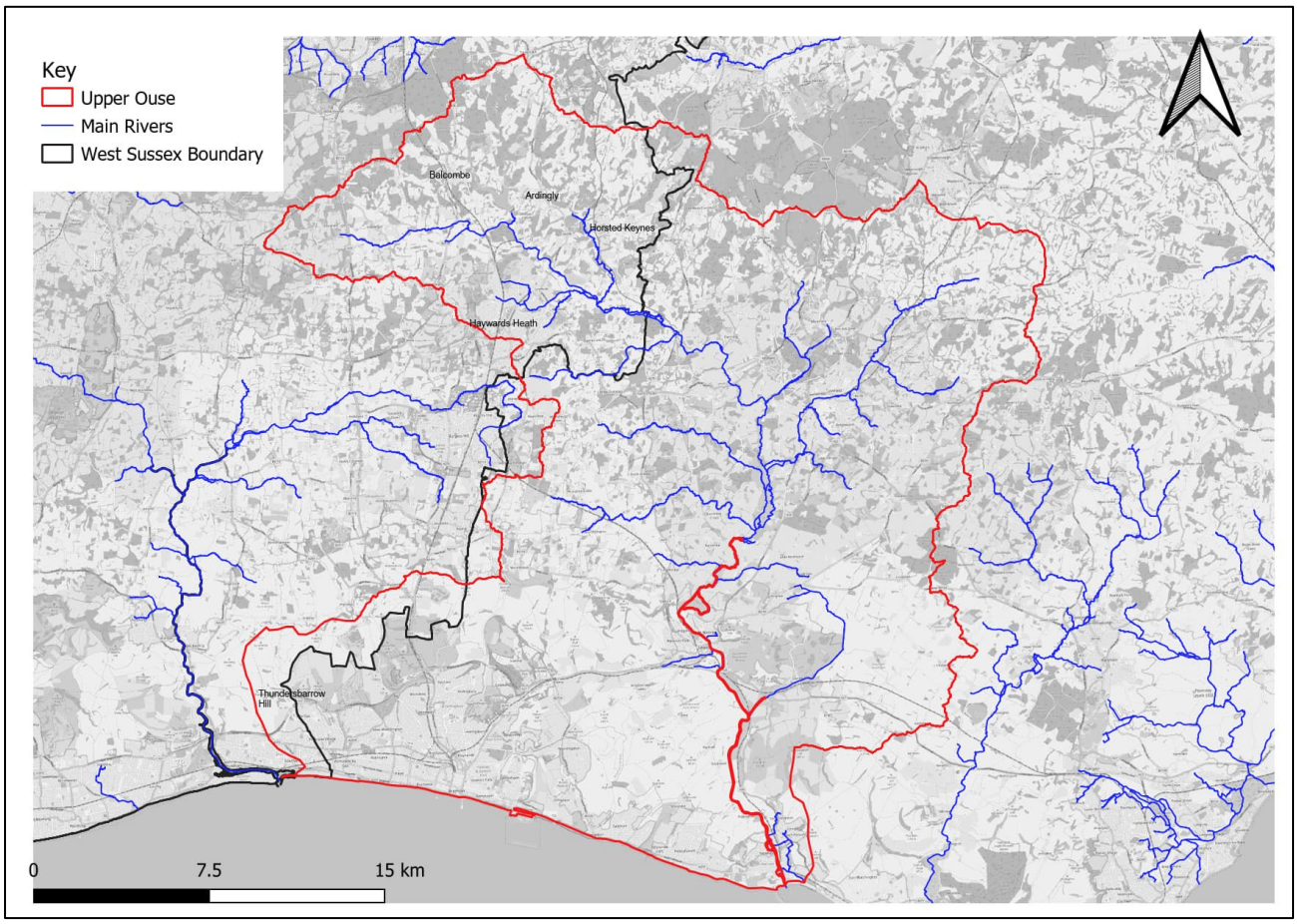
The Upper Medway Operational Catchment covers the River Medway from its source at Turners Hill to its confluence with the River Eden at Penshurst. This predominantly rural catchment has agriculture and horticulture, and large urban areas at East Grinstead, Crowbourgh and Tunbridge Wells. The catchment has a varied topography and diverse underlying soils and geology, creating high gradient watercourses in the Upper Medway. There are 12 water bodies in this catchment, including key statutory main rivers such as the River Medway, Eridge Stream and the River Grom.

Known areas of flood risk

This catchment only interacts with a small area in the east of West Sussex, south of East Grinstead. There are no known areas of risk in West Sussex associated with the Medway Operational Catchment.

Upper Ouse Operational Catchment

(Adur and Ouse Management Catchment)[20]



Catchment Summary

The River Ouse rises near Lower Beeding and has a number of shallow, forest streams and meanders south over Weald clay. The clay geology gives the river a flashy character with unreliable summer flows and winter flows prone to flooding, such as at Uckfield and Lewes, where the river becomes tidal. The Ouse has a history of navigation and milling and has been modified over time for early industry, flood defence, drainage and abstraction. The semi-impermeable nature of the underlying geology means it liable to saturation, which can produce large runoff volumes. When combined with high runoff and channel flows from further up the catchment, a serious risk of flooding occurs. There are 26 water bodies in this catchment, including key statutory main rivers such as the River Ouse and its tributaries.

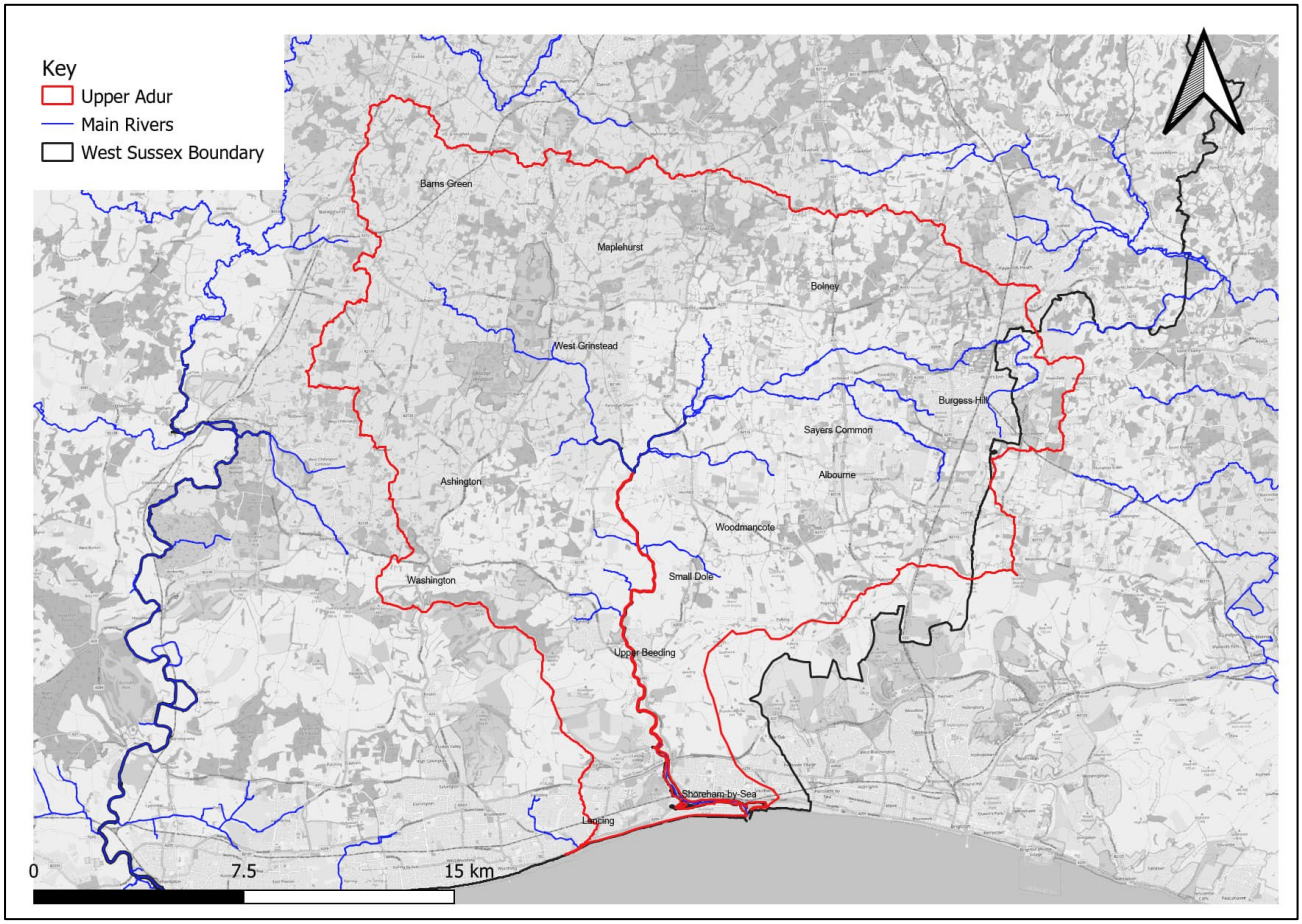
Known areas of flood risk

Recorded incidents in West Sussex are concentrated around Haywards Heath and Balcombe, attributed to a combination of surface water, sewer and watercourse flooding.

[20] Note where rivers appear red, the catchment boundary follows the route of the river to its tidal extent inland.

Adur Upper Operational Catchment

(Adur and Ouse Management Catchment)[21]



Catchment Summary

The Adur is a typical lowland river with a catchment area of about 500km^2. The river begins as two separate branches, the western arm rising at Slinfold and the eastern arm at Ditchling Common both fed by springs from the Brighton Chalk Block. The branches meet at Henfield, where the river becomes tidal and embanked for some nine miles before it reaches the estuary at Shoreham-by-Sea. The upper tributaries of the river are dominated by sandstone, which changes to impermeable clay in the lower stretches, making the river very reactive to rainfall. There are 19 water bodies in this catchment, including key statutory main rivers such as the River Adur, Copyhold Stream and Herrings Stream.

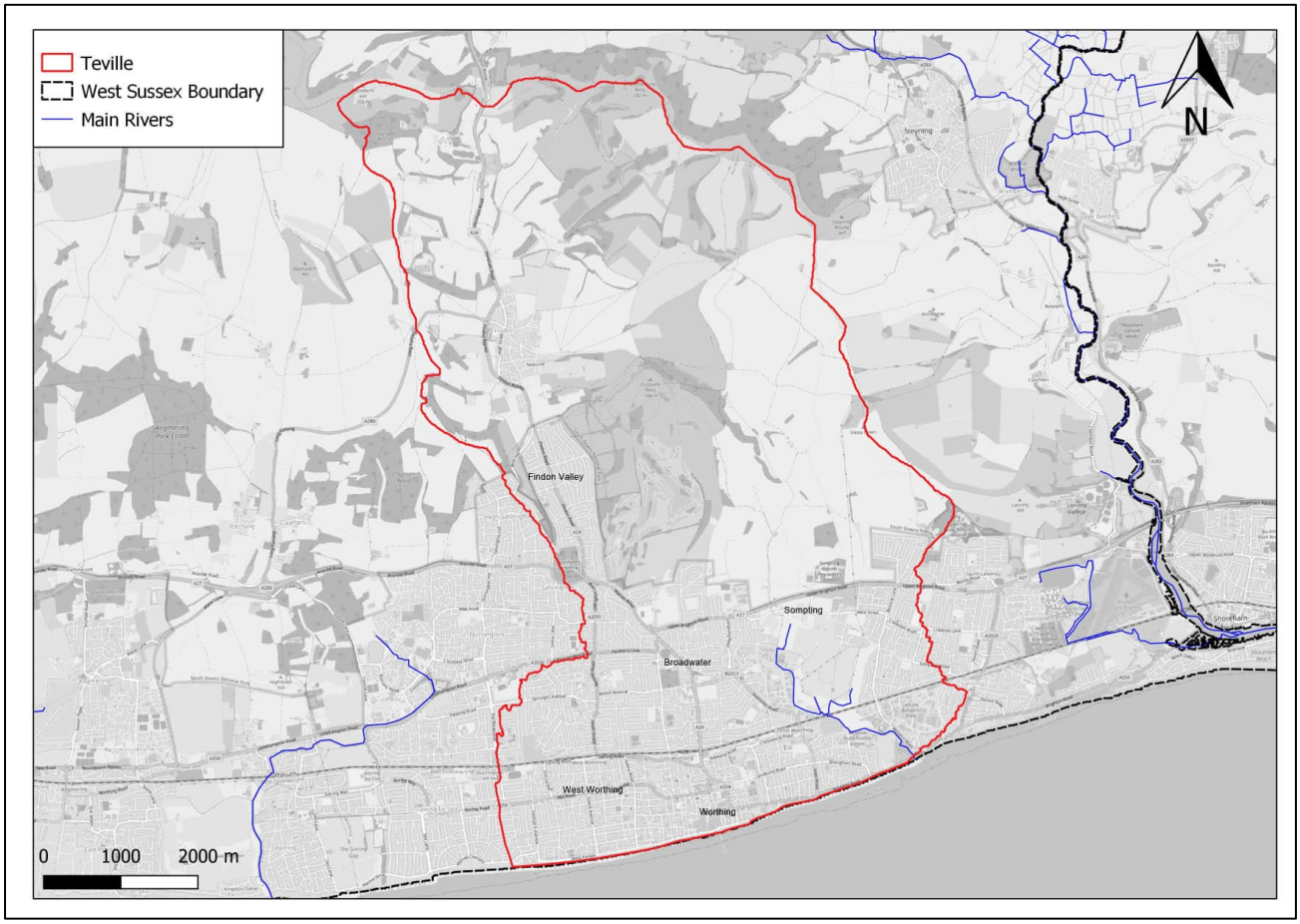
Known areas of flood risk

Burgess Hill, Hassocks and Sayers Common all have widely documented areas of flood concern with a combination of surface water, sewer and watercourse related incidents.

[21] Note where rivers appear red, the catchment boundary follows the route of the river to its tidal extent inland

Teville Operational Catchment

(Adur and Ouse Management Catchment)



Catchment Summary

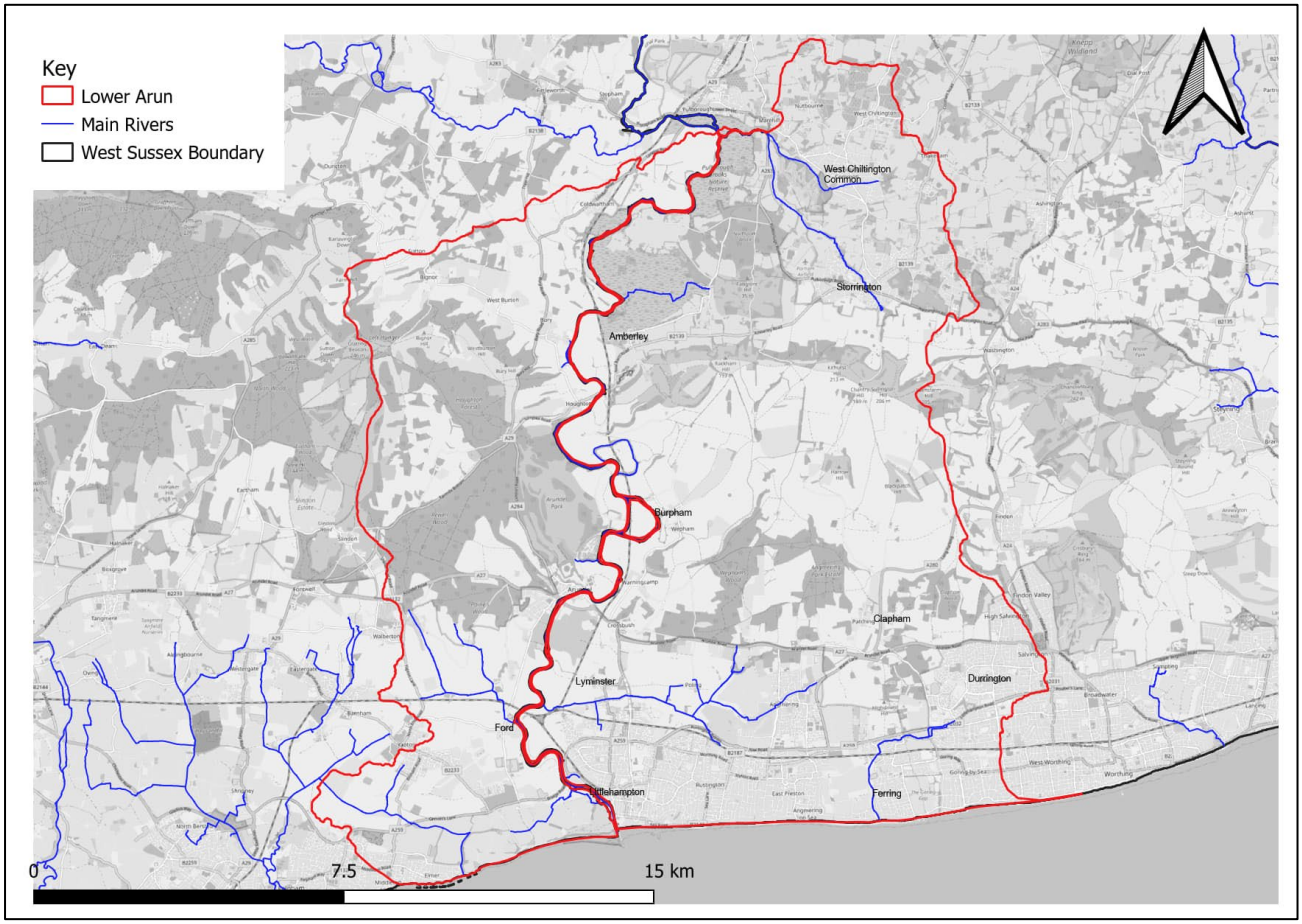
The Teville Stream rises in Tarring and flows through the town on Worthing on the western boundary of the catchment. Once a significant watercourse, the stream is now culverted and runs underground for much of length. It re-opens on the eastern side of Worthing as the Sompting Brook, which feeds Brooklands Lake and flows into the sea. The stream currently operates as a drainage channel for much of the surface water drainage from Worthing.

Known areas of flood risk

Reported incidents of flooding are concentrated in the south of the catchment in the urbanised areas of Worthing. Many are attributed to surface water and sewer surcharge and may be influenced by tidal locking of the drainage system.

Lower Arun Operational Catchment

(Arun and Western Streams Management Catchment)[22]



Catchment Summary

The Lower Arun Operational Catchment area covers 1490km2, through Littlehampton and Pulborough. It includes the tidal river Arun, a transitional waterbody, and its freshwater tributaries. The sub-catchment is mix of urban concentrations and open agricultural land. The southern reaches of the Lower Arun catchment follows the bands of chalk from the South Downs National Park. In the north of this catchment, the geology is primarily clay, sandstone and mudstone. There are seven water bodies in this catchment, including key statutory main rivers such as the Ferring Rife and the Stor. The River Arun runs along the boundary of the Lower Arun Catchment.

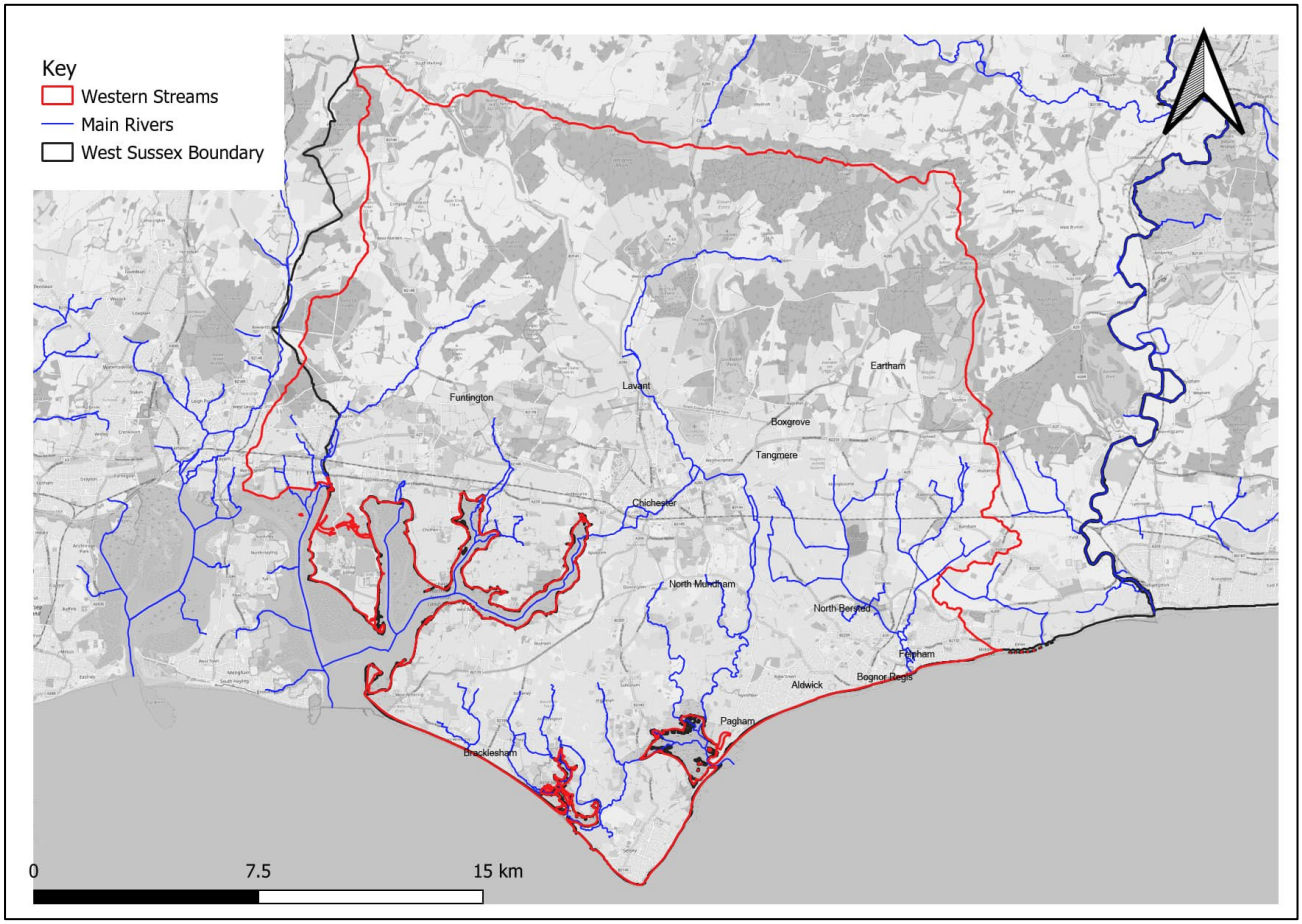
Known areas of flood risk

Significant history of flooding is concentrated in the coastal urban towns of Littlehampton, and areas of Worthing. Arundel and Amberly also have a history of flooding associated with the River Arun.

[22] Note where rivers appear red, the catchment boundary follows the route of the river to its tidal extent inland

Western Streams Operational Catchment

(Arun and Western Streams Management Catchment)



Catchment Summary

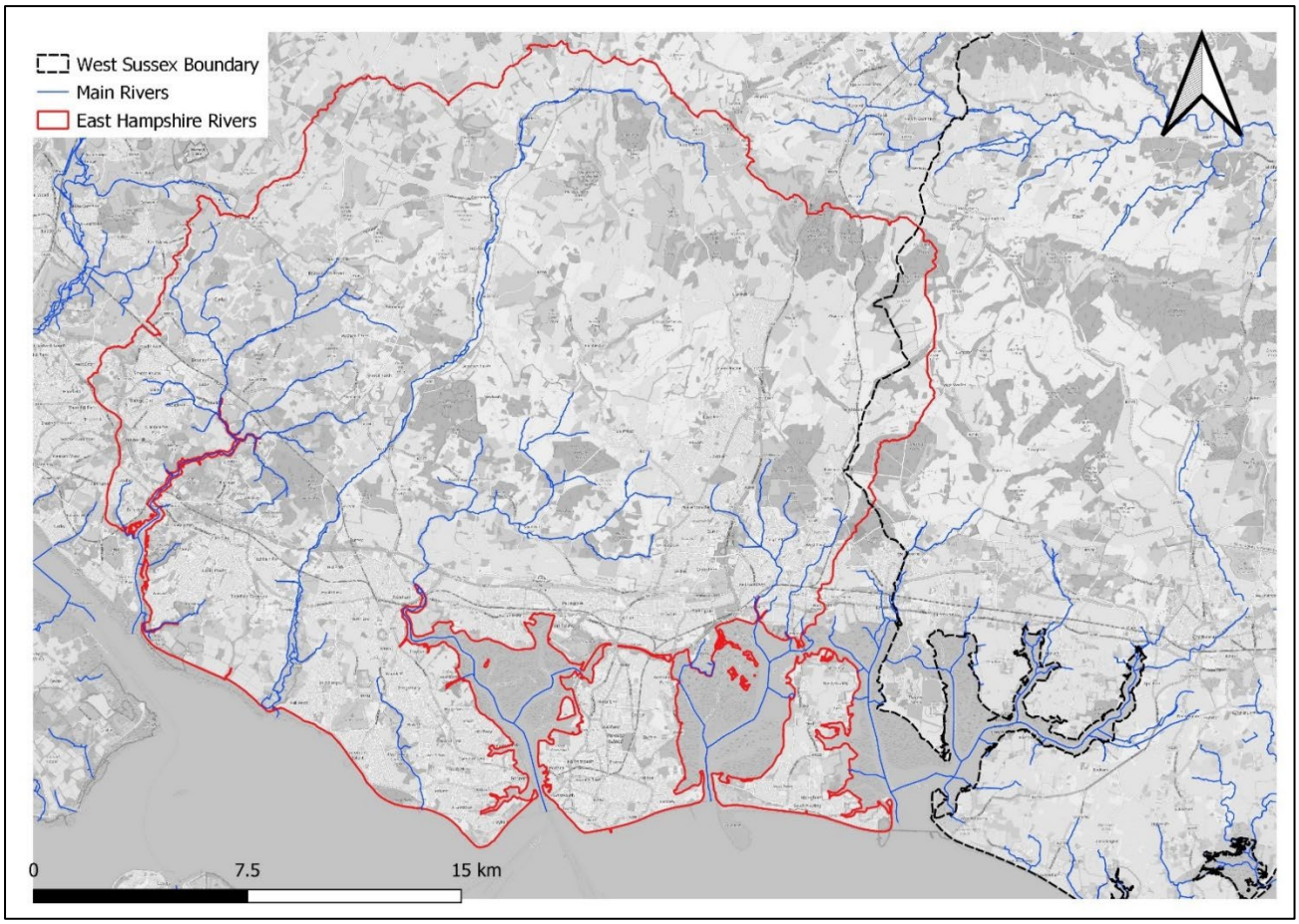
The Arun and Western Streams catchment covers 1,490 square kilometres and mainly lies within the South Downs National Park. It is dominated by the chalk ridge of the South Downs and the sand and clay of the Weald. The catchment includes the Rivers of the Western Rother, the Arun and several small coastal streams which include the chalk fed Ems and Lavant which feed into Pagham and Chichester Harbours. It is a predominantly rural catchment with its key towns being Worthing, Bognor Regis, Chichester, Arundel, Midhurst and Horsham. There are four water bodies in this catchment, including key statutory main rivers such as the Arun Lower, Arun Upper, Rother Western and Western Streams.

Known areas of flood risk

The known areas of risk include extensive history of recorded incidents in Bognor Regis, Felpham and Chichester from a complex combination of flood sources. Yapton and Selsey are also known areas of flooding. A number of recorded fluvial events are associated with the route of the River Lavant in the north of the catchment.

East Hampshire Rivers Operational Catchment

(East Hampshire Management Catchment)



Catchment Summary

The East Hampshire catchment covers an area of 571km2, with rolling chalk downland to the north and a flat, heavily urbanised coastal plain in the south, including Portsmouth. The main rivers in the catchment are the Hamble, Meon, Wallington, Hermitage and Lavant. Their sources are in the upland chalk, from where they flow into Southampton Water or the harbours of Portsmouth and Langstone. Shorter rivers like the Alver and Hook Lake are constrained but also important to their communities. The low-lying coastline has been heavily modified to allow for the growth of Fareham, Gosport, Havant, Portsmouth.

Known areas of flood risk

There are no known areas of risk in West Sussex from the East Hampshire Rivers Operational Catchment.

Progress to date

Whilst this strategy outlines new objectives, actions and measures, they build on the positive work already undertaken by WSCC and partners. Some examples of the outcomes achieved include:

- WSCC is mapping assets and flood reports as they come in, increasing our understanding of the catchments, and thus improving decision making.
- Surface Water Management Plans have been completed for four catchments, each of which were identified as having significant surface water flood risk. This has resulted in better understanding and several localised interventions to reduce risk.
- Working closely with district & borough officers to best utilise resource, skills, and local expertise.
- The creation of 'Operation Watershed' an Active Communities Fund, which has funded over 400 community-led projects to a value more than £4m. Some key examples are listed below in Table 3:

Table 3 – Recent Operation Watershed Projects.

Date	Area	Parish	Scheme
December 2023	Chichester – Chichester North	West Dean Parish	Flooding along B2141 Chilgrove outside Crows Hall Farm. Surface water floods affected the road and farm property. Work to improve highway drainage install new culvert infrastructure, carry out ditch clearance and CCTV/Jet culvert.
March 2023	Mid Sussex – Henfield	West Grinstead Parish Council	The pond is used as an attenuation pond taking water from highways and ditches north. The outfall is not working correctly to manage pond levels causing flooding to surrounding land and preventing the ditches to the north to discharge having a known affect to local properties.
November 2022	Arun – Findon	Findon Parish Council	Surface water flows uninterrupted down Findon Park Road as there is no existing drainage to the junction with A24. This has previously cut off access to properties.

We will seek to build on the successes above, making the best use of available resources to tackle local flood risks where it is most needed.

Objectives, Measures, and Actions

To develop the objectives, measures, and actions, a public engagement survey and stakeholder engagement workshop was held to understand the flood risk priorities and high-risk areas of flooding for local residents, communities and businesses. Outputs from the survey have been summarised in more detail in Appendix D. Following the public engagement survey and stakeholder engagement workshop, objectives, measures and actions were defined for the Strategy, considering a catchment-based approach and focusing on flood risk management priorities in West Sussex.

The objectives, measures and actions are presented in the following sections. WSCC will continue to work towards delivering each of the objectives with key partners, over the next five years.

Objectives

The objectives have been developed through stakeholder workshops and consideration of both the national FCERM strategy and local policy and priorities (Appendix F).

Use a catchment-based approach to understand and manage flood risk.

Create a common, informed framework for sustainable development that improves safety and resilience for people, property, infrastructure, and the environment through long-term thinking.

Adopt collaborative approaches to understanding and managing flood risk assets and systems, prioritising the implementation of nature-based solutions.

Adopt collaborative approaches to understanding and managing flood risk assets and systems, prioritising the implementation of nature-based solutions.

Objective 1 – Understand and manage the risk

Use a catchment-based approach to understand and manage flood risk

Data collection and recording throughout West Sussex requires a centralised approach as there are multiple partnerships and catchments at play that may cross administrative boundaries. Methodology for the catchment-based approach and mapping will be developed by WSCC in consultation with relevant authorities and stakeholders. Identifying where interventions can mimic the natural hydrological cycle, or deliver biodiversity or ecological enhancement, whilst reducing flood risks, will require the holistic understanding of the water system that a catchment-scale perspective provides.

Objective 1 has taken the following into consideration when assessing the measures and actions:

- It is key to assess the investment in flood risk management projects within the context of long-term risk reduction, realising multiple benefits for the communities, businesses and the environment in West Sussex. One example would be managing surface water flow paths within a catchment by slowing, diverting, or attenuating the flow.
- Understanding risk at a catchment-scale will require effective communication and education on flood risk management (engaging all stakeholders in reporting and understanding flood risk).
- Effective action at the catchment scale, including encouraging the storage and retention of water in upstream areas, will require knowledge, trust and cooperation between landowners, communities, local councils and other RMAs.

Measures and actions

For reference, the measures and actions for Objective 1 are listed below:

Measures	Actions
1.1 - Establish a clear understanding of flood risk across West Sussex by catchment	1.1.1 - Refine a process to maintain historic flood risk data register in a mapping platform, looking at all flood sources.
	1.1.2 - Develop catchment management plans for each catchment, delivery to be prioritised by action 1.2.2
	1.1.3 - Maintain a central point of collaboration between river trusts and partnerships.
1.2 - Utilise the best available data to prioritise flood risk management schemes	1.2.1- Review and analyse all data received as part of the public engagement survey, including GIS mapping.
	1.2.2 - Use all available data and a consistent risk driven approach for each catchment to identify priorities.
	1.2.3 - Subject to funding, undertake local studies and assessments and generate new flood risk data to support strategic decision making.
	1.2.4 - Where suitable locations are identified, develop business cases to support improvement schemes.
	1.2.5 – Conclude work on projects to reduce flood risk in Angmering and Parklands (West of Chichester)
1.3 - Develop collaborative opportunities for sharing data	1.3.1 - Establish a 'report my flood' system in addition to the system for reporting highway flooding, for local communities and partners.
	1.3.2 - Hold flood meetings twice a year, to be attended by all RMAs to encourage collaboration across partnerships.
	1.3.3 - Develop a programme tracker for all ongoing or planned flood risk management projects across all RMAs in West Sussex.

Objective 2 – Sustainable Development

Create a common, informed framework for sustainable development that improves safety and resilience for people, property, infrastructure, and the environment through long-term thinking.

West Sussex is expected to continue to experience growth in the future and will need to accommodate new housing and other development, and related infrastructure. New development must be planned and designed such that it does not result in negative impacts on flood risk or water quality. While this Strategy focuses on flood risk, taking an integrated approach to water management means that new development should also consider how measures to reduce flood risk could also improve water resilience, and provide benefits for people and the environment.

As LLFA, WSCC is the statutory consultee in surface water drainage for major developments under the Town and Country Planning (Development Management Procedure) (England) Order 2015[23]. WSCC follow national and local planning policy and best practice requirements when responding to surface water drainage consultations by:

[23] Major development definition included here: The Town and Country Planning (Development Management Procedure) (England) Order 2010.

- Checking Flood Risk Assessments and SuDS design adequately considers all sources of flood risk as well as any local issues which could affect the wider area.
- Ensuring that more vulnerable areas of developments such as housing, access roads and critical infrastructure such as sub-stations, are not located in areas of high flood risk now or in the future.
- Ensuring that Sustainable Drainage Systems are used in all major developments, encouraging developers to incorporate SuDS early in the design of sites, at the beginning of the planning process. This includes ensuring any surface water discharged into watercourses or surface water sewers is restricted to ensure surface water flood risk does not increase elsewhere.
- Checking relevant documents are using up to date climate change allowances, to ensure future flood risk and the effects of climate change on severe storms is addressed in the design of SuDS.
- Ensuring SuDS maintenance and management plans are adequate, including checking that schemes are designed to makes maintenance easier.

The Environment Agency are a statutory consultee for any works within 20m of the top of the bank of a main river and major development in Flood Zone 2 or 3.

The ultimate decision to grant or refuse planning permission for any reason, including flood risk and surface water drainage, rests with the Local Planning Authority (District or Borough Council, SDNPA or WSCC).

Objective 2 focuses on guiding a consistent framework for authorities and organisations across West Sussex to limit flood risks to, and from, new development, and ensure that Sustainable Drainage Systems (SuDS) are incorporated in the planning process early in the development and design of sites.

SuDS, should be installed in new developments or retrofitted to existing sites, are measures used to manage surface water, which aim to:

- Control the quantity and rate of surface water running off the footprint of a development,
- Improve the water quality of surface runoff, by removing pollutants,
- Improve the biodiversity, landscape, and visual amenity of the development site.

SuDS aim to manage rainfall close to where it falls (source control), mimicking the natural water cycle. These measures can include swales, permeable paving, rain gardens, and wetlands.

The NPPF was updated in December 2024 to require the use of SuDS in any planning application unless there is evidence that it would not be appropriate.

Measures and actions

The measures and actions for Objective 2 are listed below:

Measures	Actions
2.1 - Promote a consistent approach across local planning authorities	2.1.1 - Review and update standard flooding and drainage guidance and advice for developers.
	2.1.2 - Provide SuDS and drainage training for planning officers and local members.
	2.1.3 - Promote the chargeable pre-application service on sustainable drainage and local flood risk management for new development proposals.
	2.1.4 - Produce standard conditions on flooding and drainage for all planning authorities, including consideration of drainage implications within minor development.
2.2 - Align and integrate with Local Nature Recovery strategies and biodiversity projects to maximise delivery of co-benefits	2.2.1 - Engage with WSCC services and partner organisations to establish synergies and opportunities for nature recovery by collating ongoing projects and strategies.
	2.2.2 - Promote the wider biodiversity benefits from SuDS and nature-based flood alleviation with updated online resources signposting to best practice and information shares at stakeholder meetings.

Objective 3 – Collaboration and asset management

Adopt collaborative approaches to understanding and managing flood risk assets and systems, prioritising the implementation of nature-based solutions.

Improving the maintenance of assets, which can influence flood management, is a priority for WSCC. Innovation and technology can be deployed to better understand the maintenance requirements of the drainage system, and also meet other water environment goals such as improving water quality. Smart sensor pilots should be explored in West Sussex, in partnership with other RMAs, while a centralised mapping system can help to identify opportunities for collaborative working. A forum for RMAs and stakeholders to identify missing assets/asset gap analysis will be set up to ultimately work towards improving our flood risk assets and systems.

Actions focus on recording and mapping asset and land ownership and developing consistent approaches to assessing the condition of flood risk assets. Assets in poor condition may be more vulnerable to failure or may not perform optimally in reducing flood risk. Taking a consistent approach to mapping and grading assets, as well as empowering riparian owners to participate, can help to identify risk areas, and also focus supporting action and investment. Pilot case studies should be undertaken in higher risk areas to streamline the process before a centralised mapping approach is developed.

Nature-based solutions (NBS) for flood risk management often require less maintenance. They also provide co-benefits beyond flood risk reduction, such as carbon sequestration, water quality improvement, and biodiversity enhancement. In West Sussex, a focus on building awareness and implementation of NBS projects should be taking, including other RMAs, stakeholder organisations, and riparian owners. In alignment to traditional drainage assets, a consistent approach to grading, reporting and sharing asset data should be implemented for NBS assets.

Where opportunities arise, work to improve understanding of barriers and opportunities to NBS should be delivered. This aligns with WSCC's Local Nature Recovery Strategy and can provide avenues to improve resourcing, funding, and delivery of multi-beneficial projects.

Measures and actions

The measures and actions for Objective 3 are listed below:

Measures	Actions
3.1 – Improve collaboration with partns in asset management	3.1.1 – Consolidate partnership working via a formalised collaboration agreement or MOU.
	3.1.2 - Working with partners, consolidate a spatial mapping application to map flood risk management assets across the county.
	3.1.3 – Engage all relevant stakeholders in asset management conversations to encourage consistent record keeping.
	3.1.4 – Work with the EA on Aldingbourne Rife / Bognor resilience work, Worthing coastal flood risk management, and Shoreham to Lancing beach management.
3.2 – Improve how we manage existing assets	3.2.1 - Complete digitisation of highway asset data.
	3.2.2 - Adopt EA T98 condition grading system for inspecting assets affecting local flood risk (e.g. ditches, culverts and outfalls).
	3.2.3 – Agree methodology for defining priority assets, and undertake and record inspections of those assets, once identified.
	3.2.4 - Following the completion of 3.1.2, undertake gap analysis to identify missing or poor-quality asset data.
	3.2.5 - Implement programme of remedial or risk management projects for relevant high-risk assets, where cost-benefit justification exists.
	3.2.6 - Explore the feasibility of smart sensor implementation across WSCC highways and FCERM drainage assets and undertake initial pilot project(s).
3.3 - Support the implementation of nature-based solutions	3.3.1 - Inform communities and stakeholders on the benefits of nature-based solutions through online resources and in-person meetings.
	3.3.2 - Review and document barriers to implementation of nature-based solutions.

Measures	Actions
3.1 – Improve collaboration with partns in asset management	3.1.1 – Consolidate partnership working via a formalised collaboration agreement or MOU.
	3.1.2 - Working with partners, consolidate a spatial mapping application to map flood risk management assets across the county.
	3.1.3 – Engage all relevant stakeholders in asset management conversations to encourage consistent record keeping.
	3.1.4 – Work with the EA on Aldingbourne Rife / Bognor resilience work, Worthing coastal flood risk management, and Shoreham to Lancing beach management. 3.3.3 - Signpost and consolidate national and county-scale best practice nature-based solutions projects.

Objective 4 – Empowering communities

Empower our communities to increase their resilience and ability to adapt to flood risk now, and in the future.

Flood risk in West Sussex is complex and likely to increase as a result of climate change, urbanisation and population growth, amongst other factors. Risk cannot be removed entirely so we must focus on how residents and visitors can better prepare and respond to flooding.

Improving understanding and awareness of local flood risk is a priority for the Strategy. This includes better understanding of why flooding occurs, what actions can be taken to prepare when, or where, flooding is likely, and how communities and individuals can respond and recover from flooding. This objective encompasses how to define safety and resilience and what communities can look out for in relation to surface and ground water flood risk. This builds on work RET have been doing with the Sussex Resilience Forum and the 'What if?' programme.

WSCC has an extensive network of community organisations and stakeholder groups. These groups, alongside the parish councils, can bring local flooding and resilience to the heart of their communities. A programme of engagement and upskilling within these groups, and communities, can establish knowledgeable flood wardens to guide residents and encourage the adoption of property-level or other small-scale flood resilience measures. WSCC, as the Local Highways Authority, will continue to promote Operation Watershed and use the Riparian Drainage Project Officers to engage with communities and parish councils to reduce flood risk on adopted highways.

WSCC will lead on broader engagement and awareness in its role as LLFA. The Council, and other RMAs, will signpost and champion information relation to flood insurance, resources and support, and actively engage with educational institutions to build grassroots resilience.

Measures and actions

The measures and actions for Objective 4 are listed below:

Measures	Actions
4.1 - Create mechanisms for communities to influence flood risk management	4.1.1 - Identify the significant landowners, community groups, stakeholders by catchment.
	4.1.2 - Engage with identified landowners regarding riparian watercourse management responsibilities, requirement for watercourse consents and best practice agricultural land management to influence surface water runoff.
	4.1.3 - Continue focused enforcement by Riparian Drainage Project Officers of riparian asset owners to ensure watercourses which are contributing to highway flooding are maintained.
	4.1.4 - Develop a flooding toolbox with guidance and communication material for parish councils.
	4.1.5 - Promote and advocate for community flood wardens in 'at-risk' communities, through coordinated engagement activities such as parish council meetings.
	4.1.6 - Continued promotion and delivery of Operation Watershed to deliver community-led flood projects.
4.2 - Improve understanding and adoption of flood preparedness at a community scale	4.2.1 - Signpost guidance for community-level preparedness in vulnerable areas, including property level resilience on WSCC website and community hubs.
	4.2.2 - Attend community events via collaboration with WSCC Engagement and Communities teams and encourage attendance of RMAs.
	4.2.3 - Collaborate with schools to develop awareness around flood risk through STEM events.
	4.2.4 - Implement learning outcomes from the Rapid Adaptation Pathways Assessment[24] pilot study for better adaptation planning.

Funding

There is no single allocated source of funding for flood risk management in West Sussex. Funding often comes from a combination of sources including partnership funding opportunities, grants and allocation. This is required to successfully deliver flood resilience and resistance schemes. Some examples of potential funding opportunities have been outlined below:

[24] The Association of Directors of Environment, Economy, Planning & Transport (ADEPT) and the Environment Agency have developed a Rapid Adaptation Pathway Assessment (RAPA) toolkit. This focuses on flood and coastal erosion risks and is aimed at local authorities, allowing them to undertake a basic rapid adaptation pathways assessment approach in their places and partnerships. West Sussex is a pilot location for RAPA, with a focus on Adur & Worthing.

Local Government Funding

- LLFAs are able to apply for revenue to fulfil their statutory duties. Since April 2013, the funding can be used to develop their Local Flood Risk Management Strategy, alongside collaboration projects with stakeholders and relevant authorities.
- To fund these duties amongst others, the final local government finance settlement for 25/26 has made £69.4 billion available for local government in England (for all local authorities and for all departments within a local authority). Local authorities have the authority to decide how this funding can help meet local priorities in their area.

RFCC Allocation

- The Regional Flood and Coastal Committees (RFCCs) were established by the Environment Agency under the Water Management Act (2010) to guide coastal erosion and flood risk management. West Sussex falls under Southern and Thames RFCCs. The RFCC provide/approve funding to support flood risk management schemes.
- Some recent examples of funding granted is the over the wall drainage study which aimed to reduce the risk of surface water flooding for coastal communities in Shoreham by demonstrating what works well and what doesn't work in terms of over the wall drainage in waterfront developments.

FDGIA Allocation

- Flood Defence Grant-in-Aid could be applied for to support coastal erosion risk management projects. Projects were intergated into four categories under outcome measures 1-4. A brief summary is listed below:
  - Outcome Measure 1 - All benefits arising as a result of the investment, less those valued under the other outcome measures.
  - Outcome Measure 2 – Households moved from one category of flood risk to a lower category.
  - Outcome Measure 3 – Households better protected against coastal erosion.
  - Outcome Measure 4 – Statutory environmental obligations met through flood and coastal erosion risk management.
- Funding is allocated based on the value of qualifying benefits under Outcome Measure 1-4.

Operation Watershed Funding Grant

- A service in West Sussex which has been established specifically to address flood related issues. Operation Watershed Active Communities fund offers groups the

opportunity to apply for funding to support local projects. Operation watershed has annual capital allocation.

- The grant can be applied for by established community groups such as parish councils or residents' associations. It is not available to commercial organisations, businesses and most forms of limited companies.
- Some recent examples of funding granted is West Dean Parish Council (Flooding along B2141 Chilgrove - Improvements of an existing culvert), West Chiltington Parish Council (East street flooded property ditch improvements) and Compton Parish Council (B2146 West Marden - Highway improvements).

Wider environmental benefits

WSCC has a Climate Change Strategy for 2020 to 2030[25]. It incorporates the vision that WSCC becomes carbon neutral and climate resilient, enabling positive actions and behaviours across the county to mitigate and adapt to climate change. The Strategy is strongly aligned to both the mitigation and adaptation ambitions of the Climate Change Strategy. Implementation of projects to better protect communities, properties, and the natural environment must account for present and future risks. The Environment Agency's Climate Change Allowances mandate the consideration of future changes to weather events relating to climate changes.

Local Nature Recovery Strategy (LNRS)

WSCC is currently developing a LNRS for West Sussex. The draft LNRS, which will be published in autumn 2025 for public consultation, will identify principles for nature recovery. The Strategy aligns with several of the principles. The proposed catchment-based approach will support working at scale to support ecosystems and natural processes, such as natural hydrological attenuation of rainfall. Measures to improve awareness and action amongst rural riparian asset owners can align with showcasing and supporting action for nature across our farmed landscapes. The prioritisation of NBS and SuDS to manage surface water flood risk can act to bring nature into everyday life, providing places for people to benefit from and engaged with nature.

Biodiversity Net Gain (BNG)

In 2023, mandatory requirements relating to securing BNG through the planning system were introduced in England. The LFRMS objectives towards sustainable development and promotion of NBS to flood risk, can support WSCC in its implementation of BNG requirements, whilst biodiversity enhancement and conservation is likely complimentary to the flood risk management measures outlined in the Strategy.

Nature-Based Solutions (NBS)

Adopting a focus on NBS, or actions that use natural or modified ecosystems to reduce the risk of flooding, the Strategy supports WSCC's ambitions towards carbon neutrality. Generally, NBS have lower embodied carbon within their design, while the use of vegetation and trees to manage flood risk provides natural sequestration of carbon dioxide. The objectives of the Strategy to promote the adoption of NBS, where feasible, are complimentary to success outcomes related to managed realignment of

[25] West Sussex County Council, Climate Change Strategy 2020-2030, 2020

our coastline. The impact of water quality and quantity pressures on water dependent sites can be alleviated by the adoption of effective SuDS and drainage interventions, while a focus on upstream catchment interventions to manage ordinary watercourse and surface water flood risk can support ambitions for the inclusion of NBS in the farmed landscape. NBS can also have benefits in water stressed areas and improve water availability during droughts. For example, wetlands can provide water storage and better recharge groundwater aquifers.

Climate and Resilience Strategy (Climate Action and Adaptation Plan)

This Strategy has identified the need for targeted action on high-risk flood risk assets and infrastructure. This directly aligns to Action 17 of the Climate Action and Adaptation Plan, in managing and adapting to risks to service and delivery of duties, and wider climate resilience.

Monitoring and review

Monitoring Process

To ensure the Strategy is successful, it is important to review and monitor the progress of the actions against the overarching objectives and measures. Progress on the actions identified within the Strategy will be reported on an annual basis.

Future updates to the Strategy

A formal review of the Strategy will take place every five years, in accordance with the FWMA 2010, with the next review due in 2030 to update the Strategy. The action plan will remain dynamic, with regular review of progress and relevance. Measures and actions will be reviewed and amended if required, based on both progression and priorities within WSCC and partners.

In addition to this, updates to the Strategy may be made more regularly following significant changes in:

- Legislation, including changes to policy, which may affect roles and responsibilities.
- Funding arrangements, which may affect priorities within WSCC and partners.
- New data and evidence, which changes the understanding or nature of local flood risk.
- A significant flood event.
- Local Government Devolution and Reorganisation, which are likely to alter RMA roles and responsibilities, in particular, the remit of WSCC and District & Borough Councils.

Next Steps

This Strategy presents the commitment of WSCC to work with RMAs and other key stakeholders over the next five years and beyond, to reduce and manage flood risk across the county. Implementation and delivery of the Action Plan will support the approach of the National FCERM Strategy in ensuring we can better adapt to and mitigate against flood risk and climate change.

Appendices

See separate documents on website.

west sussex county council