Draft Local Flood Risk Management Strategy 2021 – 2026

West Sussex Lead Local Flood Authority

Incident Reporting

To report an emergency please dial **999**.

To report flooding from rivers or the sea please contact the Environment Agency incident hotline on **0800 80 70 60**.

To report surface water flooding or flooding of roads please call the contact centre of West Sussex County Council on **01243 642105**.

To help during an emergency, contact your Parish or Town Council to see what actions are underway. **Contact details are on West Sussex County Council website.**

PARTNERS OF THE WEST SUSSEX LOCAL FLOOD RISK MANAGEMENT STRATEGY

Contents

Executive Summary

This local flood risk management strategy (2021 – 2026) sets out how West Sussex County Council undertakes its flood risk management responsibilities to meet the requirements of the Flood and Water Management Act 2010. Following the 2007 floods and the independent Pitt Review, the Act transposed local flood risk management into UK law. As part of this fundamental change in flood risk management responsibilities, West Sussex County Council became a Lead Local Flood Authority and is required to establish a strategy to define how local flood risk will be managed across the county.

Since 2010 flood risk in West Sussex has been managed jointly between a number of Risk Management Authorities that include West Sussex County Council, the Borough and District Councils, the Environment Agency, the Highway Authority, Thames Water and Southern Water. This strategy explains the role that each of these organisations play in managing flood risk. To ensure flooding is managed in an integrated way across these organisations, the strategy is inclusive and considers all functions and sources of flooding. The intention of this is to recognise where flood risk responsibilities coincide, and where partnership working, and jointly funded projects could be undertaken.

Working in partnership is integral to the local flood risk management strategy. Regular communications between all Risk Management Authorities are central to this partnership approach. Our management of flood risk fully accounts for the work of neighbouring Lead Local Flood Authorities and other Risk Management Authority partners, so responses are joined up, and not prohibited by administrative borders.

When preparing the strategy West Sussex County Council identified 25 Priority Areas within the county. These have been classified using the Risk of Flooding from Surface Water dataset which shows the flooding from 'surface water runoff' that is the County Council's responsibility. The Priority Areas have also been considered by local experts from our Strategy Partner organisations, including the Borough and District Councils, the County Council, Water Companies, the South Downs National Park Authority and the Environment Agency. An action plan has been developed so that West Sussex County Council can track progress and the location of investment over the lifetime of the strategy. The prioritised locations will promote actions in the areas and allow Risk Management Authorities to consider partnership funding and implementation. Difficult decisions still need to be taken, as the allocation of funding will vary from year to year.

The Flood and Water Management Act 2010 stipulates that all Risk Management Authorities are expected to exercise their flood and coastal erosion risk management functions; and be consistent with the national strategy. As a result, the aims and objectives of our strategy are directly aligned to the objectives set out in the Environment Agency's National Flood and Coastal Erosion Risk Management Strategy for England. This was adopted on 25th September 2020. The national strategy provides a framework for guiding the operational activities and decision making of practitioners supporting the direction set by government policy in England and sets out the long-term delivery objectives the nation should take over the next 10 to 30 years. It also

sets out shorter term, practical measures, Risk Management Authorities should take working with partners and communities.

The aims of the Local Flood Risk Management Strategy have been divided into six objectives, which have been aligned with the national objectives. These are:

1. **Adaptation:** work with communities to implement adaptive approaches to enhance the natural and built environment
2. **Resilience:** support communities to help them to become more resilient to future flood risk
3. **Collaboration:** work with all Risk Management Authorities and stakeholders to achieve a consistent, co-ordinated and risk-based approach to flood risk management
4. **Opportunities:** Seek opportunities (including funding and research and development) from existing and new sources to invest in making communities resilient to flooding
5. **Evidence:** develop a strategic understanding of flood risk from all sources
6. **Sustainability:** contribute positively to sustainable growth and support environmental net gain by influencing wider development, redevelopment and regeneration plans to deliver flood risk benefits

The action plan that forms part of the Local Flood Risk Management Strategy sets out specific actions that we will undertake in partnership with other Risk Management Authorities, to manage local flood risk within the county from 2021 – 2026.

It is the principal aim of this strategy to oversee the direct reduction in local flood risk for residents and to make communities more resilient to future flood risk. These aims will be met by the projects that are taken forward in future work programmes, and by the actions set out in the action plan.

Investigations, new information, changing budgets and contributions, and subsequent flood events will alter what happens over the lifetime of the strategy, and minor changes may be made to the documents including the flood maps. Regular reviews of progress against the action plan will be conducted so that we can monitor the flood risk situation and adjust priorities, as necessary.

The strategy covers the period 2021 - 2026 and will be periodically reviewed and updated every five years. Any variations or amendments will be actioned as stipulated in Chapter 6: Implementation, monitoring and review.

Chapter 1: Introduction

This local flood risk management strategy (2021 – 2026) sets out how West Sussex County Council addresses management of local flood risk and undertakes its flood risk management responsibilities that are a statutory requirement of the Flood and Water Management Act 2010.

The local flood risk management strategy must:

- assess the local flood risk – this is set out in Chapter 3: and Appendix F;
- set out objectives for managing local flooding – these are set out in Chapter 4:; and
- list the costs and benefits of measures proposed to meet these objectives, and how the measures will be paid for – these are set out in the action plan in Appendix I.

It is the principal aim of this strategy to oversee the direct reduction in local flood risk for residents. This aim will be met by the projects that are taken forward in future work programmes, and by the actions set out in the action plan.

The key focus for the next five years is to carry out improvements to address known local flooding problems. Within this strategy, Priority Areas have been identified using the national Risk of Flooding from Surface Water (RoFSW) mapping and historic flood risk data. Precedence will be given to investigating and managing the flood risk in these Priority Areas. However, any value for money project with positive benefits, irrespective of its location, will be considered. In times of austerity, funding capital works is going to be challenging, especially where projects are required to have some partnership contributions in order to proceed. It may be that in many areas the risk of flooding is managed through early flood warnings and local resilience measures. Local authorities will also help communities take action to help themselves and carry out their own riparian responsibilities.

Local flood risk is defined in the Flood and Water Management Act (2010) as meaning flood risk from:

a. surface runoff – which is defined as rainwater (including snow and other precipitation_ which is on the surface of the ground (whether or not it is moving) and which has not entered a watercourse, drainage system or public sewer
b. groundwater – which is defined as all water which is below the surface of the ground and in direct contact with the ground of subsoil; and
c. ordinary watercourses - which is defined as a watercourse which does not form part of a main river and which includes lakes, ponds or other areas of water which flow into an ordinary watercourse.

A glossary of technical terms can be found in Appendix B at the end of this report.

1.1 The strategy partners

Within West Sussex there are a range of different organisations that have responsibility for flood risk management. In developing this strategy, West Sussex County Council worked in partnership with Risk Management Authorities and Local Planning Authorities to achieve an effective strategy and action plan for tackling and reducing the impacts of flooding across the county. The partners included in the development of this strategy were as follows:

- Adur and Worthing Councils (made up of Adur District Council and Worthing Borough Council)
- Arun District Council
- Chichester District Council
- Crawley Borough Council
- Environment Agency
- Horsham District Council
- Mid Sussex District Council
- South Downs National Park Authority
- Southern Water
- Thames Water
- West Sussex County Council

1.2 Supporting documents

1.2.1 National Flood and Coastal Erosion Management Strategy for England

The National Flood and Coastal Erosion Risk Management Strategy for England was published in July 2020, following a public consultation in autumn 2019. The strategy sets out 20 strategic objectives, 18 of which are under the three ambitions:

Future risk and investment

- Between now and 2025 the Environment Agency will have better evidence to inform future risk and investment needs for managing all sources of flood and coastal change.
- Between now and 2030 Risk Management Authorities will make greater use of funding and financing from non-public sector sources to contribute to the investment needs of flood and coastal resilience.

Ambition 1. Climate resilient places

1.1. Between now and 2050 the nation will bolster its resilience to flooding and coastal change.

1.2. Between now and 2050 Risk Management Authorities will help places plan and adapt to flooding and coastal change for a range of climate scenarios.

1.3. Between now and 2050 Risk Management Authorities will help coastal communities transition and adapt to a changing climate.

1.4. Between now and 2030 Risk Management Authorities will use nature based solutions and improve the environment through their investments in flood and coastal resilience.

1.5. Between now and 2030 Risk Management Authorities will work with farmers and landowners to help them adapt their businesses and practices to be resilient to flooding and coastal change.

Ambition 2.Today's growth and infrastructure – resilient in tomorrow's climate

2.1. Between now and 2030 all new development will contribute to making places resilient to flooding and coastal change.

2.2. Between now and 2030 all Risk Management Authorities will encourage environmental net gain in all new development to support resilience to flooding and coastal change.

2.3. Between now and 2030 Risk Management Authorities will support investments to manage flooding and coastal change that enables growth in a sustainable and climate resilient way.

2.4. Between now and 2040 Risk Management Authorities will work with the finance sector and other partners to mainstream property flood resilience measures and to 'build back better' after flooding.

2.5. Between now and 2030 owners of flood and coastal defences will understand and take responsibility for achieving flood and coastal resilience.

2.6. Between now and 2030, owners and operators of large raised reservoirs will ensure they are safe in a changing climate.

2.7. By 2030 water companies will plan for their infrastructure to be resilient to flooding and coastal change.

2.8. Between now and 2050 Risk Management Authorities will work with national infrastructure providers to contribute to more flood and coastal resilient places.

Ambition 3.A nation ready to respond and adapt to flooding and coastal change.

3.1. Between now and 2050, people will understand the potential impact of flooding and coastal change on their lives and livelihoods and will take action to reduce that impact.

3.2. Between now and 2030 people will receive the information and support they need to transform how the nation better prepares and responds to flooding and coastal change.

3.3. Between now and 2030 people and businesses will receive the support they need from all those involved in recovery after flooding so they can get back to normal quicker after flooding.

3.4. Between now and 2030 the Environment Agency will have an oversight of skills and capabilities across the flooding and coastal change sector to identify gaps and future needs.

3.5. Between now and 2030 the nation will be recognised as world leader in researching and managing flooding and coastal change.

1.2.2 Surface Water Management Action Plan

This Surface Water Management Action Plan sets out the steps the government is taking, with the Environment Agency and others, to strengthen surface water management by improving understanding of the risks and making sure those responsible can manage them effectively.

It covers a number of actions to both improve our understanding of the risks and strengthen delivery. These include:

- Improving risk assessment and communication
- Making sure infrastructure is resilient
- Clarifying responsibilities for surface water management
- Joining up planning for surface water management
- Building local authority capacity.

1.2.3 The West Sussex County Council Our Council Plan 2021 - 2025

The West Sussex County Council Our Council Plan sets out how we shape our services between 2021 and 2025. The Plan identifies four priorities:

- Keeping people safe from vulnerable situations
- A sustainable and prosperous economy
- Helping people and communities fulfil their potential
- Making the best use of resources

1.2.4 West Sussex County Council Climate Change Strategy 2020 - 2030

The West Sussex County Council Climate Change Strategy (2020-2030) states our vision that "in 2030, West Sussex County Council is carbon neutral and climate resilient, using our limited resources wisely. West Sussex County Council has enabled positive actions and behaviours across our county to mitigate and adapt to climate change". The strategy makes five key commitments:

- We will mitigate the effects of climate change by reducing carbon emissions
- We will adapt and be resilient to a changing climate
- We will source and use resources sustainably
- We will support and grow our local green economy
- We will transform how we work

The successful implementation of this local flood risk management strategy is integral to fulfilling our climate change commitments.

1.2.5 Environmental assessment of the strategy

A Strategic Environmental Assessment (SEA) will be undertaken to ensure that significant environmental effects arising from this strategy are identified, assessed and mitigated.

The Strategic Environmental Assessment is a generic tool that was introduced by the European Union Directive 2001/42/EC. The objective of the Strategic Environmental Assessment Directive is to "to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development (Article 1)". This requires national, regional and local authorities in Member States to carry out a strategic environmental assessment on certain plans and strategies that they promote, such as this strategy.

Monitoring of the significant environmental effects of implementing the strategy will be undertaken to comply with Strategic Environmental Assessment Directive - Article 10.1, to ensure that any unforeseen adverse effects of the strategy are recognised and dealt with.

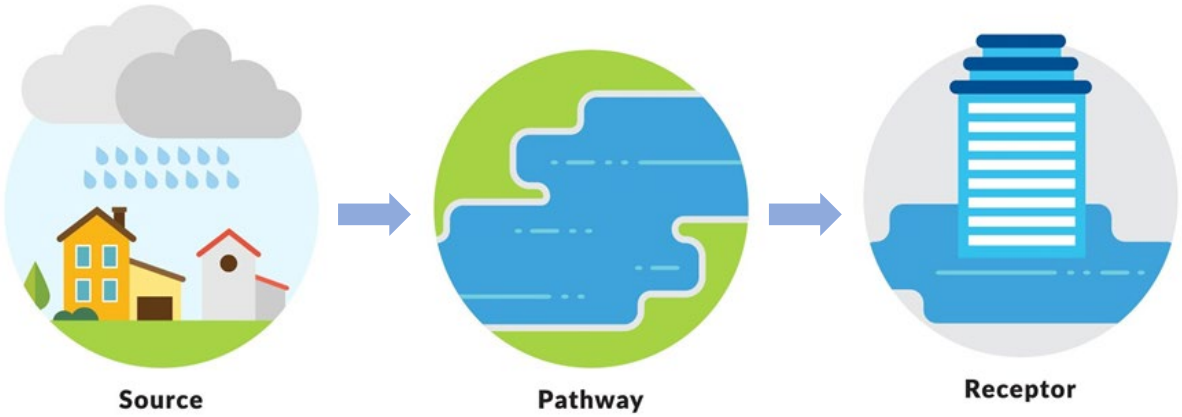
1.3 Flood risk and likelihood

Flooding is a hazard as it has the potential to cause harm to human health and life, and effect the natural and built environment.

The term 'risk' acknowledges the actual harm caused and is different to a hazard.

Flood Risk is a combination of the likelihood (or probability) of a flood event occurring and the severity of its impacts:

Flooding is only a risk when the flood water affects people, property, agricultural land or another 'receptor'. The 'source' of the flooding could be from groundwater, surface water, ordinary watercourses, sewers, main rivers or the sea. The route or path the flood waters take is known as the pathway:



Risk captures the severity of, or related consequences produced by, a flood event. Impacts can be social, economic and environmental, for example the number of properties flooded and the level of associated economic damages. The consequences of a flood depend on the level of exposure and the vulnerability of those people or places affected.

Flood risk is often measured by a percentage probability or by stating how regularly it will occur. Many everyday practitioners refer to a 1% Annual

Exceedance Probability (AEP) flood, or 1 in 100-year flood for example, but it is most important to understand that this does not mean that the flood will only happen once every 100 years. Instead, the chance of a flood of this magnitude occurring in any given year is 1% or 1 in 100). Therefore, there is a chance that two events of this magnitude could happen within a single year. We may also experience any number of smaller flood events between the larger events.

To explain this information in another way the Bognor Regis rainfall event in June 2012 saw over 100mm of rain fall in 24 hours (the average annual rainfall for this area is approximately 600mm). This downpour was calculated to be a 1 in 200-year rainfall event. In other words, the event had a 0.5 % annual probability of occurring (0.5% AEP) or there is a 1 in 200 chance of an event of the same severity being experienced each and every year.

Rainfall events of a given return period can consist of torrential rain over a short period of time, or prolonged showers over a longer period. For example, in the UK, if 35mm of rainfall falls within one hour this might be a 1 in 50-year (2% AEP) event. However, a different rainfall event in which 60mm falls over four hours could have the same probability. The important factors are the amount of rain that has fallen, and over how much time.

Rainfall rates during a storm event can also vary greatly from one town to another. In 2012 Bognor Regis recorded over 100mm in 24 hours, whereas inland at Itchingfield and Haywards Heath the totals were much less. It is important to interpret the surface water flood risk maps with this in mind because they model a uniform rainfall event occurring everywhere in the county at the same time. This is necessary to see where the biggest problems may be experienced, which then informs our work programme. In reality, during a storm event, it is more likely we will see certain towns and areas flooded as predicted on the flood maps while other areas receive significantly less rainfall and so flood to a much smaller extent.

Drainage systems and flood defences are designed to protect against a certain magnitude event occurring. Typically, surface water drains and sewers are designed to cope with a 1 in 30-year event (3.3% AEP), whilst river and tidal defences are generally built to protect against a 1 in 100-year (1% AEP) or 1 in 200-year (0.5% AEP) event, respectively. However, many older drainage systems were designed for significantly smaller storm events. The dilemma in flood risk management is how much capacity do you make available in drainage systems to account for very rare events, as it is not cost effective to install systems with a huge capacity that is hardly ever used. This is one of the cost benefit choices that Risk Management Authorities need to make.

1.4 Enhancements from the previous strategy

Since the previous strategy was produced there have been significant improvements in available datasets and computational power. Consequently, while the previous strategy took into account flooding from surface water, fluvial (rivers) and coastal (sea) sources, only the 1 in 200-year (0.5% AEP) event was used. This assessment now takes account of properties at risk of flooding from surface water for the 1 in 30-year (3.3% AEP) event, the 1 in 100-year (1% AEP) event and the 1 in 1,000-year (0.1% AEP) event. The location, type and numbers of properties are taken from the National Receptor Dataset (NRD, 2014). This represents a significant enhancement over the previous approach as

it allows the council to primarily focus on risk from surface water flooding and means consideration can be given to the likely frequency of flooding to each property.

While both the previous approach and the current approach use the National Receptor Dataset (NRD, 2014) to calculate the numbers of properties at risk of flooding, the previous approach was based on an assessment of the flood risk within a specified distance of each NRD point (a buffer zone). This is considered to be a cautious approach leading to a higher number of properties identified to be at risk of flooding. As a result, the approach taken for this strategy has used the building outlines from the Ordnance Survey MasterMap dataset to identify where flood extents intersected the property footprint. Consequently, the number of properties identified to be at risk of flooding are not directly comparable between this cycle of the strategy and the previous cycle.

The figures calculated for both this strategy and the previous cycle included businesses as well as residential properties, and flats which were above ground floor level which would be indirectly affected by flooding.

1.5 Achievements made during the previous strategy

Over the period of the previous strategy West Sussex County Council made significant progress towards achieving the objectives that were set out in the document. Most notably Surface Water Management Plans have been completed for Easebourne, Lancing, Upper Lavant, Lidsey and the Manhood Peninsula, the West Sussex Flood Resilience Community Pathfinder Scheme was completed along with Operation Watershed and updates to the Preliminary Flood Risk Assessment and West Sussex LLFA Policy for the Management of Surface Water have been undertaken.

Details of some of these key achievements, along with ongoing projects, are listed below:

Shoreline Management Plans Refresh (ongoing) - these are developed by the Coastal Groups (the Southern Coastal Group and South East Coastal Group). They identify the most sustainable approach to managing the flood and coastal erosion risks to the coastline over the short-term (0 to 20 years), medium term (20 to 50 years) and long term (50 to 100 years). The Shoreline Management Plans are currently undergoing a refresh, and this may lead to changes to policies.

Catchment Flood Management Plans (consultee) – these give an overview of the flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years. They consider all types of inland flooding, from rivers, groundwater, surface water and tidal flooding as well as the impacts of climate change, the effects of how we use and manage the land and how areas could be developed to meet our present day needs without compromising the ability of future generations to meet their own needs. Catchment Flood Management Plans are produced by the Environment Agency in consultation with key stakeholders.

Surface Water Management Plans (completed and published) – these are non-statutory plans which preceded the introduction of the Flood and Water Management Act 2010. These plans outline the preferred surface water management strategies in a given location that are identified based on flood risk

from a variety of sources as a result of heavy rainfall. A Surface Water Management Plan (SWMP) study is undertaken in consultation with key local partners who are responsible for surface water management and drainage in their area. Partners work together to understand the causes and effects of surface water flooding and agree the most cost-effective way of managing surface water flood risk for the long term.

West Sussex County Council Report on June 2012 Flood Event (completed) – following flooding to 780 properties in West Sussex in June 2012, West Sussex County Council as LLFA formed a multi-agency group to investigate the event. The report focuses on the events of 10th to 12th June 2012, identifying the causes and impacts of the flooding that occurred, in addition to setting out a number of recommendations for further work or investigation.

Flood Resilience Community Pathfinder Scheme (completed) – West Sussex was included in a £5 million national pathfinder scheme to support innovative flood defence schemes in 2013. In West Sussex, this included developing a community centred approach to flood resilience by proactively engaging and empowering individuals on flood risk. It also included developing and implementing sustainable solutions owned by communities and encapsulated in Community Flood Resilience Action Plans.

The Water Framework Directive work schedules (consultee) – through working in catchment partnerships such as the Arun and Western Streams and Adur and Ouse catchment partnerships, the LLFA is able to provide feedback on local issues. This supports the Environment Agency's role in the delivery of requirements set out under the Water Framework Directive by the European Union.

West Sussex Country Council Highways drainage works (ongoing) – as both Highway Authority and LLFA, West Sussex County Council will carry out works to improve existing drainage infrastructure across the county, where appropriate. These actions are published online, this includes actions which have been identified as completed and actions that are currently outstanding.

Asset management works (ongoing – consultee/ managing consenting) – Borough and District councils carry out a consenting role as part of a delegated arrangement with WSCC. This includes identifying whether works to an ordinary watercourse may require consent and whether the works could have an adverse impact on flood risk.

Land drainage actions identified through investigations and inspections (ongoing – enforcement panel meets periodically) – working in partnership with the Local Planning Authorities, West Sussex County Council chairs an enforcement panel that meets periodically to discuss land drainage issues throughout the county. The panel considers issues that have been identified through ongoing inspections and investigations and whether enforcement action may be necessary.

'Over the wall' drainage project (ongoing) – West Sussex County Council secured £30,000 in local levy funding to support a partnership led project investigating the feasibility, design challenges and potential benefits of directing rooftop drainage for waterfront developments over the sea wall rather than to traditional underground gravity drainage networks.

Preliminary Flood Risk Assessment update (completed) – the Preliminary Flood Risk Assessment was reviewed and updated in 2017 in line with national guidance from the Environment Agency. This including the identification of two new nationally significant Flood Risk Areas (FRAs) within West Sussex, which are Crawley and Worthing.

West Sussex LLFA Policy for the Management of Surface Water (updated) – West Sussex County Council published a policy document setting out the requirements that the LLFA has for drainage strategies and surface water management provisions associated with applications for development. It is consistent with the Non-Statutory Technical Standards for Sustainable Drainage (as published by Defra in March 2015) and sets out the policy requirements West Sussex County Council has for sustainable drainage.

Operation Watershed (completed) – following flooding in the county during 2012/13, West Sussex County Council (WSCC) resolved to address issues with the drainage infrastructure. The response was the creation of Operation Watershed which supported local communities interested in delivering capital projects to reduce the risk and impacts of flooding in their area. Operation Watershed has funded over 360 projects to a value in excess of £3.3m and worked with nearly 150 groups.

A number of fluvial and coastal schemes are currently being progressed across the county by the Environment Agency and Borough and District Councils. The schemes include strategy development, flood alleviation works, and ongoing management of key assets including beach management, outfall and tidal walls. They have all achieved funding through the partnership funding approach. Due to their priority some projects have secured 100% funding because of the significant level of protection they provide a community. In other cases a contribution has been required in order to unlock the funding.

1.6 What is being done in my area?

The best way to identify projects or investigations in your area is to contact your local Borough or District Council or the County Council who will be able to tell you what activities may be planned in your area.

A full list of the current flood and coastal risk management schemes approved by the Southern Regional Flood and Coastal Committee can be found on the Gov.uk website.

Chapter 2: Roles and Responsibilities

This chapter sets out the roles and responsibilities of Risk Management Authorities (section 2.3) and stakeholders and supporting partners (section 2.4) in relation to flood risk management.

Throughout this chapter the terms 'permissive powers' and 'duties' are used.

The term 'permissive powers' relates to certain legal powers. A Risk Management Authority may choose to intervene in the public interest, where they believe works would be beneficial and / or economically viable but does not have the legal duty to do so. This recognises that Risk Management Authorities have finite resources and so must prioritise how to use them.

The term 'duty' or 'duties' relates to a legal obligation that is imposed, requiring adherence to a standard or legislation.

2.1 Background and National Context

In England, 5.2 million properties are at risk of flooding with numbers rising over future decades. The Flood and Water Management Act 2010 requires upper (tier 1) and unitary councils to be Lead Local Flood Authorities and manage surface water, groundwater and ordinary watercourses. The Flood and Water Management Act is an important part of how the Government responded to the 2007 floods. The subsequent Pitt Review (2008) recommended urgent and fundamental changes to the way the country was adapting to increased flooding.

Lead Local Flood Authorities and Borough and District Councils have effectively joined the Environment Agency in a partnership to manage flood risk across all sources. Any combination of sources of flooding could exist in an area so partnership working, and joint projects are envisaged.

The national strategy and local strategy (this document) are at the forefront of this approach, putting innovative new ways of working into practice. The local strategies across England set out how people, communities, business and the public sector should work together. They are enabling Lead Local Flood Authorities and other Risk Management Authorities to plan and prioritise for the future. For details of how the local strategy aligns with other flood risk management documents see

A new national strategy was consulted on in 2019 and was published in July 2020. The Strategy provides a framework to guide the activities of Risk Management Authorities involved in FCERM work.

The Strategy's long-term vision is for: a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100.

The new national strategy contains three long term ambitions, underpinned by evidence about future risk and investment needs:

- Climate resilient places
- Today's growth and infrastructure – resilient in tomorrow's climate
- A nation ready to respond and adapt to flooding and coastal change

The Strategy sets out the long-term delivery objectives the nation should take over the next 10 to 30 years as well as shorter term, practical measures Risk Management Authorities should take working with partners and communities.

The Strategy's measures are either a reaffirming of existing activities, recognition of existing and new statutory requirements or voluntary funded actions. All measures are therefore cost neutral, in that they do not lead to cost increases for Risk Management Authorities.

In the March 2020 budget, the government announced a new £5.2 billion programme of funding for flood risk and coastal erosion projects from 2021 to 2027. The government published a policy statement in July 2020, which is informed by the national strategy. This sets out the government's long-term ambition to create a nation more resilient to future flood and coastal erosion risk.

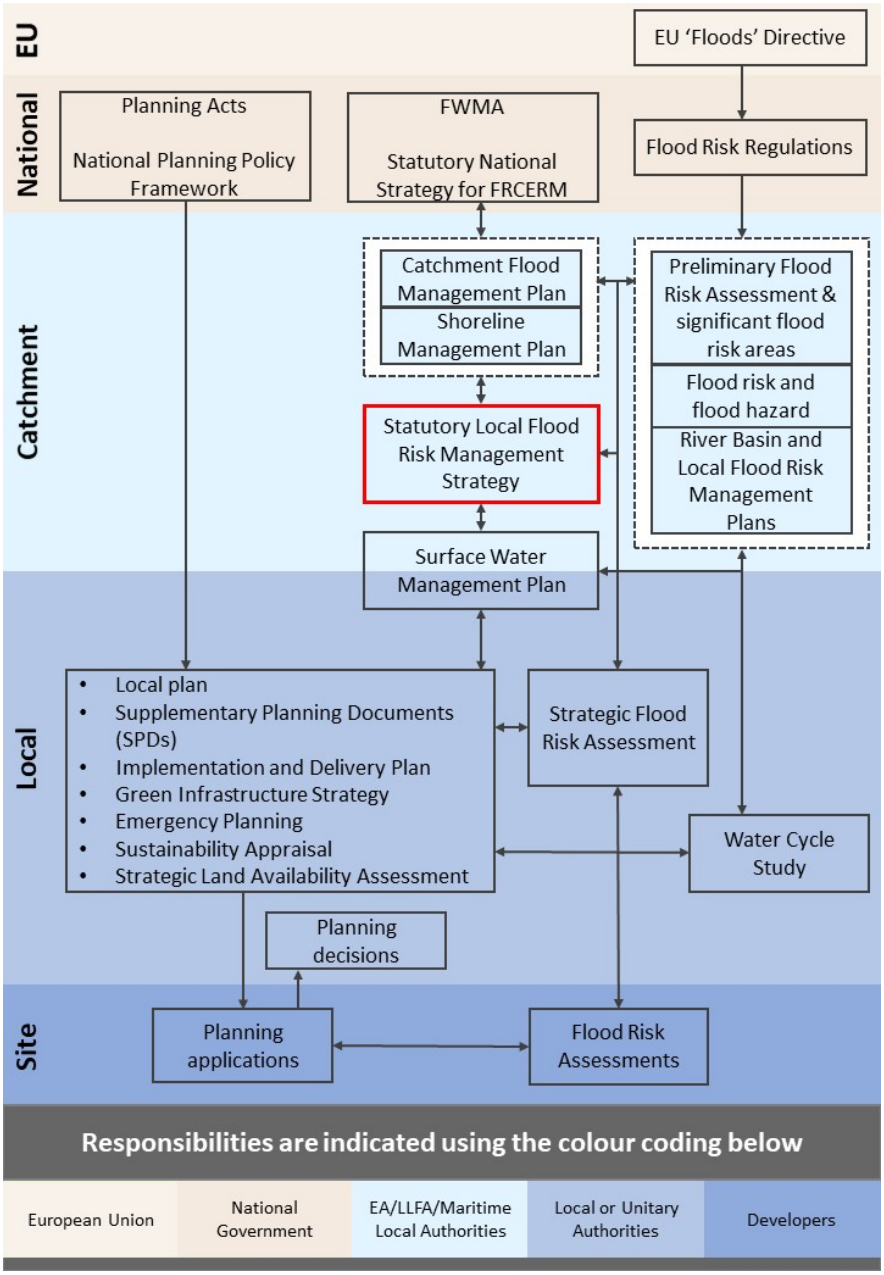


Figure 2-1: Responsibilities for key flood risk documents

Under the Flood and Water Management Act 2010, all Risk Management Authorities are expected to exercise their flood and coastal erosion risk management functions consistently with the national strategy and to exercise all other functions that may affect flooding or coastal change having regard to the national strategy.

West Sussex County Council has the responsibility for developing, maintaining, applying and monitoring the implementation of a local flood risk management strategy within the county. Local flood risk management strategies produced by lead local flood authorities must be consistent with the national strategy.

2.2 Local Context

West Sussex County Council does not work in isolation. A range of partner authorities known as Risk Management Authorities (RMAs) also have flood and coastal erosion management duties, powers and responsibility. The development of this strategy required input from designated flood RMAs. In West Sussex, the other flood RMAs are the Environment Agency, Highways England, Southern Water Services Ltd, Thames Water Utilities Ltd and the seven Borough and District Councils.

Southern Water Services Ltd and Thames Water Utilities Ltd are responsible for managing public sewers, and for resolving flooding issues where there is no significant interaction with other types of flooding. The seven Borough and District Councils are an important part of flood risk management and are Risk Management Authorities in their own right. Each council takes an active role in assisting the Lead Local Flood Authority in performing some Flood and Water Management Act duties.

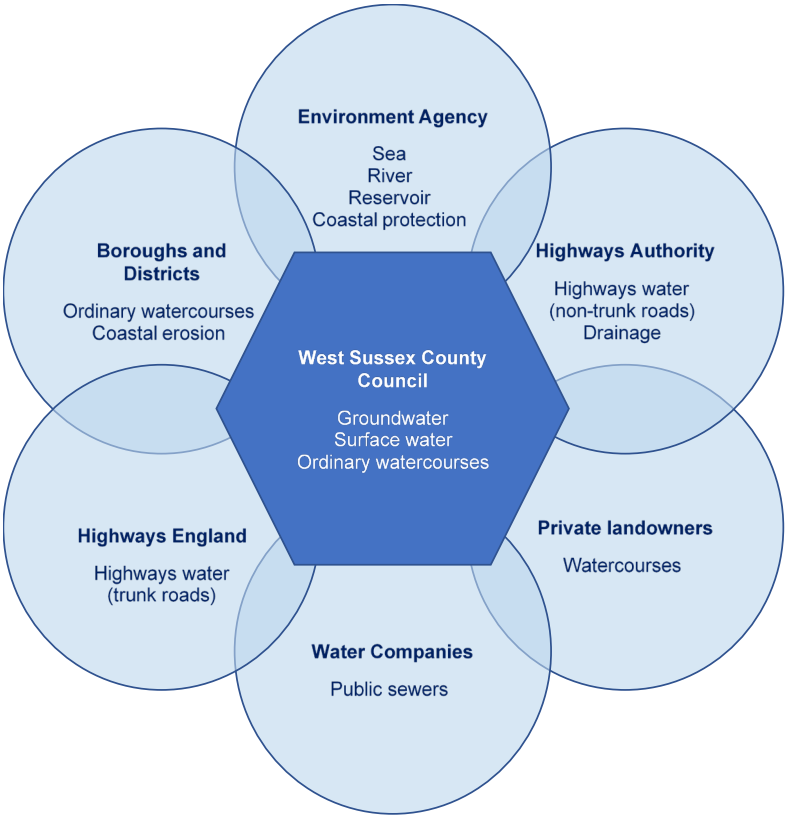


Figure 2-2: Who manages what in West Sussex?

2.3 Risk Management Authority responsibilities in relation to flood risk

Key responsibilities of the Risk Management Authorities are set out within this section. For further details of the responsibilities see Appendix C.

2.3.1 West Sussex County Council (Lead Local Flood Authority)

As Lead Local Flood Authority, West Sussex County Council has the lead operational role in managing the risk of flooding from surface water and groundwater.

The Council's key duties, as specified within the Flood and Water Management Act (2010) are as follows:

- Strategic leadership – LLFAs are required to develop, apply, maintain, and monitor a strategy for local flood risk management
- Investigate flood incidents – LLFAs have a duty to investigate flooding incidents within their area, to the extent that the LLFA considers it necessary or appropriate
- Maintain an asset register – LLFAs must prepare and maintain a register of structures and features which are likely to have a significant effect on flood risk
- Consenting and enforcement – Consent is required from the LLFA (delegated to LPAs in West Sussex) before works can be carried out on a watercourse that is not a Main River. Enforcement may be carried out where required.

The Council's other roles and responsibilities include:

- preparing and maintaining a preliminary flood risk assessment, flood hazard maps, flood risk maps and flood risk management plans;
- co-operation with all relevant Risk Management Authorities in the exercise of their flood and coastal erosion risk management functions;
- taking the lead on preparing Surface Water Management Plans;
- permissive power under section 25 of the Land Drainage Act 1991 to ensure that appropriate maintenance is carried out by riparian landowners on ordinary watercourses;
- power to undertake works either at the request of a Borough or District Council or after not less than six weeks' written notice;
- permissive power to designate structures and features with flood risk significance, requiring owners to seek consent from the council to alter, remove or replace these;
- performing as a 'category one responder' to flood incident under the Civil Contingencies Act 2004, including dealing with recovery and resulting homelessness;
- statutory consultee on Sustainable Drainage Systems;

- contributing towards the achievement of sustainable development in the exercise of flood risk management functions and to have regard to any ministerial guidance on this topic.

2.3.2 West Sussex Highways Authority (part of West Sussex County Council)

Highways authorities have the lead responsibility for providing and managing highway drainage and roadside ditches under the Highways Act 1980. The owners of land adjoining a highway also have a common-law duty to maintain ditches to prevent them causing a nuisance to road users.

The responsibility of the West Sussex Highways Authority in relation to flood risk is to:

- undertake routine and reactive maintenance on all roads (except the A27 and M23/A23 that are the responsibility of Highways England), including associated drainage provided by gullies, drains and culverts;
- provide advice on road and road drainage issues associated with proposed development, ensuring any impact on the road network is taken into account; and
- decide whether improvements to the transport network are needed, based on access to local facilities, and the possible effects of a development on road safety and congestion.

2.3.3 Environment Agency

The Environment Agency has a strategic overview of all sources of flooding and coastal erosion (as defined in the Flood and Water Management Act 2010). It is also responsible for flood and coastal erosion risk management activities on main rivers and the coast, regulating reservoir safety, and working in partnership with the Met Office to provide flood forecasts and warnings. It must also look for opportunities to maintain and improve the environment for people and wildlife while carrying out all of its duties.

The main role and responsibilities of the Environment Agency in relation to flood risk management are to:

- be a strategic overview of all types of flooding;
- be responsible for Environment Agency reservoirs, and, to regulate and enforce the Reservoirs Act 1975 on other reservoirs with capacity over 25,000m3;
- to request information for any person in relation to flood risk management concerning Environment Agency functions;
- to designate structures and features with flood risk significance;
- be a statutory consultee to local planning authorities on flood risk matters;
- perform as a Category 1 responder to flood incident under the Civil Contingencies Act;
- consent and enforce applications for works on main rivers under the Environmental Permitting (England and Wales) Regulations 2016;

- undertake consenting (under the Land Drainage Act 1991) for works on Ordinary Watercourses where these fall within the River Arun Internal Drainage District;
- communicate flood risk warnings to the public, media and partner organisations; and
- be the statutory consultee to local planning authorities for developments in Flood Zone 2 and 3.

2.3.4 Water and Sewerage Companies

Water companies play a major role in managing flood and coastal erosion risks. They manage the risk of flooding to water supply and sewerage facilities and flood risks from the failure of their infrastructure.

Within West Sussex, Southern Water and Thames Water are responsible for the wastewater infrastructure and Southern Water, South East Water and Portsmouth Water are responsible for the water supply.

The main roles of water and sewerage companies in managing flood and coastal erosion risks are to:

- make sure their systems have the appropriate level of resilience to flooding, and maintain essential services during emergencies;
- maintain and manage their water supply and sewerage systems to manage the impact and reduce the risk of flooding and pollution to the environment. They have a duty under section 94 Water Industry Act 1991 to ensure that the area they serve is "effectually drained". This includes drainage of surface water from the land around buildings as well as provision of foul sewers;
- provide advice to LLFAs on how water and sewerage company assets impact on local flood risk;
- work with developers, landowners and LLFAs to understand and manage risks – for example, by working to manage the amount of rainfall that enters sewerage systems;
- work with the Environment Agency, LLFAs and district councils to coordinate the management of water supply and sewerage systems with other flood risk management work;
- perform as a Category 2 responder to flood incidents under the Civil Contingencies Act; and
- adopt new build sewers.

2.3.5 The Borough and District Councils (Second Tier Authorities)

Borough and District Councils are key partners in planning local flood risk management. The main roles and responsibilities of the Second Tier Authorities in relation to flood risk management are to:

- designate structures and features with flood risk significance using their permissive powers;
- mange coastline erosion, under the Coastal Protection Act 1949;
- exercise parts of the Land Drainage Act 1991;

- perform as a 'category one responder' to flood incidents under the Civil Contingencies Act 2004, including dealing with recovery and resulting homelessness;
- undertake works to manage flood risk from surface water, groundwater or ordinary watercourses under powers set out in the Flood and Water Management Act (2010);
- perform as the local planning authority and a duty to encourage the appropriate development and promote sustainable development;
- use statutory powers to ensure those responsible maintain the flow of water in a watercourse and to modify or remove inappropriate structures within channels (under powers delegated by the LLFA) and take the appropriate action against those who inappropriately modify the watercourse; and
- undertake consenting (under the Land Drainage Act 1991) for works on Ordinary Watercourses outside of the River Arun Internal Drainage District.

2.3.6 Highways England

Highways England has sole responsibility and powers for managing Highway surface water runoff from the trunk road network (A27 and M23/A23). Their roles and responsibilities in relation to flood risk include:

- maintaining the highway trunk road network under the Highways Act;
- a duty to regularly inspect and maintain highways structures;
- permissive powers to deliver works to protect the highway from flooding; and
- carrying out maintenance and improvement work to maintain existing standards of protection against flooding for highways.

2.4 Flood risk management support

While not designated flood risk authorities, stakeholders and partners such as infrastructure providers, riparian/landowners, Parish Councils and residents have a key part to play in the wider flood risk management context.

2.4.1 Utility and infrastructure providers

Utility companies play an important role in flood risk management. Many of their assets are potentially situated in areas susceptible to flooding. Ensuring that the service the company provides is resilient to flooding can save the company money in the long term, therefore flooding is an important factor in investment and planning. Companies can achieve savings if they contribute to partnership funded schemes (see Appendix C for more details on partnership working). This approach provides mutual benefit for those involved and ensures services for the public and businesses are more resilient.

2.4.2 Riparian owners

Home or business owners that have a watercourse or ditch on or alongside their land are likely to be riparian owners with maintenance rights and responsibilities.

If the watercourse borders the property it is normal for the boundary of responsibility to extend into the centre of the watercourse. Managing land drainage and maintenance is vital to ensuring that surface water is adequately managed consistently across the county based on its risk.

The rights and responsibilities of riparian owners include:

- reporting incidents such as flooding, pollution, unusual changes in flow, collapsed or badly damaged banks and blockages which could cause flooding to main rivers or ordinary watercourses;
- protecting your property from flooding, and your land from erosion. However, you must get your plans agreed with the Risk Management Authority before you start work;
- maintaining riverbed and banks;
- allowing the flow of water to pass without obstruction;
- keeping banks clear of anything which could cause and obstruction and increase flood risk, either on your land or downstream if it is washed away;
- keeping any structures, such as culverts, trash screens, weirs and mill gates, clear of debris;
- a legal obligation to notify the Environment Agency and the relevant Risk Management Authority if you would like to build or alter a structure that acts as an obstruction to a watercourse;
- preventing pollution, including remove litter and animal carcasses; and
- controlling invasive alien species e.g. Japanese knotweed.

Further information about riparian owner responsibilities can be found in the Environment Agency's publication Living on the Edge (2012) and Owning a watercourse and Managing Flood Risk on the West Sussex County Council website.

Any works to change the flow, discharge to, erect or remove a culvert, or create any impediment to flow in any ordinary watercourse outside of the River Arun Internal Drainage District will require Land Drainage Consent from the relevant Borough or District who perform this duty on behalf of West Sussex County Council, as lead local flood authority. Within the River Arun Internal Drainage District, consent can be sought from the Environment Agency. For work associated with a main river; on or near a main river, on or near a main river flood defence structure, in a main river floodplain or on or near a sea defence, a Flood Risk Activity Permit from the Environment Agency may be required. It is important to contact your local Borough or District Council for more information and to check if any local byelaws apply. More information about ordinary watercourse land drainage consent is also available on the West Sussex County Council website.

2.4.3 Parish and Town Councils

Town and Parish Councils can make a significant contribution before and during a flood event. Coordinated assistance can be critical in supporting local residents and in providing the shelter for neighbours who have experienced flooding. Parish and Town Council members can also play a crucial role in the

dissemination of flood alerts and flood warnings, as they have the local knowledge of the community. This local knowledge can also be used to inform the Borough or District Council or County Council about sources of flooding.

An effective Parish or Town Council will have an emergency plan, and an agreed process in place to react to a natural disaster. For more information please contact your Borough or District Emergency Planning Officer who will be able to provide guidance.

2.4.4 Property owners and residents

It is homeowners and business owner's responsibility to protect their property from risks, including flood water protection. It is impossible to completely flood-proof a property but there are lots of things that can be done to reduce flood damage. More details can be found on the GOV.uk website under Prepare your property for flooding.

2.5 The community and public involvement

This section sets out how communities and the public can be involved in local flood risk management. For further details or for specific information on local groups please see the WSCC website.

2.5.1 Flood Action Groups

Within flood risk areas, the best way for a member of the public to be involved in the management of flood risk is through a Flood Action Group. Flood Action Groups are a representative voice for their community and the aim of them is to work in partnership with the agencies and authorities whose work involves flood risk. Through the groups, members of the public can work on behalf of the wider community in finding ways to reduce flood risk.

The National Flood Forum supports communities in the formation of Flood Action Groups, gives tools to encourage their success and sustainability and initiates the first meeting with all the right professionals needed. Many groups have been formed since the June 2012 flooding. You can find out whether a group already exists in your area by contacting the National Flood Forum website.

2.5.2 Parish and Town Councils

If you are interested in finding out more or would like to offer your time for local matters the Parish and Town Council in your area is good organisation to contact. They will already be operating and governing a range of tasks and may require assistance. You can find the contact details for your local Parish or Town Council via the West Sussex County Council website.

Chapter 3: Flooding in West Sussex

As previously described, West Sussex County Council as the Lead Local Flood Authority (LLFA) are required to develop and maintain a local flood risk management strategy (this document). An important aspect of the strategy is to assess the flood risk within the county and in particular the risk from surface water, groundwater and ordinary watercourses.

Flooding has occurred throughout West Sussex at many different locations. To identify the areas in the county which are at risk of flooding, existing flood risk mapping and reports of flooding are continually reviewed to ensure that the understanding of flood risk is based on the best available data.

Property counts (both residential and non-residential) have been derived using the latest flood risk mapping from the Environment Agency open source datasets. Based on the Risk of Flooding from Surface Water mapping, West Sussex has a total of 20,857 residential properties and 2,384 non-residential properties at risk of flooding during a 1 in 100-year (1% AEP) event (Figure 3-1). This is predicted to increase to 39,876 residential and 3,953 non-residential properties as a result of the impact of climate change (based on the Upper End estimate for the 2080's epoch).

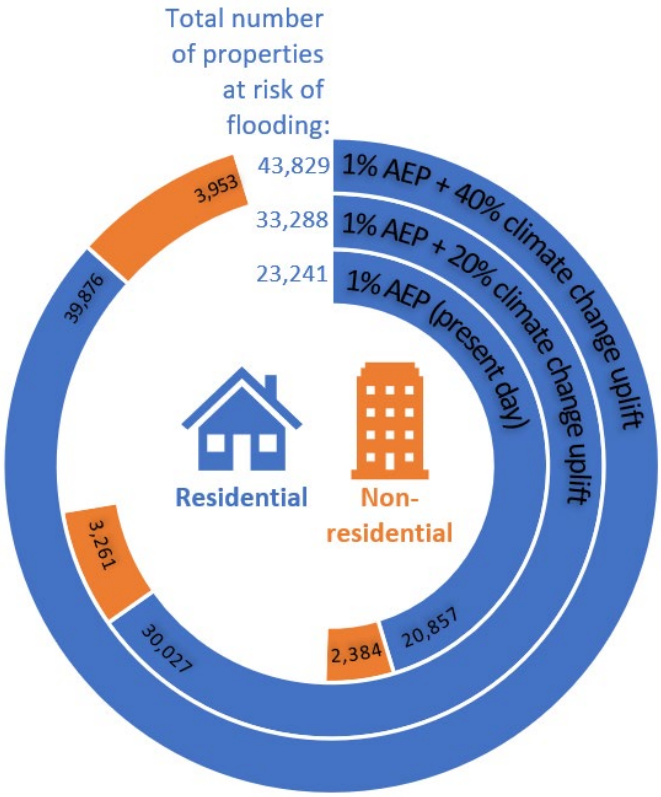


Figure 3-1: The impacts of climate change on surface water flood risk in West Sussex

Figure 3-2 displays the risk of flooding from surface water within the county based on the Risk of Flooding from Surface Water dataset.

Figure 3-3 displays the risk from rivers and sea within the county based upon the Flood Zones. 16,907 residential properties and 2,091 non-residential

properties are at risk of flooding from the 1 in 100-year (1% AEP) fluvial and coastal risk. This rises to 24,759 residential properties and 2,597 non-residential properties for the 1 in 1,000-year (0.1% AEP) fluvial and coastal risk.

Figure 3-4 displays flood risk from Groundwater Flooding within the county.

A breakdown of properties at risk within each borough and parish from each flood source is provided within Appendix E.

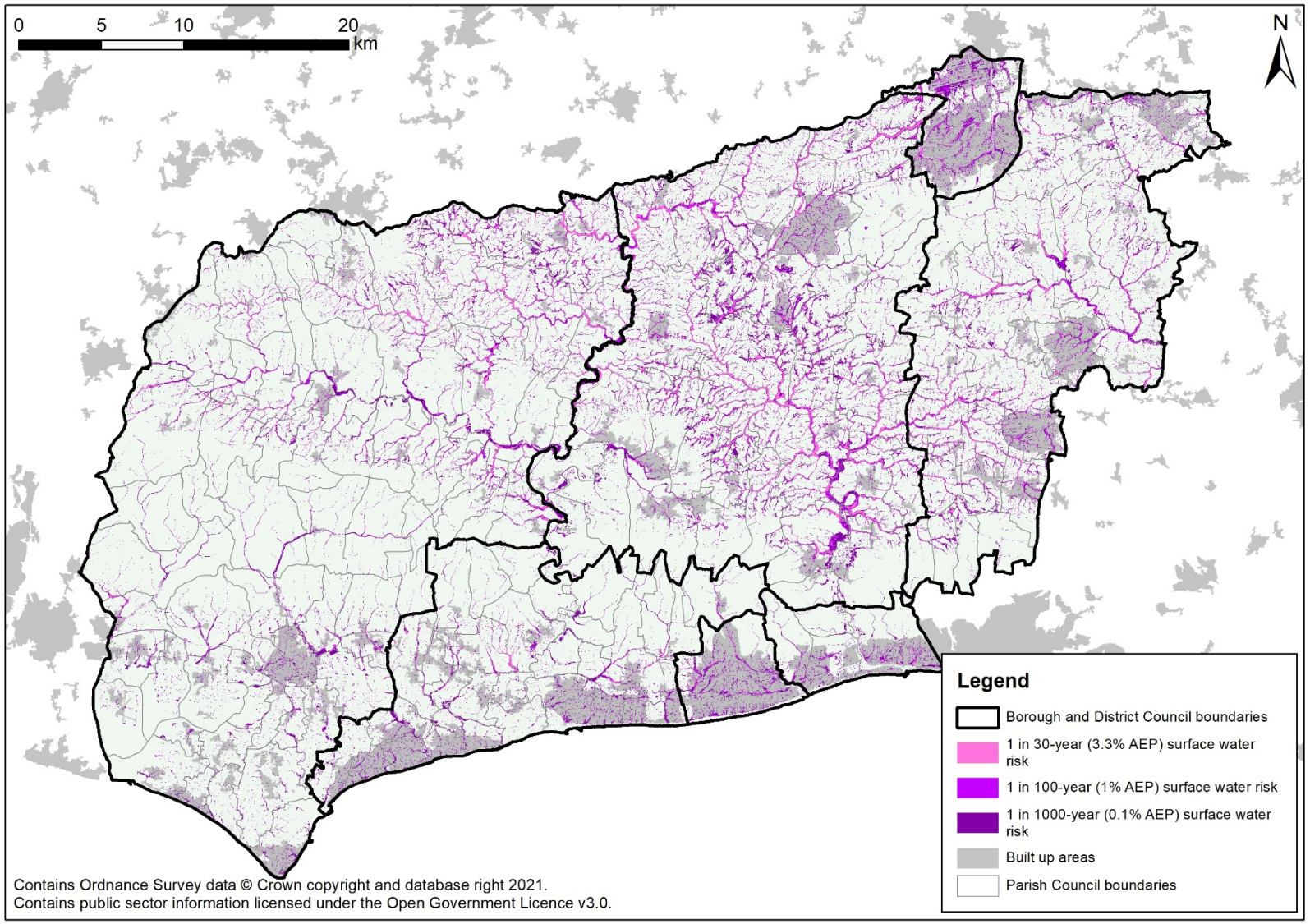


Figure 3-2: Flood risk from surface water, based on the Risk of Flooding from Surface Water dataset

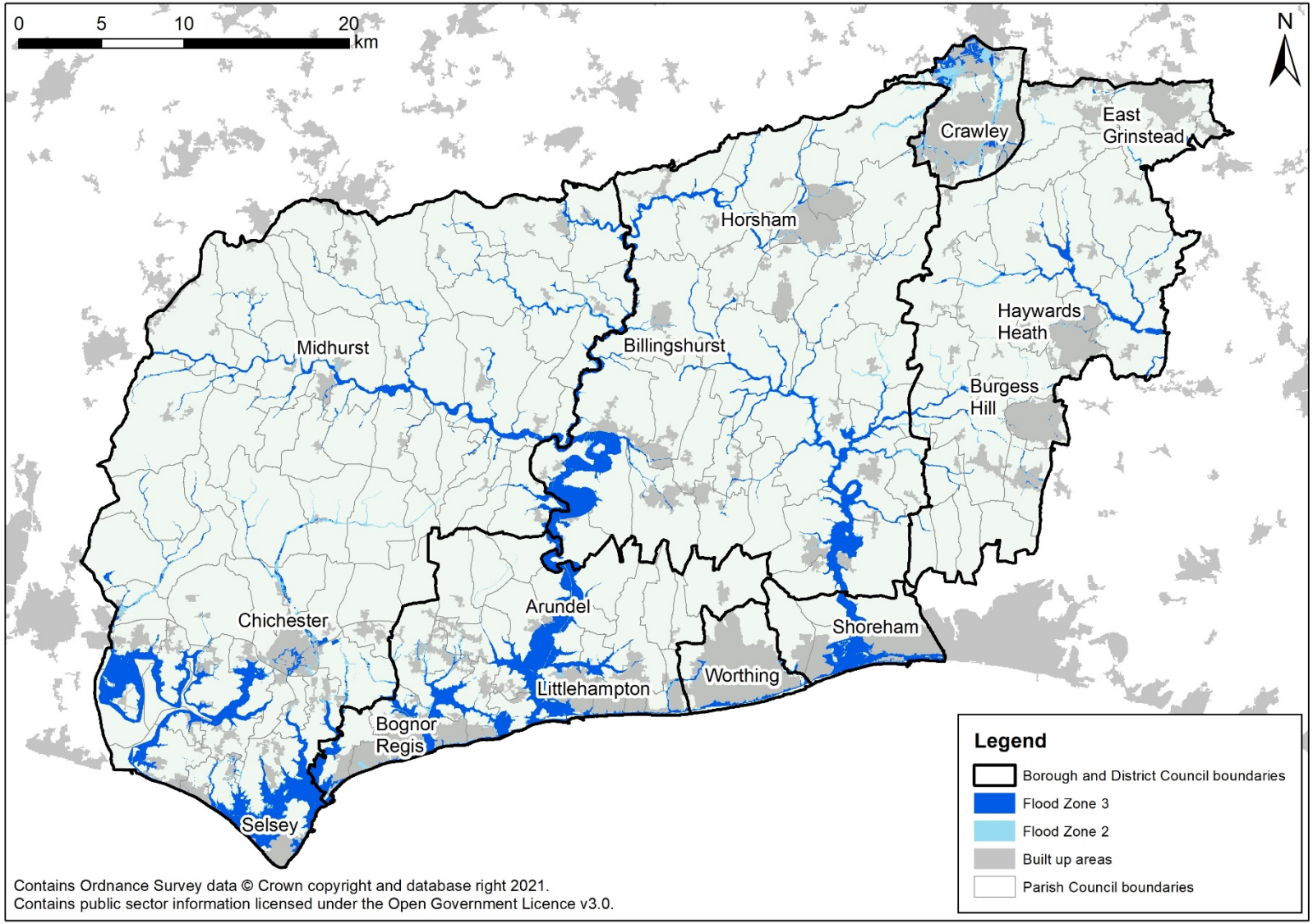


Figure 3-3: Flood risk from rivers and sea, based on the Flood Zones

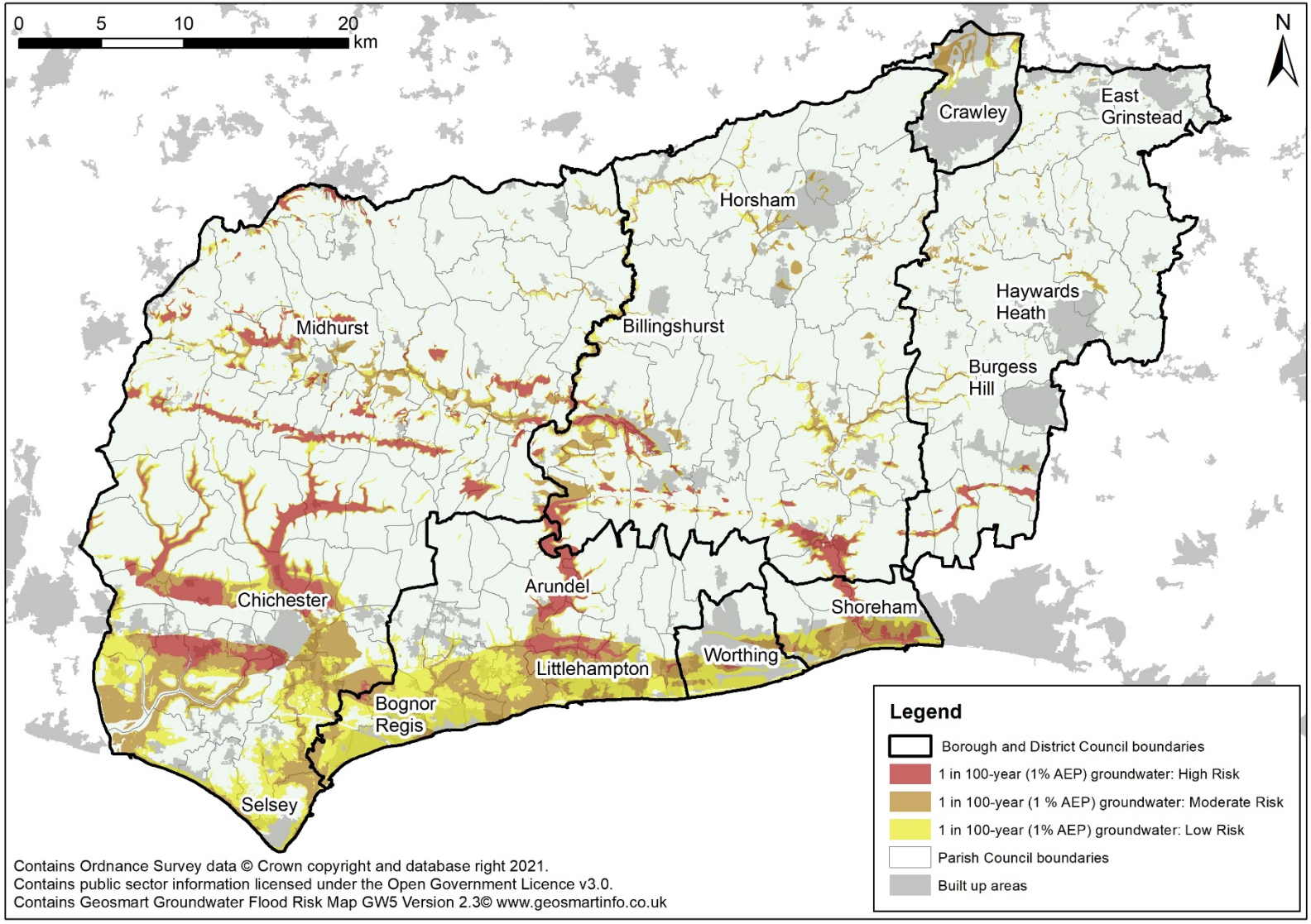


Figure 3-4: Flood risk from groundwater, based on the Groundwater Flood Risk Map

3.1 Historic flood events and properties at risk

West Sussex has a history of fluvial, coastal, surface water and groundwater flooding. There are records that extend back hundreds of years shown in previous research from our archives, provided by the fire brigade, media, academic papers, and the British Hydrological Survey. Often it is difficult to compare different events because the towns and rivers have been modified over time, and statistical information can be incomplete. The historic flood events that have occurred since 1968, and caused approximately 100 properties or more to flood, are shown in Figure 3-5. Many other smaller flood events have been recorded across the county from a range of flood risk sources. Some events affected properties, others just roads, and in some instances the information does not specify.

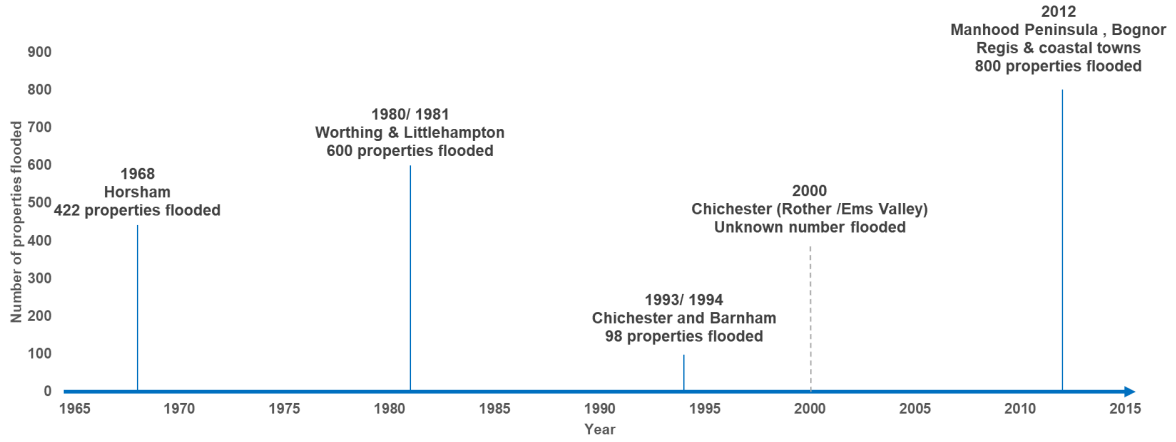


Figure 3-5: Significant historic flood events within the county since 1968

More recently, flooding occurred a number of times during the 2019/20 winter as repeated storm events occurred in November, December and February. Each one resulting in rainfall falling on ever more saturated ground.

On 19 and 20 of December 2019 almost 50mm of rain fell in some areas of West Sussex in a 36 hour period (recorded at a raingauge in Clapham, near Worthing) on land which had already seen already significant rainfall in the preceding month. This resulted in the closure, in both directions, of the M23 between junctions 10 and 11 and rail travel on the London to Brighton mainline was disrupted. The River Arun burst its banks and flooded the A29 and local businesses in Pulborough. A watercourse in Haywards Heath also burst its banks flooding American Lane and Hanbury Lane. Flooding also resulted in road closures in Appledram, Birdham, Crawley, Henfield, Lindfield, North Mundham, Oving, Pagham and Partridge Green.

Furthermore minor storm events occurred in January 2020, with rainfall peaking at 9.2mm on 15 January.

At the beginning of February 2020, Storm Ciara swept across the UK brining rain and strong winds, gusting up to 97mph along the south coast. In West Sussex, the sea defences at Climping Beach were severely damaged causing significant overtopping and flooding a large area of farmland, west of Littlehampton and cutting off access to a number of properties. Storm Ciara also resulted in further flooding to Pulborough from the River Arun, in addition to that experienced in

December 2019 and January 2020. Later in the month, Storm Dennis caused widespread flooding across the county, resulting in external property flooding in Mannings Heath and the closure of the A24 southbound near the Hop Oast roundabout and roads in Bognor, Bramber, Burgess Hill, Crawley, Felpham, Hassocks, Haywards Heath, Lindfield, Pagham, Pulborough, Storrington, Three Bridges and Turners Hill. During this event almost 50mm of rain was recorded at Clapham across two days.

These events are currently under investigation by Risk Management Authorities.

3.2 Surface water flooding

Flooding from surface water runoff is caused by intense short periods of rainfall or storms when the ground is already saturated. In urban areas, surface water will accumulate where it cannot infiltrate impermeable surfaces or be collected and conveyed within existing drainage systems. Surface water flooding is also linked to issues of poor drainage, or drainage blocked by debris, and sewer flooding. In rural areas, down land run-off due to the landscape and topography of the South Downs can also cause flooding.

Figure 3-6displays the 20 areas most at risk of surface water flooding. Figure 3-2 presents the Environment Agency's Risk of Flooding from Surface Water (RoFSW) data for West Sussex. Mapping displays the following:

- Significant surface water flood risk is generally confined to the north and east of the county, away from the highly permeable South Downs. The exceptions to this are the towns of Arundel and Chichester, which have been identified as higher risk.
- A high risk of surface water flooding has been identified within the urban areas of Crawley, Chichester, Shoreham, Worthing, Horsham, Haywards Heath, Burgess Hill and East Grinstead.

Surface Water Management Plans (SWMPs) are developed by the Lead Local Flood Authority or borough or district councils. These provide details of historical information, plans for mitigation and will identify improvement actions. Surface water management plans have been carried out for the following catchments (the parishes which are within the SWMP study areas have been included in brackets).

- Easebourne
- Lancing
- Upper Lavant Valley (Singleton, East Dean, Lavant, West Dean)
- Lidsey (Eastergate, Aldingbourne, Barnham, Walberton, Yapton, Slindon, Elmer)
- Manhood Peninsula (Selsey, Pagham, Sidlesham, Earnley, East Wittering, West Wittering, North Mundham, Birdham, Appledram, Oving, Donnington, Hunston)
- Hassocks
- Worthing
- West Chichester (Fishbourne)

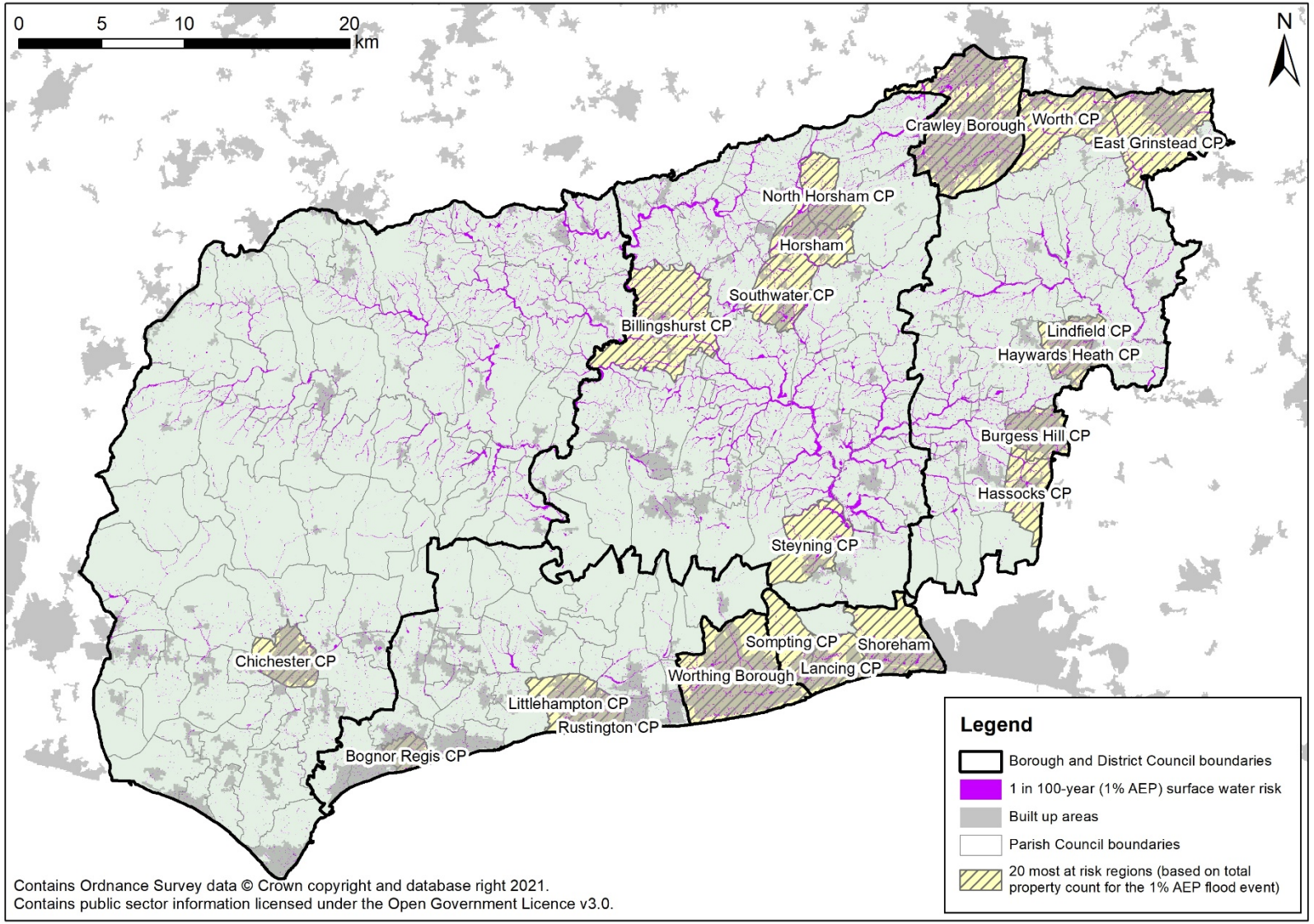


Figure 3-6: 1 in 100-year (1% AEP) risk of surface water flooding with the 20 most at risk regions

3.3 Groundwater flooding

Groundwater flooding is associated with unusually high groundwater levels. This type of flooding is primarily caused by rising water levels in permeable aquifers following prolonged rainfall or from high water levels in adjacent rivers.

West Sussex County Council uses the Groundwater Flood Risk dataset to determine areas at risk of groundwater flooding. Risk is presented at 5m resolution with >1% annual probability of groundwater flooding within the following classes:

- **Class 1 - High Risk:** there is a high risk of groundwater flooding with a chance of greater than 1% annual probability of occurrence or more frequent.
- **Class 2 - Moderate Risk:** there is moderate risk of groundwater flooding in this area with a chance of greater than 1% annual probability of occurrence
- **Class 3 – Low Risk:** there is a low risk of groundwater flooding in this area with a chance greater than 1% annual probability of occurrence.
- **Class 4 - Negligible Risk:** there is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence has a chance

Figure 3-4 displays the Groundwater Flood Risk dataset and Figure 3-7 displays the 20 areas identified to be most at risk from groundwater flooding. The mapping shows that:

- Flood risk from groundwater is highest in areas where the permeable chalk bedrock meets less permeable clay, resulting in springs forming along the boundary. These areas are in the proximity of the South Downs affecting the towns and surrounding areas of Chichester and Arundel in particular.
- Areas along the low-lying coastal plain are also found to be at risk. The town of Shoreham is identified to be at high risk where chalk deposits are present. Interaction between tidal levels and groundwater is known to occur here.

Figure 3-8 shows the underlying bedrock geology within West Sussex, the north of the county is predominantly made up of sandstones and mudstones, while the south is predominantly chalk with a band of clay running east-west through Chichester, Arundel, Worhting and Shorham and extending down into Selsey Bill.

West Sussex County Council are in the process of installing boreholes across the county to gain a better understanding of the flood risk from groundwater within the county.

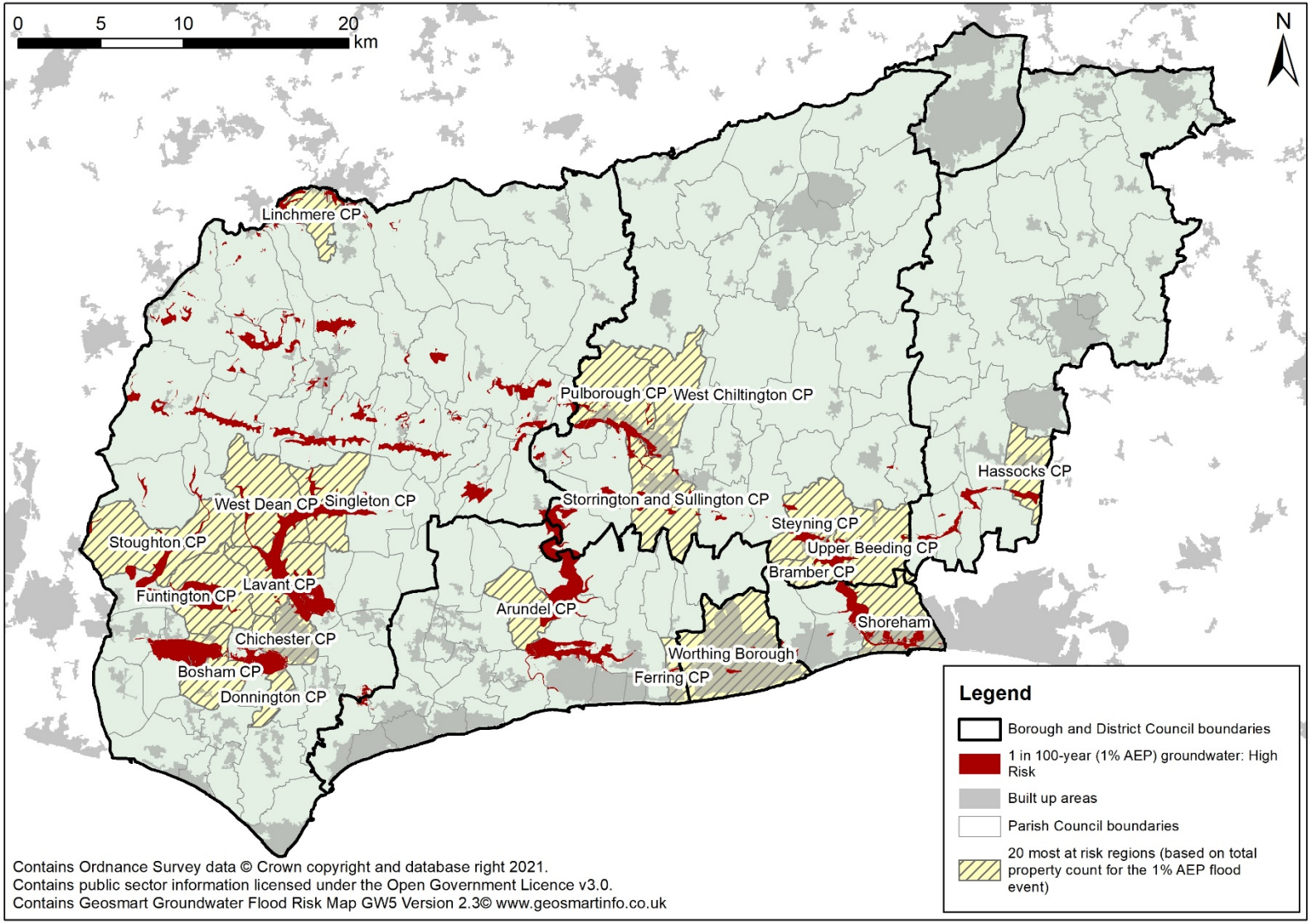


Figure 3-7: 1 in 100-year (1% AEP) risk of groundwater flooding with the 20 most at risk regions

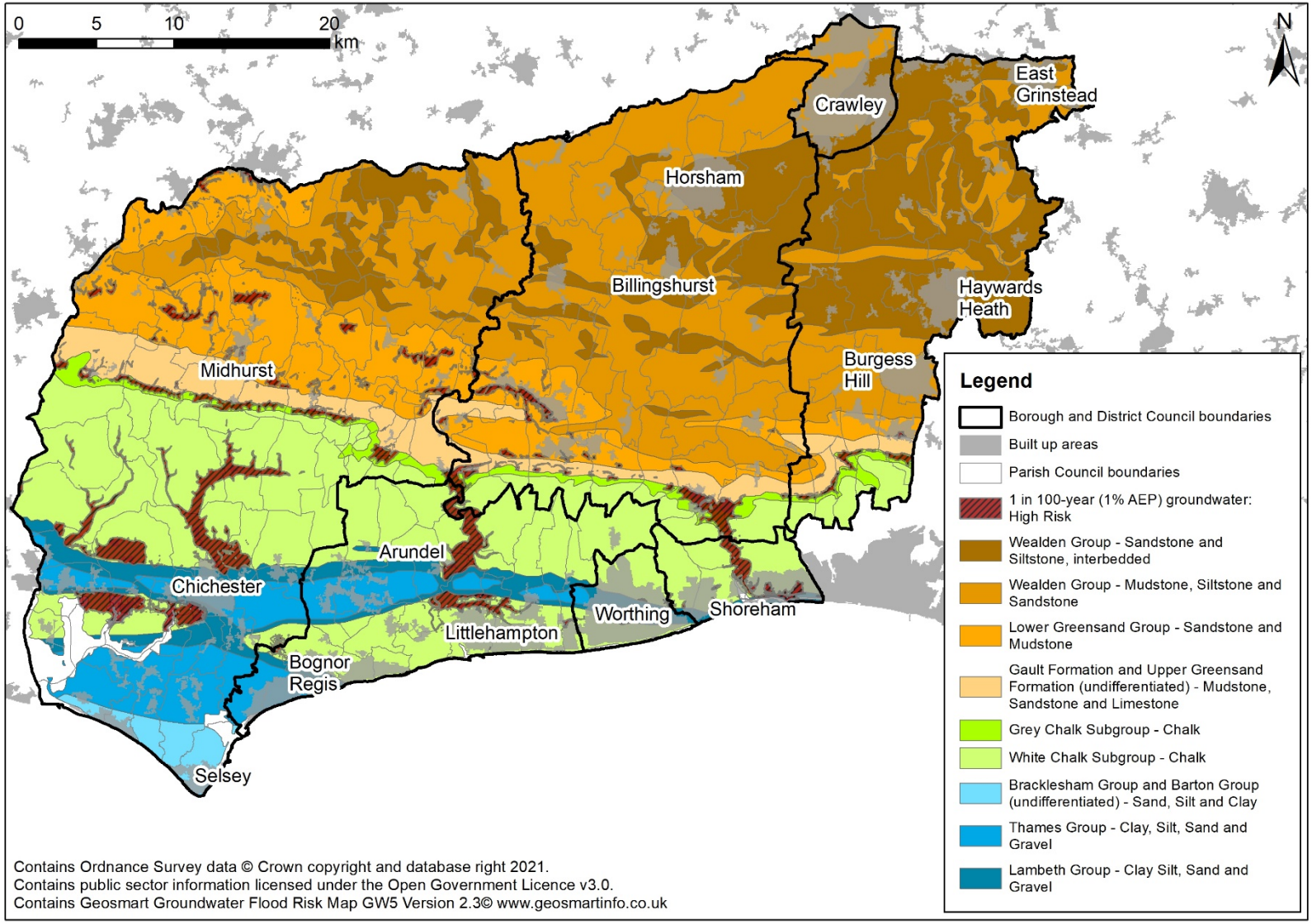


Figure 3-8: 1 in 100-year (1% AEP) high risk of groundwater flooding with bedrock geology

3.4 Main river flooding

Main rivers are designated by the Environment Agency and are watercourses that carry significant flood risk. Heavy rainfall can cause rivers to overtop their banks and spill onto the adjacent floodplain. The characteristics of the river catchments are dominated by their topography, with fast flowing streams emerging from high elevations to the north, flowing into a low lying coastal plain where the gradient is flatter and river flows are much slower.

The major river catchments in West Sussex are the River Arun, the River Adur, part of the Upper Mole catchment and a number of smaller watercourses that make up the West Sussex Rifes. The River Arun and the River Adur both flow south and discharge into the English Channel at Littlehampton and Shoreham, respectively. The River Mole flows north through Crawley and discharges into the Thames.

The 20 areas identified to be most at risk of fluvial and coastal flooding (flood zone 3) are displayed within Figure 3-9. Figure 3-3 displays flood risk from main rivers and the coast based upon the Environment Agency's Flood Zones. Fluvial flooding is shown to impact a number of areas within West Sussex:

- Between Selsey Bill and Pagham Harbour there are numerous small rifes which present a high risk of flooding to settlements in this area
- Bramber has been identified as being at particular risk form the Adur
- Arundel is at risk from the River Arun.
- Bognor Regis and Felpham have been identified as being at risk from the Aldingbourne Rife.
- Barnham is at risk from the Barnham Rife
- Loxwood is at risk from the River Lox.

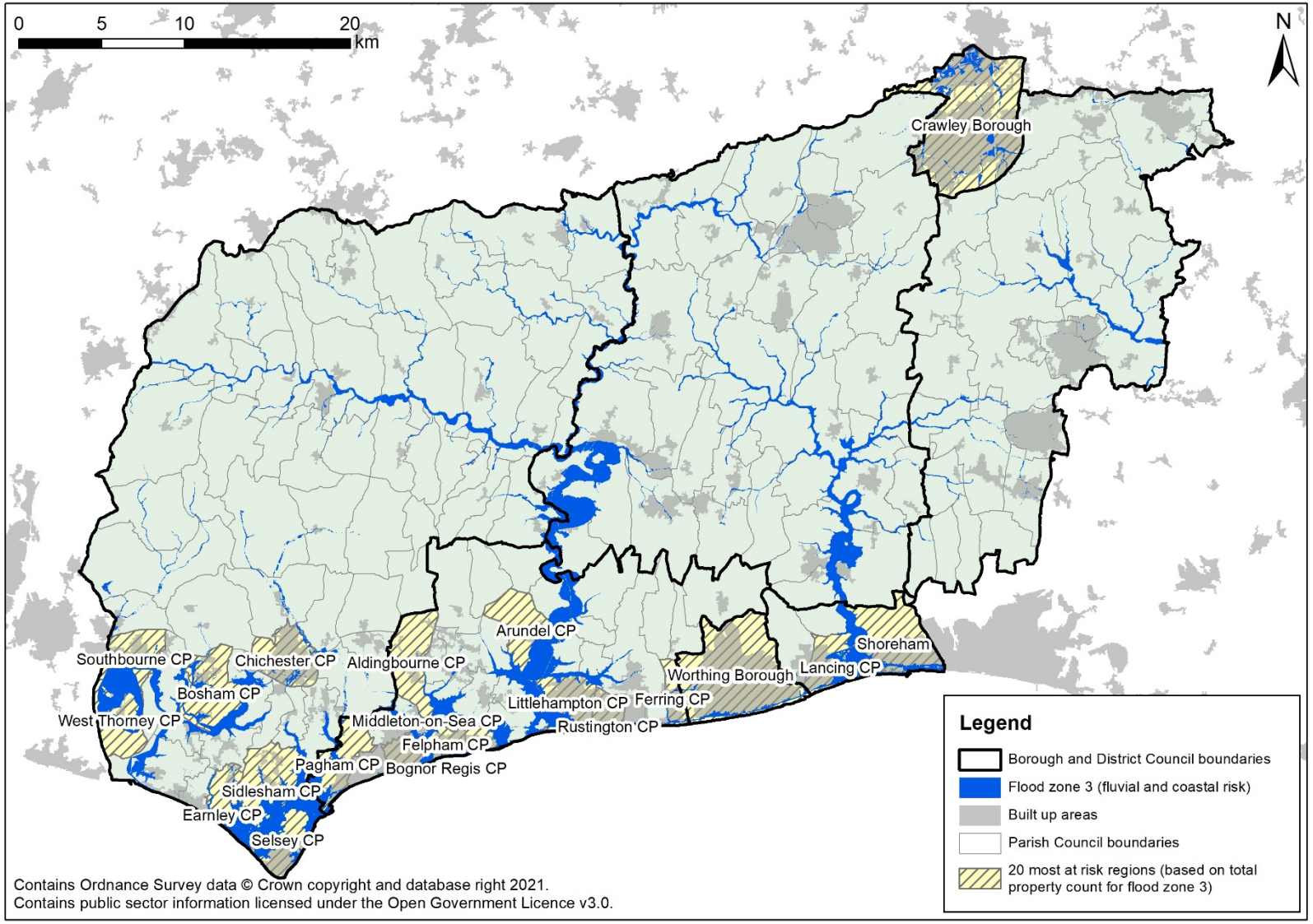


Figure 3-9: Flood zone 3 (risk of fluvial and coastal flooding) with the 20 most at risk regions

3.5 Ordinary watercourse flooding

An ordinary watercourse is any watercourse (river, stream, ditch, cut, sluice, rife, dyke or non-public open sewer) that is not identified as a Main River. Flooding can occur from an ordinary watercourse overtopping its bank due to the volume of water or because the channel or culverts become blocked.

The Environment Agency inherited the administration of three internal drainage districts in West Sussex from its predecessors: River Arun, River Adur and South West Sussex. Since 2012 the Environment Agency has been working with those affected in each of the districts to agree more locally accountable arrangements for administering these and the River Arun is now the only one of these Internal Drainage Districts (IDD) for which the Environment Agency Board acts as the internal drainage board, the River Adur and South West Sussex IDDs being dissolved in March 2017. Despite previously proposing the abolition of the River Arun IDB, the Environment Agency formally withdrew the proposal in a letter to Defra in July 2020, which was confirmed by the Secretary of State. Therefore, the Environment Agency continues to act as the Internal Drainage Board (IDB). This means that for the time being, within the River Arun IDD:

- the Environment Agency retains powers to carry out work in order to manage any flood risk from the Ordinary Watercourses; and
- the Environment Agency continues the enforcement and consenting powers for the IDD in relation to the Ordinary Watercourses.

The remainder of Ordinary Watercourses in West Sussex are therefore maintained by riparian/adjacent landowners, the Boroughs and Districts, and West Sussex County Council. Further details on the roles and responsibilities for maintaining ordinary watercourses is outlined in Section 2.4.2.

3.6 Coastal and tidal flooding

The West Sussex coastline borders the English Channel and stretches from Emsworth to Southwick. As such, the county is at risk of coastal and tidal flooding as well as wave overtopping. These types of flooding are defined as:

- **Tidal flood risk** – Caused by extreme tide levels exceeding ground and / or defence levels. Estuaries are at particular risk due to tidal locking where rivers and sea meet. The settlements of Shoreham, Arundel, Littlehampton and Sidlesham are particularly impacted by tidal locking where fluvial interactions occur.
- **Wave overtopping** – Wave overtopping occurs when the height of the waves exceeds the height of coastal defence and water flows over the top of the defence. In West Sussex, defences have been constructed in the urban areas of Selsey, Shoreham, Worthing, Littlehampton, Bognor Regis, Lancing, Felpham and Elmer.
- **Coastal flood risk** – Characterised as where the sea level exceeds the elevation of the land. This often occurs where waves have not built up a natural barrier such as a dune system or shingle beaches. Coastal flooding is also linked to the stability of the coastline. Where the coast is eroding, flood risk will often increase. The parishes of Climping and Pagham are particularly vulnerable to this.

West Sussex County Council is a member of the South East Coastal Group and Southern Coastal Group. These groups work in partnership with other Local Authorities and the Environment Agency achieve co-ordinated strategic management of the shorelines between the Thames Barrier and Selsey Bill (South East Coastal Group) and Selsey Bill to Portland Bill (Southern Coastal Group). This work includes preparing Shoreline Management Plans (SMP) for section of the coastline.

A Shoreline Management Plan (SMP) provides a large-scale assessment of the risks associated with coastal evolution and presents a policy framework to address these risks to people and the developed, historic and natural environment in a sustainable manner. In doing so, an SMP is a high-level document that forms an important part of the strategy for flood and coastal defence. Within West Sussex there are two Shoreline Management Plans:

- SMP12: Beachy Head to Selsey Bill Shoreline Management Plan (2006)
- SMP13: North Solent Shoreline Management Plan (2010) – Selsey Bill to Hurst Spit

The environment Agency is currently undertaking a refresh of the Shoreline Management Plans to make sure that they continue to be of benefit. This is likely to lead to changes to policies.

Additionally, the Environment Agency has produced seven flood risk management strategies for the West Sussex coastline which set out current and future flood risk and investment plans for the coast to manage tidal flooding:

- River Arun to Pagham flood and erosion management strategy
- Emsworth to East Head flood and coastal risk management strategy
- Rivers Arun to Adur flood and erosion management strategy
- Lower Tidal River Arun flood risk management strategy
- Brighton Marina to River Adur flood and coastal erosion risk management strategy
- Pagham to East Head coastal defence strategy
- Pagham Harbour adaptive management study

Finally, the Environment Agency has also produced two beach management plans for the West Sussex coastline which set out the approaches for intervention and monitoring to maintain the beach where it provides an integral part of the sea defences:

- Selsey Bill to Climping Regional Beach Management Plan
- Littlehampton to Brighton Marina Regional Beach Management Plan

West Sussex County Council also sits on the Local Government Association Coastal Special Interest Group (Coastal SIG). The Coastal SIG seeks to represent the interests of more than 60 English coastal Local Authorities, through increasing awareness and debate on environmental, economic and social issues in relation to the coast and wider marine environment.

3.7 Reservoir flooding

Reservoir flooding is the risk associated with the maximum extent of flooding should reservoirs be breached. Risk of flooding from reservoirs is recognised to have a significant impact on the downstream area. In the UK, reservoirs have a good safety record with no incidents resulting in the loss of life since 1925. The Environment Agency's role in managing reservoir flood risk is outline in Section 2.3.3.

There are 29 reservoirs in West Sussex with a volume greater than 25,000m^3. Ardingly Reservoir, north of Haywards Heath presents the greatest consequence to life, should any of the reservoirs breach.

Local Resilience Forums (LRFs) undertake the engagement with downstream communities to plan for emergencies. The Pitt Review recommended that communities be provided with reservoir flood maps to enable the emergency services and other responders to assess risks and plan for contingency, warning and evacuation. A new version of the mapping will be published in 2021.

3.8 Sewer flooding

Sewer flooding occurs when intense rainfall overloads the sewer system capacity and / or when sewers cannot discharge properly to watercourses due to high water levels. Interactions with high groundwater levels can also result in a lack of capacity in sewers. Thames and Southern Water are responsible for managing sewers and flooding from sewers within West Sussex. Further details are found in Section 2.3.4. The types of sewer flooding are as follows:

- Foul / combined sewers – Sewers which carries flows from business and domestic uses containing wastewater (sewage) to treatment works. Combined sewers also convey surface water flows, and consequently these typically respond to rainfall events. Flooding associated with this is contaminated with foul waste.
- Surface water sewers – Sewers that carry rainwater to a drainage point, such as a watercourse or the sea. These should not be contaminated with foul waste, although misconnections are not uncommon.

Areas previously known to have experienced regular sewer flooding are Worthing and Durrington, the Manhood Peninsula, Barnham, North Lancing, Littlehampton, Shoreham and Burgess Hill.

Chapter 4: Objectives and Actions

"In future we will need to do more to reduce the risk before any water hits a flood wall; and more to make us more resilient when it comes over the wall – which it sometimes will. That means working more upstream to reduce the risk of flooding ever happening, and more downstream to ensure that when flooding does occur communities suffer minimum damage and recover with maximum speed."

Sir James Beven, Chief Executive, Environment Agency

4.1 The Objectives

To reflect the Governments strategic objectives (see section 1.2) in the local context, West Sussex County Council have agreed, in collaboration with the Strategy Partners, local objectives to guide local focus and progress. These are:

No.	Objective
1	**Adaptation:** work with communities to implement adaptive approaches to enhance the natural and built environment
2	**Resilience:** support communities to help them to become more resilient to future flood risk
3	**Collaboration:** work with all risk management authorities and stakeholders to achieve a consistent, co-ordinated and risk-based approach to flood risk management
4	**Opportunities:** seek opportunities (including funding and research and development) from existing and new sources to invest in making communities resilient to flooding
5	**Evidence:** develop a strategic understanding of flood risk from all sources
6	**Sustainability:** contribute positively to sustainable growth and support environmental net gain by influencing wider development, redevelopment and regeneration plans to deliver flood risk benefits

The work undertaken by all flood Risk Management Authorities in West Sussex will need to make progress under one or more of these objectives. Section 4.2 sets out the actions which will be taken to achieve these objectives.

Details of how our local objectives align with the National objectives, The West Sussex Our Council Plan priorities and Surface Water Management Action Plan Themes are included in Appendix H. Many of the local objectives align with more than one of the National objectives or local priorities.

4.1.1 Objective 1: Adaptation

Work with communities to implement adaptive approaches to enhance the natural and built environment.

An adaptive approach enables flood and coastal erosion risk management to be carried out in a way that is agile to the latest climate science, growth projections and other changes to the local environment. Looking out to 2100, adaptive approaches give local places 'decision points' to help navigate through an ambiguous future in collaboration with local partners and communities.

To understand the type and extent of adaptive approaches which may be required within a community we will first need to understand the pressures (e.g. climate change, growth and environment) on the community.

Working with natural processes will be a key part of the Councils approach to managing flood risk. This can take many forms including encouraging the most appropriate crops and farming techniques to limit soil erosion and natural flood risk management to hold water back, slow run-off and encourage infiltration. These processes should benefit both people and wildlife.

4.1.2 Objective 2: Resilience

Support communities to help them to become more resilient to future flood risk.

While a vital tool for future resilience in many places will remain the building and maintaining of flood infrastructure, in some places it may make more economic and environmental sense to enhance the resilience of communities through other approaches. To help communities to become more resilient to future flood risk the council will follow a flood management hierarchy:

This will be supported by a suite of resilience tools (Figure 4-1).

Figure 4-1: Resilience tools for managing flood risk

4.1.3 Objective 3: Collaboration

Work with all Risk Management Authorities and stakeholders to achieve a consistent, co-ordinated and risk-based approach to flood risk management.

West Sussex County Council will continue to work in partnership with other Risk Management Authorities, local communities and infrastructure providers to co-ordinate the approach to flood risk management.

The government's surface water management action plan recognised that people's understanding of surface water responsibilities can be blurred. The Council will work with other Risk Management Authorities to clarify roles and support local communities when flooding occurs.

Following a flood incident, the number of organisations helping people with recovery can be significant, and can include insurance companies, health

workers, local mental health services, local authority re-homing and waste disposal companies. The council will work with all organisations to support those involved with recovery following flooding.

4.1.4 Objective 4: Opportunities

Seek opportunities (including funding, and research and development) from existing and new sources to invest in making communities resilient to flooding.

There are various funding streams available to fund projects, some available nationally and some from local sources. The Council will seek funding from a wide range of sources including, but not limited to; Flood and Coastal Erosion Risk Management Grant in Aid (GiA), Local Levy, Partnership Funding, Community Infrastructure Levy, Section 106 funding and private sources.

A detailed discussion on the types of local and national funding sources is available in Appendix D.

The council will also seek opportunities to be involved in and support research and development where this provides enhancement to the services and duties which the council currently undertakes or efficiencies in the way these services and duties are undertaken.

4.1.5 Objective 5: Evidence

Develop a strategic understanding of flood risk from all sources.

A thorough understanding and evidence base of the risk from flooding is key to effective management of local flooding. This requires an understanding of where flooding may occur, how often these areas may flood, what the impacts of this flooding could be and the likely impacts of climate change on flood risk in West Sussex.

There are some areas across the county where there may be less evidence and data to support decisions about the best way to reduce flood risk. To enhance understanding of flood risk in these locations and across the county, the council will continue to perform its duty to record and investigate flooding and maintain an asset register in relation to drainage and flood risk management infrastructure.

4.1.6 Objective 6: Sustainability

Contribute positively to sustainable growth and support environmental net gain by influencing wider development, redevelopment and regeneration plans to deliver flood risk benefits.

West Sussex County Council will help to enable sustainable growth within the county by encouraging a 'Net Gain' approach to development. 'Net Gain' aims to leave the natural environment in a measurably better state than beforehand, and it can also help to ensure new development contributes towards managing the risk of flooding.

Where existing properties have been flooded, we will help support owners to 'build back better'. This could involve support with installation of property flood resilience measures which help people return to their homes more quickly after flooding has occurred.

4.2 The Actions

The action plan for the Local Flood Risk Management Strategy identifies specific actions that West Sussex County Council in its role as Lead Local Flood Authority will take to manage local flood risk in its administrative area.

These actions have been developed based on the six Local Flood Risk Management Strategy objectives outlined in Section 4.1 along with consideration to the five themes (Figure 4-2) that underpin the work of the Lead Local Flood Authority.

These actions will be used to identify approaches to managing the flood risk within West Sussex. Where applicable, preference will be given to undertaking actions with the 25 Priority Areas (identified in section 5.1 and Appendix G). However, where appropriate, or where a project displays value for money and positive benefits, actions will be undertaken, irrespective of location.

Figure 4-2: Key themes underpinning West Sussex County Council's work as LLFA

4.2.1 Objective 1: Adaptation

Work with communities to implement adaptive approaches to enhance the natural and built environment.

1A Take the lead on improving the awareness and understanding of using natural processes to manage local flood risk in West Sussex.

Working with natural processes, by emulating the natural functions of catchments, floodplains and watercourses, has the potential to manage flood risk in both urban and rural areas. West Sussex County Council will raise awareness of the applicability for Natural Flood Management techniques to a variety of settings across the county.

1B Explore the feasibility and benefits of diverting rooftop drainage over the sea wall for waterfront developments.

Working in partnership with Risk Management Authorities and private sector partners, West Sussex County Council will take the lead in assessing the feasibility, design challenges and potential benefits of directing rooftop drainage for waterfront developments over the sea wall rather than by traditional underground gravity drainage networks that are impacted by tide locking.

1C Continue to assess and identify the risk of surface water flooding to drainage across the county and work with highways and RMAs towards the overall improvement of this.

West Sussex County Council will continue to work on smaller scale schemes, improvements and maintenance on the highways of West Sussex and, as well as with other partners (especially Borough and District Authorities) to improve local drainage. This work will take a risk-based approach, where it is in the public benefit to carry out works or where there is a risk of flooding resulting from inadequate or insufficient surface water drainage.

1D Raise community awareness of local drainage assets and encourage communities to take a more pro-active role in flood monitoring and maintenance works.

The County Council will encourage communities to take ownership of flood risk and with support, empower them to take a more pro-active role in monitoring and managing flood risk. This may include supporting local flood groups and promoting low cost routine maintenance works on local drainage assets and watercourses.

1E Support communities to adapt to and manage the impacts of climate change.

West Sussex County Council will work with communities to help them identify the potential impacts of climate change and support the communities to adapt to these impacts. Where appropriate, the Council will promote sustainable approaches such as SuDS and Natural Flood Management along with supporting communities with emergency planning achieve environmental betterment alongside enhances resilience.

4.2.2 Objective 2: Resilience

Support communities to help them to become more resilient to future flood risk.

2A Improve resilience to flooding, now and in the future, through the identification of areas that may benefit from Property Flood Resilience measures.

West Sussex County Council, in partnership with other Risk Management Authorities will identify areas that may benefit from Property Flood Resilience Measures, including existing properties that have flooded and properties that may be at increased risk as a result of climate change. The delivery of property and community level resilience measures will increase resilience to flooding now and in the future and help communities recover from flood events more quickly.

2B Inform and educate the public as to the responsibilities and legal obligations of riparian ownership.

Effective management of ordinary watercourses is a key part of land drainage, the County Council will keep residents and landowners informed as to their legal obligations and responsibilities as riparian owners under the Land Drainage Act.

2C Facilitate the dissemination of useful and up to date information to communities to improve awareness of flood risk.

West Sussex County Council will disseminate useful and up to date information relating to flood risk to communities, keeping this as clear and descriptive as possible. Explanations about what works are being undertaken and why will be made available and the limitations due to resources, technical considerations and other priorities clearly explained.

2D Facilitate communications and connect networks between communities and public bodies.

The County Council will facilitate communications between Risk Management Authorities and the public, enabling transparency and raising awareness of the actions public bodies are taking in managing flood risk across the county and on a more local scale. This may involve liaising and communicating with community flood action groups, Parish and Town Councils.

2E Collaborate with emergency planners and other Risk Management Authorities to develop Multi Agency Flood Plans and plan for flood events and the impacts of climate change.

The Lead Local Flood Authority will continue to support emergency planners, the other members of the Sussex Resilience Forum and category 1 and 2 responders in the development of, and updates to Multi Agency Flood Plans. The LLFA will support these organisations in their understanding of local flood risk, taking into account local factors and developing information on flood risk and the likely impacts of climate change.

4.2.3 Objective 3: Collaboration

Work with all Risk Management Authorities and stakeholders to achieve a consistent, co-ordinated and risk-based approach to flood risk management.

3A Collaborate and work in partnership with other Risk Management Authorities to manage flood risk within West Sussex.

The Lead Local Flood Authority will take a strategic leadership role and work in partnership with other Risk Management Authorities in its area, to provide a coordinated approach to managing flood risk in West Sussex.

3B Periodically review partner roles and responsibilities to provide a coordinated and risk-based approach to local flood risk management.

Partner roles and responsibilities will be reviewed periodically as part of the Local Flood Risk Management Strategy. This review will allow partner organisations to understand their roles and responsibilities with regard to Flood and Coastal Erosion Risk Management and enable a coordinated approach to managing these issues based on a current understanding of risk.

3C Take the lead with catchment-based partnerships (Adur & Ouse, Arun and Western Streams) to align flood risk management policies and projects with catchment priorities as and when the opportunity arises.

West Sussex County Council will proactively engage and take the lead with catchment partnerships in its area (Adur & Ouse, Arun and Western Streams) to align flood risk management policies and projects with catchment priorities, pool resources and expertise. This will enable partner organisations to take a collaborative and integrated catchment-based approach to managing flood risk.

3D Regional liaison on flood risk matters through the Southern Regional Flood and Coastal Committee.

West Sussex County Council will continue to liaise on regional flood risk matters through its membership on the Southern Regional Flood and Coastal Committee. This will encourage effective partnership working across Local Authority boundaries and provide an effective link between the Environment Agency and LLFAs, to build a coherent understanding of flood risk and target resources more effectively.

3E Provide input into Drainage and Wastewater Management Plans in consultation with Southern Water/ Thames Water and in accordance with national guidance.

West Sussex County Council will support Southern Water and Thames Water in the delivery of Drainage and Wastewater Management Plans across the county. This includes working in partnership to identify local issues and in collaboration, identify opportunities to address these.

3F Undertake investigations, engage, and where necessary enforce contraventions of the Land Drainage Act, in a fair and proportionate manner.

The County Council may investigate incidents where it suspects there may have been potential contraventions of the Land Drainage Act. The council will engage landowners fairly and constructively, using its enforcement powers only if necessary and proportionate to the specific contravention.

3G Promote Natural Flood Management measures by working in partnership with landowners and other Risk Management Authorities.

The Council will seek to collaborate with landowners and other Risk Management Authorities to implement natural flood management and nature based solutions to reduce the risk of flooding and impact of climate change while enhancing the natural environment.

4.2.4 Objective 4: Opportunities

Seek opportunities (including funding, and research and development) from existing and new sources to invest in making communities resilient to flooding.

4A Seek the best ways of enabling Partnership Funding for schemes.

Collaborative working and joint funding across partner organisations will be key to maximising the return on investment in flood risk management. West Sussex

County Council will identify partnership funding requirements for schemes to make the best use of public funding. This will allow public money to be used wisely and in a strategic way to protect the areas at greatest risk.

4B Maintain a strategic overview of the local prioritised programme of flood risk management projects for the county.

The County Council will maintain a strategic overview of the various projects and schemes underway in West Sussex to manage local flood risk. This will enable the delivery of a risk-based approach, by prioritising funding and resources for areas of the county at most significant risk.

4C Pioneer and engage research and development to identify new approaches and technologies to support flood risk management across West Sussex.

Developing new technology and approaches to solve real world problems are a crucial part of managing present and future flood risk. Where appropriate, West Sussex County Council will use partnership funding to champion and support industry research and development, in order to improve existing evidence and develop new innovative approaches to managing flood risk in West Sussex.

4D Seek to support Environmental Net Gain for development through the implementation of Natural Flood Management and nature based solutions.

The council will work with Local Planning Authorities to seek opportunities for Environmental Net Gain where development is proposed through the consideration of Natural Flood Management and nature based solutions.

4.2.5 Objective 5: Evidence

Develop a strategic understanding of flood risk from all sources.

5A Identify the areas where climate change will most increase the risk of flooding.

Understanding the impacts that climate change will have on flood risk in West Sussex, will be vital to meet the challenges of the future and ensure that flood risk continues to be managed and addressed appropriately. The council will identify the areas of the county (in particular areas of existing and future development) that are most susceptible to increased flood risk from climate change.

5B Continue to maintain and update records of flood events and share data with partner organisations to develop a picture of flood risk within West Sussex.

West Sussex County Council will continue to maintain its records of flood events across the county to develop its understanding of where flooding occurs, how often these areas flood and the impacts of flooding when it occurs. This will involve collaboration with the various Risk Management Authorities in order to build a comprehensive record of local flood risk and access local knowledge where applicable.

5C Continue to update records of land drainage enquires and ordinary watercourse land drainage consents where there may be a significant impact on local flood risk.

Land drainage is an important consideration for local flood risk management in West Sussex. The County Council will continue to maintain and update its database of land drainage enquiries and ordinary watercourse in cases where local flood risk may be affected.

5D Maintain and update the LLFAs register of structures and features likely to have a significant impact on flood risk now or as a result of the impacts of climate change.

As Lead Local Flood Authority, the council is under a duty to maintain a register of structures and features in its area that are likely to have a significant impact on flood risk, as set out under Section 21 of the Flood and Water Management Act 2010. This includes information regarding ownership and the state of repair. West Sussex County Council currently holds this information, which will be updated where appropriate.

5E Screen local flood risk issues and identify where it may be necessary or appropriate to undertake a formal flood investigation.

The Lead Local Flood Authority will screen local flood risk issues and identify where it may be appropriate to undertake a formal flood investigation as outlined under Section 19 of the Flood and Water Management Act 2010. LLFAs have a duty to investigate flooding incidents within their area, to the extent that the LLFA considers it necessary or appropriate. The County Council's criteria for undertaking an investigation are outlined in Section 2.5.4 of this strategy.

5F Improve the evidence base, understanding and awareness of surface water flood risk across West Sussex.

The Lead Local Flood Authority will take a risk-based approach and identify Priority Areas for surface water flood risk throughout the county. The LLFA will improve the quality of surface water mapping where appropriate, to provide a comprehensive understanding of localised risk and to more effectively develop proposals to manage surface water flooding.

5G Develop an evidence base and proposals to improve the management, awareness and understanding of groundwater risk across West Sussex.

Groundwater flooding and the impacts of high groundwater on surface water drainage is often poorly understood in comparison to other flood risks. The council will improve its evidence base for groundwater risks specific to West Sussex and promote the awareness and understanding of these risks, particularly relating to the impacts on surface water drainage systems.

4.2.6 Objective 6: Sustainability

Contribute positively to sustainable growth and support environmental net gain by influencing wider development, redevelopment and regeneration plans to deliver flood risk benefits.

6A Develop a policy approach to manage both the water quantity and water quality impacts of new developments throughout West Sussex in sensitive catchments.

Working in partnership, West Sussex County Council will develop a policy approach to managing the impacts of increased volumes of water and degradation in water quality resulting from new developments on sensitive catchments in West Sussex, with emphasis on developing and promoting a holistic approach to sustainable water management, multiple benefits and Environmental Net Gain throughout the county.

6B Provide advice and support to Local Planning Authorities on Local Plan policy and site allocations.

The County Council will advise Local Planning Authorities through the Local Plan process by reviewing site allocations in terms of flood risk and surface water drainage implications. As Lead Local Flood Authority, the County Council will feed into Strategic Flood Risk Assessments within the county by liaising with the Local Planning Authority, consultants and Risk Management Authorities, and through doing so provide a current assessment of flood risk and potential future schemes in the Local Plan areas.

6C Support communities in understanding the flood risk implications for neighbourhood plans.

Neighbourhood planning empowers local residents to shape their communities through developing a neighbourhood plan that allows planning policies to be set and allows granting of planning permission through Neighbourhood Development Orders. The County Council will support the development of neighbourhood plans, by informing local community groups on the flood risk implications of development on their local community and advising them on the factors they should consider when drafting local policies.

6D Champion the incorporation and maintenance of Sustainable Drainage Systems (SuDS) through supporting Local Planning Authorities within our administrative area.

By working with Local Planning Authorities and developers, the County Council will champion and promote the use of Sustainable Drainage Systems (SuDS) in new developments throughout the county to deliver multiple benefits including water quantity and quality control and biodiversity and amenity gains. The County Council will work with the planning system to understand whether proposed drainage designs and use of SuDS techniques are appropriate for a site, and that clear maintenance arrangements are in place for the proposed lifetime of the development.

6E Engage appropriately in relevant consultations on the local flood risk and drainage aspects of major planning applications and provide support to Local Planning Authorities.

As statutory consultee to the planning system, the County Council will continue to engage with the planning system to advise and guide Local Planning Authorities on the local flood risk and surface water drainage implications of major development. The delivery of this advice will be achieved through effective partnership working where appropriate and in accordance with industry best practice. This includes providing site specific advice on individual planning

applications, liaising with developers and consultants, and the provision of pre-application advice when deemed necessary.

Chapter 5: Area prioritisation

5.1 Approach to prioritisation

West Sussex County Council has identified 25 Priority Areas within the county to help inform where the actions should be focussed. These have been classified using the Risk of Flooding from Surface Water dataset which shows the flooding that takes place from the 'surface runoff' generated by rainwater (including snow and other precipitation) for the 1 in 30-year (3.3% AEP), 1 in 100-year (1% AEP) and 1 in 1000-year (0.1% AEP) rainfall events. The Priority Areas have been considered by local experts from the Strategy Partners organisations, including the Borough and District Councils, the County Council, Southern Water, the South Downs National Park Authority and by the Environment Agency.

Approach to Priority Area ranking

The process to prioritise areas of West Sussex required properties at risk of flooding to be clustered and then an average number of properties per cluster to be calculated. The resulting value for each area has then been weighted based on the return period and records of historic flooding. To avoid heavily weighting the clusters towards urban regions only ground floor and basement properties have been used in this analysis.

Cluster analysis

The Multi Coloured Manual (MCM) codes within the National Receptor Database (NRD) were used to identify residential and non-residential properties. Non-residential properties were further classified into types of property (residential, emergency services, education, utility services, transport, offices, commercial and retail). These were counted where the building footprints (from Ordnance Survey MasterMap data) for each NRD data point intersected the Risk of Flooding from Surface Water dataset for each return period (3.3%, 1% and 0.1% AEPs).

Each property identified to be at risk of flooding was buffered by 50m to generate a 100m diameter circle around each property point. These buffers were then merged where they intersected to generate the clusters. A count of the total number of properties (residential and non-residential) at risk within each cluster was then undertaken to provide the number of properties at risk within each cluster and any clusters with fewer than three properties in them were discounted from further analysis. Clusters were generated for each for the three return periods (3.3%, 1% and 0.1% AEPs)

To generate an individual "risk" value for each area, the total number of properties (residential and non-residential) within all the clusters (containing three or more properties) in a parish was divided by the total number of clusters in each parish.

Weighting

To consider the impact that the different AEPs have on the prioritisation of the areas a combined approach was undertaken. The scoring for this was generated by multiplying the individual averages for each AEP by their AEP and then adding them together. i.e. the 3.3% AEP averages were multiplied by 3.3, the 1% AEP averages were multiplied by 1 and the 0.1% AEP averages were multiplied by 0.1.

To take account of information provided by the Risk Management Authorities (RMAs) a historic weighting has also been applied to each parish based on the following information:

- Local authority: derived from information provided by local authorities as part of this study.

- Environment Agency: from the Historic Flood Outlines dataset.

- Southern Water: from the Southern Water Sewer Incident Report Form system (SIRF).

The weighting has been applied by uplifting the prioritisation scores by 10% for each type of reported flooding, i.e. if flooding has been reported by the Environment Agency and Southern Water in a parish then the score would be uplifted by 20%.

Normalisation

Once the weighting was applied the prioritisation scores were then normalised by dividing each parish score by the maximum score – giving a score between one and zero for each parish.

The approach described here further refines the approach taken in the last cycle which grouped local clusters of 10 or more properties where they were at risk of either surface water flooding, river flooding or sea flooding during a 1 in 200-year (0.5% AEP) event. The previous approach identified 53 'wet spots'.

For the purpose of this assessment West Sussex has been split in to 161 areas based on parish, borough and district boundaries. These areas are listed alphabetically in Appendix E. The total number of properties (residential and non-residential and including properties above ground floor level) at risk of flooding from surface water during a 1 in 30-year (3.33% AEP) event, 1 in 100-year (1% AEP) event, 1 in 1000-year (0.1% AEP) event and 1 in 100-year event with a 40% uplift in rainfall to account for climate change have been included along with the prioritisation score for each parish. For further information on the likelihood of flooding occurring refer to Section 1.3.

Using the prioritisation score, 25 Priority Areas, most at risk of flooding from surface water were identified (marked in bold and blue in Appendix E). Over the five-year period of the strategy these areas will be prioritised for flood risk reduction or investigation work by Risk Management Authorities.

During the five year period of this strategy (2021 to 2026) it is anticipated that five Priority Areas will be considered each year. For each area, flood risk management activities will be progressed based on the actions set out in section 4.2. These will include supporting communities to adapt and become more resilient to flood risk, collaborating with other Risk Management Authorities and community groups, seeking opportunities to maximise benefits and funding, enhancing and developing the evidence base and developing sustainable solutions. Progress and outcomes for each Priority Area will be measured against the actions.

A corresponding plan has been created for each of these 25 Priority Areas. These have been included in Appendix G. These plans show the Risk of Flooding from Surface water along with the clusters identified from the 1 in 30-year

(3.3% AEP), 1 in 100-year (1% AEP) and 1 in 1000-year (0.1% AEP) flood extents using the methodology outlined above. Figure 5-1 shows the location of these areas. As can be seen these are generally located in the east of the county, reflecting the higher risk of surface water flooding in these areas.

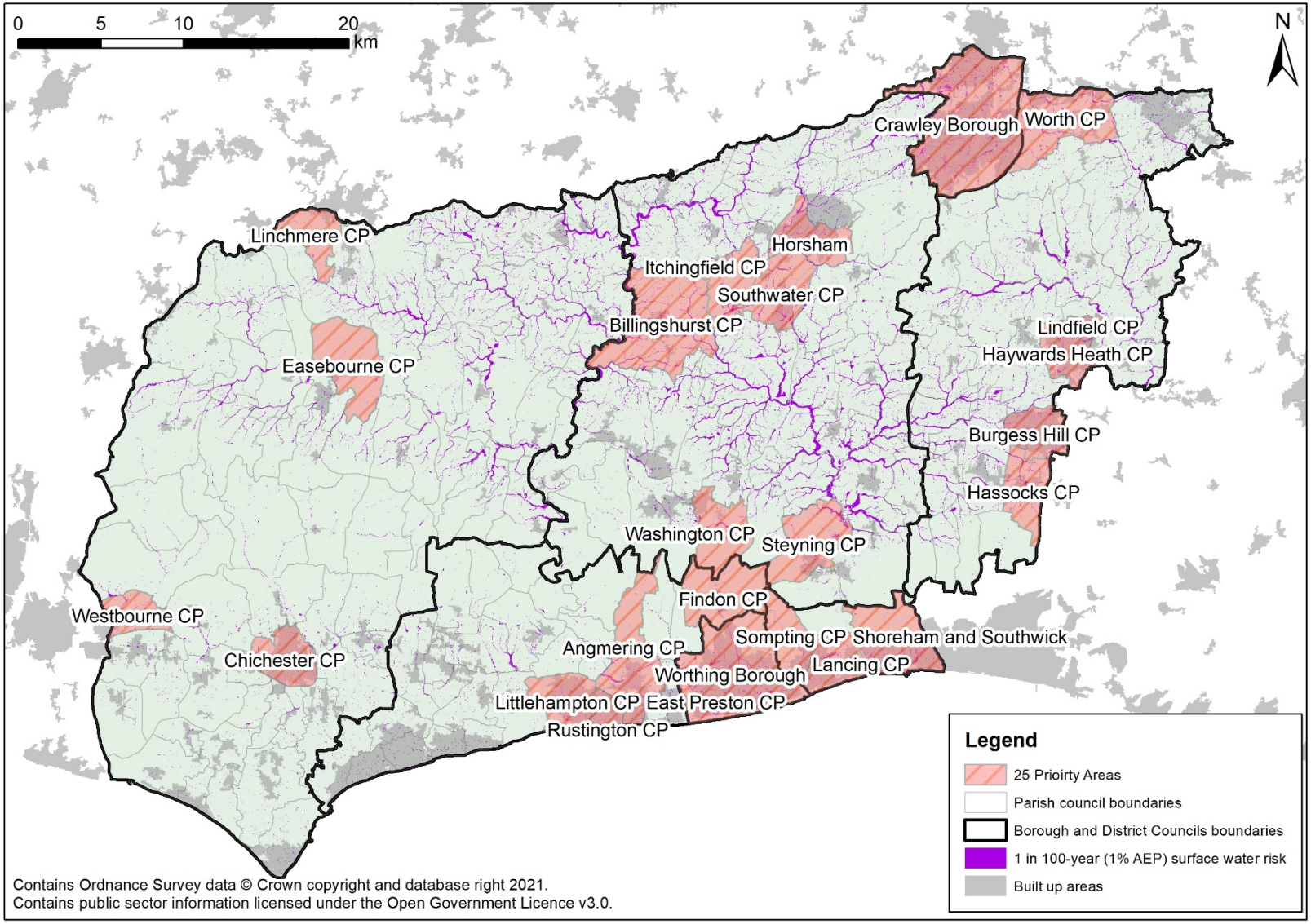


Figure 5-1: The 25 Priority Areas most at risk of surface water flooding in West Sussex

The twenty-five locations (Priority Areas) identified to be most at risk of flood from surface water flooding (Figure 5-1) will be considered first for flood risk reduction investigation work by Risk Management Authorities (RMAs). This prioritisation does not mean funding is available, or has been agreed, nor does it exclude important work from happening elsewhere if a good cost benefit or multiple benefits can be achieved. The priorities will be reviewed as progress is made.

There are many isolated properties at risk of flooding in the county that are outside of these Priority Areas. The strategy has focused on Priority Areas because funding for capital projects typically requires a high cost benefit ratio that is generally not met by single residential property projects. The strategy supports household Property Flood Resilience (PFR) measures that can mitigate or reduce the impacts of flooding at a property level scale. This approach is consistent with the revised national strategy published in July 2020 which seeks to raise awareness of the benefits and encourage the uptake of PFR. The prioritised locations will promote the areas and allow Risk Management Authorities to consider partnership funding and implementation. Difficult decisions still need to be taken, as the allocation of funding will vary from year to year.

Chapter 6: Implementation, monitoring and review

6.1 Implementation and monitoring

This local flood risk management strategy for 2021 – 2026 represents a co-ordinated county-wide approach to flood risk management. The strategy sets out the roles, responsibilities, objectives, and the priorities of the Risk Management Authorities. The local authorities and Environmental Agency, in partnership with the other Risk Management Authorities and key stakeholders, will use the investigations and projects on the work programme to manage local flooding issues across West Sussex over the next five years.

The key focus for the next five years is to carry out improvements to address known local flooding problems. The Priority Areas, identified by surface water flood mapping and historic flood risk, are to be considered first, but any value for money project with positive benefits, irrespective of its location, will be considered. In times of austerity, funding capital works is going to be challenging, especially where projects are required to have some partnership contributions in order to proceed. It may be that in many areas the risk of flooding is managed through early flood warnings and local resilience measures. Local authorities will also help communities take action to help themselves and carry out their own riparian responsibilities.

The separate work programme will be reviewed by the West Sussex County Council Operations Group and Strategic Board. The work programme will be updated with progress, new information and new projects that emerge, and will be prioritised so that all projects, be they large or small, from all sources of flooding are considered on an equal basis.

Where appropriate, West Sussex County Council, will seek to fund schemes through multiple routes, details of a number of funding sources currently available can be found in Appendix D. Additionally, the Council will continually seek news sources of funding to support our flood risk management objectives.

As well as physical works, the Risk Management Authorities in West Sussex will seek to reduce flood risk through their other actions such as planning and development control, highways management, consenting of watercourses and drainage works. We will seek to retain and develop the expertise already present in the County Council as well as increasing capacity where required. Through collaborative working and addressing issues at the appropriate authority level, be that at town, parish, borough, district or county council we will make the best use of the resources and funding available. All the authorities involved are committed to delivering these objectives and to reduce flood risk to the communities of West Sussex. West Sussex County Council will continue to take responsibility and lead these meetings with the other stakeholders.

6.2 Review

The strategy will be reviewed annually to check that objectives, actions and policies are appropriate and remain compatible and achievable. The work programme will be a continually evolving document and will be updated at least quarterly. A regular review of the action plan will be carried out at the same time and should highlight any issues which may affect the ability to deliver the

objectives set out in the strategy. Minor changes to the strategy will be made as required and changes noted. If major changes are required due to new information or polices then a new public consultation will be held. For moderate changes, a decision will be made by the West Sussex Strategic Flood Risk Management Board as to whether additional public consultation is required. The definitions of minor, moderate and major changes are set out in the box below. The most up to date documents will always be found on the West Sussex County Council website.

Types of change to strategy document

Minor – text corrections that do not alter the context or outcomes of the strategy; mapping corrections; change where no further study or new information will be required.

Moderate – other changes to the Action Plan, Priorities or Objectives which may impact on the strategy delivery or textual corrections where context is altered; mapping corrections that affect the numbers of properties affected by flooding or erosion NOT leading to changes in the Priority Areas; changes impacting nationally designated sites, e.g. SSSI, NNR, AONB, Conservation Area.

Major – significant changes to the Action Plan, Priorities or Objectives affecting delivery of strategy objectives; mapping corrections that affect the numbers of properties affected by flooding or erosion leading to changes in the Priority Areas; changes of objectives; significant changes to Government policy including funding; changes impacting on internationally designated sites, e.g. SAC, SPA, RAMSAR and MCZ.

Appendix A

Document control

Document information

Title	West Sussex Local Flood Risk Management Strategy (2021 – 2026)
Owner	Lead Local Flood Authority
Version	Second cycle V1 (2021 – 26)
File status	For adoption

Revision History

Summary of changes	Completed by	Date	Current version
First issue of second cycle	West Sussex Lead Local Flood Authority	June 2021	V1

Acknowledgments, licencing and disclaimer

Appendix B

Key terms

Term / Acronym	Definition
Annual Exceedance Probability (AEP)	The chance or probability of an event occurring annually. It is expressed as a percentage.
Association of SuDS Authorities (ASA)	The ASA is a membership of organisations whose aim it is to promote and develop the use of sustainable drainage within all new developments. The ASA offers one voice to promote and provide consistency on SuDS nationally.
Category 1 responder	Those Category 1 responders are organisations at the core of the response to most emergencies (the emergency services, Environment Agency, local authorities, NHS bodies). Category 1 responders are subject to the full set of civil protection duties.
CFMP	Catchment Flood Management Plans (CFMPs) give an overview of the flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years.
CLG Department for Communities and Local Government	CLG was established in May 2006 (replacing the Office of the Deputy Prime Minister) and is responsible for building regulations, community cohesion, decentralisation, fire services and resilience, housing, local government, planning, race equality & urban regeneration. The Department works to move decision making power from central Government to local councils, helping put communities in charge of planning, increasing accountability, and enabling citizens to see how their money is being spent.
Cluster	A group or concentration of properties that may be affected by flooding. These properties are considered to be at risk of having internal damage from flooding.
Coastal Groups	Coastal Groups comprise of all the key partners in coastal management – principally the coastal managers from maritime Local Authorities, Ports Authorities and the Environment Agency.

Term / Acronym	Definition
Culvert	A culvert is a watercourse that has been enclosed in a structure such as a pipe.
Combined Sewer	A separate underground pipe system designed specifically for transporting sewage, excess rain and surface water from houses, commercial buildings and roads for treatment or disposal.
Defra	Department for Environment, Food and Rural Affairs.
Duty	Duty is a legal obligation, set out by legislation, which is imposed on an individual or organisation requiring adherence.
Boroughs and Districts	The second tier authorities. There are 326 district/borough level subdivisions in England, of which seven are in West Sussex County. This level runs services such as planning, waste and council housing.
Flood and Coastal Erosion Risk Management Grant in Aid (FCERM GiA)	Flood and Coastal Erosion Risk Management Grant in Aid is the central funding pot of Defra (The Department of Food and Rural Affairs) that is spent each year on flood risk reduction measures.
Flood Map for Planning	The Flood Map for Planning is a multi-layered map which provides information on flooding from rivers and the sea for England and Wales. The Flood Map also has information on flood defences and the areas benefiting from those flood defences. The flood zones do not take into account flood defences.
Flood Risk Assessment (FRA)	A Flood Risk Assessment is an assessment of the risk of flooding from all flooding mechanisms. It typically includes the identification of flood mitigation measures and should provide advice on actions to be taken before and during a flood. These are typically produced to support a planning application for development.
Flood Risk Asset / Structure	A flood risk asset is a built structure, embankment or natural feature that acts to reduce flood risk to an area. Each asset varies in terms of its type, condition, length, and maintenance.

Term / Acronym	Definition
Flood Zone	Flood Zones have been created by the Environment Agency (and LPA in the case of Flood Zone 3b) to be used within the planning process to help determine the likelihood of somewhere flooding from fluvial sources, ignoring the presence of defences. Flood Zone definitions are set out in the National Planning Policy Guidance.
Fluvial flooding (River flooding)	Flooding resulting from water levels exceeding the bank level of a river or stream.
Flood and Water management Act (FWMA)	Flood and Water Management Act 2010. The FWMA implements the recommendations from Sir Michel Pitt's Review of the floods in 2007 and places a series of responsibilities on the council. The main aim of the Act is to improve flood risk management.
Green Infrastructure (GI)	Green Infrastructure (GI) refers to a strategically planned and managed network of green spaces and other environmental features vital to the sustainability of an area. It is defined as 'network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities'.
Groundwater flooding	Flooding that occurs when water levels in the ground rise above surface levels. It is most likely to occur in areas underlain by permeable geology.
Internal Drainage Boards (IDBs) / Internal Drainage Districts (IDDs)	An Internal Drainage Board / District is a public body that has been established under statute in areas of special drainage need. An IDB / IDD holds permissive powers to undertake work to deal with matters affecting water levels, land drainage and flood risk within a defined boundary.
Lead Local Flood Authority (LLFA)	Lead Local Flood Authority – Local Authority (upper or unitary council) responsible for taking the lead on local flood risk management. In this area it is West Sussex County Council.
Likelihood	The probability of something occurring.

Term / Acronym	Definition
'Local' flood risk	Local flood risk is defined as flooding from surface water, groundwater and ordinary watercourses. If other sources of flood risk (river or sea risk for example) interact with local sources, it is common for everything to be considered together. This Strategy considers all types of flooding.
Local Levy	Local levy is a funding pot governed by the Regional Flood and Coastal Committees for flood alleviation schemes.
Local Planning Authority (LPA)	The local government body that is empowered by law to exercise urban planning functions for a particular area. Within West Sussex the Local Planning Authorities are the seven Borough and District Councils and the South Downs National Park Authority.
Local Resilience Forum (LRF)	LRFs are multi agency partnerships made up of representatives from local public services, including the emergency services. These agencies are known as category 1 responders, as defined under the Civil Contingencies Act (2004).
Multi-Coloured Manual (MCM)	The UK Multi-Coloured Manual is a reference document to assess flood risks and its impacts, as well as the benefits of flood risk management measures
Main river	The Environment Agency is the lead authority on main rivers. Main rivers are a Defra statutory designation and are identified on the Environment Agency's 'Main River Map'. The Environment Agency has permissive powers to carry out work on main rivers.
NaFRA (flood map) Environment Agency	The National Flood Risk Assessment (NaFRA) includes flooding from all rivers with a catchment size greater than 3km2, and all flooding from the sea (both along the open coast and tidal estuaries). Smaller rivers are included in the assessment where they fall within the area that could be affected by an extreme flood (0.1% chance in any year). It does not include other forms of flooding such as from highway drains, sewers, overland flow or rising groundwater. The assessment takes into account the type, location and condition of flood defences.

Term / Acronym	Definition
National Receptor Dataset (NRD)	The NRD is a dataset derived from Ordnance Survey AddressBase data, providing property level information on property type, floor area and Flood Hazard Research Centre's Multi-Coloured Manual codes.
National Planning Policy Framework (NPPF)	The revised National Planning Policy Framework sets out government's planning policies for England and how these are expected to be applied.
National Strategy	The Flood and Water Management Act 2010 required the Environment Agency to develop, maintain and apply a strategy, describing what needs to be done by all authorities involved.
Non-public (private) sewer	A sewer owned by a person or company that is not Water Company owned.
Ordinary Watercourse	The Lead Local Flood Authority is the lead authority on Ordinary Watercourses, except where they are located within the Internal Drainage Board area, which in west Sussex are managed by the EA. All watercourses that are not designated Main River are considered to be Ordinary Watercourses and are the responsibility of landowners. Note, Ordinary Watercourse does not imply a "small" river, although it is often the case that Ordinary Watercourses are smaller than Main Rivers. Borough and District councils carry out a consenting role as part of a delegated arrangement with WSCC.
Partnership	The term partnership is used to refer to joint work and joint leadership of investigation or implementation of work undertaken by the Risk Management Authorities. The Risk Management Authorities are members of a West Sussex Flood Group and Flood Board, both of which discuss projects and the work programme.
Preliminary Flood Risk Assessment (PFRA)	The PFRA provides a high-level summary of significant flood risk, based on available information, describing both the probability and consequences of past and future flooding. A PFRA must consider flooding from surface runoff, groundwater and ordinary watercourses, and any interaction these sources may have with main rivers.

Term / Acronym	Definition
Permissive Powers	These are powers set out by legislation to enable Risk Management Authorities to carry out works where it deems necessary and appropriate.
Planning Practice Guidance (PPG)	The Planning Practice Guidance is a series of guidance documents, in web format, written to support the application of the NPPF.
Pitt Review	Comprehensive independent review of the 2007 summer floods by Sir Michael Pitt, which provided recommendations to improve flood risk management in England.
Priority	This strategy has ranked areas of West Sussex based on clusters of properties at risk. These are identified by the latest flood mapping. The 25 areas ranked highest are referred to as 'Priority Areas'.
Property Flood Resilience (PFR)	PFR is a term used to refer to resistance measures that slow down or stop the ingress of water to a property and resilience measures which minimise damage and speed up recovery after flooding has occurred. Examples include door-boards, airbrick covers, non-return valves, porous plaster and raising electrics.
Riparian Owner	If you own land or property next to a watercourse i.e. a river, stream, culvert or ditch (that is not owned by others), then you are a 'riparian landowner' and have riparian rights and responsibilities.
Risk	In flood risk management, risk is defined as a product of the probability or likelihood of a flood occurring, and the consequence of the flood.
Risk Management Authorities (RMAs)	All authorities with duties or powers to carry out work on the drainage network, as described in the Flood and Water Management Act 2010.
Risk of Flooding from Surface Water (RoFSW)	The Risk of Flooding from Surface Water mapping is a national map showing flood risk from surface water across the whole of England. The mapping is available for the 1 in 30-year (3.3% AEP), 1 in 100-year (1% AEP) and 1 in 1,000-year (0.1% AEP) return period events.
Sewer flooding	Flooding caused by a blockage or overflow in a sewer or urban drainage system.

Term / Acronym	Definition
South East Seven (SE7)	A working group of seven Local Authorities with common interests that includes Kent County Council, East Sussex County Council, West Sussex County Council, Hampshire County Council, Medway Council, Surrey County Council and Brighton & Hove City Council.
RFCC	Southern Regional Flood and Coastal Committee (RFCC) and Thames Regional Flood and Coastal Committee are groups of elected members responsible for scrutinising and signing off the work programme.
SDNP / SDNPA	South Downs National Park / South Downs National Park Authority. The South Downs National Park covers an area of 1,627 square kilometres, including significant parts of West Sussex. The national park is administered by the South Downs National Park Authority.
Strategic Environmental Assessment (SEA)	A Strategic Environmental Assessment is a systematic decision support process, aiming to ensure that environmental and possibly other sustainability aspects are considered effectively in policy, plan and program making
Strategic Flood Risk Assessment (SFRA)	Strategic Flood Risk Assessments are a required part of the local planning process as set out in the NPPF. An SFRA helps various parties consider flood risk when making planning decisions about the design and location of any development or flood risk management features and structures.
Sewer Incident Report Form (SIRF)	A reporting database held by Southern Water containing details of properties which have been flooded as a result of hydraulic incapacity in the sewer network.
SMP	Shoreline Management Plans (SMPs) provide a long-term framework for dealing with coastal flooding and erosion over a large area. SMPs take into account risks to people and the developed, historic and natural environment. They also take climate change into account in planning long-term coastal management.
SuDS	Sustainable Drainage Systems. A drainage system designed to control surface water runoff close to where it falls and mimic natural drainage as closely as possible.

Term / Acronym	Definition
Surface Water	Rainwater (including snow and other precipitation) which is on the surface of the ground (whether or not it is moving), and has not entered a watercourse, drainage system or public sewer.
Surface Water Management Plan (SWMP)	Surface water management plans are projects to investigate local flooding issues such as flooding from sewers, drains, groundwater, and runoff from land, small watercourses and ditches.
The council	West Sussex County Council (unless stated otherwise)
'The strategy'	This document, the Local Flood Risk Management Strategy for West Sussex (2021 – 2026)
Watershed funding, Operation Watershed	Operation Watershed is an £8.25 million commitment to invest in highway drainage and environmental improvements in areas of the county worst affected by floods.
WFD	The Water Framework Directive 2000/60/EC is an EU directive which commits European Union member states to achieve good qualitative and quantitative status of all water bodies.
WSCC	West Sussex County Council
West Sussex Strategic Flood Risk Management Board	Made up of senior officers from WSCC, all Borough and District Councils, EA and Southern Water. The group's role is to take a strategic overview of the entirety of flood risk and drainage management across West Sussex.
West Sussex Flood Risk Management Group (WSFRMG)	The group comprises WSCC, the EA (Southern & Thames), Southern Water Services and the seven Borough and District Councils within West Sussex. Its role is to plan and act to reduce the risk and consequence of flooding now and in the future in West Sussex.
WSUD Water Sensitive Urban Design	Water-sensitive urban design (WSUD) is a land planning and engineering design approach which integrates the urban water cycle, including storm water, groundwater and wastewater management and water supply, into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.

Appendix C

Responsibilities under the Flood and Water Management act 2010

This strategy clarifies the roles and responsibilities for local flood risk, and the duties (where the relevant authority is completed to act) and permissive powers (where the relevant authority is allowed to act) that flood Risk Management Authorities have. It also builds on the existing partnerships developed in West Sussex and provides a framework for local communities to develop local partnerships and solutions.

Table C-1 sets out the duties and powers which are common to all Risk Management Authorities under the Flood and Water Management Act (2010).

Table C-1: Powers and duties given to Risk Management Authorities by the FWMA 2010

Responsibility	Comments	Power or Duty	Paragraph of Act
Strategic leadership	LLFAs are required to develop, apply, maintain and monitor a strategy for local flood risk management	Duty	9
Consistency with national and local strategies	RMAs must act in a manner which is consistent with the national and local strategies and guidance (Water Companies should act with regard to the Local Strategy)	Duty	11
Co-operation	All relevant Risk Management Authorities must co-operate with other RMAs in the exercise of their flood and coastal erosion risk management functions	Duty	13 and 14 (4)
Delegation	RMAs may arrange for a flood risk function to be exercised on its behalf (excluding the preparation and monitoring of the Local Flood Risk Management Strategy by the LLFA and the preparation and monitoring of a strategy for flood and coastal erosion risk management by the Environment Agency)	Power	13 (4)
Request information	The Environment Agency and LLFA may request information in connection with their flood risk management functions	Power	14
Investigate flood incidents	LLFAs have a duty to investigate flooding incidents within their area, to the extent that the LLFA considers it necessary or appropriate	Duty	19

Responsibility	Comments	Power or Duty	Paragraph of Act
Asset register	An LLFA must prepare and maintain a register of structures and features which are likely to have a significant effect on flood risk	Duty	21
Contribution towards sustainable development	In exercising flood risk management within the County, RMAs must aim to make a contribution towards the achievement of sustainable development	Duty	27
Works	Borough and district councils have powers to undertake works to manage flood risk from surface water, groundwater or ordinary watercourses. The LLFA is able to exercise the power either at the request of the district or borough council or after not less than six weeks' notice being given in writing by the LLFA to the district or borough council	Power	31 and Schedule 2, section 29 - amends Land Drainage Act (1991) section 14 and section 16 of the Land Drainage Act (1991)
Designation	In West Sussex, the LLFA and EA have permissive power to designate structures and features with flood risk significance, requiring owners to seek consent from the council to alter, remove or replace these	Power	30 and Schedule 1
Consenting and Enforcement	Consent is required from the LLFA (delegated to LPAs in West Sussex) before works can be carried out on a watercourse that is not a Main River. Enforcement may be carried out where required.	Duty	31 and Schedule 2, section 32 Amends Land Drainage Act 1991 section 23
Scrutiny from the LLFA democratic process	The flood risk management functions of RMAs which affect the LLFAs area must be available to be subjected to scrutiny from the Lead Local Flood Authority's democratic process	Duty	31 and Schedule 2, section 54. Amends section 21 of the Local Government Act 2000

Strategic leadership

Under paragraph 9 of the Flood and Water Management Act 2010, LLFAs have a duty to develop, apply, maintain and monitor a strategy for local flood risk management (this document).

West Sussex County Council chair the strategic leadership group that was formed in response to the new flood responsibilities enacted by the Flood and

Water Management Act 2010. The group is comprised of the Risk Management Authorities within West Sussex County, and meets quarterly with elected members to ensure that a joint management approach is taken.

To provide a framework for the strategic leadership role West Sussex County Council are required to produce a strategy (this document) to direct flood risk management and ways of working in accordance with legislation.

Consistency with national and local strategies

Under paragraph 11 of the Flood and Water Management Act 2010, Risk Management Authorities have a duty to act in a manner which is consistent with the national and local strategies and guidance (Water Companies should act with regard to the Local Strategy).

Risk Management Authorities should use the National Flood and Coastal Erosion Risk Management Strategy to help coordinate their work together with communities. The strategy provides a general framework for action to manage coastal change and flooding from all sources and it encourages communities and other organisations to get involved to help create climate resilient places.

West Sussex County Council have used the National Strategy as a basis for developing the Objectives and Actions within this Local Strategy.

Co-operation

Under paragraphs 13 and 14 (4) of the Flood and Water Management Act 2010, all relevant Risk Management Authorities have a duty to co-operate with other RMAs in the exercise of their flood and coastal erosion risk management functions.

Co-operation involves organisations and individuals working together to achieve more effective results than they could achieve through working alone. It is built on trust, good communication, sharing information and resources, and an improved understanding of the mutual benefits it can bring.

Co-operation respects the interests of those concerned, while at the same time promoting the wider interests of the group and its stakeholders. It is essential to help build local relationships between relevant authorities within and across operational boundaries. The aim of the duty to co-operate between Risk Management Authorities is to make sure that constructive and active engagement takes place, and it is expected that all Risk Management Authorities will co-operate in a reasonable way.

Further details can be found in the Co-operation and requesting information in flood and coastal erosion risk management guidance document published by the government.

Request information

Under paragraph 14 of the Flood and Water Management Act 2010, the Environment Agency and LLFA have the power to request information in connection with their flood risk management functions.

This partnership of Risk Management Authorities ensures that data and information is shared across organisations. The Flood and Water Management Act 2010 gives West Sussex County Council powers to request information

related to its flooding responsibilities. It is expected that the Risk Management Authorities within West Sussex County Council boundary share data on request.

Further details can be found in the Co-operation and requesting information in flood and coastal erosion risk management guidance document published by the government.

Investigate flood incidents

Under paragraph 19 of the Flood and Water Management Act 2010, LLFAs have a duty to investigate flooding incidents within their area, to the extent that the LLFA considers it necessary or appropriate.

Since April 2011 onwards West Sussex County Council has a duty to undertake flood investigations after an incident occurs, where it deems necessary or appropriate.

West Sussex County Council have developed the following eligibility criteria for investigating incidents of flooding:

- where there is ambiguity surrounding the source or responsibility of a flood incident;
- where internal flooding of one property has been experienced on more than one occasion;
- where internal flooding of five properties has been experienced during one single flood incident;
- where flooding resulted in disruption of one or more items of critical infrastructure;
- where a single flood incident resulted in flooding that affects vulnerable individuals; or
- where there is a risk to life as a result of flooding.

For the purpose of flood investigation and reporting critical infrastructure and vulnerable individuals shall be defined as:

Critical Infrastructure:

- Major disruption to public infrastructure i.e. power generation and distribution, ICT infrastructure, water supply and treatment major transport links. Major disruption to transport links shall mean that the transport network was totally impassable for a significant period.
    - Trunk roads and major rail links – 2 hours or more (only if investigation not carried out by Highways England or Network Rail)
    - Class A and B highways and other railway links – 4 hours or more
    - Class C highways – 10 hours or more
    - Class D highways – 24 hours or more.

Vulnerable Individuals:

This category includes younger people, older people, and people with disabilities or health problems. The key indicator is the effect of the flooding event upon such amenities as hospitals, care and nursing homes, schools, etc. If any

vulnerable individuals are placed at risk, or if the services provided to them are disrupted for a significant period, then this should warrant action.

The investigation must set out which Risk Management Authorities have a role to play, establish the reasons for the flood and what further actions can be taken. If flooding has occurred to more than ten properties in one incident, then a full investigation will be triggered. Depending on the circumstances of smaller flooding events, an initial investigation may still be required for flooding of less than ten properties.

West Sussex County Council conducted an investigation into the flooding that occurred in June 2012. The Council formed a multi-agency group comprising the Environment Agency, Southern Water, Arun District Council, Chichester District Council, and Worthing Borough Council to investigate the flooding. It was identified that in the vast majority of cases flooding occurred simply due to the exceptionally high volume of rainfall. The process also highlighted some limitations in the management of drainage and the drainage infrastructure itself. This investigation report has been published on the Flood Reports, Projects and Policies page on the West Sussex County Council website.

Maintain the West Sussex flood asset register

Under paragraph 21 of the Flood and Water Management Act 2010, LLFAs have a duty to prepare and maintain a register of structures and features which are likely to have a significant effect on flood risk.

The duty to produce and maintain a flood asset register commenced in April 2011. Assets are defined as structures that in the opinion of the Lead Local Flood Authority are likely to have a significant effect on flood risk. West Sussex County Council have used Defra guidance and local expertise in Borough and District Councils to collate this data. This is reported periodically to the Environment Agency in line with the requirements of Section 18 of the Flood and Water Management Act (2010).

Further details can be found in the guidance document, Lead Local Flood Authority: Duty to Maintain a Register, published by the government.

Contribute towards sustainable development

Under paragraph 27 of the Flood and Water Management Act 2010, in exercising flood risk management within the County, RMAs have a duty to aim to make a contribution towards the achievement of sustainable development.

Flood and coastal erosion Risk Management Authorities should aim to make a contribution towards the achievement of sustainable development when exercising their flood and coastal erosion risk management functions. Sustainable development in the context of flood and coastal erosion risk management should include:

- taking account of the safety and wellbeing of people and the ecosystems upon which they depend
- using finite resources efficiently and minimising waste
- taking action to avoid exposing current and future generations to increasing risk; and

- improving the resilience of communities, the economy and the natural, historic, built and social environment to current and future risks.

Further details can be found in the guidance document, Guidance for Risk Management Authorities on Sustainable Development in relation to their Flood and Coastal Erosion Risk Management Functions, published by the government.

Defra guidance on sustainable development in relation to flood and coastal erosion risk management functions defines some of the ways in which West Sussex County Council will contribute. The key topics supported in this strategy are:

- Tackling climate change and to use techniques that enhance the natural environment
- Promoting fairness in improving the wellbeing of communities
- Using green economic and operations decisions
- Using sound science to develop solutions
- Being transparent and be accountable to the public
- Using techniques and solutions which do not prevent future generations from meeting their own needs and effectively managing their own flood risk.

Designation

Under paragraph 30 and Schedule 1 of the Flood and Water Management Act 2010, the LLFA, LPAs and EA have permissive powers to designate structures and features with flood risk significance, requiring owners to seek consent from the authority to alter, remove or replace these.

West Sussex County Council as Lead Local Flood Authority, the Local Planning Authorities and the Environment Agency have powers to designate third party and privately owned artificial or natural features that are important for flood or erosion risk management. Designation means that a feature may not be altered, replaced or removed without consent. Designated features will be added to the asset register that is maintained by West Sussex County Council.

Works

Under paragraph 31 and Schedule 2, section 29 (amends section 14 and section 16 of the Land Drainage Act (1991)) of the Flood and Water Management Act 2010, Borough and district councils have powers to undertake works to manage flood risk from surface water, groundwater or ordinary watercourses.

West Sussex County Council, similarly to the Environment Agency and the Borough and District Councils, have permissive powers to construct works to protect people and property where these are economically justified. The LLFA is able to exercise the power either at the request of the district or borough council or after not less than six weeks' notice being given in writing by the LLFA to the district or borough council. These powers are not a legal obligation but indicate the authority to manage flood risk from surface water, groundwater and ordinary watercourses if desired. In a similar way the Environment Agency has powers

but not a legal obligation to manage main rivers and the coast. There is no right to flood or erosion protection, except in very limited circumstances.

Consenting and enforcement

Under paragraph 31 and Schedule 2, section 32 (amends section 23 of the Land Drainage Act (1991)) of the Flood and Water Management Act 2010, LLFA (delegated to the Boroughs and Districts within West Sussex) has the power to regulate ordinary watercourses to maintain a proper flow by consenting works that are to be carried out on a watercourse that is not a Main River or within an Internal Drainage District and by taking enforcement action where damaging or potentially damaging works have been undertaken without consent or are in contravention to an issued consent.

Consenting of works by third parties on ordinary watercourses under Section 23 of the Land Drainage Act 1991 were transferred from the Environment Agency to the Lead Local Flood Authorities. The consenting role for West Sussex County Council commenced in April 2012. Consent is refused if the works (a dam, weir, culvert, mill or other obstruction) would result in an increase in flood risk or adversely affect nature conservation. An application can be made using the form that is available on the Ordinary Watercourse Land Drainage Consent page on the West Sussex County Council website.

The consenting role is being undertaken by the seven Borough and District Councils in West Sussex, following delegation from West Sussex County Council. The Borough and District Councils or West Sussex County Council can undertake works on ordinary watercourses.

The County Council and Borough and District Councils are each responsible for the enforcement of their responsibilities. At county level this includes ordinary watercourse enforcement by administering the duties of riparian owners of watercourses including keeping the watercourse free of blockages and obstructions. This enforcement role is enacted by the Borough and District Councils supported by West Sussex County Council when legal action is required.

There are four main areas where the LLFA (supported by the Borough and District Councils) is empowered to take enforcement action in relation to ordinary watercourses, out site of the Arun Internal Drainage District:

Designation of features (Schedule 1, Flood and Water Management Act, 2010) – LLFAs are able to take enforcement action against a person who alters, removes or replaces a designated feature without prior consent.

Obligations to repair watercourse (Section 21 of the Land Drainage Act, 1991, as amended by the Flood and Water Management Act, 2010) – LLFAs can serve notice on anyone with an obligation to do work to repair and maintain a watercourse, bridge or drainage structure prior to the commencement of the Land Drainage Act (i.e. 01 December 1991) and who has previously failed to do so.

Prohibition of obstructions in watercourse (Section 23 of the Land Drainage Act, 1991) – enforcement can be served where an obstruction has been placed in a weir without the consent of the drainage board. This can include a mill, dam, weir or other obstruction to the flow.

Powers to require works for maintaining flow of watercourse (Section 25 of the Land Drainage Act, 1991) – provisions are made for enforcement in those instances where the proper flow of an ordinary watercourse is being impeded.

Scrutiny from the LLFA democratic process

Under paragraph 31 and Schedule 2, section 54 (amends section 21 of the Local Government Act (2000)) of the Flood and Water Management Act 2010, the flood risk management functions of RMAs which affect the LLFAs area must be available to be subjected to scrutiny from the Lead Local Flood Authority's democratic process.

The act extends the reach of existing local authority overview and scrutiny committees by extending the number of entities with duties to respond to the committees, to include all the flood Risk Management Authorities, and the scope of enquiry of these committees.

These Regulations augment these duties by including a duty to attend before the overview and scrutiny committee to give information orally, if requested by that committee. They also require responses to be made within 28 days, unless extended by agreement, and to include an indication of the action the authority proposes to take. The regulations also contain provisions to safeguard any confidential information provided to the scrutiny committee against disclosure.

Responsibilities outside of the Flood and Water Management Act 2010

Statutory consultee on sustainable drainage systems

Increasing urbanisation and development has caused problems with increased run-off after sudden or prolonged rain. As areas of vegetation are replaced by impermeable concrete, tarmac or roofed areas the ground loses its ability to absorb rainwater. This rain is instead directed into existing surface water and highway drainage systems, often overloading them and causing floods. The idea behind sustainable drainage systems (SuDS) is to try to replicate natural systems. The designs use cost effective solutions with low environmental impact to drain away surface water run-off naturally using a range of techniques. The water is released slowly back into the environment, such as into watercourses or by infiltration into the ground.

Since April 2015[1] local planning policies and decisions on planning applications relating to major development or major commercial development have had to make provision for sustainable drainage systems to manage run-off, where major developments are defined as:

- residential development: 10 dwellings or more, or residential development with a site area of 0.5 hectares or more where the number of dwellings is not yet known; and

[1] House of Commons: Written Statement (HCWS161) Written Statement made by: The Secretary of State for Communities and Local Government (Mr Eric Pickles) on 18 Dec 2014. Department for Communities and Local Government (2014).

- non-residential development: provision of a building or buildings where the total floor space to be created is 1,000 square metres or more or, where the floor area is not yet known, a site area of one hectare or more.
- development carried out on a site having an area of 1 hectare or more.
- Waste and minerals development.

The Local Planning Authority must satisfy themselves that clear arrangements are in place for future management of the maintenance arrangements and the LLFA (West Sussex County Council), as statutory consultee is required to review the drainage and Sustainable Drainage proposals to confirm they are appropriate.

When considering planning applications, local planning authorities should seek advice from the relevant flood risk management bodies, principally the LLFA on the management of surface water (including what sort of SuDS they would consider to be reasonably practicable), satisfy themselves that the 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 development's lifetime. Judgement on what SuDS system would be reasonably practicable should be through reference to Defra's Non-statutory technical standards for SuDS document and should take into account design and construction costs.

The Defra Non-Statutory Technical Guidance document was developed to sit alongside PPG and provide non-statutory standards as to the expected design and performance for SuDS. The LPA will make reference to these standards when determining whether proposed SuDS are considered reasonably practicable and appropriate.

It is essential that developers consider sustainable drainage at an early stage of the development process – ideally at the master-planning stage. This will assist with the delivery of well designed, appropriate and effective SuDS. Proposals should also comply with the key SuDS principles regarding solutions that deliver multiple long-term benefits. These principles are:

Quantity: should be able to cope with the quantity of water generated by the development at the agreed rate with due consideration for climate change via a micro-catchment based approach

Quality: should utilise SuDS features in a "treatment train" that will have the effect of treating the water before infiltration or passing it on to a subsequent water body

Amenity/Biodiversity: should be incorporated within "open space" or "green corridors" within the site and designed with a view to performing a multifunctional purpose

West Sussex County Council as part of the South East Seven Group has developed a guide for master planning sustainable drainage into developments. The Water, People, Places guidance was created with partner authorities and includes design guidance for developers which highlights the need to consider SuDS at an early planning stage. In addition, the guidance identifies specific site characteristics and constraints that can limit the effectiveness of SuDS including (but not limited to) existing flood conditions, runoff characteristics, high groundwater levels and Groundwater Source Protection Zones (GSPZ),

topography, soil type, geology, contaminated land, existing infrastructure, land ownership, ecology and space constraints.

West Sussex County Council have also published a policy statement, setting out how policy statement sets out how the council, as a statutory consultee, will review drainage strategies and surface water management provisions associated with applications for development.

Areas with low permeability soils and bedrock may still have potential for surface detention features, such as ponds and basins, while areas at risk of fluvial flooding can provide attenuation and biodiversity through the implementation of conveyance features, such as swales, and wetland areas. In more densely populated areas, like Crawley, Horsham, Chichester and Shoreham, space efficient SuDS approaches may be suitable, such as green roofs, rills and permeable paving.

From April 2020 the Sector Guidance in relation to the adoption of sewerage assets by sewerage companies in England along with the Design and Construction Guidance came into effect. The updated rules and guidance within these documents allow English water and sewerage companies to adopt a wider range of sewer types, including those with Sustainable Drainage (SuDS) elements.

Requirements under the EU Flood Directive: Flood Risk Regs 2009

The Flood and Water Management Act (2010) must be considered alongside the EU Flood Directive that was transposed into UK law as the Flood Risk Regulations in December 2009. The Flood Risk Regulations require three types of assessment to be carried out in England; the Preliminary Flood Risk Assessment, Flood Hazard and Flood Risk Maps, and, Flood Risk Management Plans.

The recent update to the English Preliminary Flood Risk Assessment (2018) has refined the identified Flood Risk Areas (FRA). FRAs are areas where risk of flooding is likely to be significant for people, the economy or the environment. 116 communities were identified to be at significant flood risk in England. Two of these are located in West Sussex: Crawley and Worthing.

Planning

The Borough and District Councils and the South Downs National Park Authority (the Local Planning Authorities) are responsible for managing planning control and making decisions on what will or will not be granted planning permission. West Sussex County Council is responsible for planning control of libraries, waste sites, mineral sites and schools.

Areas at high risk of flooding are identified within the Local Planning Authorities Strategic Flood Risk Assessments (SFRA). Proposed development sites at high risk will be required to satisfy the Sequential and, where necessary, Exception Tests in accordance with the National Planning Policy Framework (NPPF).

The sequential test compares the site on which development is proposed with other available sites to find out which has the lowest flood risk. A sequential test is required if the development site is located within either Flood Zone 2 or Flood Zone 3 (see Table C-2).

If the sequential test shows that it is not possible to use an alternative site, the exception test may be required. The exception test shows how flood risk will be managed across the proposed site. It needs to show that;

a. the sustainability benefits of the development to the community outweigh the flood risk; and

b. the development will be safe for its lifetime taking into account the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

The exception test is required if the development type is;

- highly vulnerable (for example police and ambulance stations, basement dwellings and caravans) and in flood zone 2;
- essential infrastructure (for example transport and utility infrastructure) in flood zone 3a or 3b; or
- more vulnerable (for example hospitals, care homes, houses, drinking establishments, education establishments and holiday lets) in flood zone 3a.

Site specific Flood Risk Assessments (FRA) are required by developers to provide a greater level of detail on flood risk and any protection provided by defences and, where necessary, demonstrate the development satisfies part 'b' of the Exception Test.

The NPPF classifies flood risk into four different zones of probability (Table C-2). These zones are set out in Strategic Flood Risk Assessments (SFRA) which are used to inform local plans and decisions regarding development and flood risk.

Table C-2: Flood Zones

Flood Zone	Definition
Zone 1 (Low probability)	Land having a less than 1 in 1,000-year (0.1% AEP) annual probability of river or sea flooding (shown as 'clear' on the Flood Map – all land outside Zones 2 and 3).
Zone 2 (Medium Probability)	Land having between a 1 in 100-year (1% AEP) and 1 in 1,000-year (0.1% AEP) annual probability of river flooding; or land having between a 1 in 200-year (0.5% AEP) and 1 in 1,000-year (0.1% AEP) annual probability of sea flooding (land shown in light blue on the Flood Map).
Zone 3a (High Probability)	Land having a 1 in 100-year (1% AEP) or greater annual probability of river flooding; or Land having a 1 in 200-year (0.5% AEP) or greater annual probability of sea flooding (land shown in dark blue on the Flood Map).
Zone 3b (Functional Floodplain)	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency (not separately distinguished from Zone 3a on the Flood Map).

Response, rescue and recovery

The West Sussex Multi-Agency Flood Plan contains the Sussex Resilience Forum procedures for response, rescue and recovery. The plan sets out when a response is triggered and when adverse weather arrangements begin. These plans are in place across the country to ensure good management and coordination in an emergency situation. All emergency response organisations including the police, fire and rescue, ambulance services, West Sussex County Council, the Borough and District Councils and the Environment Agency are signed up to the plan. Parishes and Town Councils also have an important role to play before, during and after an event.

The plan is in two sections, a generic overview and a more detailed plan for each urban centre within the county. The plan considers all types of flooding; coastal, river, surface, ground, sewer flooding. The triggers for multi-agency response are Environment Agency Flood Alerts and Warnings, Met Office Weather Warnings, and reports of flooding. Considerations involve pre agreed communication between Risk Management Authorities to identify the level of risk and decide on the action. Depending on the size of the event this could be to do nothing, activate Part 1 of the Multi-Agency Flood Plan, or activate both parts.

If a response is activated, adverse weather arrangements are supported by the Sussex Emergency Response and Recovery Document and Multi-Agency Strategic Co-ordinating Group Guidance. The multi-agency response will either be an Adverse Weather Teleconference (chaired by the Environment Agency), an Adverse Weather Office (chaired by the Police), or, to set up Strategic Co-coordinating Group (chaired by the Police).

With regards to rescue procedures, the detailed plans for each urban centre contain the processes involved to evacuate and also include shelter arrangements. Procedures and the response to flooding can vary depending on the type of flood event, the area and the time of year. Membership of the recovery group will vary depending on the event, but will usually include all Risk Management Authorities. A Recovery Co-ordinating Group led by West Sussex County Council will manage the recovery process.

The Water Framework Directive

The Water Framework Directive seeks to improve the management, protection and enhancement of the water environment. In 2015 the Environment Agency produced ten River Basin Management Plans for the basin districts across England and Wales. These plans are available on the River Basin Management Plans 2015 page on GOV.UK's website. The work programme associated with this strategy is eligible to receive contributions from Water Framework Directive funding to implement improvement projects.

The West Sussex local flood risk management strategy supports the actions identified in the South East River Basin Management Plan. All projects are required to have regard to the ecological and chemical status of water bodies. The projects will help deliver the objectives of these plans where possible. West Sussex County Council will conduct ordinary watercourse consenting and future sustainable drainage management so that the functions contribute to the Water Framework Directive objectives.

There are 148 water bodies within West Sussex boundary. These water bodies consist of 121 river catchments, 14 groundwater bodies, 8 lake water bodies, and 5 coastal water bodies. Investigations into the quality of these water bodies have identified work that needs to be done to improve their status and the water environment as a whole. This process of investigation and identification is supported by West Sussex by the inclusion of WFD projects on the work programme.

The watercourses within the county are extensively used for water abstraction, agriculture, navigation and flood protection. To accommodate these uses our watercourses have been over widened, deepened and impounded with a variety of structures such as locks, weirs, dams and mills. These changes have interfered with the natural flow, negatively impacting the wildlife and health of our watercourses. To start to remedy these issues the strategy is integrating the delivery of flood risk and WFD objectives to provide sustainable cost-effective options of managing flood risk for the catchment. West Sussex County Council will support future works to deliver improvements, such as the removal of redundant structures, reconnection to floodplain where feasible and soft engineering options. Cost may restrict what work can be undertaken but options will be considered and assessed.

Pollution from agricultural land, treated wastewater discharges and urban drainage are the major pressures to chemical and ecological status of water quality in West Sussex. To manage these pressures the strategy:

- supports catchment sensitive farming initiatives that seek to change agricultural practices;
- encourages planned wastewater projects so that water companies can contribute to reducing the concentration of pollutants; and
- encourages adoption of water sensitive urban drainage through the planning process and prioritise on key areas.

Partnership working

Partnership working between authorities is essential to the effective delivery of flood risk management actions. Partnerships need to link authorities at Council, Cabinet, Director and Officer level so each organisation and flood risk management is able to work effectively.

Following flooding in the county during 2012/13, West Sussex County Council (WSCC) created the 'Operation Watershed' within which the Active Communities Fund was launched. Since the establishment of Operation Watershed, WSCC has successfully supported and worked with over 150 local community groups in delivering capital projects to reduce the risk and impacts of flooding in their areas by funding over 360 projects to a value in excess of £3.3 million.

The national Flood and Coastal Erosion Risk Management Grant in Aid (FCERM GiA) funding for flood risk management schemes has a limited amount of money and many schemes will require Partnership Funding contributions in order to go ahead. Partnership working is therefore extremely important to flood risk management. If people are pro-active and are regularly communicating, then delivery and progress is more likely to be effective. By working together we can avoid duplication, maximise available resources and funding opportunities, and share best practice, skills and expertise.

West Sussex County Council is a member of the Association of SuDS Authorities (ASA)

The Resilience and Emergency Teams work with the town and parish councils on emergency planning for flooding. If you are interested in getting involved, please contact your town or parish council or contact the National Flood Forum about Flood Action Groups.

In terms of democratic representation, elected members will sign off this Local Flood Risk Management Strategy. Elected members are also able to influence the flood risk management work programme through the Strategic Board and flood risk funding via the 'Local Levy' funding allocated by RFCC (explained in Appendix D) and their individual authority Members funds.

A number of partnerships at a local, national and regional level provide a forum for discussion on key issues and the delivery of projects. The key partnerships in West Sussex are listed below in Table C-3. The governance relationship between these groups is shown in Figure C-6-1.

Table C-3: Partnership groups within West Sussex

Partnership groups	Governance
South East Seven (SE7)	A partnership of seven upper tier authorities (West Sussex, East Sussex, Kent, Medway, Hampshire, Brighton and Hove, and Surrey) created with the purpose of identifying savings through working together, using shared services, increasing efficiencies and generally working better.
West Sussex Flood Risk Management Group (WSFRMG)	The working group is an officer level working team that meet quarterly to solve county wide issues, progress actions and discuss future work and contributions. The aim of this group is to provide a joint resource to develop solutions at the most appropriate level. This group provides inputs to current and future projects and develops the outline flood risk management work programme.
West Sussex Planning Policy Officers Group	A joint group which discusses planning and policy issues across the county and is chaired by strategic planning. A representative sits on the WSFRMG.
Coastal Groups	Coastal Groups comprise all the key partners in coastal management - principally the coastal managers from maritime Local Authorities, Ports Authorities and the Environment Agency. Other interested organisations, such as Natural England and Historic England, are also members. West Sussex works with both the southern and south eastern coastal groups and has representatives on the Operations Group. West Sussex County Council are members of the Southern Coastal Group which incorporates the southern partnership, the Local Government Association Coastal Special Interest Group and the Southeast Coastal Group

Partnership groups	Governance
South Downs National Park Authority	Fifty per cent of West Sussex falls within the South Downs National Park, an area of national importance in terms of its landscape, wildlife and cultural heritage. In the implementation of this strategy, West Sussex County Council and its partners will work with the South Downs National Park Authority (SDNPA) to safeguard and where possible enhance the beauty, wildlife and cultural heritage of the county. The SDNPA also acts as the planning authority with the park boundary. A representative of the SDNP sits on the Operations Group.
Water Framework Directive groups	These groups are a partnership of landowners and authorities that lead on a programme of work to achieve ecological and chemical improvements to rivers and watercourses, including removing unneeded manmade structures and improving fish passage. The two groups in West Sussex are: the Adur and Ouse Partnership and the Arun and Western Streams Partnership. Stakeholders within these groups including Sussex Wildlife Trust, Arun and Rother Rivers Trust, Adur and Ouse Rivers Trust, Natural England, Environment Agency and Water Companies).

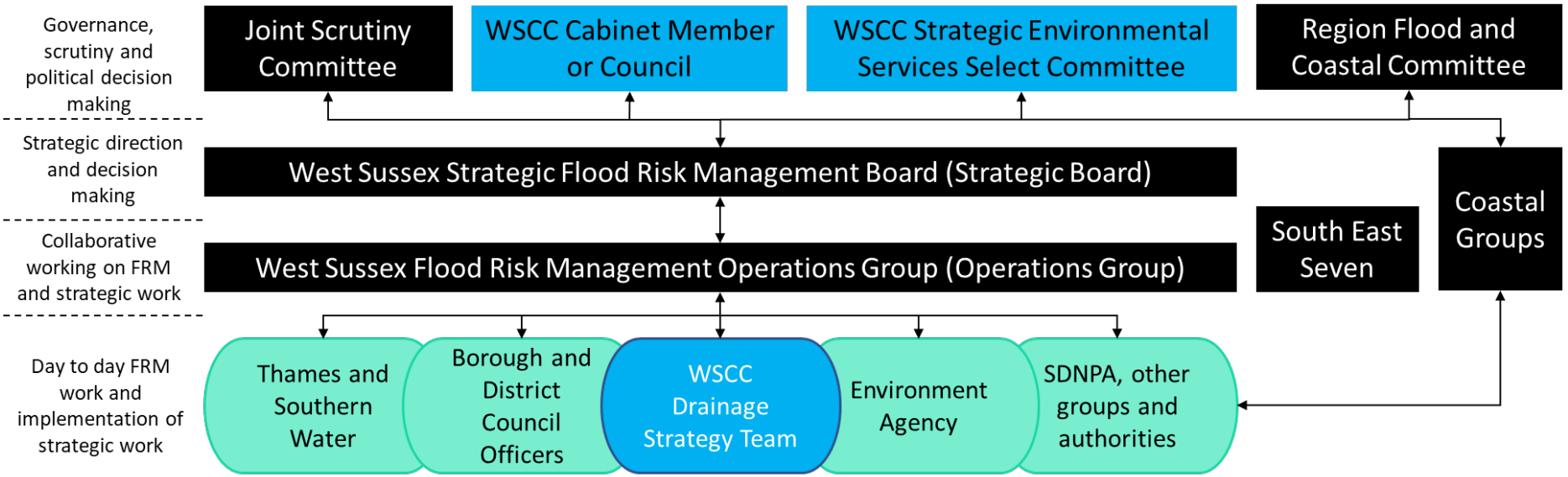


Figure C-6-1: Partnership groups and governance within West Sussex

Appendix D

Sources of Funding for Flood Risk Management

Budgets are often limited so it is important to identify exactly what can be done, what will require additional contributions, and what can be programmed to happen at a later date. There are various funding streams available to fund projects, some available nationally and some from local sources.

A diagram detailing the sources of funding for Flood and Coastal Erosion risk management can be found in Defra's Central Government Funding for Flood and Coastal Erosion Risk Management in England document.

Council funds

Much of the day to day flood risk management work that is currently done in the county is carried out by the local authorities (County, Borough and District Councils) and the Environment Agency. This is funded from the main budgets these bodies hold based on the availability of resources and the benefits to the local communities.

West Sussex County Council and the other local authorities are funded by a Formula Grant provided by the Department for Communities and Local Government. Together with locally collected council tax and some other smaller sources of funding, these resources fund the entire range of services administered by the councils. Flood risk management is only one of the services which must be considered alongside all the other activities the councils provide including waste and recycling, health and social care, schools, planning and development, highways and transport, and public amenity. Each Council must decide how much to allocate to each service and consider flood risk management priorities against other investment needs.

Partnership funding - FCERM Grant in Aid (GiA)

The partnership funding approach was introduced in 2011 following the recommendations of Sir Michael Pitt's review of widespread flooding in 2007. This approach to funding flood and coastal erosion risk management projects shares the costs between national and local sources of funding, enabling greater ownership and choice on how communities are protected and encouraging more cost-effective solutions. Any project where the benefits are greater than the costs can qualify for a contribution from Flood and Coastal Erosion Risk Management (FCERM) Grant-in-Aid (GiA).

How much FCERM GiA a scheme is eligible for depends on the benefits and outcomes of the project. If the eligible GiA does not cover all costs, it may be necessary to raise extra money from partners through contributions. Anyone who benefits from an FCERM project can be a partner, including local communities, businesses, developers and local councils.

Local Levy

The 'local levy' is an Environment Agency levy placed upon upper tier authorities. It is administered and allocated by the Regional Flood and Coastal

Committees. Local Levy can be allocated to regional priority flood and coastal schemes that could not display high enough cost/benefits to be awarded central funding.

Partnerships with other RMAs

Flood risk responsibilities remain divided between Risk Management Authorities, understanding and a co-ordinated response between partners is therefore essential to the delivery of effective flood risk management. Partnership working can incorporate a range of activities, from co-ordinated flood alleviation schemes, to providing technical support or advice to a partner or organisation. This can occur between regional partnerships, such as the South East 7, and other Risk Management Authorities in West Sussex, as well as local councils, communities and flood action groups.

Community Infrastructure Levy

The Community Infrastructure Levy is a standard charge on developments used to help deliver a wide range of infrastructure to support development. This can include delivery of flood defences, in addition to transport facilities, sports facilities and open spaces.

Section 106

Planning obligations, involve the use of Section 106 legal agreements and address the issue of how facilities and services (for example drainage and wastewater infrastructure) adversely affected by a particular development can be protected, enhanced, maintained or, where appropriate, where new provision can be made. When required, they can be used to secure financial contributions as part of a planning permission in order to make a development proposal acceptable in planning terms.

DEFRA grants

DEFRA has previously provided grant funding for flood hit homes and businesses through local authorities. These grants of up to £5000 per property, will help homes and businesses to become more resilient to flooding by helping to pay for a range of property improvements, for example by providing flood doors or raising electrics off ground level.

Private / local funding

Private developers and local industry may also be a source of funding for flood risk management, particularly with the implementation of Sustainable Drainage Systems (SuDS) into new developments. Development that integrates SuDS using greenery or water features can improve upon the existing surface water management regime and can be a means of managing flood risk to communities. SuDS often provide an attractive environmental feature for buyers and in turn can help to drive desirability and demand for properties in specific developments.

Other sources

Landowners and owners of other structures and assets such as bridges, culverts, sluices, ponds etc. have a duty to maintain the free flow of water through their

property and so another large part of the maintenance works in the county are carried out by private individuals, companies and other landowners (including councils themselves).

Appendix E

Count of properties susceptible to flood risk by area and flood source

Area	Borough/District	Total number of properties at risk				Priority
		30-year	100-year	1000-year	100-year + 40% climate change uplift	
Albourne CP	Mid Sussex District	8	11	39	19	118
Aldingbourne CP	Arun District	23	51	238	111	42
Aldwick CP	Arun District	0	39	543	140	87
Amberley CP	Horsham District	1	3	12	4	116
Angmering CP	**Arun District**	**76**	**143**	**510**	**285**	**20**
Ansty and Staplefield CP	Mid Sussex District	6	12	69	35	90
Appledram CP	Chichester District	0	0	7	2	147
Ardingly CP	Mid Sussex District	17	37	121	80	43
Arundel CP	Arun District	101	126	433	271	27
Ashington CP	Horsham District	5	28	123	59	63
Ashurst CP	Horsham District	5	7	16	12	133
Ashurst Wood CP	Mid Sussex District	10	29	164	75	56
Balcombe CP	Mid Sussex District	11	30	109	53	72
Barlavington CP	Chichester District	0	0	2	0	155
Barnham CP	Arun District	10	17	79	52	91
Bepton CP	Chichester District	2	3	10	5	135

Area	Borough/District	Total number of properties at risk				Priority
		30-year	100-year	1000-year	100-year + 40% climate change uplift	
Bersted CP	Arun District	11	153	563	319	67
Bignor CP	Chichester District	6	6	8	6	154
Billingshurst CP	**Horsham District**	**319**	**427**	**908**	**630**	**9**
Birdham CP	Chichester District	0	2	38	9	112
Bognor Regis CP	Arun District	96	277	1278	531	39
Bolney CP	Mid Sussex District	30	59	122	72	57
Bosham CP	Chichester District	4	13	116	36	82
Boxgrove CP	Chichester District	8	24	98	54	92
Bramber CP	Horsham District	9	10	39	16	69
Broadbridge Heath CP	Horsham District	18	55	160	92	41
Burgess Hill CP	**Mid Sussex District**	**459**	**1083**	**2885**	**1840**	**18**
Burpham CP	Arun District	0	0	6	2	148
Bury CP	Chichester District	5	10	29	14	115
Chichester CP	**Chichester District**	**152**	**680**	**3107**	**1616**	**25**
Chidham and Hambrook CP	Chichester District	1	4	80	21	113
Clapham CP	Arun District	0	4	12	5	95
Climping CP	Arun District	0	0	27	8	114
Cocking CP	Chichester District	9	14	39	24	61
Coldwaltham CP	Horsham District	4	16	47	34	94
Colgate CP	Horsham District	5	9	34	15	60
Compton CP	Chichester District	1	13	43	25	93

Area	Borough/District	Total number of properties at risk				Priority
		30-year	100-year	1000-year	100-year + 40% climate change uplift	
Coombes CP	Adur District	0	0	2	2	159
Cowfold CP	Horsham District	20	38	111	62	52
Crawley Borough	**Crawley Borough**	**2097**	**4660**	**13144**	**7979**	**8**
Cuckfield CP	Mid Sussex District	23	63	188	119	138
Donnington CP	Chichester District	0	2	58	16	110
Duncton CP	Chichester District	35	39	60	46	40
Earnley CP	Chichester District	0	1	43	11	117
Eartham CP	Chichester District	2	2	4	4	151
Easebourne CP	**Chichester District**	**46**	**69**	**215**	**113**	**3**
East Dean CP	Chichester District	0	6	28	22	108
East Grinstead CP	Mid Sussex District	321	771	2649	1497	28
East Lavington CP	Chichester District	9	12	30	25	123
East Preston CP	**Arun District**	**75**	**128**	**548**	**273**	**1**
East Wittering CP	Chichester District	1	6	189	43	106
Eastergate CP	Arun District	19	71	290	149	26
Ebernoe CP	Chichester District	2	2	10	7	140
Elsted and Treyford CP	Chichester District	2	5	15	10	144
Felpham CP	Arun District	6	44	512	199	89
Fernhurst CP	Chichester District	16	37	201	93	101
Ferring CP	Arun District	17	105	525	273	50
Findon CP	**Arun District**	**40**	**138**	**347**	**217**	**17**

Area	Borough/District	Total number of properties at risk				Priority
		30-year	100-year	1000-year	100-year + 40% climate change uplift	
Fishbourne CP	Chichester District	9	35	177	98	44
Fittleworth CP	Chichester District	7	19	46	29	99
Ford CP	Arun District	0	1	18	13	124
Fulking CP	Mid Sussex District	0	1	5	2	145
Funtington CP	Chichester District	17	38	131	73	38
Graffham CP	Chichester District	3	8	31	12	122
Harting CP	Chichester District	23	33	97	53	37
Hassocks CP	**Mid Sussex District**	**162**	**340**	**884**	**545**	**14**
Haywards Heath CP	**Mid Sussex District**	**568**	**1173**	**3164**	**1975**	**13**
Henfield CP	Horsham District	30	131	299	197	33
Heyshott CP	Chichester District	1	4	20	13	131
Horsham	**Horsham District**	**297**	**740**	**2608**	**1414**	**22**
Horsted Keynes CP	Mid Sussex District	5	19	78	38	85
Houghton CP	Arun District	0	0	0	0	158
Hunston CP	Chichester District	1	3	41	14	104
Hurstpierpoint and Sayers Common CP	Mid Sussex District	108	170	553	322	30
Itchingfield CP	**Horsham District**	**64**	**100**	**216**	**153**	**11**
Kingston CP	Arun District	0	2	21	11	134
Kirdford CP	Chichester District	7	23	88	40	86
Lancing CP	**Adur District**	**141**	**534**	**1914**	**967**	**6**
Lavant CP	Chichester District	23	64	156	92	54

Area	Borough/District	Total number of properties at risk				Priority
		30-year	100-year	1000-year	100-year + 40% climate change uplift	
Linch CP	Chichester District	2	2	5	3	153
Linchmere CP	**Chichester District**	**29**	**66**	**146**	**106**	**7**
Lindfield CP	**Mid Sussex District**	**91**	**276**	**809**	**502**	**10**
Lindfield Rural CP	Mid Sussex District	14	44	162	84	84
Littlehampton CP	**Arun District**	**246**	**852**	**2515**	**1495**	**15**
Lodsworth CP	Chichester District	4	15	41	26	118
Lower Beeding CP	Horsham District	2	3	24	10	127
Loxwood CP	Chichester District	32	56	141	89	31
Lurgashall CP	Chichester District	14	20	41	28	65
Lyminster and Crossbush CP	Arun District	1	1	2	1	139
Madehurst CP	Arun District	0	0	1	1	150
Marden CP	Chichester District	0	1	2	1	156
Middleton-on-Sea CP	Arun District	5	48	316	144	78
Midhurst CP	Chichester District	39	194	608	337	36
Milland CP	Chichester District	10	15	67	38	74
Newtimber CP	Mid Sussex District	1	1	7	3	137
North Horsham CP	Horsham District	208	542	1655	942	29
North Mundham CP	Chichester District	3	8	48	20	129
Northchapel CP	Chichester District	12	41	132	72	47
Nuthurst CP	Horsham District	15	35	113	59	76
Oving CP	Chichester District	1	8	62	24	97

Area	Borough/District	Total number of properties at risk				Priority
		30-year	100-year	1000-year	100-year + 40% climate change uplift	
Pagham CP	Arun District	4	12	276	84	105
Parham CP	Horsham District	0	1	5	2	143
Patching CP	Arun District	1	11	18	16	88
Petworth CP	Chichester District	27	58	265	145	71
Plaistow CP	Chichester District	30	61	216	122	49
Poling CP	Arun District	2	6	13	9	80
Poynings CP	Mid Sussex District	1	1	25	11	128
Pulborough CP	Horsham District	53	105	347	165	32
Pyecombe CP	Mid Sussex District	1	2	8	5	146
Rogate CP	Chichester District	4	8	72	42	107
Rudgwick CP	Horsham District	19	43	174	93	68
Rusper CP	Horsham District	27	42	180	67	51
Rustington CP	**Arun District**	**61**	**221**	**1149**	**573**	**23**
Selsey CP	Chichester District	6	78	825	313	77
Shermanbury CP	Horsham District	11	17	54	38	73
Shipley CP	Horsham District	27	43	115	66	66
Shoreham and Southwick	**Adur District**	**465**	**1292**	**4112**	**2325**	**5**
Sidlesham CP	Chichester District	0	5	37	18	126
Singleton CP	Chichester District	3	22	77	47	79
Slaugham CP	Mid Sussex District	5	14	74	24	96
Slindon CP	Arun District	2	6	33	11	120

Area	Borough/District	Total number of properties at risk				Priority
		30-year	100-year	1000-year	100-year + 40% climate change uplift	
Slinfold CP	Horsham District	23	57	200	118	48
Sompting CP	**Adur District**	**70**	**206**	**650**	**354**	**24**
South Stoke CP	Arun District	0	0	0	0	157
Southbourne CP	Chichester District	11	74	286	161	58
Southwater CP	**Horsham District**	**140**	**360**	**1192**	**632**	**2**
Stedham with Iping CP	Chichester District	6	10	39	25	102
Steyning CP	**Horsham District**	**90**	**203**	**484**	**338**	**19**
Stopham CP	Chichester District	0	11	12	11	98
Storrington and Sullington CP	Horsham District	68	157	531	308	45
Stoughton CP	Chichester District	2	8	52	31	119
Sutton CP	Chichester District	1	3	6	3	136
Tangmere CP	Chichester District	7	55	195	121	83
Thakeham CP	Horsham District	10	35	88	58	46
Tillington CP	Chichester District	6	18	40	26	64
Trotton with Chithurst CP	Chichester District	2	2	5	3	142
Turners Hill CP	Mid Sussex District	3	10	92	50	111
Twineham CP	Mid Sussex District	3	8	29	13	125
Upper Beeding CP	Horsham District	26	47	179	110	53
Upwaltham CP	Chichester District	3	3	4	3	160
Walberton CP	Arun District	9	38	158	94	81
Warnham CP	Horsham District	37	94	288	190	35

Area	Borough/District	Total number of properties at risk				Priority
		30-year	100-year	1000-year	100-year + 40% climate change uplift	
Warningcamp CP	Arun District	0	0	2	2	152
Washington CP	**Horsham District**	**65**	**85**	**159**	**118**	**4**
West Chiltington CP	Horsham District	31	71	263	137	34
West Dean CP	Chichester District	5	13	36	24	70
West Grinstead CP	Horsham District	20	80	225	129	55
West Hoathly CP	Mid Sussex District	20	53	188	106	59
West Itchenor CP	Chichester District	1	8	23	17	121
West Lavington CP	Chichester District	0	3	16	8	130
West Thorney CP	Chichester District	2	5	7	6	103
West Wittering CP	Chichester District	0	5	102	32	109
Westbourne CP	**Chichester District**	**39**	**102**	**295**	**207**	**16**
Westhampnett CP	Chichester District	8	18	72	41	62
Wisborough Green CP	Chichester District	6	30	117	72	75
Wiston CP	Horsham District	2	4	21	6	141
Woodmancote CP	Horsham District	6	9	34	18	132
Woolbeding with Redford CP	Chichester District	0	0	2	0	149
Worth CP	**Mid Sussex District**	**172**	**394**	**1337**	**818**	**21**
Worthing Borough	**Worthing Borough**	**867**	**3627**	**13290**	**7412**	**12**
Yapton CP	Arun District	3	27	123	64	100

Appendix F

Borough and District analysis

The following pages show the flood risk by borough and district along with the number and location of clusters (defined by the process described in section 5.1) within each area.

Adur District Council

The district of Adur is located at the base of the South Downs with the English Channel to the south. Much of the district is urbanised with flat topography and permeable chalk geology, although the coastal margin is predominantly made up of clay. Presently three Priority Areas (Lancing, Shoreham and Sompting) have been identified within Adur District Council's boundary. However, the prioritisation will be regularly assessed.

Surface Water flooding

Figure F-1 displays the risk of flooding from surface water (RoFSW) in the district as well as the property clusters. Table F-1 displays the number of clusters identified within each parish.

Table F-1: Number of clusters within each area

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Coombes CP	0	0	0
Lancing CP	**9**	**19**	**21**
Shoreham and Southwick	**25**	**47**	**35**
Sompting CP	**6**	**12**	**13**

The majority of surface water flood risk is shown to be in built up areas at the base of the South Downs where topography flattens out towards the sea. Rural areas are at a lower risk from surface water. The rural parish of Coombes is shown to have no clusters within it and is at a low risk of flooding from surface water.

There are seven clusters containing at least 10 properties at risk of flooding during the 30-year (3.3% AEP) event, this increases to 25 clusters during the 100-year (1% AEP) event. The largest cluster identified using the 30-year event is located in Shoreham and contains 42 properties at risk of flooding from surface water. During the 100-year (1% AEP) event this cluster merges with one other to from a cluster containing 168 properties at risk of flooding. The surface water modelling indicates flooding is occurring because surface water is pooling to the north of the railway line. This is also the location of the largest cluster in the 1 in 100-year (1% AEP) event.

Fluvial, tidal and Coastal flooding

The primary source of fluvial / tidal flood risk in the district is the River Adur which is tidally influenced. Large areas within Shoreham, Lancing and Coombes are at risk from this flood source. A small area to the west of Sompting is at risk from the Teville Stream watercourse which flows along the west boundary of the district.

Groundwater flooding

Due to the underlying chalk geology and overlain well-drained top-soils, rainfall drains quickly to the aquifers below. Following prolonged rainfall, the district is susceptible to groundwater flooding. Shoreham is identified to be at a high risk from groundwater flooding. Additionally, interactions between high tidal levels in the River Adur and groundwater exacerbates this further. There are also localised perched aquifers around New Salts Farm and Old Salts Farm which interact with tidal levels and result in significant localised risks of groundwater emergence. Groundwater flooding also occurs along a spring line where the geology changes from chalk to clay, roughly following the A27, this has affected properties along Old Shoreham Road in the past.

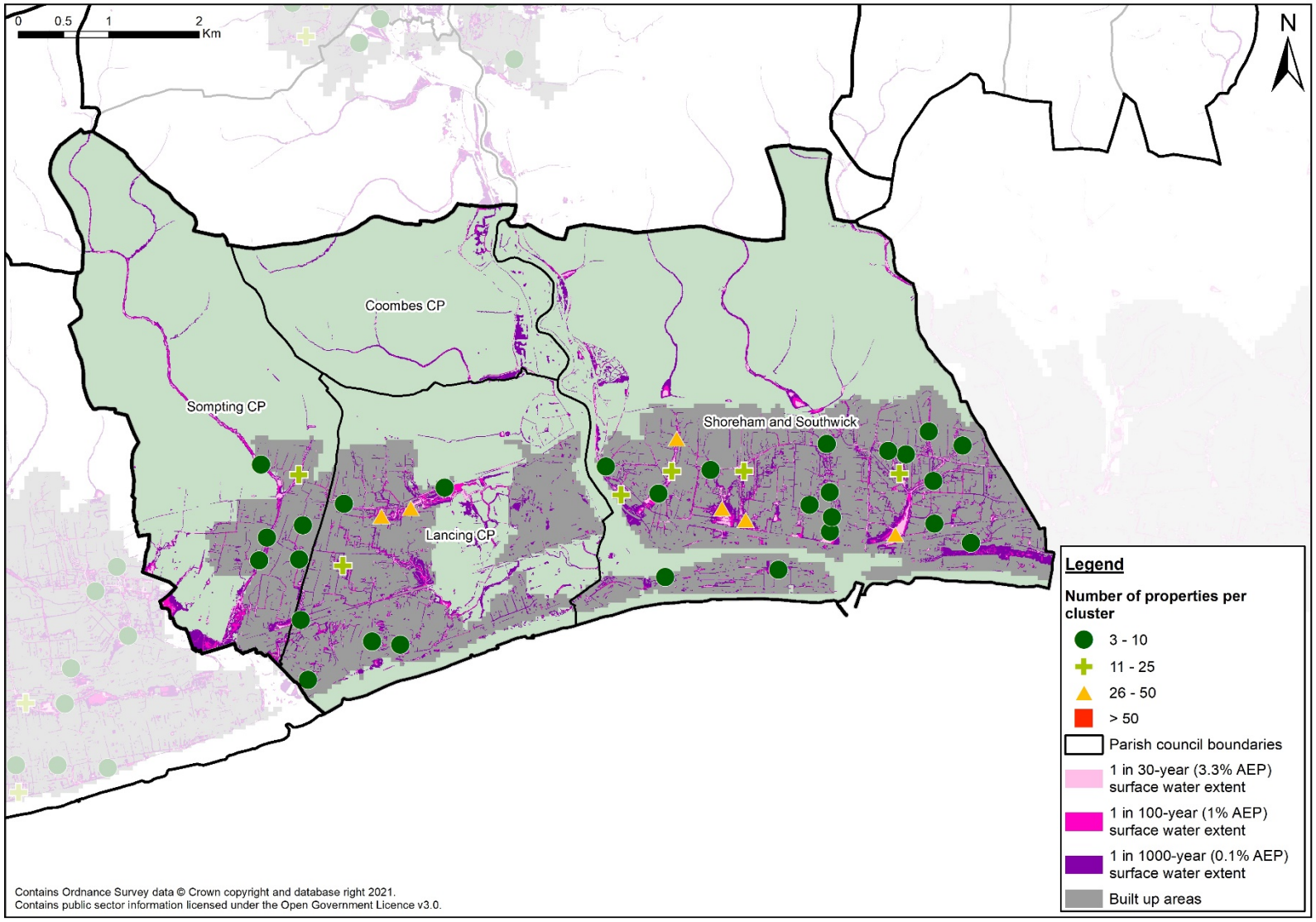


Figure F-1: Surface water flood risk in Adur District with at risk property clusters for the 1 in 30-year (3.3% AEP) event

Arun District

The district of Arun consists of high elevations from the South Downs to the north and low flat elevation towards the coastal plain in the south. The district is made up of a mixture of highly permeable chalk geology and soils which are poorly drained. Presently, five Priority Areas (Angmering, East Preston, Findon, Littlehampton and Rustington) have been identified within Arun District Council's boundary. However, the prioritisation will be regularly assessed.

Surface Water flooding

Figure F-2 displays the risk of flooding from surface water (RoFSW) in the district as well as the property clusters. Table F-2 displays the number of clusters identified within each region, those regions identified as Priority Areas have been highlighted in bold and blue.

Table F-2: Number of clusters within each area

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Aldingbourne CP	3	4	7
Aldwick CP	0	2	20
Angmering CP	**5**	**10**	**12**
Arundel CP	4	5	10
Barnham CP	0	1	1
Bersted CP	0	8	16
Bognor Regis CP	5	9	26
Burpham CP	0	0	0
Clapham CP	0	1	1
Climping CP	0	0	2
East Preston CP	**1**	**7**	**16**
Eastergate CP	2	4	7
Felpham CP	0	3	25
Ferring CP	1	8	14
Findon CP	**4**	**5**	**4**
Ford CP	0	0	2
Houghton CP	0	0	0
Kingston CP	0	0	3
Littlehampton CP	**8**	**20**	**42**

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Lyminster and Crossbush CP	0	0	0
Madehurst CP	0	0	0
Middleton-on-Sea CP	0	2	12
Pagham CP	0	0	13
Patching CP	0	1	2
Poling CP	0	1	1
Rustington CP	**2**	**12**	**32**
Slindon CP	0	0	3
South Stoke CP	0	0	0
Walberton CP	0	3	7
Warningcamp CP	0	0	0
Yapton CP	0	1	9

Areas of high surface water flood risk are generally located to the south of the district at the base of the steep slopes of the South Downs and along the flat coastal plain. There is a higher risk of surface water flooding within urban areas including East Preston and Littlehampton.

There are 12 clusters containing at least 10 properties at risk of flooding during the 30-year (3.3% AEP) event, this increases to 26 clusters during the 100-year (1% AEP) event. The largest cluster identified using the 30-year (3.3% AEP) event is located in Littlehampton and contains 49 properties at risk of flooding from surface water. During the 100-year (1% AEP) event this cluster merges with two others to from a cluster containing 153 properties at risk of flooding. The surface water modelling indicates the flood risk in this area is caused by surface water pooling in a low lying region behind the coastal defences. This is also the location of the largest cluster in the 1 in 100-year (1% AEP) event.

Fluvial, tidal and coastal flooding

The main source of fluvial / tidal flood risk in the district originates from the River Arun which flows through the centre of the district. Additionally, fluvial risk is also associated with the Aldingbourne Rife, Ferring Rife, Elmer Rife, Pagham Rife and the Black Ditch. The watercourses which discharge directly to the sea are tidally influenced, in particular the lower reaches of the River Arun. The urban areas of Elmer, Ferring, Climping, Littlehampton, Arundel, Barnham, Walberton and Bognor Regis are identified to be susceptible to these sources of flooding.

Groundwater flooding

Due to presence of permeable chalk geology, the district is susceptible to groundwater flooding. Groundwater flooding also occurs along a spring line where the geology changes from chalk to clay, roughly following the A27. Towns along the coastline including Bognor Regis and Littlehampton have been

identified to be at moderate risk and Arundel has been identified to be at high risk from groundwater flooding. Barnham has also been impacted by groundwater flood previously, and groundwater infiltration into the foul drainage system has also been reported in this area. Interactions between high tidal levels in the River Arun and high groundwater levels can also increases risk from groundwater flooding.

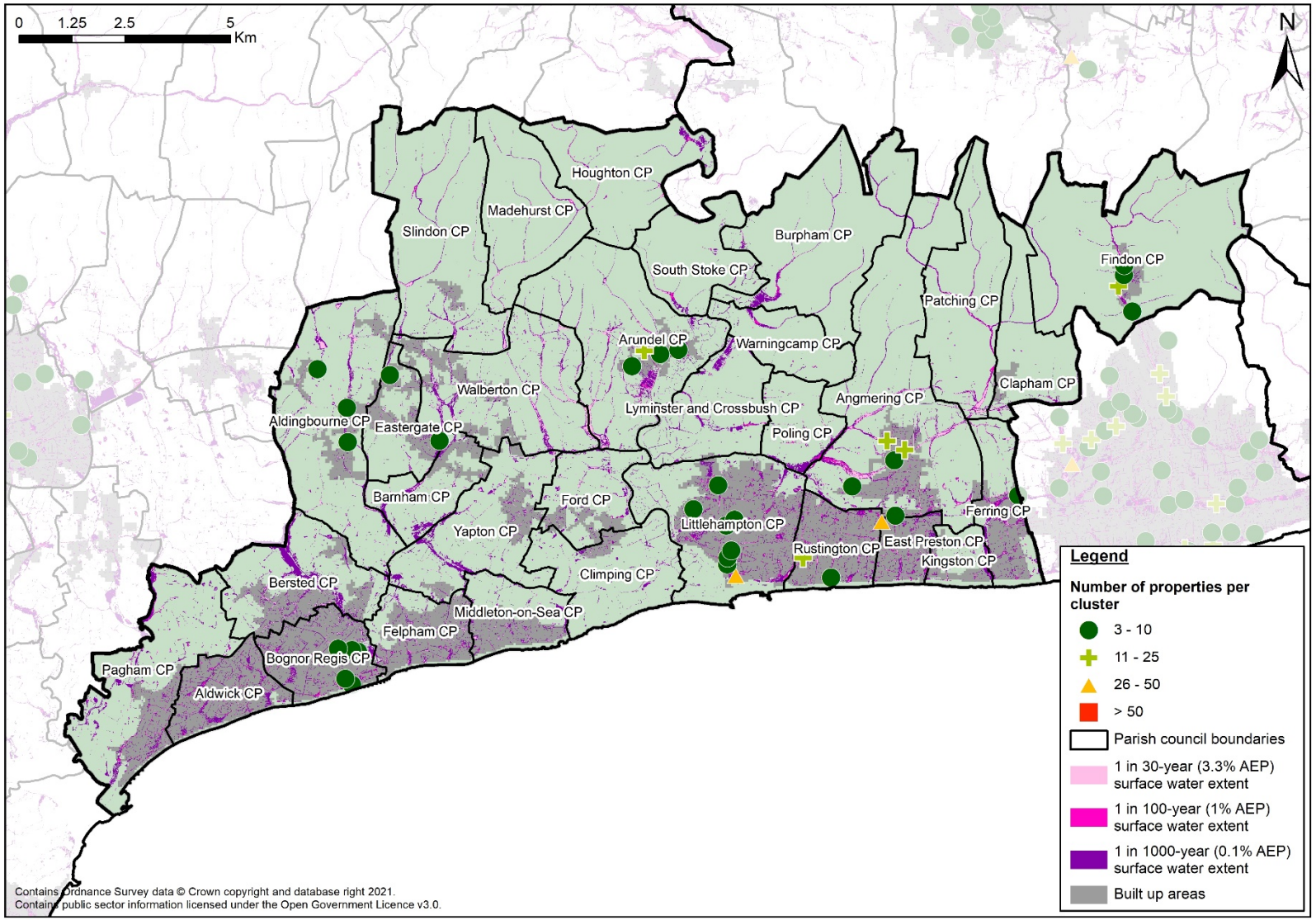


Figure F-2: Surface water flood risk in Arun District with at risk property clusters for the 1 in 30-year (3.3% AEP) event

Chichester District

The district of Chichester is divided by the South Downs across the centre of the district and consists of highly permeable chalk geology. To north, the Weald is located consisting of low-lying clay, sandstone and siltstone geology. To the south, the district slopes to a flat coastal plain. Presently, four Priority Areas (Chichester, Easebourne, Linchmere and Westbourne) have been identified within Chichester District Council's boundary. However, the prioritisation will be regularly assessed.

Surface Water flooding

Figure F-3 displays the risk of flooding from surface water (RoFSW) in the district as well as the property clusters. Table F-3 displays the number of clusters identified within each region, those regions identified as Priority Areas have been highlighted in bold and blue.

Table F-3: Number of clusters within each area

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Appledram CP	0	0	0
Barlavington CP	0	0	0
Bepton CP	0	0	2
Bignor CP	0	0	0
Birdham CP	0	0	2
Bosham CP	0	1	10
Boxgrove CP	0	3	5
Bury CP	0	0	2
Chichester CP	**8**	**26**	**53**
Chidham and Hambrook CP	0	0	7
Cocking CP	1	1	3
Compton CP	0	2	5
Donnington CP	0	0	3
Duncton CP	3	3	3
Earnley CP	0	0	2
Eartham CP	0	0	0
Easebourne CP	**1**	**4**	**7**
East Dean CP	0	0	2
East Lavington CP	0	0	1

Area			
East Wittering CP	0	0	9
Ebernoe CP	0	0	0
Elsted and Treyford CP	0	0	0
Fernhurst CP	0	3	12
Fishbourne CP	1	2	2
Fittleworth CP	0	1	2
Funtington CP	1	4	7
Graffham CP	0	0	4
Harting CP	2	2	5
Heyshott CP	0	0	1
Hunston CP	0	0	1
Kirdford CP	0	2	6
Lavant CP	3	5	8
Linch CP	0	0	0
Linchmere CP	**1**	**4**	**4**
Lodsworth CP	0	0	3
Loxwood CP	3	5	5
Lurgashall CP	1	2	4
Marden CP	0	0	0
Midhurst CP	3	8	12
Milland CP	1	1	4
North Mundham CP	0	0	1
Northchapel CP	1	2	2
Oving CP	0	1	3
Petworth CP	1	2	9
Plaistow CP	3	3	13
Rogate CP	0	0	2
Selsey CP	0	5	19
Sidlesham CP	0	0	1
Singleton CP	0	2	3
Southbourne CP	1	5	16
Stedham with Iping CP	0	1	5
Stopham CP	0	1	1
Stoughton CP	0	0	7
Sutton CP	0	0	1

Area			
Tangmere CP	0	4	7
Tillington CP	1	2	4
Trotton with Chithurst CP	0	0	0
Upwaltham CP	0	0	0
West Dean CP	1	1	2
West Itchenor CP	0	0	3
West Lavington CP	0	0	3
West Thorney CP	0	1	1
West Wittering CP	0	0	6
Westbourne CP	**2**	**3**	**3**
Westhampnett CP	1	2	4
Wisborough Green CP	0	1	6
Woolbeding with Redford CP	0	0	0

Surface water flood risk has been identified to be highest in more rural areas of the district where risk is associated with areas adjacent to drainage systems, at the bottom of hillslopes, valley bottoms and hollows. The areas of Easebourne, Linchmere, and Westbourne are identified to be at higher risk of flooding. At the foot of the South Downs to the south, Chichester is also identified to be at higher risk within the district.

There are six clusters containing at least 10 properties at risk of flooding during the 30-year (3.3% AEP) event, this increases to 23 clusters during the 100-year (1% AEP) event. The largest of these clusters (located in Easebourne) contains 21 properties at risk of flooding during the 30-year (3.3% AEP) event, increasing to 26 properties during the 100-year (1% AEP) event, the surface water modelling indicates that flooding is occurring here as it pools against the side of the building and as a result this may not be representative.

Elsewhere in the district the largest cluster during the 100-year (1% AEP) event is located in Westbourne and contains 51 properties (rising from 19 across two clusters during the 30-year (3.3% AEP) event. The surface water modelling shows the flood risk here to be caused by local exceedance of the watercourse which flows through the settlement.

Fluvial, tidal and Coastal flooding

The River Rother is located in the north of the district and drains into the Low Weald through Midhurst. The River Lavant is located to the south and is affected by tide locking. Following flooding in 1993 and 1994, construction of the River Lavant FAS began in 2000, with completion in 2003. The settlements of Bosham, Emsworth, Southbourne, Fishbourne, Sidlesham and Itchenor are at risk fluvial and / or tidal flooding. The low-lying coastal areas of Selsey, East and West Witterings are susceptible to coastal flooding only.

Groundwater flooding

The district is also susceptible to groundwater flooding, in particular the settlements of Chichester, Bosham, Fishbourne have been identified to be at high risk. As the River Lavant is groundwater fed, interactions between river levels and groundwater levels occurs and can result in groundwater flooding. Consequently, areas through the Lavant Valley are also prone to this risk.

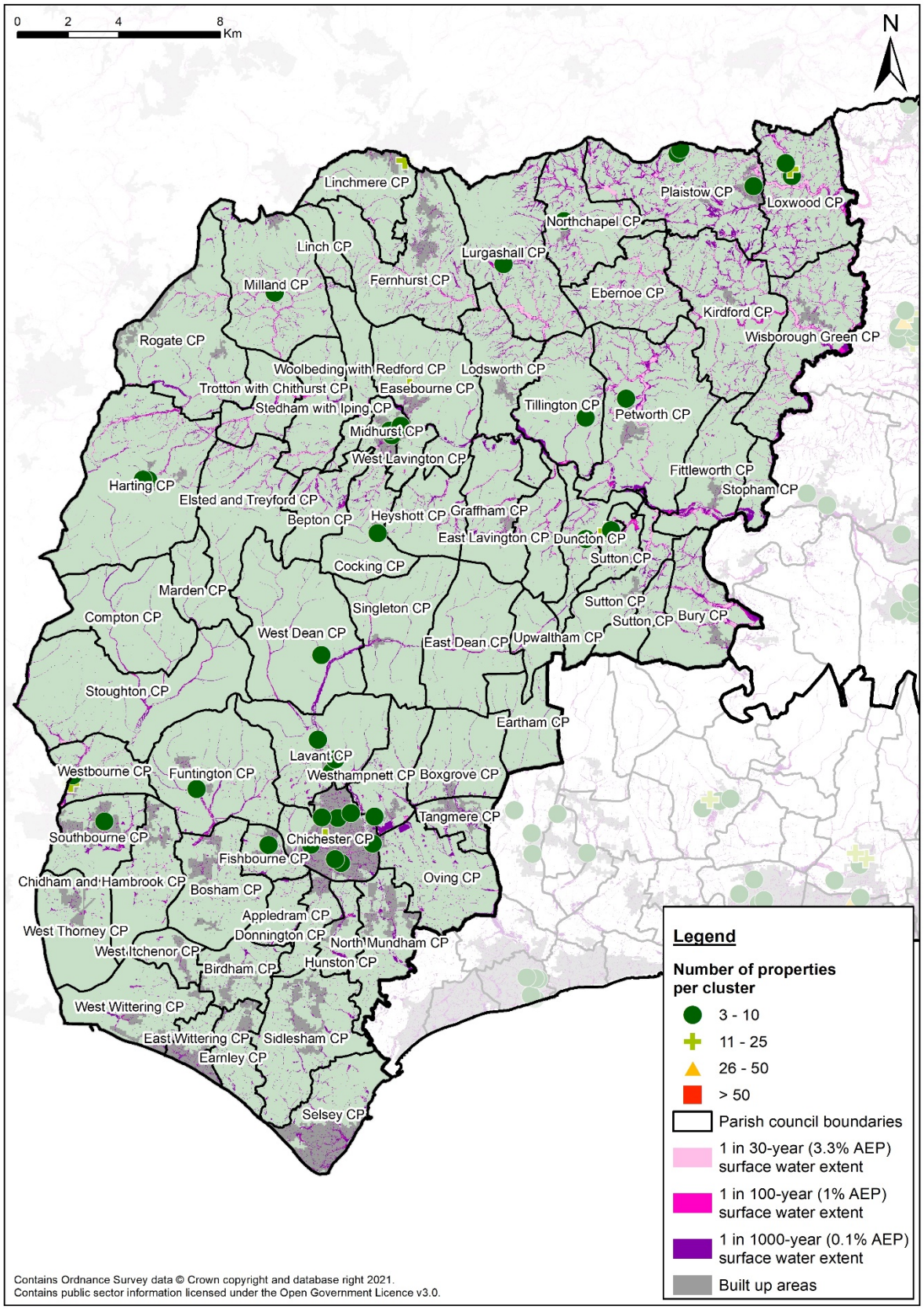


Figure F-3: Surface water flood risk in Chichester District with at risk property clusters for the 1 in 30-year (3.3% AEP) event

Crawley Borough

The borough of Crawley is highly urbanised with relatively flat topography to the north and underlain by Weald clay geology. Presently, Crawley Borough has been identified as a Priority Area. However, the prioritisation will be regularly assessed.

Surface Water flooding

Figure F-4 displays the risk of flooding from surface water (RoFSW) in the borough as well as the property clusters. Table F-4 displays the number of clusters identified within each region, those regions identified as Priority Areas have been highlighted in bold and blue.

Table F-4: Number of clusters within each area

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Crawley Borough	**67**	**122**	**111**

Surface water flooding within the borough is associated with overland flow over impermeable surfaces during heavy rainfall. As a result, flood extents show flow routes to follow much of the road networks within Crawley. Consequently, there are a high number of clusters within the borough.

There are 18 clusters containing at least 10 properties at risk of flooding during the 30-year (3.3% AEP) event, this increases to 43 clusters during the 100-year (1% AEP) event. The largest cluster identified using the 30-year (3.3% AEP) event is located to the south of Crawley town centre and contains 37 properties at risk of flooding from surface water. During the 100-year (1% AEP) event the number of properties at risk of flooding here increases to 51. The surface water flood modelling indicates flooding is caused by a surface water flow path which starts in Southgate and flows in a north-easterly direction towards the town centre.

The largest cluster identified using the 100-year (1% AEP) event is located in Northgate and contains 186 properties at risk of flooding (rising from 18 properties at risk of flooding across two clusters during the 30-year (3.3% AEP) event). Flooding here is caused by a surface water flow path commencing in West Green and flowing in a north-easterly direction and pooling against the A2011.

Fluvial flooding

The main source of flood risk within the borough is associated with the Upper Mole. Additionally, Gatwick Stream and Crawter's Brook are also located within the borough. As Crawley has developed, many reaches of watercourses have become culverted with some culverts being undersized and prone to blockage. As a result, fluvial risk is also governed by the maintenance and capacity of

culverts. Gatwick airport is identified to be at the highest risk to the north of the borough. Additionally, Tilgate and Furnace Green located to the south east of borough is also found to be at high risk of fluvial flooding.

Groundwater flooding

Crawley is underlain by Weald clay and is relatively flat. Consequently, risk of flooding from groundwater is relatively low. Areas of moderate risk are however located within the urban area of Gatwick Airport.

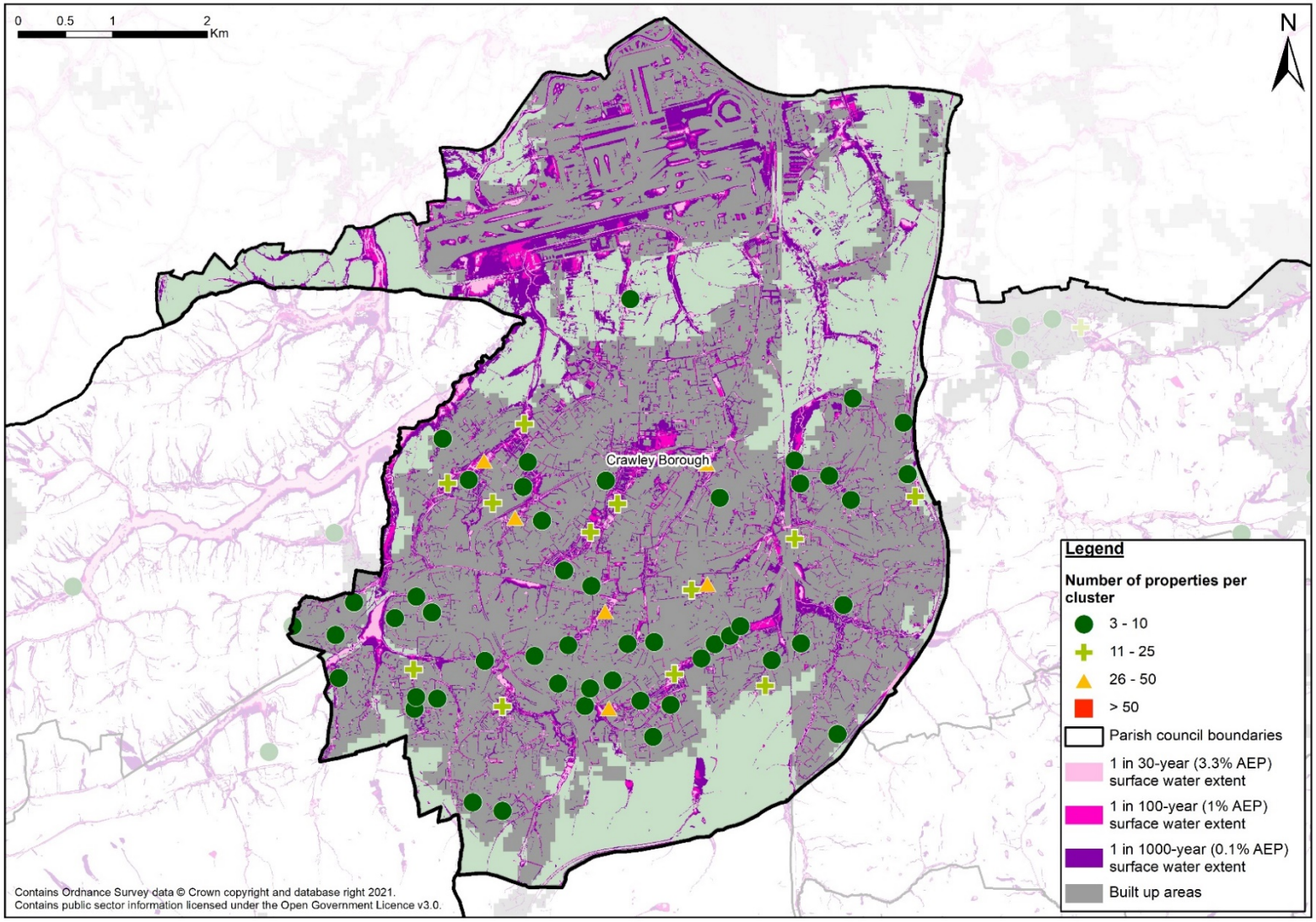


Figure F-4: Surface water flood risk in Crawley Borough with at risk property clusters for the 1 in 30-year (3.3% AEP) event

Horsham District

The district of Horsham is overlain with impermeable Weald clay with steep sloping topography in the north of the district. To the south, there is permeable chalk geology. Presently, six Priority Areas (Billingshurst, Horsham, Itchingfield, Southwater, Steyning and Washington) have been identified within Horsham District Council's boundary. However, the prioritisation will be regularly assessed.

Surface Water flooding

Figure F-5 displays the risk of flooding from surface water (RoFSW) in the district as well as the property clusters. Table F-5 displays the number of clusters identified within each region, those regions identified as Priority Areas have been highlighted in bold and blue.

Table F-5: Number of clusters within each area

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Amberley CP	0	0	1
Ashington CP	1	4	7
Ashurst CP	0	0	1
Billingshurst CP	**10**	**10**	**15**
Bramber CP	2	2	3
Broadbridge Heath CP	2	4	4
Coldwaltham CP	0	1	6
Colgate CP	1	1	2
Cowfold CP	1	2	5
Henfield CP	2	6	8
Horsham	**15**	**29**	**51**
Itchingfield CP	**3**	**4**	**13**
Lower Beeding CP	0	0	2
North Horsham CP	13	28	27
Nuthurst CP	0	2	5
Parham CP	0	0	0
Pulborough CP	2	4	15
Rudgwick CP	1	3	11
Rusper CP	2	2	12
Shermanbury CP	1	1	3

Area			
Shipley CP	1	2	8
Slinfold CP	2	3	7
Southwater CP	**4**	**12**	**19**
Steyning CP	**6**	**9**	**14**
Storrington and Sullington CP	6	14	14
Thakeham CP	1	2	4
Upper Beeding CP	3	4	7
Warnham CP	3	4	8
Washington CP	**2**	**4**	**8**
West Chiltington CP	1	6	18
West Grinstead CP	2	6	8
Wiston CP	0	0	0
Woodmancote CP	0	0	1

Due to the impermeable Weald clay located to the north of the district and steep slopes, Horsham has a rapid response to rainfall and therefore a high risk of surface water flooding. The urban areas of Horsham, Southwater and Billinghurst are identified to be particularly susceptible to surface water flooding.

There are 13 clusters containing at least 10 properties at risk of flooding during the 30-year (3.3% AEP) event, this increases to 45 clusters during the 100-year (1% AEP) event. The largest cluster identified using the 30-year (3.3% AEP) event is located in Southwater and contains 49 properties at risk of flooding from surface water. This increases to 104 for the 100-year (1% AEP) event. The surface water flood modelling indicates that flooding here is the result of a surface water flow path which starts to the west and north of Southwater and flows in a south-easterly direction, pooling to the north of the disused railway line. This is also the location of the largest cluster in the 1 in 100-year (1% AEP) event.

Fluvial and tidal flooding

The River Arun and Adur are located to the south of the district. Although Horsham does not have a coastline, both the River Arun and Adur are tidally influenced within district. Bramber is at high risk from fluvial and tidal flooding due to the River Adur, Pulborough is identified to be at high risk from the River Arun and Steyning from the Tanyard Stream.

The Upper Mole is located in the north of the district although it is largely in a rural area and so has a limited impact on flood risk to properties within this district.

Groundwater flooding

High groundwater flood risk is located to the south of the district due to the presence of permeable chalk geology. The urban areas of Bramber, Pulborough and Steyning are located within areas of high risk.

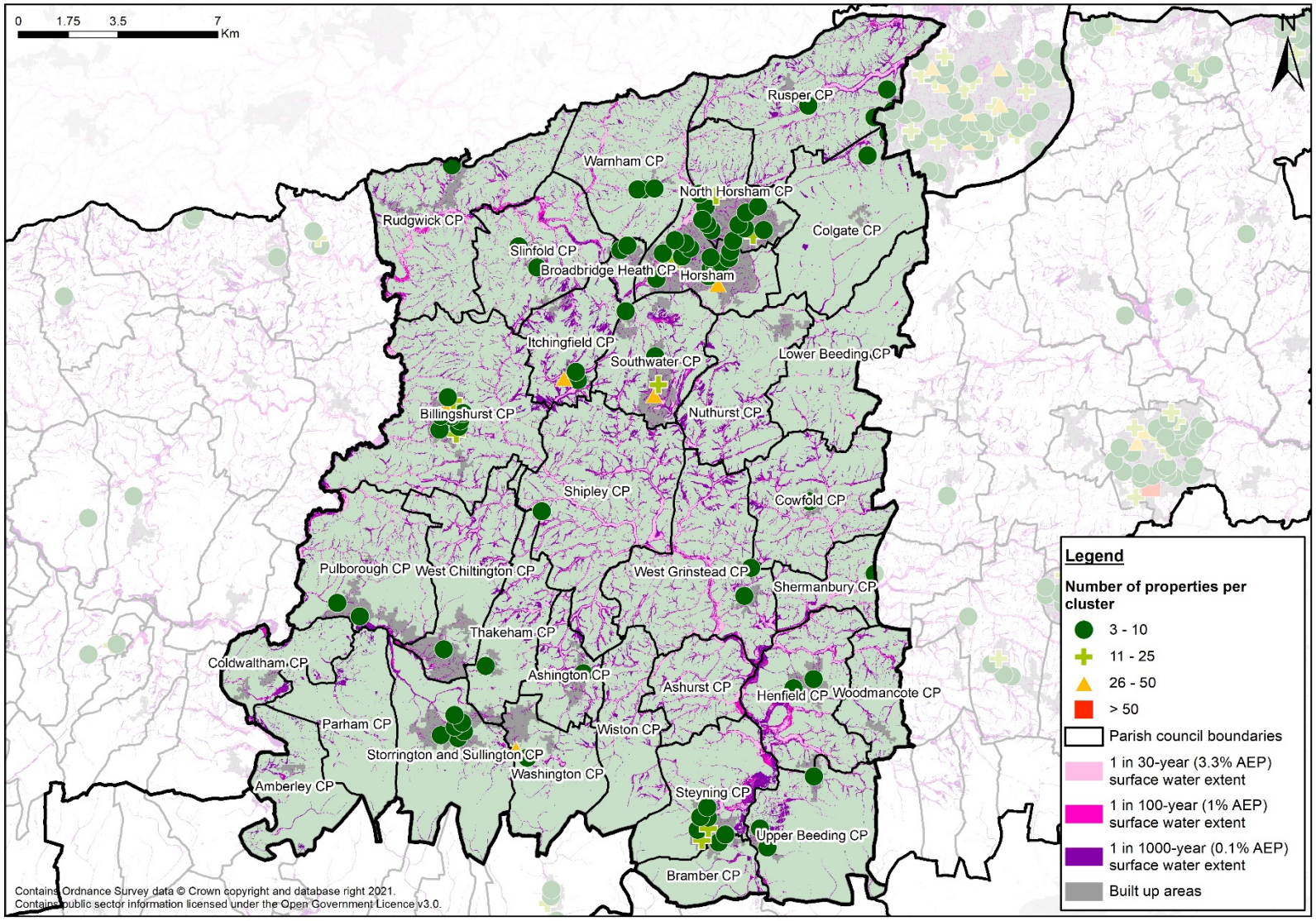


Figure F-5: Surface water flood risk in Horsham District with at risk property clusters for the 1 in 30-year (3.3% AEP) event

Mid Sussex District

To the district of Mid Sussex is crossed by the South Downs is located creating an area of permeable chalk geology to the south of the district. Presently, five Priority Areas (Burgess Hill, Hassocks, Haywards Heath, Lindfield and Worth) have been identified within Mid Sussex District Council's boundary. However, the prioritisation will be regularly assessed.

Surface Water flooding

Figure F-6 displays the risk of flooding from surface water (RoFSW) in the district as well as the property clusters. Table F-6 displays the number of clusters identified within each region, those regions identified as Priority Areas have been highlighted in bold and blue.

Table F-6: Number of clusters within each area

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Albourne CP	0	0	3
Ansty and Staplefield CP	0	5	13
Ardingly CP	1	3	6
Ashurst Wood CP	1	2	7
Balcombe CP	1	3	6
Bolney CP	1	3	6
Burgess Hill CP	**30**	**41**	**43**
Cuckfield CP	0	0	0
East Grinstead CP	23	41	54
Fulking CP	0	0	0
Hassocks CP	**10**	**11**	**20**
Haywards Heath CP	**24**	**38**	**49**
Horsted Keynes CP	0	3	5
Hurstpierpoint and Sayers Common CP	5	6	19
Lindfield CP	**9**	**7**	**8**
Lindfield Rural CP	0	1	8
Newtimber CP	0	0	1
Poynings CP	0	0	2
Pyecombe CP	0	0	0
Slaugham CP	0	1	4
Turners Hill CP	0	0	5

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Twineham CP	0	0	2
West Hoathly CP	1	5	11
Worth CP	**12**	**17**	**26**

The risk of surface water flooding in the district is generally concentrated around the urban areas. The highest risk areas are located within Haywards Heath, Burgess Hill, East Grinstead and Hassocks. Haywards Heath has been identified to be the highest area at risk within the District.

There are 26 clusters containing at least 10 properties at risk of flooding during the 30-year (3.3% AEP) event, this increases to 65 clusters during the 100-year (1% AEP) event. The largest cluster identified using the 30-year (3.3% AEP) event is located in Haywards Heath and contains 57 properties at risk of flooding from surface water. This increase to 99 for the 100-year (1% AEP) event. Flooding here is caused by a surface water flow path which starts near Franklyn Road and flows in a south-westerly direction towards the railway line.

The largest cluster identified using the 100-year (1% AEP) event is located in Crawley Down and contains 110 properties at risk of flooding (rising from 37 properties at risk of flooding across four clusters during the 30-year (3.3% AEP) event). The surface water modelling indicates that the flood risk here is caused by exceedance of the watercourse through Crawley Down.

Fluvial flooding

There are a number of watercourses within the district. The River Ouse is located within the centre of the district, the River Mole to the north and the River Adur to the west. The greatest fluvial risk is associated with the River Ouse to the east. The highest risk is in Hassocks and Haywards Heath, and in rural areas within the parishes of Ardingly, Balcombe and Lindfield.

Groundwater flooding

Permeable chalk geology is located to the south of the district and consequently a high risk of groundwater flooding in this location. This affects mostly rural areas however the settlement of Hassocks is also at high risk.

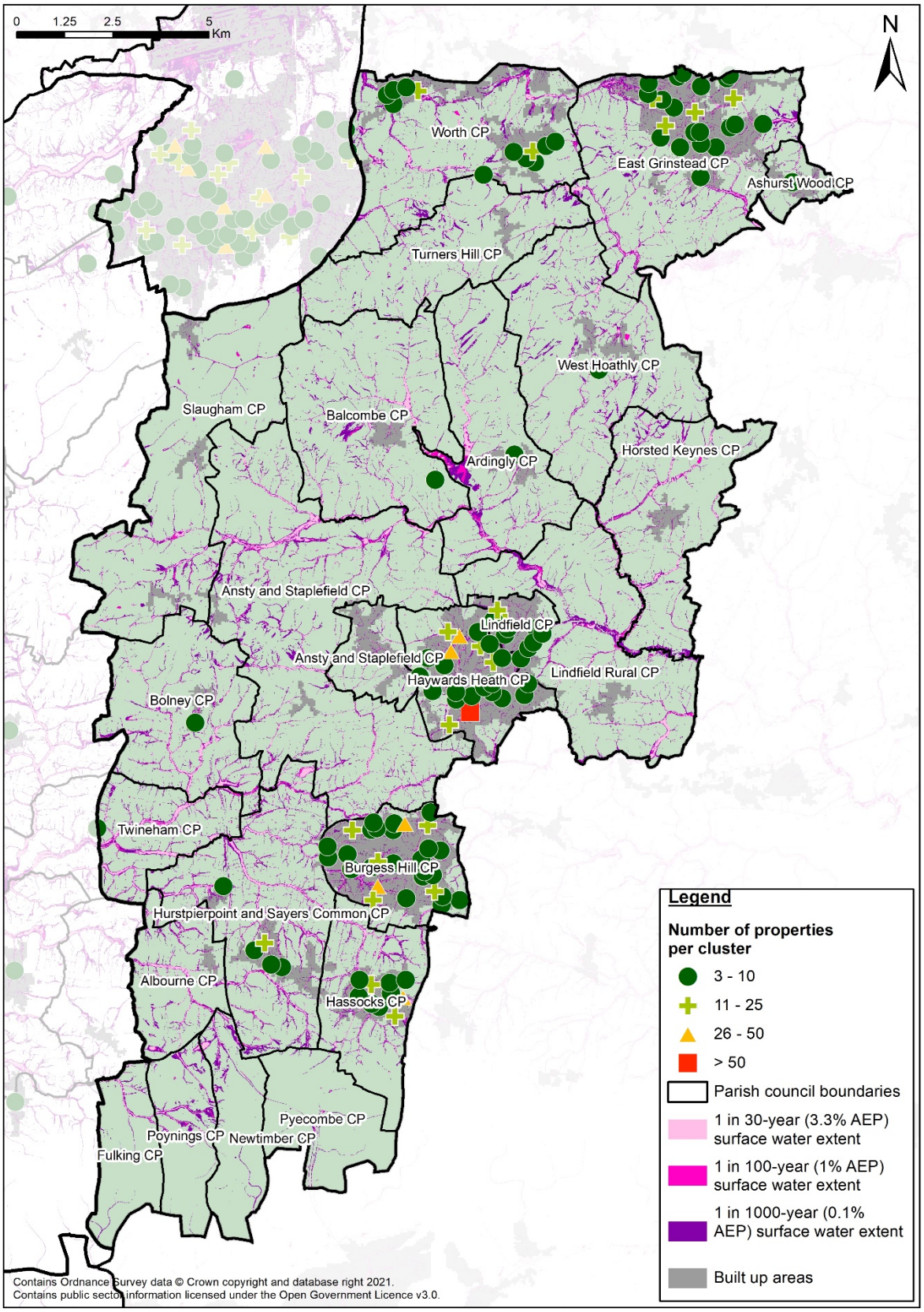


Figure F-6: Surface water flood risk in Mid Sussex District with at risk property clusters for the 1 in 30-year (3.3% AEP) event

Worthing Borough

The borough of Worthing is located at the foot of the steep sloping South Downs and is mostly urbanised. The geology of Worthing consists of chalk with clay, silt and sand from West Durrington to Lancing. Presently, Worthing Borough has been identified as a Priority Area. However, the prioritisation will be regularly assessed.

Surface Water flooding

Figure F-7 displays the risk of flooding from surface water (RoFSW) in the borough as well as the property clusters. Table F-7 displays the number of clusters identified within each region, those regions identified as Priority Areas have been highlighted in bold and blue.

Table F-7: Number of clusters within each area

Area	Number of clusters identified from the 30-year RoFSW	Number of clusters identified from the 100-year RoFSW	Number of clusters identified from the 1000-year RoFSW
Worthing Borough	**40**	**88**	**108**

There is a high risk of surface water flooding within much of the borough due to the steep slopes of the South Downs, flat coastal plain and the borough being heavily urbanised.

There are nine clusters containing at least 10 properties at risk of flooding during the 30-year (3.3% AEP) event, this increases to 35 clusters during the 100-year (1% AEP) event. The largest cluster identified using the 30-year (3.3% AEP) event is located in West Durrington and contains 35 properties at risk of flooding from surface water. This increase to 54 for the 100-year (1% AEP) event. The surface water flood mapping indicates that there is a surface water flow path which starts north-west of West Durrington and flows in a south-easterly direction through the area, this flow path generally follows the course of the Ferring Rife.

Based on the 100-year (1% AEP) event, the largest cluster contains 166 properties at risk of flooding (rising from 33 properties across four clusters during the 30-year (3.3% AEP) event). This cluster is also in West Durrington but flooding here is caused by a surface water flow path which starts in the north-east around Salvington. There are a number of other clusters in the borough which are also affected by these flow paths.

Fluvial, tidal and coastal flooding

The Ferring Rife is located within the borough and this is associated with fluvial flood risk to the urban areas of West Durrington and Ferring to the west of Worthing. Teville Stream is also located in the borough to the east. Both watercourses can become tidally locked in their lower reaches, although in the case of the Ferring Rife, this occurs within the Arun District administrative area.

Groundwater flooding

Due to the chalk geology within the borough, following prolonged rainfall, the areas of Goring and Durrington are susceptible to groundwater flooding.

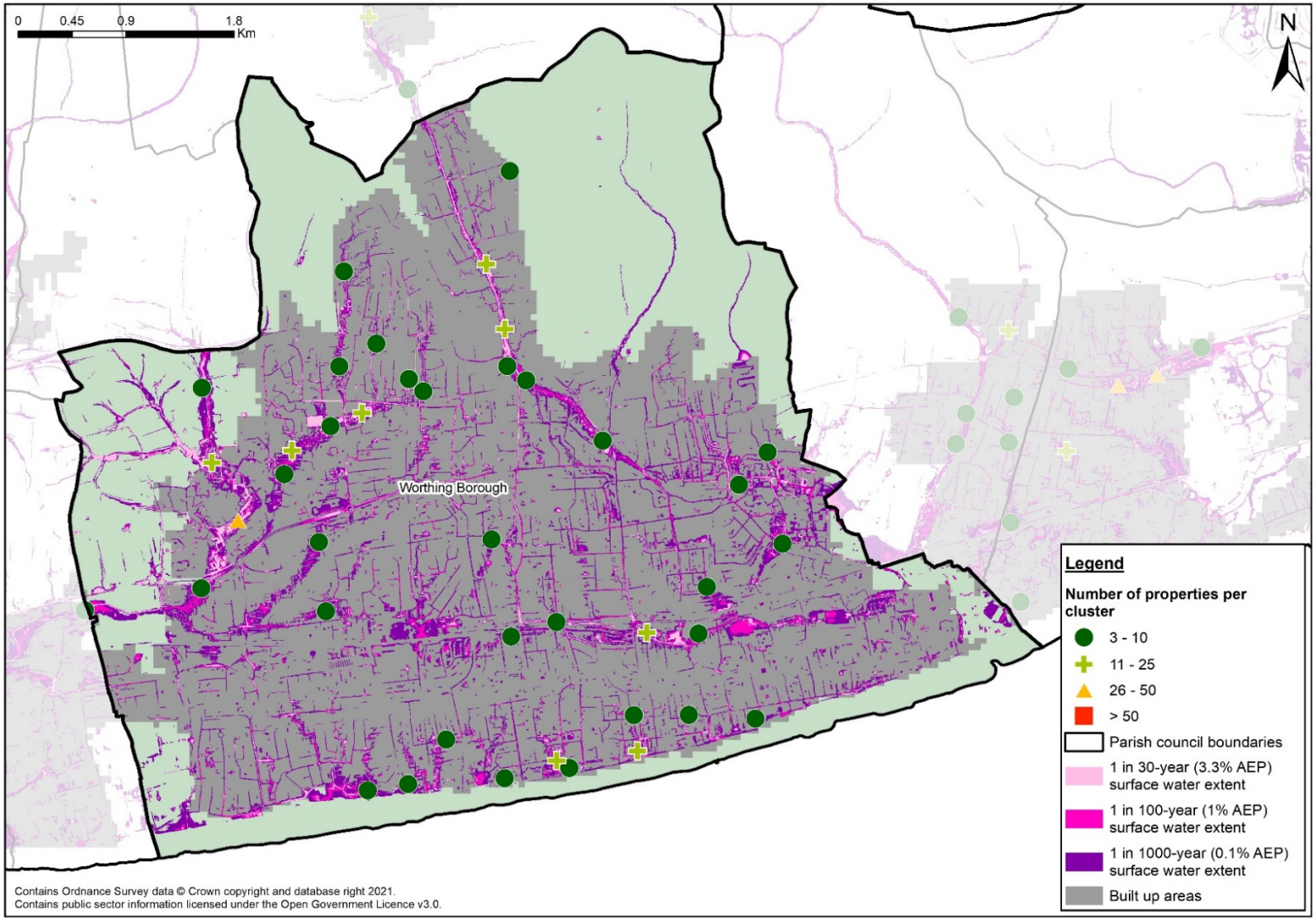


Figure F-7: Surface water flood risk in Worthing Borough with at risk property clusters for the 1 in 30-year (3.3% AEP) event

Appendix G

The Priority Area maps

Please note this Appendix to the strategy is a separate document. The Priority Area maps included in the full appendix are;

- Angmering CP
- Billingshurst CP
- Burgess Hill CP
- Chichester CP
- Crawley Borough
- Easebourne CP
- East Preston CP
- Findon CP
- Hassocks CP
- Haywards Heath CP
- Horsham
- Itchingfield CP
- Lancing CP
- Linchmere CP
- Lindfield CP
- Littlehampton CP
- Rustington CP
- Shoreham and Southwick
- Sompting CP
- Southwater CP
- Steyning CP
- Washington CP
- Westbourne CP
- Worth CP
- Worthing Borough

Appendix H

Local strategy objectives links

National Strategy Objectives

Future Risk and Investment

National Strategy Objective	Local strategy objectives					
	1 Adaptation	2 Resilience	3 Collaboration	4 Opportunities	5 Evidence	6 Sustainability
A: Between now and 2025 the Environment Agency will have better evidence to inform future risk and investment needs for managing all sources of flood and coastal change.				✓	✓	
B: Between now and 2030 Risk Management Authorities will make greater use of funding and financing from non-public sector sources to contribute to the investment needs of flood and coastal resilience.		✓		✓		

Ambition 1. Climate Resilient Places

National Strategy Objective	Local strategy objectives					
	1 Adaptation	2 Resilience	3 Collaboration	4 Opportunities	5 Evidence	6 Sustainability
1.1: Between now and 2050 the nation will bolster its resilience to flooding and coastal change		✓			✓	
1.2: Between now and 2050 Risk Management Authorities will help places plan and adapt to flooding and coastal change for a range of climate scenarios.	✓	✓			✓	
1.3: Between now and 2050 Risk Management Authorities will help coastal communities transition and adapt to a changing climate.	✓					✓
1.4: Between now and 2030 Risk Management Authorities will use nature based solutions and improve the environment through their investments in flood and coastal resilience.				✓		✓
1.5: By 2030 Risk Management Authorities will work with farmers and landowners to help them adapt their businesses and practices to be resilient to flooding and coastal change.	✓	✓		✓		

Ambition 2. Today's growth and infrastructure – resilient in tomorrow's climate

National Strategy Objective	Local strategy objectives					
	1 Adaptation	2 Resilience	3 Collaboration	4 Opportunities	5 Evidence	6 Sustainability
2.1: Between now and 2030 all new development will contribute to making places resilient to flooding and coastal change.		✓				✓
2.2: Between now and 2030 Risk Management Authorities will encourage environmental net gain in all new development to support resilience to flooding and coastal change.		✓				✓
2.3: Between now and 2030 Risk Management Authorities will support investments to manage flooding and coastal change that enables growth in a sustainable and climate resilient way.		✓		✓		✓
2.4: Between now and 2040 Risk Management Authorities will work with the finance sector and other partners to mainstream property flood resilience measures and to 'build back better' after flooding.		✓	✓	✓		
2.5: Between now and 2030 owners of flood and coastal defences will understand and take responsibility for achieving flood and coastal resilience.		✓	✓			
2.6: Between now and 2030, owners and operators of large raised reservoirs will ensure they are safe in a changing climate.		✓	✓			
2.7: By 2030 water companies will plan for their infrastructure to be resilient to flooding and coastal change.		✓	✓			
2.8: Between now and 2050 Risk Management Authorities will work with national infrastructure providers to contribute to more flood and coastal resilient places.		✓	✓			

Ambition 3. A nation ready to respond and adapt to flooding and coastal change

National Strategy Objective	Local strategy objectives					
	1 Adaptation	2 Resilience	3 Collaboration	4 Opportunities	5 Evidence	6 Sustainability
3.1: Between now and 2050, people will understand the potential impact of flooding and coastal change on their lives and livelihoods and will take action to reduce that impact.	✓				✓	
3.2: Between now and 2030 people will receive the information and support they need to transform how the nation better prepares and responds to flooding and coastal change.	✓				✓	
3.3: Between now and 2030 people and businesses will receive the support they need from all those involved in recovery after flooding so they can get back to normal quicker after flooding.			✓		✓	
3.4: Between now and 2030 the Environment Agency will have an oversight of skills and capabilities across the flooding and coastal change sector to identify gaps and future needs.					✓	
3.5: Between now and 2030 the nation will be recognised as world leader in researching and managing flooding and coastal change.					✓	

Surface Water Management Action Plan Themes

Surface Water Management Action Plan Theme	Local strategy objectives					
	1 Adaptation	2 Resilience	3 Collaboration	4 Opportunities	5 Evidence	6 Sustainability
Improving risk assessment and communication			✓		✓	
Making sure infrastructure is resilient		✓				✓
Clarifying responsibilities for surface water management		✓	✓			
Joining up planning for surface water management			✓			
Building local authority capacity			✓			✓

West Sussex Plan Priorities

West Sussex Plan Priority	Local strategy objectives					
	1 Adaptation	2 Resilience	3 Collaboration	4 Opportunities	5 Evidence	6 Sustainability
A prosperous place	✓	✓				
A strong, safe and sustainable place				✓		✓
A council that works for the community		✓	✓	✓		

Appendix I

The Strategy Action Plan

Abbreviations for Partners and Funding Sources

Abbreviation	Partner
B+Ds	Borough and Districts
EA	Environment Agency
SDPNA	South Downs National Park Authority
SRF	Sussex Resilience Forum
TC/PC	Town Council / Parish Council
WaSC	Water and Sewerage Companies
WSCC	West Sussex County Council

Abbreviation	Funding source
B+Ds	Borough and Districts
DWMP	Drainage and Wastewater Management Plan (Southern Water)
FDGiA	Flood Defence Grant in Aid
LL	Local Levy
WaSC	Water and Sewerage Companies
WSCC	West Sussex County Council

Objective 1: Adaptation

Work with communities to implement adaptive approaches to enhance the natural and built environment.

Actions	Delivery Partner(s)	Other Partner(s)	Timescale	Funding source(s)
1A - Take the lead on improving the awareness and understanding of using natural processes to manage local flood risk in West Sussex	WSCC, EA	B+Ds, SDNPA, TC/PC, Local Flood Groups	Ongoing	WSCC
1B - Explore the feasibility and benefits of diverting rooftop drainage over the sea wall for waterfront developments	WSCC	WaSC	2021	WSCC, LL
1C - Continue to assess and identify the risk and work with highways and RMAs towards the overall improvement of surface water drainage risk across the county	WSCC	WaSC, B+Ds, SDNPA	Ongoing	WSCC
1D - Raise community awareness of local drainage assets and encourage communities to take a more pro-active role in flood monitoring and maintenance work	WSCC	B+Ds, SDNPA, TC/PC, Local Flood Groups	Ongoing	WSCC, B&D
1E – Support communities to adapt to and manage the impacts of climate change	WSCC	B+Ds, SDNPA, TC/PC, Local Flood Group	Ongoing	WSCC, LL, FDGiA

Objective 2: Resilience

Support communities to help them to become more resilient to future flood risk

Actions	Delivery Partner(s)	Other Partner(s)	Timescale	Funding source(s)
2A - Improve resilience to flooding, now and in the future, through the identification of areas that may benefit from Property Flood Resilience measures	WSCC, EA	WaSC, B+Ds, TC/PCs	Ongoing	WSCC, LL, FDGiA
2B - Inform and educate the public as to the responsibilities and legal obligations of riparian ownership	WSCC	EA, B+Ds, SDNPA, TC/PC, Local Flood Groups	Ongoing	WSCC, B+Ds
2C - Facilitate the dissemination of useful and up to date information to communities to improve awareness of flood risk	WSCC, EA	WaSC, B+Ds, SDNPA, SRF	Ongoing	WSCC, B+Ds
2D - Facilitate communications and connect networks between communities and public bodies	WSCC, EA, B+Ds, SDNPA, WaSC	TC/PC, SRF, Local Flood Groups	Ongoing	WSCC
2E - Collaborate with emergency planners and other Risk Management Authorities to develop Multi Agency Flood Plans and plan for flood events and the impacts of climate change	WSCC, EA, SRF	TC/PC, B+Ds	Ongoing	WSCC, B+Ds

Objective 3: Collaboration

Work with all Risk Management Authorities and stakeholders to achieve a consistent, co-ordinated and risk-based approach to flood risk management

Actions	Delivery Partner(s)	Other Partner(s)	Timescale	Funding source(s)
3A - Collaborate and work in partnership with other Risk Management Authorities to manage flood risk within West Sussex	WSCC	WaSC, EA, B+Ds, SDNPA, Local Flood Groups	Ongoing	WSCC, B+Ds
3B - Periodically review partner roles and responsibilities to provide a coordinated and risk-based approach to local flood risk management	WSCC	WaSC, EA, B+Ds, SDNPA, Local Flood Groups	2025 (next LFRMS review	WSCC, B+Ds
3C - Take the lead with catchment-based partnerships (Adur & Ouse, Arun and Western Streams) to align flood risk management policies and projects with catchment priorities as and when the opportunity arises	WSCC, EA	B+Ds, SDNPA, WaSC	Ongoing	WSCC, B+Ds, LL, FDGiA
3D - Regional liaison on flood risk matters through the Southern Regional Flood and Coastal Committee	WSCC	WaSC, EA, B+Ds	2022	WSCC, B+Ds, LL, FDGiA
3E - Provide input into Drainage and Wastewater Management Plans in consultation with Southern Water/ Thames Water and in accordance with national guidance	WSCC, WaSC	EA, B+Ds, SDNPA	Ongoing	WSCC, B+Ds, LL, FDGiA, DWMP
3F - Undertake investigations, engage, and where necessary enforce contraventions of the Land Drainage Act, in a fair and proportionate manner	WSCC	B+Ds	Ongoing	WSCC, B+Ds
3G - Promote Natural Flood Management measures by working in partnership with landowners and other Risk Management Authorities	WSCC	B+Ds, EA, SDNPA, Landowners	Ongoing	WSCC, B+Ds

Objective 4: Opportunities

Seek opportunities (including funding, and research and development) from existing and new sources to invest in making communities resilient to flooding.

Actions	Delivery Partner(s)	Other Partner(s)	Timescale	Funding source(s)
4A - Seek the best ways of enabling Partnership Funding for schemes	WSCC	EA, B+Ds, SDNPA, WaSC	Ongoing	WSCC, B+Ds
4B - Maintain a strategic overview of the local prioritised programme of flood risk management projects for the county	WSCC, EA	B+Ds, SDNPA, WaSC	Ongoing	WSCC, B+Ds
4C - Pioneer and engage research and development to identify new approaches and technologies to support flood risk management across West Sussex.	WSCC, EA	B+DS, SDNPA, WaSC	Ongoing	WSCC, B+Ds, LL, FDGiA, WaSC
4D - Seek to support Environmental Net Gain for development through the implementation of Natural Flood Management and nature based solutions	WSCC	B+Ds, SDNPA	Ongoing	WSCC, B+Ds, LL, FDGiA

Objective 5: Evidence

Develop a strategic understanding of flood risk from all sources.

Actions	Delivery Partner(s)	Other Partner(s)	Timescale	Funding source(s)
5A - Identify the areas where climate change will most increase the risk of flooding	WSCC	WaSC, EA, B+Ds, SDNPA	Ongoing	WSCC, B+Ds
5B - Continue to maintain and update records of flood events and share data with partner organisations to develop a picture of flood risk within West Sussex	WSCC	WaSC, EA, B+Ds, SDNPA	Ongoing	WSCC, B+Ds
5C - Continue to update records of land drainage enquires and ordinary watercourse land drainage consents where there may be a significant impact on local flood risk	WSCC	EA, B+Ds, TC/PCs	Ongoing	WSCC, B+Ds
5D - Maintain and update the WSCCs register of structures and features likely to have a significant impact on flood risk	WSCC	B+Ds	Ongoing	WSCC
5E - Screen local flood risk issues and identify where it may be necessary or appropriate to undertake a formal flood investigation	WSCC	WaSC, EA, B+Ds	Ongoing	WSCC
5F - Improve the evidence base, understanding and awareness of surface water flood risk across West Sussex	WSCC	WaSC, B+Ds, SDNPA	2025 (next LFRMS review	WSCC
5G - Develop an evidence base and proposals to improve the management, awareness and understanding of groundwater risk across West Sussex	WSCC	WaSC, EA, B+Ds, SDNPA	2025 (next LFRMS review	WSCC, LL

Objective 6: Sustainability

Contribute positively to sustainable growth and support environmental net gain by influencing wider development, redevelopment and regeneration plans to deliver flood risk benefits

Actions	Delivery Partner(s)	Other Partner(s)	Timescale	Funding source(s)
6A - Develop a policy approach to manage both the water quantity and water quality impacts of new developments throughout West Sussex in sensitive catchments	WSCC, EA	WaSC, B+Ds, SDNPA	2025 (next LFRMS review	WSCC, B+Ds, WaSC
6B - Provide advice and support to Local Planning Authorities on Local Plan policy and site allocations	WSCC	EA, B+Ds, SDNPA	Ongoing	WSCC, B+Ds
6C - Support communities in understanding the flood risk implications for neighbourhood plans	WSCC	EA, B+Ds, SDNPA, TC/PC	Ongoing	WSCC, B+Ds
6D - Champion the incorporation and maintenance of Sustainable Drainage Systems (SuDS) through supporting Local Planning Authorities within our administrative area.	WSCC	EA, WaSC, B+Ds, SDNPA	Ongoing	WSCC, B+Ds
6E - Engage appropriately in relevant consultations on the local flood risk and drainage aspects of major planning applications and provide support to Local Planning Authorities	WSCC, B+Ds, SDNPA	EA, WaSC	Ongoing	WSCC, B+Ds