

**Brighton & Hove
City Council**

Local Flood Risk Management Strategy

Consultation Draft

July 2025



**Brighton & Hove
City Council**

Brighton and Hove City Council

Hove Town Hall

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Brighton & Hove City Council (BHCC) is aiming to reduce its per capita carbon emissions and become carbon neutral by 2030.

Foreword

Flooding in Brighton and Hove comes in many forms from many sources; from the South Downs to the north; from the sea to the south and from rainfall which can be intense and fast-flowing through our city.

We have a long history of flooding and we have planned to meet those challenges and reduce them where possible. But climate change is changing the way flooding affects our community and so our response to it must also change. To adapt we must prepare for the more intense floods that are more likely to happen, rather than the floods we have seen in the past.

We, as a community, must find ways to build resilience so that when flooding does happen, we plan, prepare and respond so we can recover as quickly as possible and limit the devastation that flooding can cause to all sectors of our community. This will mean we have to use new approaches and innovative drainage methods. We know we cannot do this alone, and we will strengthen our relationships with Risk Management Authority partners, local groups and new funding sources to maximise what we can achieve.

We also recognise the contribution that new development can make to flooding. New development can provide an opportunity to reduce the pressure on existing drainage systems, particularly in our densely-populated Victorian city centre. However, new development can also make flooding worse without careful management of run-off from new roads and buildings. We have included actions in this strategy so that new development does not increase surface water run-off and that planning applicants assess all forms of flooding appropriately at the planning stage.

Forward-planning for future floods is key to the success of this plan, and we will put a strategy in place that builds the evidence base and partnerships for the actions we take.

Councillor Tim Rowkins

Chair, City Environment, South Downs and The Sea Committee,

Brighton & Hove City Council

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List of Abbreviations

AEP	Annual Exceedance Probability
AOD	Above Ordnance Datum
BGS	British Geological Society
BHCC	Brighton and Hove City Council
EA	Environment Agency
FRMP	Flood Risk Management Plan
JBA	Jeremy Benn Associates
LiDAR	Light Detection and Ranging
LLFA	Lead Local Flood Authority
LFRMS	Local Flood Risk Management Strategy
PFR	Property Flood Resilience
RMA	Risk Management Authority
RoFSW	Risk of Flooding from Surface Water (Environment Agency mapping)
SWMP	Surface Water Management Plan

1 Introduction

The Flood and Water Management Act (FWMA) 2010 requires the Unitary Authorities/County Councils to develop, maintain, apply and monitor a strategy for local flood risk management in their respective domains (a “local flood risk management strategy” or “Local Strategy”). This report sets out Brighton & Hove City Council’s (BHCC) strategy for local flood risk management, in accordance with the requirements of the Flood and Water Management Act 2010.

The FWMA defines the role of the Lead Local Flood Authority (LLFA), which is either the County Council or Unitary Authority for the region. As a result, BHCC is a LLFA. LLFAs are responsible for local flood risk management from all sources with the exception of ‘Main’ rivers, reservoirs, estuaries and the sea, which remain the responsibility of the Environment Agency (EA). There are no main rivers in Brighton and Hove.

BHCC’s previous Local Flood Risk Management Strategy dated June 2015 aimed to; raise awareness of existing flood risk issues; provide an overview of the proposed flood risk mitigation work; and set out the long-term strategy for flood risk management.

This updated version of the strategy has been prepared to overcome the gaps in the previous strategy due to contemporary issues like climate change and the most recent amendments in Schedule-III of FWMA, 2010. The new BHCC strategy will establish the priorities for managing local flood risk and identify how BHCC will work together with other Risk Management Authorities, stakeholders, and local communities to manage and mitigate local flood risk, where possible.

The Local Flood Risk Management Strategy (LFRMS) to be referred to as “the Strategy” will set out the objectives for managing local flood risk and the measures proposed to achieve those objectives. The main partners in delivering a local strategy include the Environment Agency and Southern Water together with other flood risk management authorities.

1.1. BHCC Vision for Flood Risk Management

Reduce flood risk to property in Brighton and Hove

This is the overarching objective of all the work BHCC do as the LLFA. BHCC want to reduce the risk of flooding to properties in Brighton and Hove wherever and whenever possible and increase the flood risk resilience of people and places where practicable. To do this, BHCC need to reassess where our priority areas are, focusing not just on areas that have flooded historically but also areas that might flood in the future.

BHCC want to be bold and ambitious when it comes to managing flood risk in our area. To do this, BHCC have a five-point vision which sets out our aspirations and key priorities over this plan period.

Address today's flood risk issues whilst looking to manage future flood risk

Flood risk will change in the future and our understanding changes over time. BHCC know that, in the future, surface water flooding is likely to increase with more frequent severe storms. BHCC will take an adaptive risk-based approach to flood risk.

Lead in managing and reducing risk from local sources of flooding in our area

BHCC are fortunate to be part of a wider network of internal and external partners who are experts in their fields. BHCC want to facilitate collaboration and build best practice in Brighton and Hove, learning from others and making links between different organisations.

Better understand how flooding happens and how different types of flooding interact

Flooding in our area is complicated by interactions between different sources of flooding. BHCC want to work with our partners to gather the best available information to plan for flood events and fund future schemes

Work with our partners and communities to make Brighton and Hove more resilient to flooding

BHCC can't always stop flooding happening, but when it does happen, BHCC want to make Brighton and Hove more resilient by only allowing new developments that are safe and reduce flood risk, implementing schemes that reduce the risk of flooding, and having plans in place so people are better prepared to respond and recover quickly, whether financially, physically or emotionally. BHCC will work to increase resilience to flooding, particularly in our more vulnerable communities.

Promote sustainable flood risk management providing multiple benefits

Sustainability is at the heart of what Brighton and Hove does as a council. Where possible, BHCC will prioritise schemes which not only provide benefit by reducing flood risk, but also protecting or enhancing water quality, biodiversity and spaces to enjoy.

1.2. Legal and Policy Basis for Flood Risk Management

National, regional and local legislation and policy provide the framework for managing flood risk in Brighton and Hove. The following sections describe the main relevant

legislation and policy that BHCC, as the Lead Local Flood Authority, must consider.

The Flood and Water Management Act

The Flood and Water Management (2010) sets out how flood risk is managed in England and introduced new powers and responsibilities to Risk Management Authorities. The Act created the role of the Lead Local Flood Authority (LLFA) for Unitary Authorities (such as Brighton and Hove City Council) and County Councils and set out the requirements for an LLFA to produce Local Flood Risk Management Strategies. Section 9 of the Flood and Water Management Act is quoted below:

“9 Local flood risk management strategies: England

(1) A lead local flood authority for an area in England must develop, maintain, apply and monitor a strategy for local flood risk management in its area (a “local flood risk management strategy”).

(4) The strategy must specify—

(a) the risk management authorities in the authority's area,

(b) the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area,

(c) the objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009),

(d) the measures proposed to achieve those objectives,

(e) how and when the measures are expected to be implemented,

(f) the costs and benefits of those measures, and how they are to be paid for,

(g) the assessment of local flood risk for the purpose of the strategy,

(h) how and when the strategy is to be reviewed, and

(i) how the strategy contributes to the achievement of wider environmental objectives.”

The National FCERM Strategy

The National Flood and Coastal Erosion Risk Management Strategy (“the National Strategy”) was prepared by the Environment Agency. It provides a framework for guiding the operations and decision making of organisations with responsibilities for managing flood risk and coastal erosion. The strategy sets out the national long-term delivery objectives for the next 10 to 30 years. It also includes shorter term, practical measures RMAs should take working with partners and communities.

It includes the following three core ambitions:

1. Climate resilient places: working with partners to bolster resilience to flooding and coastal change across the nation, both now and in the face of climate change
2. Today’s growth and infrastructure resilient in tomorrow’s climate: making the right investment and planning decisions to secure sustainable growth and environmental improvements, as well as resilient infrastructure
3. A nation ready to respond and adapt to flooding and coastal change: ensuring local people understand their risk to flooding and coastal change, and know their responsibilities and how to take action.

One of the key themes in the National Strategy is resilience. The following actions have been identified for achieving climate resilient places:

- Avoiding inappropriate development in the floodplain
- Using Nature Based Solutions (NBS) to slow the flow or store flood waters
- Preparation and response to flooding through timely and effective forecasting, warning and evacuation
- Helping communities and local economies recover more quickly after a flood or “building back better”
- Being agile to include the latest information in plans, for example new science, growth projections and investment opportunities.
- Integrate adaptation to flooding and coastal change into daily activities and projects as well as long-term strategies

The recommended actions for Risk Management Authorities (including Brighton and Hove City Council) are included in **Table 1-1** below:

Table 1-1: Actions for Risk Management Authorities from the National Strategy

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
Deliver practical and innovative actions that help to bolster resilience to flood and coastal change in local places	Put greater focus on providing timely and quality planning advice that helps avoid inappropriate development in areas at risk of flooding and coastal change	Support communities to better prepare and respond to flooding and coastal change, including transforming how people receive flood warnings
Make greater use of nature-based solutions that take a catchment led approach to managing the flow of water to improve resilience to both floods and droughts	Leave the environment in a better state by contributing to environmental net gain for new development proposals	Ensure people and businesses receive the support they need from all those involved in recovery so they can get back to normal quicker after flooding
Maximise opportunities to work with farmers and land managers to help them adapt their businesses and practices to be resilient to flooding and coastal change	Ensure that spending on flood and coastal resilience contributes to job creation and sustainable growth in local places	Help support communities with managing the long-term mental health impacts from flooding and coastal change
Develop adaptive pathways in local places that equip practitioners and policy makers to better plan for future flood and coastal change and adapt to future climate hazards	Provide expert advice on how infrastructure providers (road, rail, water and power supplies) can ensure their investments are more resilient to future flooding and coastal change avoiding disruption to peoples' lives and livelihoods	Develop the skills and capabilities needed to better support communities to adapt to future flooding and coastal change
Ensure that spending on		Become a world leader in

flood and coastal resilience contributes to job creation and sustainable growth in local places		the research and innovation of flood and coastal risk management to better protect current and future generations
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Brighton and Hove Plan 2020-2023

The **Brighton and Hove Plan** ¹ is centred on the idea of “a fairer city, a sustainable future” with six key outcomes for the plan. Elements of each outcome which impact on this plan are also identified as follows:

- **a city to call home-** improving access to good quality housing and reducing homelessness and rough sleeping. BHCC will introduce a decent environment standard for council estates to go with the decent home standard
- **a city working for all-** building community wealth, so that our local people and organisations benefit from prosperity in the city. BHCC will encourage sustainable development in the city through our planning policies
- **a stronger city-** ensuring that participation and engagement is fair and representative of the whole city
- **a growing and learning city-** schools and services among the best in the country, focussing on inclusion and improving outcomes for the most disadvantaged
- **a sustainable city-** take all action to make our city carbon neutral by 2030 including protecting properties from surface water by installing sustainable urban drainage schemes and developing the new city download estate plan and encouraging tree planting and green corridors to support biodiversity
- **a healthy and caring city-** ensuring that the most vulnerable residents in the city are prioritised and introducing a new model of delivery which takes into account people’s and communities’ strengths and assets as well as their needs. BHCC will support older people to stay in their own homes longer.

Brighton and Hove City Plan (Parts One and Two)

City Plan Part One ² was adopted in May 2016. Its purpose is to provide the overall strategic and spatial vision for the future of Brighton and Hove through to 2030 and is part of the Development Plan Document. It includes policies that guide decisions on planning applications and sets out infrastructure requirements for the city up to 2030.

Policy CP11 Flood Risk sets out the requirements for flood risk assessment. The

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1 Brighton and Hove City Council Plan 2020-2023: <https://www.brighton-hove.gov.uk/sites/default/files/2020-01/brighton-hove-city-council-plan-2020-2023.pdf>

2 City Plan Part One (<https://www.brighton-hove.gov.uk/sites/default/files/migrated/article/inline/FINAL%20version%20cityplan%20March%202016compreswith%20forward.pdf>)

policy states that the council will seek to manage and reduce flood risk and any potential adverse effects on people and property in Brighton and Hove, in accordance with the findings of the Strategic Flood Risk Assessment. Where flood risk management or mitigation measures are required, the opportunity to simultaneously achieve wider sustainability and biodiversity objectives for the city should be investigated and will be encouraged).

The role of **City Plan Part Two** ³ is to support the implementation and delivery of City Plan Part One. City Plan Part 2 was adopted in Autumn 2022.

Policy DM43 outlines the requirements for Sustainable Drainage that are proposed for adoption in City Plan Part Two. In particular, it states that the all new buildings, car parking and hardstanding will be required to incorporate appropriate Sustainable Drainage systems. The Policy also states that subterranean development will not be permitted in areas where there has been a history of groundwater emergence (or other sources of flooding)

Brighton and Hove Supplementary Planning Document SPD16

This Supplementary Planning Document (SPD) sets out a long-term vision for the implementation of sustainable drainage measures in the Brighton and Hove area and:

- supports the delivery of the City Plan Part One and draft City Plan Part Two
- provides guidance for developers and planning officers for the incorporation of SuDS into developments
- sets out Local Guidance to be considered in the provision of SuDS
- sets out supporting information to be submitted to assist the assessment of proposed SuDS measures included within planning applications

Greater Brighton Water Plan

The **Greater Brighton Water Plan** ⁴ was published in July 2020. The plan aims to help Greater Brighton be a UK leader in sustainable water management, to improve the affordability of water and energy and secure a more sustainable foundation for growth, so that the region will enjoy a resilient, integrated water environment. Whilst the main focus of the plan is water availability and quality, the plan does include the

³City Plan Part Two: (<https://www.brighton-hove.gov.uk/sites/default/files/migrated/article/inline/Proposed%20Submission%20City%20Plan%20Part%20Two%20April%2025%202020%20PRINTERSa.pdf>)

⁴ Greater Brighton Water Plan (2020): <https://greaterbrighton.com/wp-content/uploads/2020/09/Greater-Brighton-Water-Plan.pdf>

impact some of these measures could have on reducing the impacts of flooding.

As part of the carbon capture projects included in the Plan, each Local Authority identified land in its area to create a new habitat, lock up carbon and involve local residents as a physical demonstration of their response to the climate emergency. The project could involve a combination of the techniques listed in **Table 1-2** overleaf. The Sussex Local Nature Partnership was identified as the lead for delivering the project with the rain garden campaign led by The Aquifer Partnership (TAP). Since that Plan was published, TAP has become incorporated into The Living Coast, a UNESCO World Biosphere Region

Table 1-2: Carbon capture projects in the Greater Brighton Water Plan

Technique	What is it?	Direct benefits for reducing local flood risk
Marshland and wetland restoration	Anywhere that provides areas which are predominantly wet. In the South Downs, dew ponds were constructed by farmers and lined with clay to stop the water running away into the chalk	Marshes and wetlands act as natural buffers, soaking up and storing rainfall and reducing sediment washout
Rain gardens	Areas of ground which receive run-off from roofs and other surfaces. Water fills the depression, which is planted with water-loving plants, and then drains away slowly.	Reduces the peak runoff rate and volume into the sewer system by removing water from the sewer network.
Rewilding and working with nature	Land management that seeks to work with natural processes to restore ecosystems	Changes to farming practices such as low tillage can reduce soil erosion and compaction
Tree planting	Trees intercept water before it hits the ground. In summer, evaporation for intercepted water can reduce the water volume hitting the ground, and even in winter this can happen to a lesser degree. The root systems can aid infiltration into the ground	Trees intercept water before it hits the ground. In summer, evaporation for intercepted water can reduce the water volume hitting the ground, and even in winter this can happen to a lesser degree. The root systems can aid infiltration into the ground

Flood Risk Management Plans: 2021-2027

Flood Risk Management Plans are plans to manage the risk of flooding for people, the economy and the environment, including cultural heritage. The Flood Risk Management Plan includes objectives to manage the identified risk of flooding and measures to achieve those objectives and must be reviewed by the Environment Agency and the Lead Local Flood Authorities every six years.

Flood Risk Management Plans differ from the Local Flood Risk Management Strategy as it covers a far greater area (10 River Basin Districts) and includes all forms of flood risk, however they may overlap where local measures are proposed for groundwater or surface water flood risk management.

The South East River Basin District Flood Risk Management Plan 2021 to 2027 was published on 12 December 2022. The main themes are:

- **Partnerships-** the value of working in partnership to plan and deliver flood risk management solutions
- **Catchment based approach-** support for and greater emphasis on this for flood risk management
- **Alignment-** the need to align with other plans and strategies so delivery is effective
- **Land management-** the need to consider all land uses including the benefits of agricultural land
- **Climate change and adaptation-** the importance of working together across all organisations and having better information on factors such as the carbon footprint of the measures
- **Funding-** the need to identify funding and resources for the timely deliverability of measures
- **Readability-** the ability to find information in the plans

The South East River Basin District Flood Risk Management Plan 2021 to 2027 identifies the City of Brighton and Hove as a Flood Risk Area for surface water flooding. It includes measures provided by BHCC LLFA which overlap with the actions in this Strategy.

Drainage and Wastewater Management Plans

Water and wastewater companies in England and Wales, including Southern Water

services, are currently formulating Drainage and Wastewater Management Plans, which will set out how water and wastewater companies intend to extend, improve and maintain their drainage and wastewater systems to make them robust and resilient.

Brighton and Hove City is within the Adur and Ouse Catchment DWMP. Public consultations were undertaken between June and September 2022. The **final DWMP** has been published.

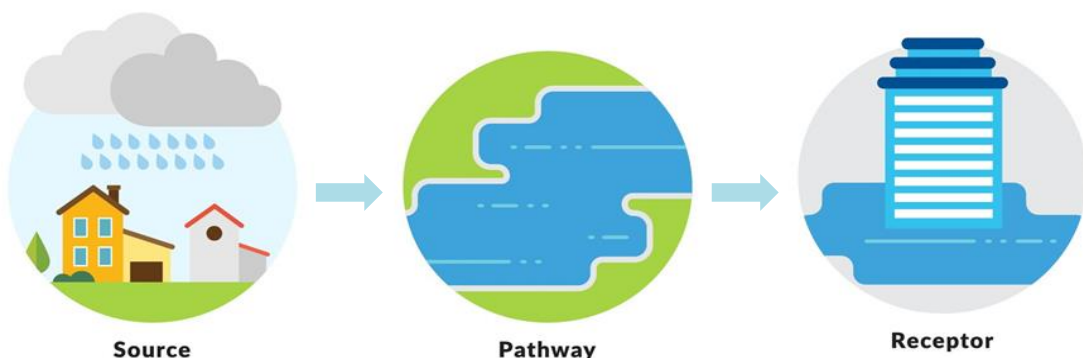
2. Understanding Flood Risks in Brighton and Hove

2.1. What is Flood Risk?

Flooding has the potential to cause significant harm to human health and life and impact the natural and built environment. Flood risk is a combination of the probability (or likelihood) of a flood event occurring and the consequence 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 impacts produced by a flood event, as well as the severity of the flooding that happened. Impacts can be social, economic and environmental and the severity of the impacts will 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%. Therefore, there is a chance that two events of this magnitude could happen within a single year. BHCC may also experience any number of smaller flood events between the larger events.

Drainage systems and flood defences are designed to provide standards of protection from events with specific magnitudes. Some examples of standard of protection as follows:

- Surface water drains and sewers are designed to have a surcharged capacity (the water in the sewer system is at or below ground level) for a 1 in 30 (3.3%)-annual probability event.
- Coastal defences are generally built to protect against a 1 in 200 (0.5%) annual probability event.
- Drainage for new highways constructed are designed to a 1 in 30 annual probability event, however the vast majority of the existing highway network are not built to modern standards and therefore have a lower standard. The probability of the highway drainage network in some areas could be a 1 in 10 (10%) annual probability event or lower.

2.2. Surface water flooding in Brighton and Hove

Most of the time, rainwater which falls to the ground soaks into pores in the soil and recharges our groundwater and provides water for our plants. However, when rainfall is intense, or the soils are already waterlogged, or water falls on surfaces where the water cannot soak into the soil (impermeable surfaces), water starts to pond on the ground surface and form overground flow routes. Underwater drainage systems such as highway drainage and sewers help to reduce surface water flooding if the severity of the flood is within the design capacity of the network.

Surface water flooding, along with groundwater, are the causes of most floods in Brighton and Hove. Towards the north of the city, steep-sided downland areas lead to water running off the surface quickly and in the city centre, large areas of impermeable surface means that water cannot infiltrate.

Flood Risk and Hazard Maps produced for the Flood Risk Management Plans show the following statistics regarding flooding in Brighton and Hove, with the following at risk of flooding from surface water

- 46,293 people living in the Flood Risk Area
- 2,571 non-residential properties

- 9.2 kilometres of A roads including strategically important roads such as the A23 and A27
- 8 kilometres of railway
- 36 hectares of agricultural land
- 107 listed buildings

The Risk of Flooding from Surface Water (RoFSW) is shown in the Environment Agency's Long Term Flood Risk mapping available online at gov.uk⁵. The map in **Appendix B1-1** shows the areas at risk of flooding in response to rainfall events with the following chance of occurring in any given year:

- High risk – greater than a 3.33% chance (1 in 30)
- Medium risk – between a 3.33% and 1% chance (1 in 100)
- Low risk – between a 1% and 0.1% chance (1 in 1,000)

The **Strategic Flood Risk Assessment (2018)**⁶ also identifies Surface Water flood zones in Brighton and Hove. These are divided into

- Accumulation Zone- where surface water is expected to pond
- Conveyance Zone- sloping ground where surface water will flow

The mapping shows the surface water flow routes draining from the South Downs north of the urban area, along dry valleys towards the sea. Major roads in Brighton and Hove also tend to follow these valleys, such as Lewes Road, London Road, Old Steine and Falmer Road in Woodingdean and Rottingdean. These flow arteries are shown in the accumulation zone of the Strategic Flood Risk Assessment whilst much of the populated areas in the north of Brighton, Hove and Rottingdean are shown in the conveyance zone.

In Hove, flow routes to the sea are cut off by the railway embankment shown in the darker colours to the north of the railway line. Nevertheless, flooding can still be seen to the south between the railway embankment and the sea, following the grid pattern

⁵ <https://check-long-term-flood-risk.service.gov.uk/map>

⁶Brighton and Hove SFRA (2018)

arrangement of the Victorian urban centre.

Flooding of commercial and residential property from recreational and agricultural land has been a recurrent problem for Brighton & Hove in the past and farming practices have the potential to significantly change the runoff characteristics in the upper catchment, particularly on steep-sided fields within the downland area. Between September and December 2000 runoff from agricultural land resulted in flooding in the suburbs of Brighton including Bevendean, Woodingdean and Ovingdean. Rottingdean has also suffered from historic flooding from agricultural runoff (locally known as muddy flooding).

2.3. Groundwater flooding

Groundwater is the water that fills pores, empty spaces and cracks in the rock layers. In Brighton, groundwater flooding is a known issue due to the chalk which runs under the city and forms the South Downs to the north.

The impact of groundwater flooding is particularly long-lasting when compared to other sources of flooding, and can last for weeks rather than days, rendering some properties uninhabitable due to internal damage and lack of access. The groundwater level rises and falls depends on factors such as:

- Rainfall duration
- Rainfall intensity
- Water extraction rates
- Transmission rates of water through the chalk

Long-lasting or intense rainfall can cause the water table in the chalk aquifer in the north of Brighton and Hove to rise above the ground surface. This is shown in **Figure 2-1** below. Once flood water reaches the surface in Brighton, it flows down dry valleys but can emerge anywhere where the chalk meets a less porous layer such as clay. It can also seep into basements and sewer networks through cracks and joints and can reduce the capacity of sustainable drainage features such as attenuation ponds if not accounted for in the design

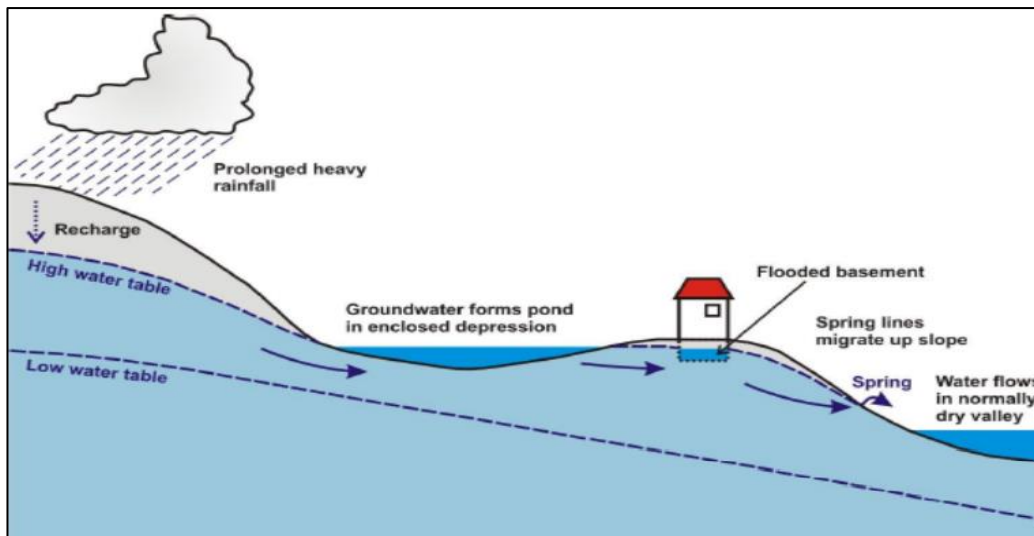


Figure 2-1: Groundwater flooding mechanism⁷.

2.3.1. Groundwater transmission through the chalk

The Chalk to the north of Brighton is characterised as a karst aquifer. Karstic geologies are characterised by caves and surface landforms as shown in **Table 2-1**.

Table 2-1: Features of karstic landscapes

Feature	Description
Doline	A funnel-shaped surface hollow or basin
Shaft	A vertical or steeply sided natural open formed by solution or erosion of vertical fractures in the rock
Spring	A natural resurgence of groundwater alongside a hillside or valley floor
Solution/dissolution pipes	Small smoothly cylindrical pipes

⁷ Groundwater_flood_risk_management_in_England_-_report.pdf

In England, groundwater flow is predominantly through small-scale karstic features⁸. Stream sinks are recorded within the Brighton area as well as surface depressions and dissolution pipes (recorded in the Natural cavities database). Following droughts in the 19th century, audits were constructed throughout the area in order to increase the rate of groundwater flow and so allow the aquifer to be better exploited as a water source. These typically extended from the bases of wells and boreholes horizontally into surrounding chalk.

2.3.2. Groundwater flooding interactions

Groundwater flooding often occurs at the same time as and can contribute to other types of flooding in the following ways:

- High sea levels can contribute to groundwater flooding in coastal areas due to sea water saturating the underlying geology
- Groundwater can flow overland into the surface water drainage network, increasing the risk of surface water flooding
- High groundwater can stop rainfall from infiltrating into the ground, meaning more runoff into the sewer system or flowing overland
- Groundwater may infiltrate into the sewer network where there are cracks or other failings in the pipes and contribute to sewer flooding

Man-made structures such as pipe trenches also increase the speed that groundwater travels through the ground and route it to areas where it would not naturally occur. Historically, trenches were used to increase transmissivity through the chalk for efficient water abstraction, permanently increasing the rate of transmissivity at these locations.

2.3.3. Modelled groundwater flood risk

The groundwater flood map⁹ indicates how close groundwater might be to the surface in a 1% annual exceedance probability groundwater event, using inputs such as geology: topography, groundwater volumes and transmission properties across England. The mapping for Brighton and Hove in **Appendix B1-3** shows three main areas at potentially at risk of flooding from groundwater, Aldrington, Patcham and Falmer. It should be noted that whilst the mapping shows the risk of emergence of groundwater it does not show how or where the groundwater would flow after it has emerged. This limitation should be recognised, and groundwater flooding should make use of information and records from observed events.

⁸ BGS Karst report Series: C7 Karst in the Chalk of the South Downs (<https://nora.nerc.ac.uk/id/eprint/531542/>)

⁹ Source: JBA Consulting

Groundwater flood risk is well established in Patcham and Falmer. These areas sit at the base of the South Downs adjacent to the major arterial roads of the A23 and A27.

At Aldrington the chalk is overlain by permeable superficial deposits. The distribution of these deposits is consistent with areas where groundwater may surface locally in the groundwater mapping.

2.3.4. History of Groundwater Flooding

There are records of groundwater flooding in the Patcham dating from 1877 to the present day. In the winter of 2000–2001 the Patcham area of Brighton was affected by serious flooding between the 7th and 19th of November 2000, which led to disruption to the London–Brighton railway line for 5 days¹⁰ and the closure of the A23 road south of the A27. The ground floors of 15 houses were flooded, as well as the basements of several others.



Figure 2-2: Flooding at Old London Road, Patcham in 2000

During the winter of 2013-2014 widespread groundwater flooding occurred throughout the southeast of England during one of the wettest winters on record with 588.5m of rainfall recorded on the South Downs in 3 months¹¹. In Brighton and Hove, groundwater flooding led to flooding in Patcham; Portslade; Preston Park; Bevendean

¹⁰ Flood Defence Assessment for Downland Flooding', Binnie Black & Veatch (2001)

¹¹ Brighton and Hove City Council s19 flood report 2013/2014

and Coldean.

The flood investigation concluded that “there is no simple solution to groundwater flooding; little can be done to prevent groundwater from rising through the aquifer and flooding properties. However, when groundwater emerges at the surface, measures can be taken to reduce the risk of floodwater entering properties”

2.3.5. Groundwater flood warnings

Information on groundwater levels at three sites and rainfall data from two sites is collected by the Environment Agency. This data is used to issue flood warnings to a groundwater flood warning area in the Patcham area which covers Old London Road, parts of Church Hill and Mill Road, and the Recreation Ground.

2.4. River flooding

There are no designated main rivers, or ordinary watercourses, within Brighton and Hove. A spring-fed winterbourne drain is reported to run at times of high groundwater beneath Preston Park, London Road and The Level, discharging to the sea in the vicinity of Palace Pier.

2.5. Tidal flooding and coastal erosion

The Environment Agency Flood Map for Planning in [Appendix B1-2](#) shows the extent of tidal flooding in a 1 in 200 flood (Flood Zone 3) and 1 in 1000 flood (Flood Zone 2). It shows that there is a low risk of flooding to Brighton and Hove from tidal flooding except for Shoreham Port and Brighton Marina. However, the Flood Zone mapping shows the undefended scenario (without flood defences) and Brighton Marina has defences that provide a safe standard of protection for wave and tide events up to a 1 in 200 annual probability. The mapping also only looks at present day risk rather than future flooding allowing for climate change.

Coastal flooding was experienced at several places in Brighton and Hove during the winter of 2013/2014. At Shoreham, factories and warehouses within Shoreham Port and property at Basin Road South were flooded. In Hove, flooding was reported at Western Esplanade, the Hove Deep Sea Anglers’ buildings and along the lower promenade around Brighton Pier. Further damage was caused to the derelict West Pier in February 2014 after rough seas caused part of it to collapse into the sea.

2.6. Reservoir flooding

Reservoirs with a volume greater than 25,000 cubic metres are governed by the Reservoir Act 1975 and are listed on a register held by the Environment Agency. There are no large reservoirs which fall under the Reservoirs Act in Brighton and Hove.

2.7. Sewer flooding

Sewer flooding in Brighton and Hove occurs when intense rainfall overloads the sewer system capacity. Sewer flooding can also be caused when problems such as blockages, collapses or equipment (such as pump) failure occur.

Since 1980, the Sewers for Adoption guidelines (now replaced by the **Design Construction Guidance**) have meant that most new surface water sewers have been designed to have capacity for a rainfall event with a 1 in 30 chance of occurring in any given year (3.33% AEP), although until recently this did not apply to smaller private systems. However, as much of the sewer system in Brighton and Hove was first constructed in the Victorian era, not all of the pipes are built to this standard.

To stop combined foul and surface water discharging into the sea without being treated, Southern Water constructed a storm water storage tunnel along Brighton seafront to store storm water overflows from the combined sewerage system for flood events up to a 1 in 50 (2% annual probability) rainfall event. In other parts of the Brighton and Hove city area, such as Saltdean, combined sewer overflows are still in usage when sewer flows exceed the capacity of the sewers.

It is important to note that even sewers built to modern design standards can still be overwhelmed by more severe events than those they were designed for. Existing sewers can also become overloaded as new development adds to their catchment, even with restrictions in place on permitted connections. This is often due to increases in roofed and paved surfaces at the individual property scale over time.

Southern Water have provided a list of sewer flooding incidents in Brighton from its DG5 register, these are shown in **Figure 2-3** overleaf (these incidents are aggregated to a 6-digit postcode reference, and it is not possible to identify individual properties).

The mapping indicates a number of post code locations where there are known sewer flooding issues, this includes a number of clusters of sewer flooding incidents in the Preston Park area, Market Street, Hollingbury and Hangleton.

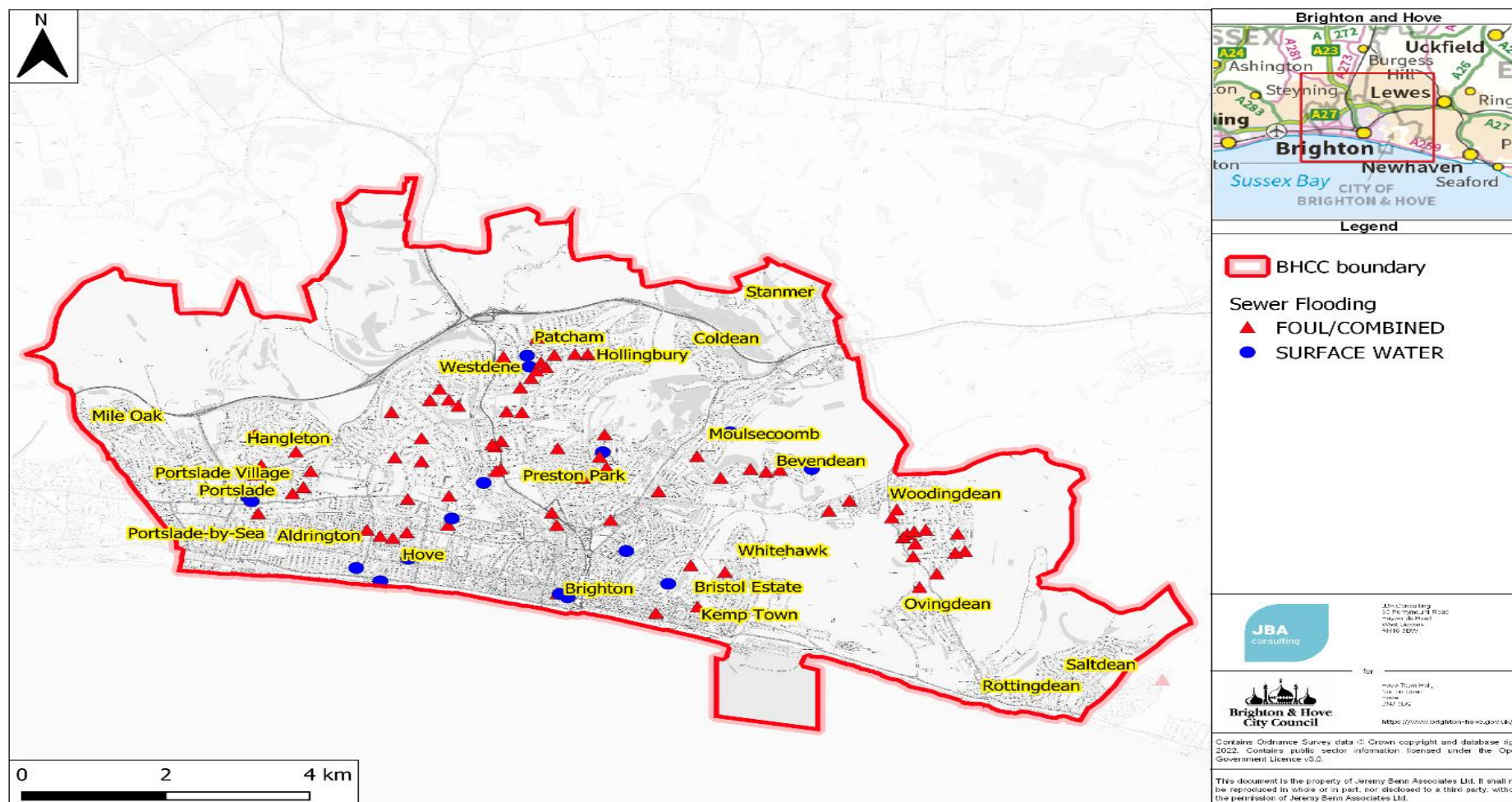


Figure 2-3: Southern Water sewer flooding records

2.8. Flood Risk and Climate change

Global average temperatures have already warmed in excess of 1 degrees C above pre-industrial recorded temperatures and, will continue to increase unless big changes are made worldwide. The National FCERM strategy seeks to better prepare for 2 C warming whilst planning for higher scenarios up to 4 C.

Nationwide, more frequent and extreme flooding as well as increased coastal erosion, droughts and wildfires has been experienced in recent years. The anticipated effects of climate change on the risk of flooding in Brighton and Hove are summarised below.

2.8.1. Climate Change Implications on Surface Water

Climate change projections show an increased chance of warmer, wetter winters and hotter, drier summers with a higher likelihood of more frequent and intense rainfall. This is likely to make severe flooding occur more often, particularly in summer when the intensity of storms is expected to increase. This will lead to greater overland flows, meaning that underground sewers and the gullies receiving water from the highways are both more likely to be overwhelmed as the floods they have been designed for (the design flood) will become more likely in the future.

Table 2-2 shows the current predicted increases to rainfall. New climate change allowances for peak rainfall intensity were published in 2022 based on the **UKCP18 climate change projections** and included anticipated change for the 3.3% annual probability event as well as the 1% annual probability event.

UKCP18 climate change projections

Table 2-2: Climate change uplift values for Environment Agency's peak rainfall approach (2022)

Total potential anticipated changes	Central (2050s)	Upper End (2050s)	Central (2070s)	Upper End (2070s)
3.3%	20%	35%	20%	40%
1%	20%	45%	25%	45%

The Risk of Flooding from Surface Water (RoFSW) mapping has been updated with 30% (Central) and 40% (Upper End) uplifts to assess the impacts of climate change on surface water flood risk. The mapping shows that small increases in extents can be expected in the extent of surface water flooding for both the 30% and 40% uplift scenarios. However, the pathways are likely to remain similar to the present day, following the preferential flow routes from north to south. Portslade and Valley Gardens showed the greatest increase in flood extent in the climate change scenarios where flows converged or were impeded by features such as the railway line. These

areas are shown in **Appendix B1-4**

2.8.2. Climate Change Effect on Tidal and coastal flooding

Global sea level has risen over the 20th century and will continue to rise over the coming centuries. The 2018 climate change predictions (UKCP18) are currently considered to be the best estimate of future seas level rise to 2100.

For the South East, sea levels are predicted to rise a total of between 1.2m and 1.6m over 125 years (2000 to 2125). As well as this, offshore wind speed and extreme wave heights may also change because of increased water depths, and changes to the frequency, duration and severity of storms. This means that flood defences that currently defend against a flood with an annual probability of 1 in 200 will either need to be upgraded to keep the same standard of protection or will have a lower standard of protection in the future as more extreme events become more common.

2.8.3. Climate Change Impact on Groundwater

The impacts of climate change on groundwater flood risk are much more uncertain than with other sources of flooding, however it is generally accepted that, as sea levels rise, the shallow groundwater table in coastal communities will also rise¹² This could potentially have implications for areas near to the shoreline where groundwater flooding is already experienced such as the Old Brewery Site at Portslade. However, for areas at risk of groundwater flooding in the north of the city, this is unlikely to have significant impacts on flood risk.

Milder wetter winters may increase the frequency of groundwater flooding incidents in areas that are already susceptible to groundwater flooding and also lead to catchments being saturated for longer periods. Warmer drier summers may counteract this effect by drawing down groundwater levels to a greater extent during the summer months.

2.9. Contextual Challenges in managing flood risk in Brighton and Hove

Along most of Brighton and Hove coastline, the beaches are our first line of defence against flooding from the sea. However, Brighton and Hove coast is eroding and with climate change, the sea level is not only rising but the energy of the sea to erode our beaches, cliffs and flood and coastal defences is increasing. The areas in our city which are potentially at risk of flooding from the sea are limited in Brighton and Hove to particular locations in Shoreham Port and Brighton Marina (although the Marina has a breakwater that provides some protection from the action of tides and waves).

Whilst the centre of Brighton and Hove is mostly flat and low-lying, the ground levels (elevations) in our area generally rise from the south to the north by 200 metres, with

—

¹²CoSMoS-Groundwater | U.S. Geological Survey (usgs.gov)

two “dry valleys” (which don’t have natural watercourses or channels) leading to the coast from Patcham and Moulsecoomb.



Figure 2-4: Chalk Cliffs at Roedean School

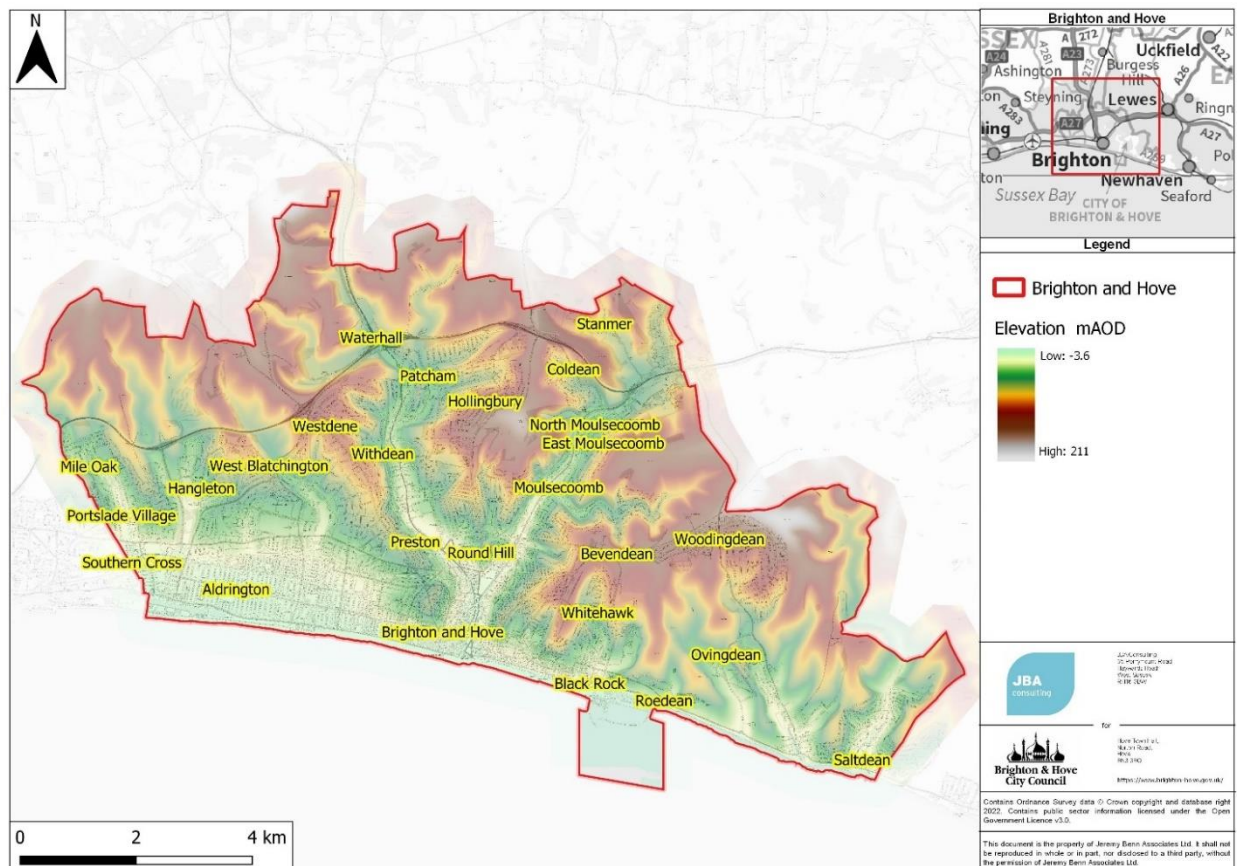


Figure 2-5: Ground Levels in Brighton and Hove (metres above Ordnance Datum)

Rainwater falling on to the South Downs can flow quickly overland from the chalk hills into the Victorian Sewer system. Whilst newer developments on the edge of the city have separate foul and surface water systems, this is not the case in the city centre where the sewers must take both foul and surface water. As a result, if too much surface water enters the combined sewers, the consequence is potentially flooding from foul water or discharging foul water directly into the sea. The severity of surface water flooding in Brighton and Hove is recognised as being nationally significant, with a Flood Risk Area (an area defined as being at significant risk) covering the city area from Shoreham to Brighton Marina and Falmer. Historic reports of flooding are shown in **Figure 2-6** below.

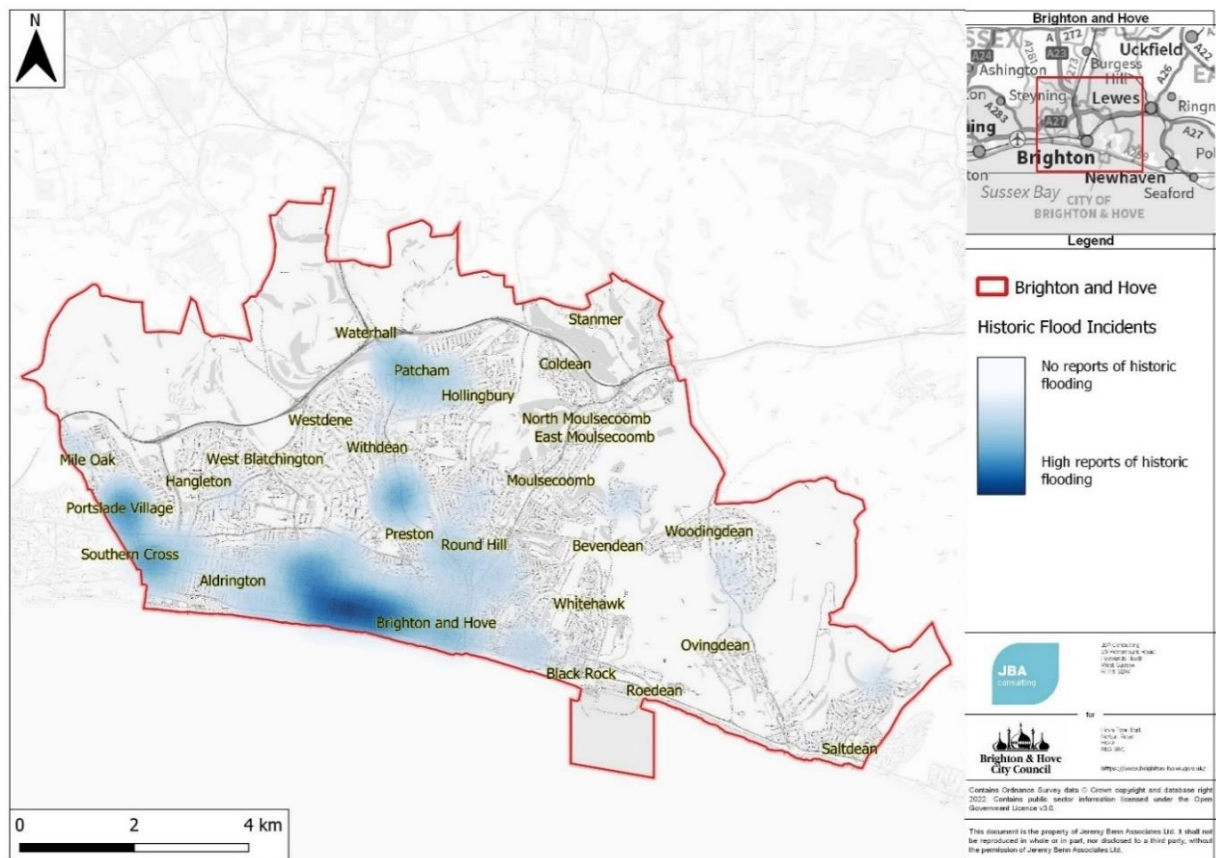


Figure 2-6: Historic flooding in Brighton and Hove

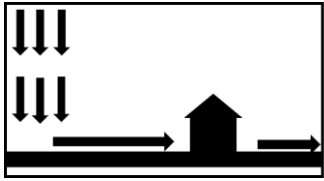
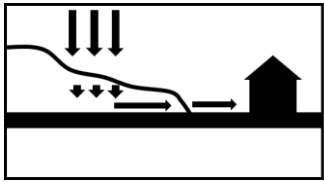
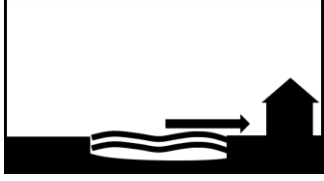
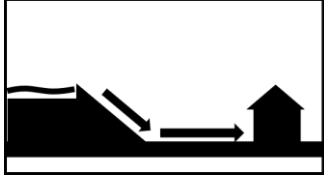
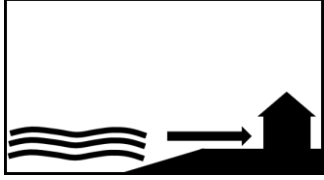
Heavy or long-lasting rainfall can increase groundwater levels in the underlying chalk in areas such as Patcham. This groundwater is vital for our community, providing the water supply for our area and Brighton & Hove City Council need to make sure that the quality of our groundwater is maintained whilst managing the potential flooding that it can bring.

Brighton and Hove City is surrounded by natural beauty, but this also means that our city has limited options for growth. To the north, Brighton & Hove City Council have the wide-open spaces of the South Downs National Park and to the south Brighton & Hove City Council look out on to our shingle beaches and the English Channel. In between, our beautiful Victorian urban landscape provides housing and employment to some 273,000 people in an area of around 85 square kilometres. There are projected to be 23,300 more people living in the city by 2030 (compared with 2017, an 8% increase to 311,500 people). With the constraints on expansion the council faces, this means our population density will increase.

3. Flood Risk Management Responsibilities

3.1. Overview of Risk Management Authorities

In England, **Defra** sets policy direction, and the **Environment Agency** has a strategic overview of all flood and coastal erosion risks in England. This includes:

Surface water flooding Caused by intense short periods of rainfall and occurs where the natural (or artificial) drainage system is unable to cope with the volume or intensity of water	
Groundwater flooding Long-lasting or intense rainfall over a period of time can cause the water table in the chalk in the north of Brighton and Hove to rise above the ground surface. This can cause surface flooding and also fill up underground drains and sewers with groundwater	
Rivers and other watercourses Flooding occurs when the capacity of the river channel is exceeded, causing water to extend into the surrounding land. There are no rivers in Brighton and Hove.	
Reservoirs Overtopping or damage to the structure of the reservoir can mean water can escape over or through the structure. There are no large reservoirs in Brighton and Hove.	
The Sea (coastal) Flooding can occur due to high tides and high wave heights. Low pressure storms can lift the tide height even higher (storm surge)	

More information about how the causes and impacts of different types of flooding is included in [Section 2](#) with mapping shown in [Appendix B](#).

3.2. The role of Risk Management Authorities

Section 6(13) of the Flood and Water Management Act 2010 names Risk Management Authorities with responsibilities for flood risk.

None of these organisations or groups have a 'duty to protect' communities, businesses or other interests on the flood plain or around the coast. Their role is to work together in various ways to reduce damages when possible and achieve the greatest overall benefit in terms of managing flood and coastal erosion risk with the funding and other resources they have available.

The following are responsible for flood and coastal erosion risk management activities in the city:

- Environment Agency,
- Lead Local Flood Authorities,
- Local Planning Authorities,
- Other Risk Management Authorities,
- Water companies,
- Reservoir owners
- Highways authorities

The list below shows the various areas of responsibility of each of these organisations. Brighton Marina and Shoreham Port are not Risk Management Authorities as defined in the Flood and Water Management Act.

- Highways - Strategic Road Network – National Highways
- Highways - Local Road Network – Brighton and Hove City Council
- Surface water – Brighton and Hove City Council
- Groundwater – Brighton and Hove City Council
- Coast – Brighton and Hove City Council, Brighton Marina, Shoreham Port, Environment Agency
- Reservoirs – Environment Agency
- Sewers – Southern Water

There are no main rivers or ordinary watercourses in the Brighton and Hove City Council area

3.3. Lead Local Flood Authority

Brighton and Hove City Council, as Lead Local Flood Authority (LLFA) has a wide range of responsibilities set out in Flood and Water Management Act and included in **Appendix C**. These include:

- Investigating and reporting flooding incidents.
- Permissive power to manage flood risk from surface water, groundwater and ordinary watercourses.
- Producing a Local Flood Risk Management Strategy (this document).
- Maintaining a register of flood risk management and drainage assets.
- Statutory consultee on major developments.
- Consenting works on ordinary watercourses; and
- Enforcing works to maintain the flow on ordinary watercourses.

3.4. The Environment Agency

The Environment Agency directly manages flood risk from main rivers (as shown on the main river map), the sea and reservoirs. It also has an oversight role and works with other organisations to manage the risk of flooding and coastal erosion in England.



Some of the main functions of the Environment Agency as a Risk Management Authority for flooding are to:

- provide and operate flood warning systems for river and tidal flooding, and some areas at high risk of groundwater flooding
- carry out works to manage flood risk from the sea and main rivers (permissive powers)
- issue permits for works on or near main rivers and works protected by byelaws
- advise planning authorities on the implications of development proposals on flood risk
- designate structures and features of the environment that affect flood or coastal erosion risk

3.5. Highway Authorities

Responsibility for highways in Brighton is shared by National Highways for the A27, and Brighton and Hove Council for all other highways. They have the lead responsibility for providing and managing highway drainage and roadside ditches under the Highways Act 1980. They must work within the Environment Agency's national FCERM strategy and the Local Flood Risk Management Strategy when:



- carrying out highway drainage works
- diverting or carrying out works on part of a watercourse

The owners of land adjoining a highway have a common-law duty to maintain ditches to prevent them causing a nuisance to road users. The Highway Authority have powers of enforcement to abate nuisance on the highway.

3.6. Water and sewerage companies

Southern Water is the water and sewerage company for Brighton and Hove. The main roles of water and sewerage companies in managing flood and coastal erosion risks are to:



- ensure their systems have the appropriate level of resilience to flooding
- maintain essential services during emergencies
- maintain their water supply and sewerage systems to manage the impact and reduce the risk of flooding and pollution to the environment
- provide advice to Lead Local Flood Authorities on how water and sewerage company assets impact on local flood risk
- work with developers, landowners and LLFAs to manage risks to and from the public sewer system
- work with the Environment Agency, LLFAs and district councils to coordinate the management of water and sewerage systems with other flood risk management work

Where there is frequent and severe sewer flooding, sewerage undertakers are required to address this through their capital investment plans. Southern Water has set up a Storm Overflow Task Force which is carrying out five pathfinder projects to demonstrate how catchment and nature-based solutions can reduce storm releases by up to 80% by 2030¹³

3.7. Other partners with flood risk management responsibilities

Section 6(13) of the Flood and Water Management Act 2010 sets out the formal definition for a Risk Management Authority under the Act. In addition to its role as the Lead Local Flood Authority, Brighton and Hove City Council is also:

- Local Planning Authority
- Highway Authority
- Coastal Protection Authority

Whilst this strategy only covers the council's responsibilities as the Lead Local Flood

¹³ <https://www.southernwater.co.uk/the-news-room/the-media-centre/2021/november/southern-water-launches-taskforce-to-cut-storm-overflows-by-80-per-cent>

Authority, it should be acknowledged that the council's other responsibilities may overlap with flood risk, particularly with regard to planning and coastal protection.

There are a number of other organisations and who have flood risk responsibilities in Brighton:

The Brighton Marina Company manage and maintain Brighton Marina. They have a legal obligation to keep the marina in good repair and privately fund the maintenance of all structures including flood and erosion defences.

BRIGHTON
MARINA



Figure 3-1: Brighton Marina¹⁴

Shoreham Port Authority own the beach at Shoreham Port from Southwick Beach to Portslade apart from approximately 650m which is owned by Adur District Council. The Port Authority has a programme of sea defence renewal and manages breach risk for the main port operational area.



Shoreham Port Authority also own and operate the Shoreham Locked Section. The lock gates at Shoreham are not flood defences and so do not manage flood risk to the

¹⁴ Source: <https://www.brightonmarina.co.uk/whats-here/stay/>

basin and, when the water level outside the gates is greater than the water level in the basin, the lock gates are forced open. To stop this happening, the water level in the basin is usually kept at the level of the **highest astronomical tide** by pumping.

Currently, Shoreham Port Authority also move beach material back to the west each year, with assistance from Brighton and Hove City Council. This is because the structures interrupt natural movement and recycling of beach gravels which in turn has led to increased erosion over time at the western end of the Brighton and Hove area¹⁵. In the future, Beach Management Plans (BMPs) will lead to a regional approach to beach management funding¹⁶.



Figure 3-2: Shoreham Port¹⁷

Western Esplanade Beach Management Company (WemCo) manages the beach fronting Western Esplanade on behalf of the residents who own this private section of beach.

4. Review of Previous LFRMS - 2014

The first Local Flood Risk Management Strategy in 2014 focused on establishing and developing Brighton and Hove City Council's new role as a Lead Local Flood Authority following the phased commencement of the Flood and Water Management Act.

4.1. Aims and delivery of the first strategy

¹⁵ The Regional Shingle Sediment Budget for Selsey Bill to Brighton Marina (Canterbury City Council 2013)

¹⁶ South East Coastal Group website, 2014

¹⁷ Source: <https://www.shoreham-port.co.uk/need-to-know/news/>

A key component of a Local Flood Risk Management is the objectives of the strategy during the plan period and how those objectives are to be reviewed.

The first strategy called for the action plan to be monitored annually with an overview review of the strategy undertaken in cycles to align with the Flood Risk Regulations review period set every six years, with lessons learned to be reflected into the next edition of the strategy.

The review of the first strategy is included in **Table 4-1** overleaf. The status for each action has been recorded as either

- 1) Not progressed
- 2) Partially achieved or some progress
- 3) Fully achieved or completed

It is important to note that the progression of actions does not show success or failure, but rather how priorities have changed during the strategy period, or where the action may be relevant across multiple plan periods. More detail regarding the measures to reduce flood risk and future actions are included in **Sections 5.2 and 5.3**.

Table 4-1: Objectives and actions from 2014 strategy

Objectives	Actions	Status
Work with Partners, Stakeholders and Local Community Groups to Understand and manage flood risk.	Develop data and information sharing protocols.	1
	As LLFA hold quarterly partnership meetings with the EA and Southern Water.	3
	BHCC to attend the regional South East 7 flood group.	3
‘Continue to improve BHCC knowledge and evidence base of local flood risk’.	Define BHCC’s description of flooding and the associated sources.	3
	Investigate and record all instances of internal property flooding under Section 19 Duties of the FWMA	2 ¹⁸
	Undertake a study into groundwater flooding in Brighton and improve monitoring levels throughout the city.	1
	Investigate and define local SW flood risk areas with drainage infrastructure constraints	1
‘Work with Partners and Funders to implement sustainable measures to reduce flood risk’	Identify priority flood risk areas for investigation.	3
	Continue to implement and improve the beach replenishment programme.	3
	Implement the Action Plan from the BHCC SWMP.	2
	Assess the potential for short term flooding of open space areas as mitigation, for example use of parkland as temporary flood storage areas	2
‘Manage development impact on flood risk through land allocation and development control policy’.	Establish development control policies for ‘city plan’ – part 2.	3
	Establish protocol for consulting the LLFA on planning applications using flood risk evidence base (Geographical Information System database) as mandatory development control check / consultation	2
	Implement Schedule 3 of FWMA in accordance with DEFRA national standards and guidance.	3 ¹⁹

¹⁸ Section 19 investigation policy during this plan period was more selective during the last plan period and is due for renewal

¹⁹ Schedule 3 of the Flood and Water Management Act was not enacted

‘Raise public awareness and resilience to flooding’.	Provide guidance on interpreting flood risk data.	1
	Provide self-help advice on flood resilience	1
	Provide advice and support establishment of local community groups.	1
‘Undertake annual inspection, maintenance and improvement, where necessary of flood defence assets.’	Produce a consolidated flood defence asset register.	2
	Define what constitutes a Flood Defence asset.	1
	Prioritise and implement maintenance budgets.	2
	Undertake ecological surveys of assets prior to any maintenance or improvement works.	1
‘Work with Partners and Funders to implement sustainable public health protection measures’	Assess the public health implications from flooding.	1
	Identify and implement measures to protect public health during flood events	1
Ensure the likely environmental effects of the LFRMS are considered and understood and any potentially adverse effects are avoided, reduced or minimised	Undertake a Strategic Environmental Assessment of the draft LFRMS	3
	Prepare an Strategic Environmental Assessment Report to accompany the adopted LFRMS	3
	Implement monitoring according to the Strategic Environmental Assessment Report	1

4.2. Action taken since the last strategy was published

○ Completion of new Strategic Flood Risk Assessment

Since the last strategy, BHCC commissioned a Strategic Flood Risk Assessment (SFRA) as part of the evidence base for City Plan Part 2. This included Level 1 (which looks at the whole plan area) and Level 2 (for sites which may be developed and have a possible risk of flooding). The information in the reports was updated in 2021 with new climate change allowances, meaning that up-to-date information regarding flooding and climate change could be factored into strategic decision making. The SFRA included surface water flood zones, and these have now been identified as an appropriate approach in the latest published amendment to the National Planning Policy Framework (NPPF) issued in July 2021.

○ Installation of Property Flood Resilience (PFR) measures

In 2017 PFR measures were installed at 24 properties including 16 on Old London Road. Resilience measures have also been installed at 17 properties in Warmdene Road and Dale Drive in 2019, successfully preventing flooding to properties in Warmdene Road on several occasions since installation.

The Central Hove and Portslade Property Level Protection Scheme was completed in 2021. It has reduced flood risk to 45 properties, including several listed buildings.

- These schemes, with costs totalling £500,000 were funded by Brighton and Hove City Council and the Southern Regional Flood and Coastal Committee.
- **Highway SuDS pilot scheme**

As part of the SCAPE project (part of the EU Interreg programme) a pilot scheme to install shallow surface water storage basins in wide verges has been completed. This has added basins into verges in Carden Avenue and Darcy Drive, and a new raingarden at Norton Road.

Further details of progress against actions in the last strategy are listed in **Table 4-2** below.

- **Wild Park Rainscape**

Work to install a rainscape, consisting of storage and treatment basins for surface water and highway runoff from the A27 dual carriageway is underway in Wild Park. This is combined with improvements to the nearby Keep Balancing Pond. This scheme was completed by in autumn 2025.

Table 4-2: Progress against SWMP actions

Location	Progress
Maintenance of existing ditch at Kett's Ridge, Ovingdean	Cost benefit analysis completed which showed low benefit, however no flooding has occurred since farming practices higher in the catchment were changed
Investigation into monitoring of groundwater levels and telemetry and Moulsecoomb Primary School	Cost benefit analysis completed which showed very low benefit. The Wild Park Rainscape project which is currently underway will reduce surface water flood risk in this area

Highway amendments at Heath Hill Avenue and construction of embankments on playing fields at Bevendean	The dams installed near to Bodiam Close were highly successful in the 2014 flood, so this was not taken forward
Property Level Protection on Old London Road, Patcham	Property Level Protection installed in 2017 to 24 properties including 16 on Old London Road
Drainage investigation, highways works, and sewer works at Carden Avenue and Warmdene Road	The original proposals were discounted at detailed design; however, Property Level Protection was installed to 17 properties in Warmdene Road and Dale Drive in 2019. A highways sustainable drainage scheme at Carden Avenue and a SuDS in schools project at Carden Avenue have both been completed.
Construction of embankments at Cockroost Hill, Mile Oak and investigation for monitoring of groundwater levels	A benefit cost analysis was completed but had a low score and so was uneconomical to proceed
Investigation work at Blatchington Mill School	This was determined to be maintenance issues. No further action was taken by the LLFA team.

4.3. Things that have changed since the First LFRMS - 2014 published

Since the first strategy was published in 2014, there have been changes in policy and the understanding of flood risk in Brighton, these include:

- **The declaration of a climate and biodiversity emergency by Brighton and Hove Council**

Brighton and Hove City Council declared a climate and biodiversity emergency in December 2018. In answer to this, BHCC has made a commitment as a city to become carbon neutral by 2030. The programme of works created in response to the climate emergency includes Sustainable Urban Drainage as one of the key actions for adaptation, including a need to implement a Sustainable Urban Drainage Supplementary Planning Document.

The programme also includes protecting against coastal erosion and flood risk through the coastal defence strategy and coastal protection schemes.

- **The production of Brighton and Hove Supplementary Planning Document (SPD) for Sustainable Drainage**

The Brighton and Hove SPD was introduced following the publication of the non-statutory technical standards for sustainable drainage published by DEFRA in 2015 and provides local guidance on sustainable drainage systems. It incorporates the surface water flood zones identified in the 2018 Strategic Flood Risk Assessment and specific guidance for developers.

- **National Planning Policy Framework and Planning Practice Guidance updates, and updated climate change allowances for flood risk assessment**

The National Planning Policy Framework received a major update in July 2021. In terms of flood risk, this included a focus on making sure plans take into account all sources of flood risk and encouraged the use of green infrastructure and natural flood management. The theme of resilience was also expanded in this version, stating that [development should be flood resistant and resilient] “such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment

Planning Practice Guidance Flood Risk and Coastal Change was introduced in March 2014 and therefore was relatively new when the last strategy was released. It advises how the requirements of the National Planning Policy Framework should be included in the planning process, both by applicants and Local Authorities. The Planning Practice Guidance was last updated in August 2022 and has been adjusted so it addresses the changes to policy in the NPPF. The guidance now identifies that development decisions should strategically address all sources of flood risk both now and in the future.

- **New responsibilities within the planning system**

In April 2015 Brighton and Hove City Council as the Lead Local Flood Authority became a statutory consultee to the planning system, advising on the surface water drainage implications of all major development proposals in the city area. With the forthcoming adoption of City Plan Part 2, the impact of minor development on surface water drainage, as well as major development, will need to be assessed as part of the planning application process.

- **Changes in the resourcing of the Lead Local Flood Authority**

Within this plan cycle, the Lead Local Flood Authority team at Brighton and Hove City Council plans to expand with new officer roles to support delivery of the actions from this plan. Building the team internally will provide opportunities for building capacity and knowledge, providing a strong internal service to support both internal teams such as the planning and external partners.

4.4. Areas BHCC want to build on from the first Strategy

It was not possible to complete every action from the first Strategy in the first six years and many of the actions may take multiple strategy periods to complete. With the release of the new National Strategy, flood risk management in England is moving to a different approach which puts resilience at the heart of what BHCC do. As a result, BHCC will bring forward actions which will help us to achieve our aim and the aims of the current national strategy.

- **Investigate and record internal property flooding**

Under S19 of the Flood and Water Management Act, Lead Local Flood Authorities must, to the extent that it considers necessary or appropriate, investigate:

- which management authorities have relevant flood risk functions and,
- whether each of those flood risk authorities have exercised, or is proposing to exercise, those functions in response to the flood.

Where an authority conducts an investigation it must publish the results of the investigation and notify any relevant risk management authorities.

BHCC has published formal flood investigations such as the investigation into groundwater flooding in 2014²⁰. Currently there is no defined protocol or threshold for

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²⁰ Section 19 Flood Investigations Report- Groundwater Flooding in Brighton and Hove City (February 2014)(<https://ww3.brighton-hove.gov.uk/sites/brighton-hove.gov.uk/files/BHCC%20-Section%2019%20Report-%20Groundwater%20flooding%20v3%200.pdf>)

when a formal flood investigation under the Act would be required. It is also complicated by the fact that, in some areas such as Patcham, there is a long and comprehensive history of flooding. Where the flood mechanism is known, and resources have to be targeted, it is not always possible to investigate every flood to the same degree.

In this strategy period, BHCC would like to set out when a formal investigation would be required under S19 of the Flood and Water Management Act.

- **Undertake a study into groundwater flooding in Brighton and improve monitoring levels throughout the city.**

Modelling of groundwater flooding is an area which has improved over recent years, although there are still many uncertainties due to the complexity of routing water through the ground and assigning probabilities to groundwater flood events.

Research undertaken as part of the EU funded Interreg programme has led to improved knowledge and understanding regarding flooding in Patcham in particular and BHCC want to make sure that BHCC use our knowledge for Patcham and expand on it, where feasible and appropriate.

- **Investigate and define local SW flood risk areas with drainage infrastructure constraints**

The flood risk in Brighton and Hove is interlinked between groundwater, surface water and the sewer network. BHCC want to increase our understanding of problem points in the sewer network so BHCC can focus on delivering sustainable drainage schemes in those areas with our partners, particularly where they are highlighted as priority catchments for surface water flooding. Where possible, BHCC will work with our partners to reuse existing information and expand on it to create new models and datasets.

- **Raise public awareness and resilience to flooding**

Surface water flooding is different to other types of flooding BHCC face, as it can happen almost anywhere with the right conditions. Planning policies in City Plans One and Two seek to increase the resilience of new or redeveloped properties to flooding, but for existing residents BHCC need a city-wide approach which focuses on the receptors to flooding (ie, people and property) rather than the causes.

Groundwater flooding is far more predictable in our area, and BHCC have well tried and tested plans in place, but these plans will currently only be known to residents who have experienced floods in this area. BHCC want to raise the profile of groundwater flooding so people know what they can do to respond and recover before flooding even occurs.

- **Implementing sustainable measures to reduce flood risk**

A Surface Water Management Plan was completed alongside the 2014 strategy and included an action plan for surface water schemes which could be brought forward to reduce flood risk in priority areas. This was based on known risk at the time and focused on areas which had flooded historically. Seven hotspots were identified in the Surface Water Management Plan. The progress against each of the identified actions is included in **Table 4-2**.

4.5. Environmental Impact of the Local Flood Risk Management Strategy

To meet the legal requirements of the Environmental Assessment of Plans and Programmes Regulations 2004, a Strategic Environmental Assessment is required as part of this strategy.

The purpose of the environmental assessment is to look at potential environmental consequences of the strategy (and reasonable alternatives) before it is approved. The ultimate aim of the assessment is to help the strategy to deliver better and more sustainable environmental outcomes as well as resilience to potential future changes.

To do this, the environmental assessment identifies, assesses and sets out how to mitigate significant environmental effects arising from the strategy. The assessment also sets out how significant effects should be monitored once the strategy is implemented.

A Strategic Environmental Assessment has been carried out for this report and the accompanying action plan is included as **Appendix A**.

4.6. Surface Water Management Plan

Brighton and Hove City Council is updating its citywide Surface Water Management Plan (SWMP). A SWMP is a study to understand the flood risk and mechanisms from surface water and other local flood risks such as groundwater and ordinary watercourses. As part of this study, a catchment prioritisation and hotspot analysis study has been undertaken to identify the most significant areas of risk and identify specific actions that could be undertaken to manage flood risk in these areas in the future. The catchment prioritisation and hotspot analysis are discussed in **Section 5.10** and **Appendix E**.

Further work and outputs from the Surface Water Management Plan will identify specific measures and areas where flood risk interventions could take place, along with a high-level feasibility study.

5. Objectives of Revised LFRMS - 2025

Seven objectives for managing flood risk have been developed which are aligned with the National Strategy Objectives and the key themes.

The objectives are supported by an action plan (**Appendix D**), which shows the actions we will take to achieve the objectives and outcomes showing what the actions will achieve. The background to each of the objectives is discussed in more detail below and definitions of the terms used in this section are included in **Table 5-1** below.

Table 5-1: Terms used in this section

Term	Meaning
Objective	What do BHCC want to achieve?
Action	What will BHCC do to achieve our objectives?
Outcome	What would achieving the objective look like?

As discussed in **Section 4**, some of the policies in the 2014 Local Flood Risk Management Strategy have been brought forward into this Strategy. **Table 5-2** shows a comparison of the old and new objectives.

Table 5-2: Comparison of old and new LFRMS

Old Objectives	New Objectives
Work with Partners, Stakeholders and Local Community Groups to Understand and manage flood risk.	Work collaboratively with Partners, Stakeholders and Local Community Groups to understand and manage flood risk
Continue to improve BHCC knowledge and evidence base of local flood risk	Continue to improve knowledge and evidence base for local flood risk
Work with Partners and Funders to implement sustainable measures to reduce flood risk	Work with Partners and Funders to implement sustainable measures to reduce flood risk and promote water quality, biodiversity and amenity
Manage development impact on flood risk	Manage the impact of development on flood risk
Raise public awareness and resilience to flooding	Raise public awareness and resilience to flooding
Undertake annual inspection, maintenance and improvement, where necessary of flood defence assets	Strengthen the ability of the LLFA to manage flooding
Work with Partners and Funders to implement sustainable public health protection measures	Reduce flood risk through asset maintenance and good land management practices

Ensure the likely environmental effects of the LFRMS are considered and understood and any potentially adverse effects are avoided, reduced or minimised	
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5.1. Objective 1: Work collaboratively with Partners, Stakeholders and Local Community Groups to understand and manage flood risk

The following Actions will be implemented to achieve this Objective:

- **Active participation in local and regional flood risk and sustainable drainage groups as forums for learning and cooperation. Recruitment of a SuDS Project Officer to facilitate this action.**

BHCC work with other Lead Local Flood Authorities across borders in the South East 7 flood group as well as the Aquifer Partnership on issues and plans relating to the chalk aquifer. BHCC will also continue to be active in the Regional Flood and Coastal Committee (RFCC) and engage with the Greater Brighton Water Management Plan, taking note of projects which have already been identified through the plan such as the rain garden campaign. Recruitment of a dedicated SuDS Project Officer will help resource this Action.

The desired Outcome for this Action is: Shared knowledge, working practice and collaboration across geographic boundaries.

- **Hold quarterly flood partnership meetings with key local risk management authorities. Recruitment of a SuDS Project Officer to facilitate this action.**

We will hold quarterly meetings with our key risk management partners working with us in the Brighton and Hove City area through the Brighton and Hove Flood Management Partnership. The aims of the flood partnership will be to discuss:

- The development of strategic flood risk management policies (for example DWMPs, SFRAs, FRMPs)
- New funding and partnership working opportunities
- Incident management plans, protocols and multi-agency response (in conjunction with our civil contingencies colleagues where appropriate)
- Management of unexpected surcharge events from the public sewer network

Recruitment of a dedicated SuDS Project Officer will help resource this Action.

The desired Outcome for this Action is: Close working relationships with other risk management authorities in the Brighton and Hove area including partnership funding, sharing of best practice, sharing of information and improved incident response.

- **Strong collaboration within the council and with local partners and stakeholders to promote sustainable drainage and deliver schemes. Recruitment of a SuDS Project Officer to facilitate this action.**

We know that there is great work happening across the council in sustainable drainage, responding to flood events and placemaking for the future. We are actively building strong links with other teams within the council, particularly where the type of work we undertake overlaps (such as sustainable drainage), where we work closely together and where we need to share data and information. However, to fully integrate surface water management across the functions of the Council, we now need to extend beyond our current network of internal partners (ie CityParks, Sustainability and Transport) to other functions within the council such as housing; schools and property management. Recruitment of a dedicated SuDS Project Officer will help resource this Action.

The desired Outcome for this Action is: Form cross departmental working group within the council to promote and expand sustainable drainage and to interface with local partners and stakeholders.

- **For the whole BHCC area, work with Southern Water modelling and asset teams to identify significant areas of interaction between the sewer network and groundwater/ surface water**

A catchment prioritisation exercise has been carried out as part of this strategy to identify areas which may require interventions, which is based mainly on the Risk of Flooding from Surface Water dataset. However, this doesn't account for groundwater or the sewer network. The interactions between groundwater; surface water and infrastructure can blur the lines between different types of flooding and make the situation far more complex in reality.

We want to improve our understanding of these interactions by integrating the sewer network into surface level modelling to provide a whole-catchment model. We will facilitate data sharing with Southern Water to maximise the efficiency and benefit of the modelling we will undertake. This work will be facilitated by building good relationships through our Risk Management Authority working group.

The desired Outcome for this Action is: Comprehensive understanding of sewerage network constraints and surcharge vulnerability.

5.2. Objective 2: Continue to improve knowledge and evidence base for local flood risk

The following Actions will be implemented to achieve this Objective:

- **Publish policy for s19 flood investigations and produce protocol for non s19 flood events**

As discussed in [Section 4.4](#), BHCC have a duty to investigate flooding in our area (as far as considered necessary or appropriate). There are no national guidelines to demonstrate which flood events would be considered necessary or appropriate to formally investigate and therefore each Lead Local Flood Authority must make their own decisions when to formally investigate flooding under s19 of the Flood and Water Management Act.

In this strategy period, we will set clear criteria for carrying out formal flood investigations. We will also produce a protocol for investigating flooding which does not meet the threshold for formal investigation but would provide additional understanding of flood risks in our area. This will also make our decision-making process regarding flood investigations clear and fair to our residents and businesses.

The desired Outcome for this Action is: Formalise thresholds and methods for investigating reports of flooding including under Section 19 of the Flood and Water Management Act.

- **Complete feasibility study into groundwater monitoring and telemetry and implement findings**

One of the recommendations of the flood investigation into the 2013/2014 groundwater flooding was to revise the plan for Patcham to include the entire city, with measurements based on groundwater levels and emergency observed in the February 2014 event.

We want to see if it is feasible to cover areas currently not provided with groundwater flood warnings and improve our understanding of existing monitoring locations. For groundwater, a warning is issued based on borehole data, combined with rainfall data. The Ladies Mile borehole provides groundwater flooding warnings for Patcham and the Civil Contingencies team have a well-established plan with the Environment Agency for responding to groundwater flooding in this area. We will undertake a feasibility study to investigate these aims.

The desired Outcome for this Action is: Develop greater understanding of groundwater flood mechanism in Brighton and Hove and increase monitoring of groundwater and rainfall across the city.

- **For hotspots, compile drainage infrastructure plans and produce combined models including surface water, sewers, highway drainage and groundwater influence where relevant**

Flooding does not respect boundaries or stay within one risk management authorities' infrastructure. To take a "whole catchment" approach to flood risk, we therefore need to share understanding and data with our partners. We want to build on the good work

that has already taken place on individual flood risks in our area and, as far as we can, identify and understand the linkages between them. This will require close liaison with the Highway Authorities and Southern Water. Due to the complexity of this project this may extend into the next plan period. An integrated catchment model has been created for Preston Park and Eldred Avenue to look at surface and sewer flow interactions.

Further information on our approach to catchment and hot spot prioritisation is set out in **Section 5.10** and **Appendix E**.

The desired Outcome for this Action is: Improve understanding of interactions between different forms of flooding from multiple sources.

- **Undertake a consultation to gather data on historic property flood instances and local knowledge.**

The records of previous flooding instances held by the Council are often reliant upon reports and information from local residents and businesses. Our records and understanding could be improved by greater engagement with residents and stakeholders to promote provision of information on flooding instances.

We will undertake a consultation exercise to gather information and encourage reporting of flooding to improve our datasets and local knowledge.

The desired Outcome for this Action is: Improve quality of data on flood instances and identify previously unknown events.

5.3. Objective 3: Work with Partners and Funders to implement sustainable measures to reduce flood risk and promote water quality, biodiversity and amenity

The following Actions will be implemented to achieve this Objective:

- **Produce feasibility study for a citywide SuDS programme and Produce an implementation plan based on the outcomes of the citywide SuDS programme feasibility study**

The need for a citywide sustainable drainage scheme was identified within the Brighton and Hove Plan. The beneficial cumulative impact of such interventions has been identified by a number of organisations, including Brighton and Hove City Council in the corporate plan and Southern Water through their combined sewer overflow taskforce.

There is already some great work going on this area, for example through The Aquifer Partnership's campaign to create as many rain gardens as possible across Brighton, Lewes and Hove by 2025, and Southern Water's pathfinder projects. We want to work with our partnerships to build a sustainable drainage toolkit, which expands beyond

rain gardens into other small-scale interventions that can be carried out by individual properties, businesses and council property.

We will also undertake a feasibility study for larger-scale schemes which might require internal or external funding and produce an implementation plan for projects which show benefits based on the current scoring criteria. This work will be carried out as a second phase Surface Water Management Plan.

Our aim is to shortlist and (if possible) identify a preferred option for each priority catchment to take forward to detailed design. For each catchment the following stages will be required:

- Baseline modelling and options appraisal
- Model shortlisted options and prepare outline design and costs. The purpose of this stage is to work out the best option and commercial strategy
- Prepare Outline Business Case (OBC)- This shows the results of the investigation and seeks authorisation to complete the detailed design and tender prices

Once the scoping and feasibility study has been produced, we will produce an implementation plan showing how we intend to deliver strategic elements of the citywide SuDS scheme and work with our partners to monitor the success of the overall scheme.

The desired Outcome for this Action is: Identify and implement opportunities for sustainable measures to reduce flood risk in the context of increasing risk of flooding due to Climate Change.

- **Develop a ranking system for the assessment of SuDS schemes for different types of benefits with reference to the 'SuDS Pillars'**

For the flood risk schemes we deliver as the Lead Local Flood Authority, we want to provide multiple benefits wherever possible, following the approach set out in the four pillars of SuDS design presented in the CIRIA SuDS Manual. Examples of this might include improving water quality, creating new high-quality habitat or enhancing the local area as an additional benefit to flood risk reduction work. To do this, we will develop a system to assess scheme options for multiple benefits and rank potential interventions using the different pillars as measures to combine to a total score. This will allow identification of schemes which score highly in some areas of Sustainable Drainage and low in others for consideration on their merits.

The desired Outcome for this Action is: Consistency for assessment of schemes promoting multiple benefits.

5.4. Objective 4: Manage the impact of development on flood risk

The following Actions will be implemented to achieve this Objective:

- **Build internal knowledge of pre-application in the LPA team and actively approach developers bringing forward strategically important or high-risk sites**

New development should provide opportunities to manage flood risk, not just within the development itself, but elsewhere where there is a new or emerging risk of flooding as a result of climate change. We will build on the work we started in the last Local Flood Risk Management Strategy and continue to have high expectations for managing flood risk through new development.

We understand that early involvement in the planning process is vital to including sustainable drainage and flood risk management and is at the heart of the placemaking element of resilience. We want to expand our pre-application service offer to developers, focussing on strategically important or sites which either are at high risk of flooding, or could potentially cause an increase in flood risk if appropriate measures are not put in place. To do this, we will need to work with the Local Planning Authority team identify sites where our pre-application service could have a real impact on the final layout and design of the development.

This approach supports the Brighton and Hove Plan action to ensure a positive planning service which ensures the quality of new homes and places, focusing on sustainability, placemaking, design quality and accommodation standards²¹.

The desired Outcome for this Action is: Proactive pre-application advice and engagement with major developers on flood risk and sustainable drainage matters.

- **Develop a tool for small developers to demonstrate compliance with SuDS policy for minor development and Publish external guidance for minor development**

Following the adoption of City Plan Part 2, applications for minor development will also need to demonstrate compliance with our sustainable drainage policies. We do not want this to be a burdensome process for applicants and therefore we will develop a web-based tool to make the process easy for applicants. The web tool will be designed so that Planning Officers will be able to see compliance against SuDS standards with the LLFA supporting for complex or high-risk cases.

We want to provide applicants for minor developments with a single source of information to demonstrate what they need to do and what they need to provide as

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²¹ Economy, Environment and Culture (brighton-hove.gov.uk)

part of their application. We will therefore produce and publish a guidance document for flood risk and drainage documents to support non-major and householder development. This will be linked to the developer tool.

The desired Outcome for this Action is: Provide accessible and up to date sustainable drainage guidance for small developers or householders.

- **Protocol for consulting the LLFA for minor planning applications linked to surface water flood zones and compliance with SuDS Policy and Provide training for LPA case officers considering flood risk and sustainable drainage matters and when to consult the LLFA**

The adoption of City Plan Part Two, which includes sustainable drainage requirements for non-major development, has led to the Lead Local Flood Authority being consulted on more planning applications and potential delays in providing responses if not managed carefully.

We will work with the Local Planning Authority team so that they will be able to determine if the criteria for sustainable drainage have been met (through the web tool in the first instance for minor applications). This protocol will indicate thresholds for when the Lead Local Flood Authority team should be consulted to provide additional advice.

We will provide training for Case Officers within the Local Planning Authority team and work with them to understand flood risk and drainage matters in the context of Town and Country Planning, including when it is necessary to consult with the Lead Local Flood Authority.

The desired Outcome for this Action is: Risk-based approach to responding to planning consultations whilst considering flood risk and sustainable drainage in all planning applications.

5.5. Objective 5: Raise public awareness and resilience to flooding

The following Actions will be implemented to achieve this Objective:

- **Provide information and signposting on BHCC website on property flood resilience, flood action plans, flood action groups and how to engage with the Council for assistance**

We want to improve our team's online presence so that residents can quickly and easily find the information they need from us. In particular, we want individuals and communities to know where they can find information on flooding;

- advice on what to do in a flood and;
- how they can get involved in planning for future flooding.

We will therefore work to improve the information available on our web pages and to guide residents and stakeholder groups in how to engage with the Council.

The desired Outcome for this Action is: Improved information on the council website, including how and under what circumstances members of the public should contact the council as Lead Local Flood Authority.

- **Work with partners and local groups to mitigate residual flood risk and form Flood Action Groups where appropriate**

Flood risk cannot be removed from the City and where residual risk exists, resilience and preparation can mitigate the impacts of flooding.

To improve resilience, we focus on the impact that flooding will have, recognising that the same flood would have very different impacts on different individuals, communities and businesses. Brighton and Hove is a diverse area, including rural and urban areas, wealthy areas and areas which score highly for deprivation indicators. In some areas of the city, the population is transient with a high proportion of residents occupying properties they do not own themselves leading to a low understanding of the flood risk and barriers to people being able to prepare for flooding.

In order to increase resilience in communities, we first need to understand the constraints, and strengths, that those communities have regarding flood risk. We will work with our internal teams, councillors, parish councils and community leaders to raise the profile of flooding and better understand how we can build flood resilience through all of the services that Brighton and Hove delivers and help local residents and businesses form Flood Action Groups to take greater ownership and responsibility for flood resilience.

The desired Outcome for this Action is: Community involvement in residual flood risk where physical interventions cannot bring properties out of flood risk.

5.6. Objective 6: Strengthen the ability of the LLFA to manage flooding

The following Actions will be implemented to achieve this Objective:

- **Recruitment of permanent staff to key roles and Provide training and support for continuing professional development**

We want to deliver a high-quality service to our communities, particularly through the information we can provide and the advice we can give. We want to build a team that is resilient and capable of providing the wide variety of functions that the Lead Local Flood Authority provides.

In order to achieve this, it is necessary to have a team of permanent staff to perform the various functions and to develop and retain the necessary skills, knowledge and understanding in the long term. The previous permanent staff of a single Flood Risk

Manager was not sustainable and has been a significant barrier to fully achieving the aims and objectives of the previous Strategy. The Council has approved additional roles of a Flood Risk Management Officer and a dedicated Sustainable Drainage Projects Officer.

Training and Continuing Professional Development will be provided by the Team Leader with support from Senior Management, including access to training programmes for accreditation with Professional Institutions.

The desired Outcome for this Action is: Increase the capacity of the flood risk and sustainable drainage team to retain in-house skills and knowledge to provide a more comprehensive and resilient service.

5.7. Objective 7: Reduce flood risk through asset maintenance and good land management practices

The following Actions will be implemented to achieve this Objective:

- ***Increase the cyclical drainage maintenance regime by BHCC Highways. Maintenance of the sewers by Southern Water.***

The highway drainage and public sewer systems are integral parts of the drainage of surface water with the City and the risk of flooding from surface water increases significantly where there is reduced capacity within these drainage systems through blockage or siltation.

We will work closely with the Highways Team and Southern Water to ensure that maintenance regimes reduce the risk of flooding within the City.

The desired Outcome for this Action is: A more efficient highways drainage systems resulting in fewer reports of flooding.

- ***Develop guidance and policy for land management practices relating to flood risk management.***

The Council owns large areas of downland around the City which are typically managed by Tenant Farmers for farmland, or the Council as parks and open spaces.

Runoff from undeveloped land can have a significant contribution to flood risk in the City and in particular can produce 'muddy flooding' from uncovered fields. This has caused or exacerbated flooding in the past and whilst the worst catchments have been addressed by flood risk interventions such as flood storage basins, there are improvements which could be made to further reduce flood risk through land management techniques and arrangements for reducing the speed of runoff. We will develop local guidance and policy specifically for reduction of flood risk through land management practices.

The desired Outcome for this Action is: Reduced muddy water run offs and reduced report of flooding on major transport networks and improve water quality in the city.

5.8. Approach to Effective Direction of Resources

We want to reduce the risk of flooding to properties (public, private and commercial) in Brighton and Hove wherever and whenever possible. To do this, we need to reassess where our priority areas are from the last strategy, focusing not just on areas that have flooded historically but also areas that might flood in the future.

5.9. Sustainability and Climate Change Adaptation Approach

The Brighton and Hove Plan includes the objective to include sustainable drainage in the sustainable city outcome. It is anticipated that most of the sustainable drainage schemes that will come forward will be small scale, with key strategic projects being brought forward from the recommendations of the forthcoming Surface Water Drainage Strategy.

A scheme for individual properties owners has been developed by the Aquifer Partnership to create as many rain gardens as possible across the Brighton, Hove and Lewes Area by 2025²². We want to support this type of work and recognise the cumulative impact that these types of interventions can have. However, is unlikely that small scale interventions would be able to keep pace with the increased risk of flooding that are expected in the next 100 years. It is therefore important that small-scale cumulative actions as well as strategic flood alleviation schemes are brought forward in a dual approach to tackling the increasing risk of flooding in Brighton and Hove.

We recognise that as the Lead Local Flood Authority, we are part of a wider network of teams with experience of delivering projects relating to flood risk, even where this is not their primary purpose. For smaller scale activities which can be delivered on a more ad-hoc basis, we want to provide a collaborative framework for partners to work with us to build up a body of best practice for different interventions in Brighton and Hove, empowering others to take action to reduce the risk of flooding whilst promoting multiple benefits.

5.10. Catchment prioritisation, Sustainable Drainage and Flood Defence

With this in mind, a new prioritisation approach has been adopted for this strategy. This prioritisation exercise does not necessarily indicate where funding will be provided but provides a useful starting point for indicating where funding might provide reduction in flooding to the greatest numbers of properties. More information about funding for flood risk reduction measures is included in **Section 7**, including how other

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²² Major programme launched to create green network of rain gardens across Brighton and Hove - South Downs National Park Authority

social and economic factors influence funding decisions.

A catchment-based approach was taken which split Brighton and Hove into twenty areas. Surface water flood modelling and past flooding records were used to identify properties which might be at surface water flood risk. This differs from the approach of the Last Flood Risk Management Strategy, which was based on known problem areas and specific interventions that were investigated and put in place where it was possible to do so. The methodology used for the prioritisation approach is set out in more detail in **Appendix E**.

Table 5-3 and **Figure 5-1** show the priority catchments based on the new catchment approach.

Table 5-3: Priority catchments

New Catchment	Priority area for last LFRMS
Hove	Mile Oak (Portslade)
Seafront	Bevendean
Elm Grove	Patcham*
Preston Park	Carden Avenue/Warmdene Road (Patcham)*
Portslade	Moulsecoomb Primary School*
Whitehawk	Ovingdean-Kett's Ridge
Aldrington	Blatchington Mill School (North Hove)
Hollingbury	

*The delivery of flood management schemes in these areas since the last LFRMS has resulted in our priorities changing. In Patcham, £250,000 has been spent on property level protection for 21 properties.

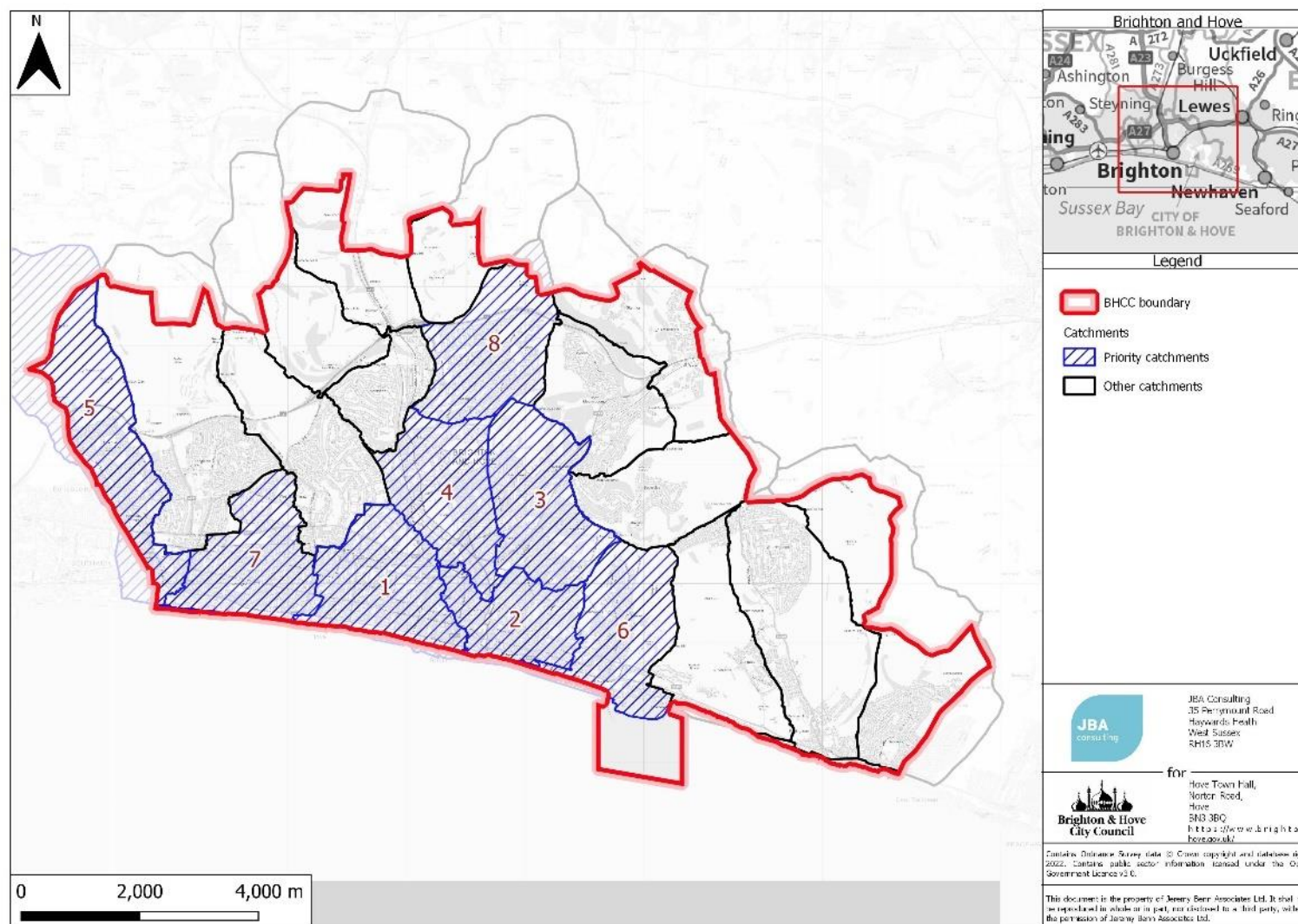


Figure 5-1: Priority catchments

6. Strategic themes for flood risk management in Brighton and Hove

6.1. Resilience

Resilience to flood risk describes the capacity of people and places to plan for, better protect, respond to and recover from flooding and coastal change. It includes making the best land use and development choices, protecting people and places, responding to and recovering from flooding and coastal change whilst also adapting to and planning for climate changes BHCC are likely to see over the next 100 years. The National FCERM Strategy identifies four approaches to managing flood and coastal resilience as shown below.

Flood risk is constantly changing, and in the context of climate change BHCC are likely to see flooding in areas which have not flooded historically. Our understanding of flood risk is also constantly evolving based on cutting-edge science and our approach must be able to adapt to changes in our understanding of the flood risks BHCC face. One example of this is the introduction of **non-stationarity**²³ into guidance for funding future projects, reflecting that what happened in the past may not reflect what will happen in the future.

Considering resilience will change the way BHCC look at funding projects to manage flood risk, because the investment BHCC make is not only aimed at reducing risk through reducing how likely flooding is to occur and physical harm caused, but also reducing the vulnerability of what is affected by flooding (the receptor). More information on funding for flood alleviation works is included in **Section 7**.

6.1.1. Property Level Resilience

Property Flood Resilience (PFR) or Property Level Resilience (PLR) is about taking the measures to reduce the impact of flood on properties and speed up recovery from any incident of flooding. BHCC puts the property protection a foremost priority and hence believes in taking proactive measures installed such as flood gates, wallpapers, impervious protection layers in high flood risk areas.

6.1.2. Flood and Coastal Resilience Innovation Programme

Between 2021 and 2027, the flood and coastal resilience innovation programme, managed by the Environment Agency, will allocate £150 million to 25 local authority led projects that will demonstrate how practical innovative actions can work to improve resilience to flooding and coastal erosion. Whilst Brighton and Hove is not one of the 25 areas to receive funding, the outcomes and innovations from this programme will provide new ways of working to improve resilience. The aims of the flood and coastal

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https://assets.publishing.service.gov.uk/media/6038f75a8fa8f5048e587467/Development_of_interim_national_guidance_on_non-stationary_fluvial_flood_frequency_estimation_-_practitioner_guidance__1_.pdf

resilience innovation programme are to:

- encourage local authorities, businesses and communities to test and demonstrate innovative practical resilience actions in their areas
- improve the resilience of 25 local areas, reducing the costs of future damage and disruption from flooding and coastal erosion
- improve evidence on the costs and benefits of the innovative resilience actions and demonstrate how different actions work together across geographical areas
- use the evidence and learning developed to inform future approaches to, and investments in, flood and coastal erosion risk management

Place making - improve place making:

Making the best land use and development choices to manage flooding and coastal change

Communities, planners and land managers making the best land use and design choices for development and infrastructure to manage the damages from flooding and coastal change. This includes making space for water to manage risk and support wider environmental benefits.

Protect - better protect:

Building and maintaining defences and managing the flow of water

Sustained and long term investment in building and maintaining flood and sea defences ensuring they provide an appropriate standard of protection, operate reliably and perform as expected when exceeded. Better protection includes nature based solutions that manage the flow of water to reduce the risk of flooding and coastal change.

Respond - ready to respond:

Preparing for and responding effectively to incidents

Organisations and communities working together to prepare for and respond to flood and coastal incidents through timely and effective forecasting, warning and evacuation.

Recover - recover quickly:

Getting back to normal and building back better

Helping people and local economies recover more quickly by clearing up the damages, returning water and power supplies or draining floodwaters from farmland. Recovery should also include building back better so that properties and infrastructure are more resilient to future events.

6.1.3. Social and economic challenges to resilience

The ability of individuals and the community as a whole to respond to flooding and recover from flooding in particular can vary based on a number of factors including:

- If people are aware of the risks
- If they know what can be done about the risks
- If they have the financial means and capacity to take action before an event
- If they have financial means and capacity to recover after flooding has occurred

The following infographic shows some of the challenges that BHCC face for building resilience in Brighton and Hove. BHCC want everyone to be able to understand what is available to them, and how BHCC can help particularly in an emergency situation. BHCC also want to identify obstacles members of our community face in being resilient to flooding and in accessing support and remove those obstacles wherever possible. This may mean, for example, flood resilience measures which do not require any active intervention to install if flooding is expected. BHCC will work with specialists throughout the Council to make sure all communities are able to access funds, grants and flood risk reduction opportunities.

Listed below are some of the challenges that we face for building resilience in the city. We want everyone to be able to understand what is available to them, and how we can help in an emergency situation. We will also identify obstacles to flooding resilience and accessing support. We want to remove those obstacles wherever possible. For example, we prefer flood resilience measures which do not require residents to act to use. We will work with specialists throughout the Council. This is to ensure that everyone can access funds, grants and flood risk reduction opportunities.

- More than one in twenty residents say their day to day activities are 'limited a lot' due to a long term health problem or being disabled
- Whitehawk, Moulsecoomb and Hollingbury are in the 20% most deprived areas in England
- By 2030, there are projected to be 33% more people in the 60 to 74 years bracket and 30% more people in the 75+ age group
- By 2030 there are projected to be 700 more 85 to 89 year olds and 400 more 90+ years olds living in Brighton and Hove
- No-one spoke English as their main language in 5% of households in 2011 and in 734 households no adult spoke English

Sources: Brighton & Hove City Council Plan for 2020 to 2023 (brighton-hove.gov.uk)

UK 2011 population census (brighton-hove.gov.uk)

6.2. Climate Change Responsive

In Brighton and Hove, BHCC are likely to see more extreme weather events such as intense storms and strong winds in the future. BHCC are expecting to experience hotter drier summers and warmer wetter winters which could mean more droughts and more flooding. Sea level rise could lead to increased flooding along the coast with increased wave energy causing accelerated coastal erosion.

In response to this, BHCC **declared a climate and biodiversity emergency** in 2018 and made a commitment to become carbon neutral by 2030. This will require a fall in the city's greenhouse gas emissions of 12.7% from 2020. To achieve this, any works carried out by Brighton and Hove City Council need to follow the Brighton and Hove Sustainable Procurement Policy including building in a requirement for CO2 reduction into the specification of contracts, where appropriate. More information about Brighton and Hove City Council's response to the climate and biodiversity emergency is included in **Section 4.3**.

Planning and adapting to future climate risks is crucial to making sure places remain resilient to future flooding and coastal change over the longer term. In practical terms, this means planning for 2100 and beyond. One of the biggest problems BHCC face is how to predict future flooding. Traditional methods used to estimate the severity of flooding and how likely it is to occur have looked at what has happened in the past and assumed it will represent future flooding. However, this may not necessarily be the case as BHCC try to factor climate change into predictions and is the reason why BHCC will consider how BHCC can be most resilient to "shock" events.

6.2.1. Adaptive pathways

The uncertainty regarding future climate change is one of the biggest challenges BHCC face in managing future risks of flooding. Traditionally, our understanding of future flood risk has been based on planning for one, rather than a range, of scenarios and re-evaluating our risk based on what has happened in the past, however, this can lead to knowledge gaps and does not necessarily enable us to plan for future events

that might be more severe. Adaptive pathways, which plan for a range of future scenarios, allow us to not only identify the best action to take using the information BHCC have available, but also the best time at which to take that action. Adaptive pathways not only consider changes in our understanding of flood risk, but also allow for consideration in other factors such as environmental, social or economic changes.

Currently, there is no precise guidance on how Risk Management Authorities should approach flood risk planning in an adaptive way for local sources of flood risk, although there is an action in the National Strategy (2020) for the Environment Agency to deliver guidance. However, at Brighton and Hove BHCC are already moving towards a more adaptive approach, for example updating our Strategic Flood Risk Assessment when new climate change allowances were released. This meant that our decision-making process was based on the most up to date understanding available and allowed us to re-evaluate site allocations for development.

The action plan from this strategy will also use an adaptive approach, looking at short-term measures that BHCC can implement to address the current risk, and longer term measures which will address future changes to flood risk whilst acknowledging the uncertainties in planning further ahead.

6.3. Nature based solutions

Natural flood management, also known as ‘working with natural processes’ and ‘nature-based solutions’ aims to reduce flood frequency and extent using natural processes. These techniques are summarised below:

Natural Flood Management Techniques:

1. In stream structures for example woody debris
2. Blocking of moorland drainage channels
3. Woodland planting
4. Land and soil management practices, cover crops, hedgerows, suitable crops
5. River morphology and floodplain restoration for example removal of embankments and re-meandering
6. Inland storage ponds and wetlands
7. Protecting riverbanks for example stock fencing
8. Sustainable urban drainage systems for example swales, wetlands in urban areas, green roofs, permeable pavements, detention ponds, filter strips
9. Saltmarsh restoration
10. Coastal managed realignment
11. Coastal change management

Taken from the National Flood and Coastal Erosion Risk Management Strategy for England

For Brighton and Hove, management of runoff from the South Downs at the source of the overland flows is a key way in which BHCC manage flood risk in the city centre, particularly where BHCC are a land-owner, for example the Downland Estate. The control BHCC have over the use of land is an important part of providing us with the capacity to improve future protection of the urban centre of Brighton. Natural Flood Management (NFM) has to work with natural processes and therefore not all techniques will be suitable in all areas. **Table 6-1** shows which techniques may be useful in Brighton and Hove, either alongside other flood management techniques or as standalone projects

Table 6-1: Suitability of NFM techniques

Technique	Can it be used in Brighton and Hove?	Reason
In stream structures	No	No open channels in the Brighton and Hove area.
Blocking of moorland drainage channels	Yes	This technique is already being carried out in Brighton and Hove to reduce overland flows through the use of earth dams (see section on asset management in section 8 for more details).
Woodland planting	Yes	Woodland planting can increase infiltration and interception to decrease surface water runoff. Most effective in upland areas however the South Downs is a carefully managed landscape- any Woodland Planting should be carried out in line with the principles of the Downland Estate Plan in collaboration with the South Downs National Park Authority.
Land and soil management practices, cover crops, hedgerows and suitable crops	Yes	Particularly important for upland areas in Brighton and Hove in the South Downs area. The Downland Estate Plan includes details on how this is going to be carried out in areas owned by Brighton and Hove Council.
River morphology and floodplain restoration	No	No open channels in the Brighton and Hove area.
Inland storage ponds and wetlands	Yes	Could be utilised in Brighton and Hove to reduce flows into sewers in City Centre areas.

Protecting riverbanks	No	No open channels in the Brighton and Hove area.
Sustainable urban drainage systems	Yes	This technique is being encouraged as a primary method of surface water management in Brighton and Hove.
Saltmarsh restoration, coastal managed realignment and coastal change management	N/A	Coastal measures discussed through Shoreline Management Plans.

6.3.1. The City Downland Estate

“ The estate can mitigate the effects of climate related flooding and extreme weather events through green infrastructure, water efficiency, recycling and by adopting new land and soil health management techniques.

BHCC already maintain earth bunds at the bottom of valleys and apply restrictions on cropping. This limits the rate of water run-off and increases the moisture-carrying capacity in soil and vegetation”

Draft City Downland Estate Plan 2022

Much of the land to the north of the urban centre of Brighton is council-owned and collectively known as the Downland Estate. It consists of around 12,500 acres and 94% is within the South Downs National Park. The estate was initially acquired by the council around 100 years ago, with the aim of protecting the town’s water supply and controlling development. In 2006, the council created the City Downland Estate Policy, and 73% of the estate is subject to Environmental Stewardship Scheme agreements. The updated draft Downland Estate Plan includes the management of surface water and how it can help reduce flood risk.

Specific actions identified in the draft plan are to:

- review existing flood and surface water run-off infrastructure to ensure it remains fit for purpose in protecting housing which directly adjoins the

estate. BHCC will identify any new at risk areas that may become susceptible to storm, rising sea levels and flood damage as a result of changing weather patterns.

- keep under review opportunities to restore and create sustainable drainage systems (SuDS), new streams, ponds and dew ponds that will help to delay and slow the rate of surface water run-off, supporting the recharging of the aquifer and mitigating flood risk.

6.4. Sustainable development

Sustainable development can be defined as development which meets present needs without affecting the ability of future generations to meet their own needs. However, there are conflicts between different needs in our community which means sustainable growth is not always easy.

For example, population growth projections mean that the demands and needs for new homes are higher than the city can realistically accommodate. This means BHCC may see construction in areas at risk of flooding because there is not enough readily available land at lower risk to respond to the housing crisis, (evidenced in the sequential test for the Local Plan). Nevertheless, new development, particularly in areas where development has previously taken place, can afford opportunities to improve the existing environment

6.4.1. Sustainability in Planning

The majority of new housing, employment and retail development will be located on previously developed sites within the city's built up area. Where it is not possible to avoid development in areas at risk of flooding, government planning policy requires that it is made safe for the lifetime of the development and does not increase flood risk elsewhere.

Lead Local Flood Authority makes sure that all new developments are permitted after flood risk assessment and have proper drainage and flood protections measures in place. The planning applications use section 106 for enforcing the developers to retrofit sustainable drainage and PFR in the designs.

6.4.2. Sustainable Drainage Systems (SuDS)

Every opportunity to reduce the peak flow and volume of surface water entering the combined sewer should be taken to reduce the burden on the sewer system.

Our Supplementary Planning Document Sustainable Drainage (SPD16, 2019) on SuDS provides the starting point for developers to consider drainage in Brighton and Hove and BHCC want to take this further, working with the planning department, urban design, ecology and biodiversity officers to promote surface water drainage with multiple benefits and high-quality green infrastructure. This is expressed in the four

pillars of SuDS design below:

Water Quantity

Support the management of flood risk, and
Maintain and protect the natural water cycle

Water Quality

Manage the quality of runoff to prevent pollution

Amenity

Create and sustain better places for people

Biodiversity

Create and sustain better places for nature

6.4.3. Flood Investigation and SuDS Targeting Study

BHCC strategy is to work on flood hotspots and complete all the Section 19: flood investigation reports to understand the cause of flooding. In order to assure sustainable solution the SuDS targeting study is also underway which would suggest the suitable SuDS (swales, rainwater harvesting, soakaways, raingardens, bioretention ponds etc.) in different locations of Brighton and Hove to control the relevant issue of flooding.

6.5. Partnership and Collaboration

6.5.1. Working Together for larger benefits

BHCC is building in-house capacity on flood risks management and making proposals on learning together with other councils, boroughs and unitary authorities. There is an ongoing collaboration with Southern Water on SuDS IQ tool to work on real time data on stormwater and surface water controlled through SuDS and the burden on main sewers, to enhance the overall performance of system. Further, the collaboration with South Downs National Park, The Aquifer Partnership, National Highways England, Environment Agency and other regional organizations is always a priority to achieve combined goals around flood risk management.

6.5.2. Community involvement

Community involvement is at the heart of the local strategy and the national strategy.

Whilst there is a long record of historic flooding in Brighton and Hove, flood incident reporting could be expanded and improved. Individuals and communities may not know who to contact in the event of flooding and how the information they provide to the Council may be used, or who it might be shared with. In future BHCC want to make

it easier for members of the public to communicate and share knowledge with us.

Within flood risk areas, one way to involve the community is through a Flood Action Group. Through these groups, members of the public can act as a representative voice for their wider community. They can be a valuable resource in building resilience within a community and for building relationships between the community and the Risk Management Authorities.

Currently, there are no Flood Action Groups in the Brighton and Hove City area and BHCC would like to see if it would be possible to establish them in Brighton and Hove.

6.6. Flood defences and asset management

Flood defences are any assets that provide flood or coastal protection functions and can include manmade and natural defences, for example natural high ground. Defences in Brighton and Hove consist of coastal assets which Brighton and Hove from coastal flooding and erosion as well as inland defences, that play a role in managing surface water runoff from the Downs. Brighton and Hove manage and maintain most of the assets including several earth embankments. Southern Water are responsible for the storm water tunnel at the seafront.

6.6.1. Asset register

Brighton and Hove City Council has produced a Flood Risk Asset Register as part of its duties as Lead Local Flood Authority under the Flood and Water Management Act. The register contains details and locations of assets in the administrative area. It is not anticipated that there will be major changes to the asset register within this Local Flood Risk Management Strategy cycle and Brighton and Hove City Council will continue to make the asset register available on request.

6.6.2. Surface water management assets

Brighton and Hove's flood defences mainly comprise earth embankments and ditches in upland areas to protect the city from surface water runoff. The defences are shown in **Table 6-2** below. The defences are maintained by Brighton and Hove City Council.

Table 6-2: Surface water management assets

Structure	Type	Area benefitting from defences
New Barn Valley	Earth dams	Rottingdean
Longhill School	Earth dam and ditch	Rottingdean
Walmer Crescent	Earth dam	Bevendean
Bodiam Close	Earth dam and ditches	Bevendean
Kenilworth Close	Earth dam and ditch	Bevendean
Wheatfield Way	Ditch	Moulsecoomb

Wolseley Road	Earth dam and ditch	Coldean
Millcroft	Dew pond and earth dam	Millcroft
Mile Oak	Earth dams	Mile Oak
Bulstrode Farm	Earth dams	Ovingdean

6.6.3. Coastal assets

Coastal defence assets are maintained by BHCC and Shoreham Port Authority for the small area that falls within the Brighton and Hove Council area. Coastal defences are primarily discussed in the South Downs Shoreline Management Plan (SMP), leading to the development of two plans for the area. These cover the following areas:

- Brighton Marina to Saltdean
- Brighton Marina to River Adur

The 14 kilometres of seafront in the Brighton and Hove area is protected from tidal and coastal flooding by formal defences including sea walls and revetments. Flooding and erosion along the entire length of the beach is also controlled by a series of timber, rock, masonry and concrete groynes.



Figure 6-1: Breakwater at Brighton Seafront

The breakwaters and flood defences at Brighton Marina are currently well maintained by the Brighton Marina Company with a 0.5% annual probability standard of protection. In practice, this means that the Brighton Marina defences should withstand a flood with a 1 in 200 chance of occurring in any one year.

6.6.4. Stormwater and Foul water assets

Southern Water are responsible for the stormwater storage tunnel at Brighton and

Hove seafront which can store up to 132,000 cubic metres of storm water taken from Victorian interceptor sewers. Once there is capacity in the network, the wastewater is pumped from the eastern end of the tunnel at Black Rock to Portobello sewage treatment works.

7. Funding for flood risk management

Long-term investments are a vital part of our strategic aims for managing flood risk in Brighton and Hove. The Environment Agency long-term investment scenarios predict that, for every £1 spent on protecting communities around £5 in property damages is avoided.

Whilst some actions will not require additional funding, capital schemes and feasibility studies will require funding from one or more sources.

7.1. Environment Agency funding

The Environment Agency can provide capital grants (Flood Defence Grant in Aid) to other risk management authorities (Authorities) under section 16 of the Flood and Water Act Management Act 2010. Local authorities can also make applications on behalf of communities or private organisations. The Environment Agency may also make grants for projects out of local levy monies they have raised from Lead Local Flood Authorities.

The Environment Agency and other Risk Management Authorities use the FCERM appraisal guidance²⁴ when developing or reviewing:

- a business case to support an application for FCERM capital funding
- a local FCERM strategy

The FCERM appraisal guidance

It was originally introduced in 2010 and updated in March 2022. Under the appraisal guidance there are 5 types of projects:

- projects that fulfil legal obligations (ie environmental legislation)
- projects that sustain a standard of service (eg refurbishing a flood defence)
- Projects that develop a local FCERM strategy
- Projects that implement a local FCERM strategy
- Standalone projects (eg, a flood barrier or property flood resilience project)

There are two different economic appraisal techniques that can be used:

24 FCERM appraisal guidance: (<https://www.gov.uk/government/publications/fcerm-appraisal-technical-guidance#full-publication-update-history>)

- Cost benefit analysis
- Cost effectiveness analysis

7.2. Partnership funding

The partnership funding approach was introduced in 2011 to replace a priority scoring scheme which fully funded the highest priority projects but left lower priority projects which could still provide benefits unfunded. With partnership funding, any project where the benefits are greater than the costs can qualify for a contribution from government funding, with the funding dependent on the benefits it provides. Projects in more deprived areas, and ones that provide environmental or wider economic benefits may attract more grant funding.

Partnership funding also allows for local choice in decision making. This means that, where an option is preferred for reasons other than those assessed through the business case, there is the opportunity for other

The National Flood and Coastal Erosion Risk Strategy (NFCERMS) has a strategic aim that Risk Management Authorities will use more non-public sector funding for flood and coastal resilience between now and 2030.

Wherever possible, contributions should be made from people who will benefit from flood and coastal resilience measures, or whose actions or requests have led to the project being carried out. For example, if a developer relies on a project to improve an existing defence, they are expected to contribute towards that project.

For every project, there will be a range of options that are considered against economic, social and environmental measures to identify the overall preferred option. However, the local choice (ie the Brighton and Hove City Council preferred option) may be more expensive, provide a greater advantage or other local opportunities than identified through the national guidance. In this instance, the additional funding would need to be raised from the community or others that would benefit.

Funding from capital grants (FDGiA) can be matched from many places including private companies, public companies, NGOs and charities. However, there are limits to when FDGiA funding can be awarded, for example:

The developer must pay for the full costs of flood risk and coastal erosion work where development takes place in areas without existing defences, or where the development is the only area that will benefit from the defences,

The funding awarded to a project through partnership funding does not consider new housing completed or converted after 1 January 2012.

7.3. Other funding sources

Other sources of funding for flood mitigation schemes include:

- Section 106 agreements (s106), local tariffs, and the community infrastructure levy (CIL)
- Local Levy (through the RFCC)
- Carbon neutral funded activities (BHCC internal funding)
- Local business rates
- Public Loans Work Board
- Grants from the Department for Levelling Up, Housing and Communities (note this is not ringfenced for flood and coastal risk management work)

7.4. Possible partner organisations for funding applications

- The Aquifer Partnership (TAP)- a well-established partnership between Brighton & Hove City Council, Southern Water, South Downs National Park Authority and the Environment Agency. In 2022 the Aquifer Partnership received funding from National Highways to set up the Wild Park Rainscape project. The Partnership have also delivered small-scale raingarden schemes throughout Brighton and Hove.
- Sussex Nature Partnership (SxNP)- a voluntary partnership of over 30 organisations covering the whole of Sussex supporting the development and delivery of 'nature-based solutions' across Sussex.
- The Greater Brighton Economic Board- the body behind the growth of the Greater Brighton City Region with the aim of protecting and growing the Region's economy.

8. Implementation, monitoring and Action plan review

8.1. Implementation

In partnership with other Risk Management Authorities and key stakeholders, we will use the strategy to support the management of local flooding issues across Brighton and Hove.

Our ambition is to deliver all the actions in the action plan within the 6-year strategy period. However, we know that the implementation will be influenced by external factors such as funding and resource availability so we will need to react to opportunities and challenges as they arise.

Funding capital works can be challenging, especially where projects are required to have some partnership contributions in order to proceed. Opportunities for reducing flood risks or the impacts of flooding will be considered on their merits and the ability to fund the scheme, including maintenance requirements over its lifetime.

8.2. Monitoring and review

The next full strategy review will take place in 2030/31, along with next round of Flood Risk Management Plans (FRMPs). The action plan will be reviewed every year in the plan period to check that objectives, actions and policies are still appropriate and achievable. Reviews will also take place based on monitoring requirements identified in the SEA.

The Strategy represents the situation we have today and may require review more regularly to recognise specific changes. Potential triggers for a review may include:

- A significant surface water flood event happening in Brighton and Hove,
- Changes to information which may change our understanding of flood risk Brighton and (for example changes to the locations of critical infrastructure)
- Changes to legal responsibilities, roles or functions of Risk Management Authorities and other risk managers identified in this strategy.