

The City of Brighton and Hove Surface Water FRA



Flood Risk Area: City of Brighton and Hove, South East



- Flood Risk Area: Surface Water
- River Basin Districts



0 2 4 6 Kilometres

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Figure 1: a map showing the boundary of the City of Brighton and Hove Surface Water Flood Risk Area

Introduction to the City of Brighton and Hove Surface Water FRA

The City of Brighton and Hove Flood Risk Area (FRA) has been identified as an FRA because the risk of flooding from surface water is significant nationally for people, the economy or the environment (including cultural heritage). This location was also identified as an FRA in the first cycle Flood Risk Management Plan (FRMP).

Brighton and Hove City Council take the lead on the development and delivery of the FRMP for this FRA. They're the Lead Local Flood Authority (LLFA) responsible for managing flood risk from 'local' sources. For Brighton and Hove, these local sources of flooding are surface water and groundwater. There are no rivers within the FRA.

Southern Water is the water and sewage company that owns, operates and maintains the sewerage network and wastewater treatment infrastructure in the FRA.

The City of Brighton and Hove FRA covers the urban district of the City of Brighton and Hove. The urban area includes:

- residential
- business
- amenity

The FRA is in the Adur and Ouse management catchment. It's surrounded to the north by a green belt of farmland and the South Downs National Park. To the south of the city is 14km of coastal frontage and amenity beach. Within the FRA, there are parks and several listed buildings at risk of flooding. The boundary of the FRA is shown in



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The geology in the FRA is extensively chalk downland, with isolated pockets of clay, silt and sand in the south-west. The chalk downland acts as an aquifer, providing the city with its main water supply. The highly permeable nature of this bedrock significantly contributes to flood risk within the FRA, through over land flow when rising groundwater levels reach the surface.

During periods of prolonged rainfall, groundwater is known to emerge in locations on the northern edge of the urban area, such as in Portslade and Patcham. A series of earth embankments provide cut-offs and diversions for the main overland routes in the northern part of the city.

Over time, development of the city has resulted in several historic watercourses being culverted and then built over. These comprise the main Victorian sewers, which continue to provide drainage routes beneath roads through the city to the coast. In the upper catchments, there are separate surface water and foul sewers. In the lower, flatter part of the catchment, the sewer system is combined. A large modern storm water tunnel, or drain, runs along the coastal frontage of the city.

The existing soakaway and sewer system can cope with rainfall events that have less than about a 3% chance of occurring each year. However, in more extreme rainfall events, it can become overwhelmed. This is a particular issue in the Preston Park area, due to the combined effects of a reduction in sewer size and low-lying ground.

Flooding is made worse when the chalk aquifer also reaches capacity, resulting in combined surface water and groundwater flooding.

The risk of flooding from the sea within the FRA is not significant. Brighton and Hove City Council continue to work with Lewes District Council, Adur and Worthing Councils and the Environment Agency to manage the risk of coastal erosion and flooding.

Current flood risk

Since 2015, surface water flooding of properties and services has occurred in isolated locations including:

- Patcham
- Portslade
- Central Hove

These areas were identified as being at risk of flooding in the first cycle FRMP and measures have since been implemented to help manage this risk.

The [Flood Risk and Hazard Maps for Surface Water in England](#) provide data on the likelihood and consequence of flooding for the City of Brighton and Hove FRA. This data is from December 2019. It considers the presence and condition of defences.

The [Flood Risk and Hazard Maps for Surface Water in England](#) show that in the City of Brighton and Hove FRA, 46,293 people live in areas at risk of flooding from surface water. Of these people, 9% are in areas of high risk.

Also shown to be in areas at risk of flooding from surface water are:

- 2,571 non-residential properties
- services - including hospitals, schools and colleges and public utilities
- 9.2km of A-roads - including parts of the A27, A23 and A259
- 8km of railway
- 36ha of agricultural land
- 107 listed buildings
- parks and gardens
- water abstraction points

Based on this information, Risk Management Authorities (RMAs) have concluded that further steps should be taken to reduce the likelihood of flooding and the current and future impact it could have on the FRA.

How the risk is currently managed

Brighton and Hove City Council manage the surface water risk in collaboration with Southern Water and work with other partners including the Environment Agency.

The Southern Regional Flood and Coastal Committee (RFCC) provides a link between the Environment Agency, LLFA and other RMAs to build an understanding of flood and coastal erosion risk in their area. To ensure that flood and coastal erosion risk management work represents value for money and benefits local communities, the RFCC encourage investment that's:

- efficient
- targeted
- risk-based

The long-term strategy for managing local flood risk is set out in the Brighton and Hove 'Local Flood Risk Management Strategy' and 'Surface Water Management Plan'. These can be found on the [flood and drainage policies](#) section of Brighton and Hove City Council's website and will both be updated in 2022.

Flood risk maps are published based on the outputs from mathematical modelling to inform:

- the public and business of their flood risk
- potential developers and local planning authorities
- the assessment and design of flood risk management work

In 2018, Brighton and Hove City Council introduced planning guidance for Sustainable Drainage Systems (SuDS) for all future development within the planning authority boundary.

Brighton and Hove City Council manage and maintain most of the permanent flood risk assets within the FRA. These include several earth embankments and open channels. Southern Water are responsible for the storm water tunnel along the coastal frontage of the city. Flood risk assets installed as part of Property Flood Resilience (or Property Level Protection) Schemes within the FRA are maintained by the homeowner.

The following flood risk improvements have been carried out in the FRA since 2015:

- 'Patcham Flood Alleviation Scheme'
- 'Central Hove and Portslade Property Level Protection Scheme'
- 'Warmdene Road Property Level Protection Scheme'
- 'Carden Avenue Sustainable Drainage Systems Scheme - Phase 1'
- Wolseley Road earth embankment and drain

A surface water management scheme, potentially incorporating the principles of sustainable drainage has been identified at Preston Park, by a flood risk management group comprising:

- Brighton and Hove City Council
- Southern Water
- the Environment Agency

The scheme will reduce the risk of surface water and combined sewer flooding to:

- homes
- small businesses
- transport links into the city

Brighton and Hove City Council are also reviewing the potential for implementing a city-wide programme for installation of Sustainable Drainage Systems. This would help to deliver multiple benefits throughout the city and is identified as an objective in their draft Local Flood Risk Management Strategy.

Southern Water are developing a '[Drainage and Wastewater Management Plan](#)' for the Adur and Ouse management catchment. This will help identify further opportunities to reduce flooding and improve drainage systems.

Information on groundwater levels (including at the Ladies Mile borehole) and rainfall data is collected by the Environment Agency. This data is used to issue flood

warnings to a groundwater flood warning area in the Patcham area. Rainfall data is also collected at further sites across the city that are managed and maintained by the University of Brighton. This data is used by Brighton and Hove City Council to inform their flood incident response and reporting activities.

You can find more information about the routine day to day work that all LLFAs carry out in the national-level measures in the [Flood Plan Explorer](#), an interactive mapping tool.

The impact of climate change and future flood risk

As rainfall intensity increases, it means that surface water flooding will become more frequent as higher rainfall totals will be seen more often. Please refer to the '[Climate change and the South East RBD](#)' section for more information on what we know is likely to be the implications of climate change for flood risk in the South East River Basin District.

Objectives and measures for the City of Brighton and Hove Surface Water FRA

Measures have been developed that apply specifically to the City of Brighton and Hove FRA.

You can find information about these measures, including which national objectives each measure helps to achieve, in the [Flood Plan Explorer](#), an interactive mapping tool.

