

Flood Risk
Management
and climate
impacts in
Bristol :
Adaptation in
an Urban
Landscape





Introductions

Councillor Nicola Beech



Title: Cabinet Member with responsibility for Strategic Planning, Resilience & Floods

Party: Labour

Ward: St George Central

Bristol Avon Flood Strategy
Avonmouth Severnside
Resilient Frome

Councillor Martin Fodor



Party: Green

Ward: Redland

Planning and land
management



Bristol Avon Flood Strategy

Better protecting people and property from flooding

Future-proofing Bristol and neighbouring communities; enabling a greener, more active city; and unlocking our city's potential.

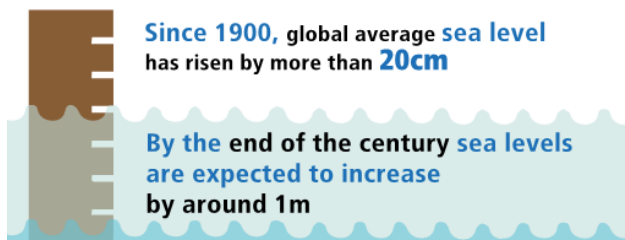


Why we need a flood strategy



Severe flood today

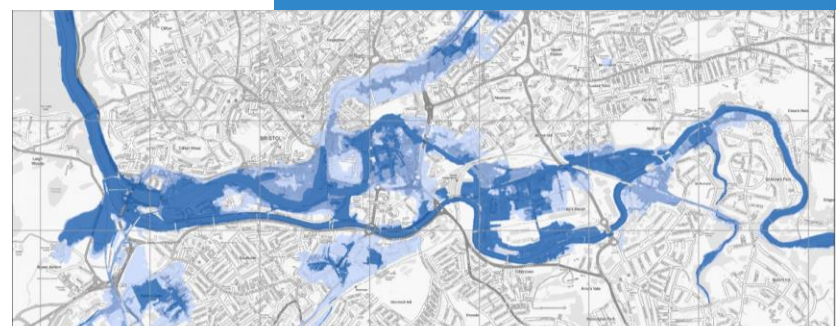
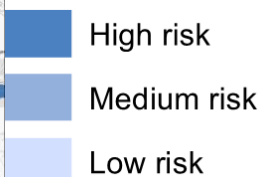
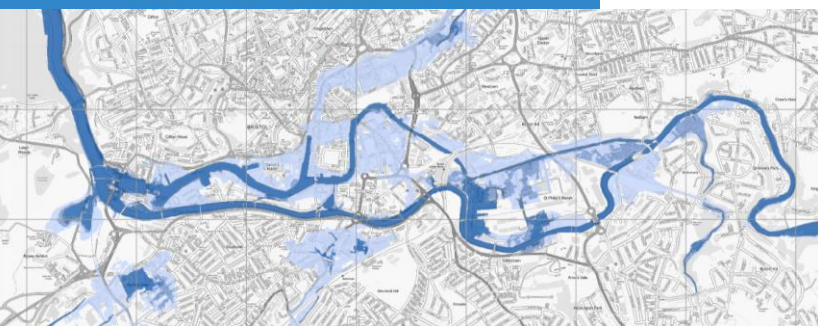
- Around **1,100** properties near the city centre and **200** in neighbouring communities at risk of a severe river or tidal flood.



- Unless we take action, by the end of the century almost **4,500** existing properties could be at risk.

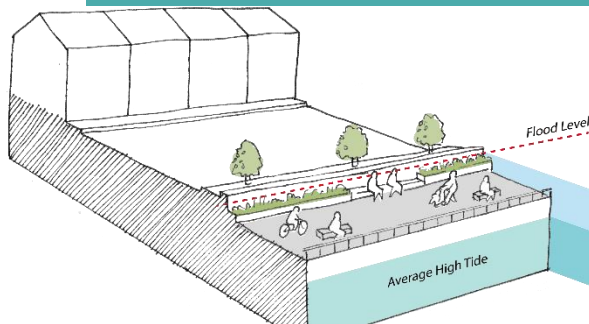


Severe flood by end of century

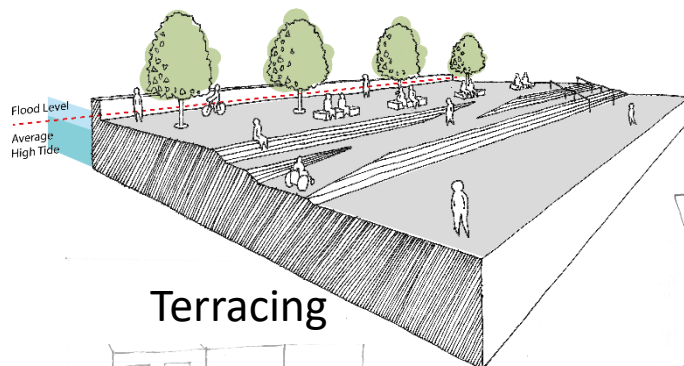


Integrating flood defences into a city

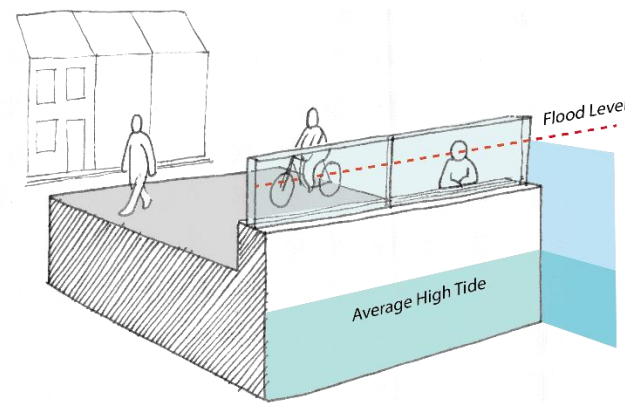
Propose to integrate flood defences into our city so that they are in keeping and improve walking and cycling routes, enhance public recreation and wildlife spaces, historic assets, and support areas of regeneration.



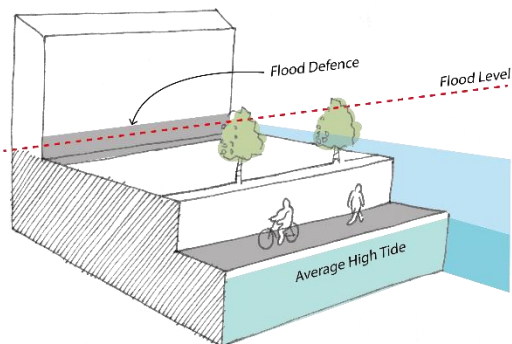
Submergible paths and parks



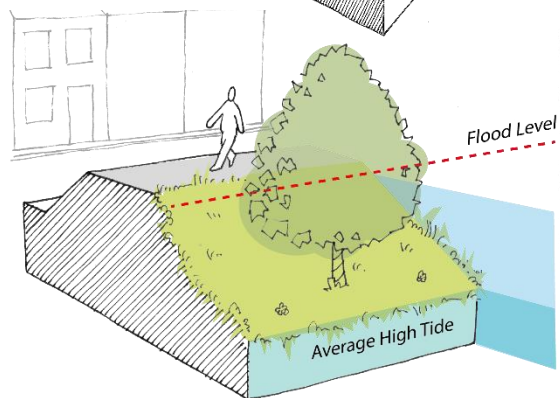
Terracing



Glazing



Integrating new defences with developments



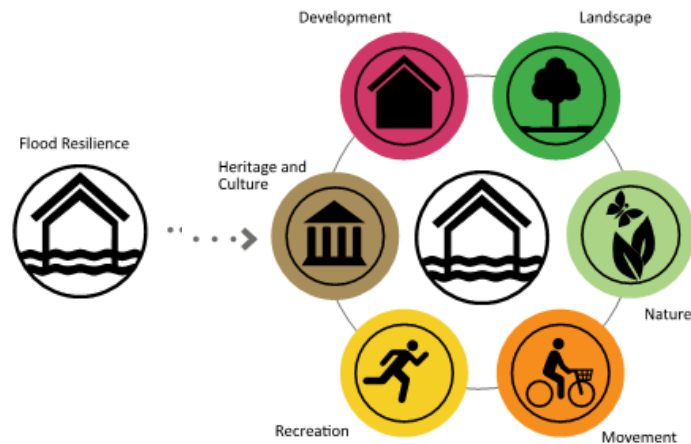
Linear green space



The strategic approach

The River Avon is integral to the story of Bristol and remains a central part of daily life for the city and its residents. Our vision is to design measures that work for Bristol year-round.

- Future-proofing the city and neighbouring communities
- Enabling a greener, more active city
- Unlocking Bristol's potential



Bath Quays



© Environment Agency



The Avonmouth Severnside Enterprise Area (ASEA) Ecology Mitigation and Flood Defence Project

The biggest project of its type in the West of England. When completed in 2026/7 it will...

Protecting and boosting nature

Encouraging business investment

Reducing flood risk to homes and businesses



Protecting and boosting nature



Above: A Dunlin, 10,000 of which are overwintering at New Passage

80 hectares of new wetland habitat (the equivalent of around 112 football pitches)

These new wetland habitats at Northwick and Hallen Marsh have been designed to attract waders and ducks including the European white-fronted goose, shelduck, gadwall, dunlin, redshank, and wigeon

Reducing flood risk to homes and businesses



Flood defence wall, facing onto the estuary, with built-in oak habitat shelves

17km of improved flood defences from Lamplighter's Marsh in the south to Aust in the north.

The new flood defences will reduce flood risk to 2,500 homes and businesses, in particular around Avonmouth Village and Chittening in Bristol and the Severn Beach area in South Gloucestershire

The new flood defences will also create improved walking routes

ResilientFrome

Sustainable solutions to land and water management



Part of the Flood and Coastal Resilience Innovation Programme



How our project is testing innovation

We are testing 3 resilience actions and 1 policy challenge:

- nature based solutions
- integrated water management solutions
- monitoring and management of local assets
- meeting the needs of new developments in areas of flood risk

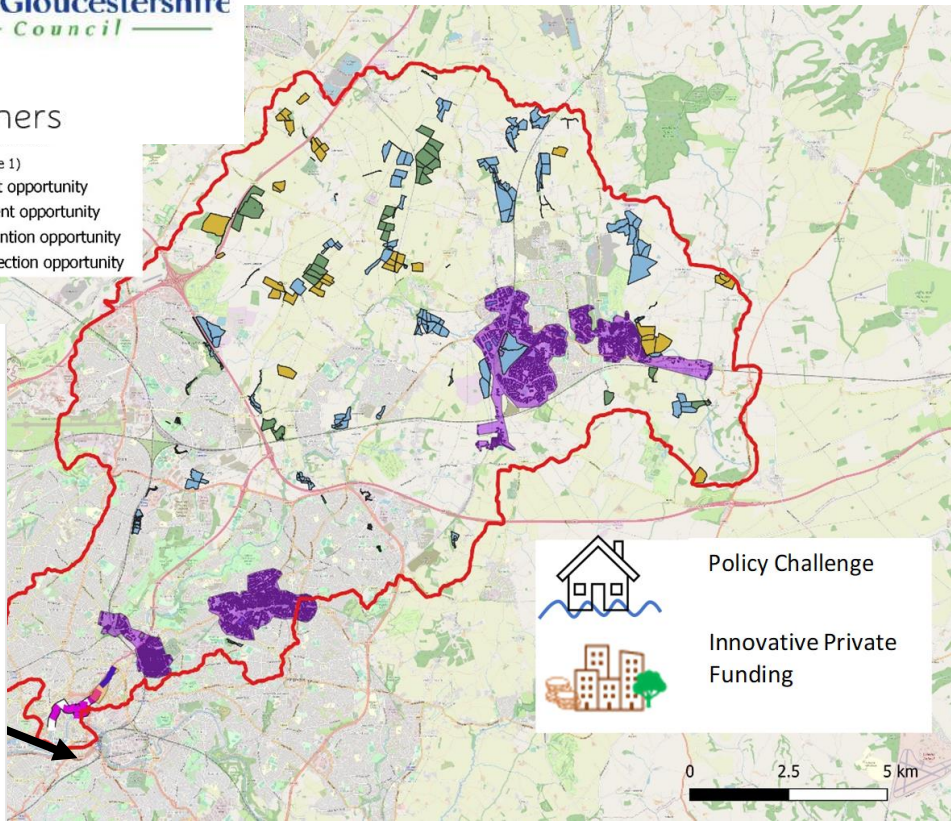


Supported by multiple delivery partners

Six workstreams mirroring the rural to urban nature of the catchment:

Natural Flood Management	Hydrometric Monitoring
Retrofit SuDS	Planning Policy Challenge
River Restoration	Innovative Private Funding

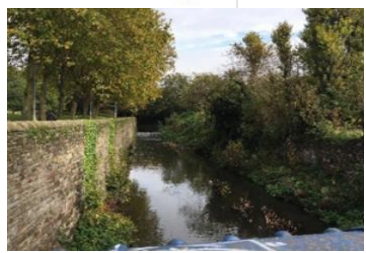
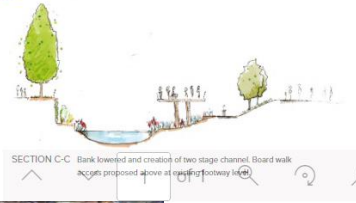
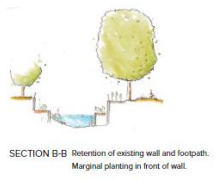
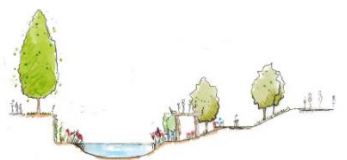
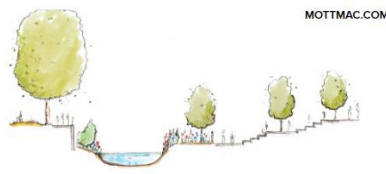
- NFM Opportunities (Tranche 1)
- Land management opportunity
 - Runoff management opportunity
 - In-channel intervention opportunity
 - Floodplain reconnection opportunity



Frome Innovation River Restoration Concept

A concept design has been developed to show a variety of modifications of the right bank of the River Frome as it flows through Riverside Park. The concepts have been developed to improve habitat and recreation potential within the park along with bringing improved visual amenity.

The layout of modifications is flexible and will be developed during the next phase of the project in conjunction with additional consultation and survey work on the river bed, banks walls, and surrounding areas.



Photos L-R: Bristol Frome Culverts, Example NFM in the Frome Headlands, Frome Gateway, Example NFM Bund, Example SuDS Rain garden (source: © susDrain 2022)

Bristol Local Flood Risk Management Strategy

February 2023



Climate resilience



A catchment based approach



Community focus and partnership working

Strategy policy

Prevent the installation of impermeable surfaces unless using sustainable drainage techniques to manage runoff. Encourage the re-introduction of green areas.



Making space for water: new development in South Bristol incorporating sustainable drainage measures to ensure good rain water management



Flood risk and drainage for developers

What to do about surface water drainage

You should consider surface water drainage at the start of your design process, as it is likely this will influence the rest of your design.

You need to use water management measures when carrying out development. This is to reduce surface water runoff and make sure it doesn't increase the flood risk in other areas.

Sustainable drainage systems (SuDS) are a way of managing surface water to reduce the risk of flooding and deal with any pollution in the water. Find out about [sustainable drainage systems at GOV.UK](#).

All new developments should use sustainable drainage systems where possible. If you're applying for a major development, you'll need a detailed sustainable drainage system strategy.



Ashley Vale green roof



Marissal Road attenuation pond



Aztec West retention pond



Stroud Co-housing rills

West of England Sustainable Drainage Developer Guide Section 1



Bath & North East
Somerset Council



North
Somerset
COUNCIL




South Gloucestershire
Council



Retrofitting the existing city

**Most development is already there
– the challenge is to make it fit for
the future**

- Sustainable urban drainage needs to be added
 - New shade features are needed
 - Existing sites should be upgraded
 - Facilities need to be maintained
- 

Sustainable drainage in The Dings development



Embleton Road SuDS Scheme

Retrofitting sustainable drainage to a street in Southmead to manage rainfall events



Interpretation panel to explain and promote sustainable drainage features



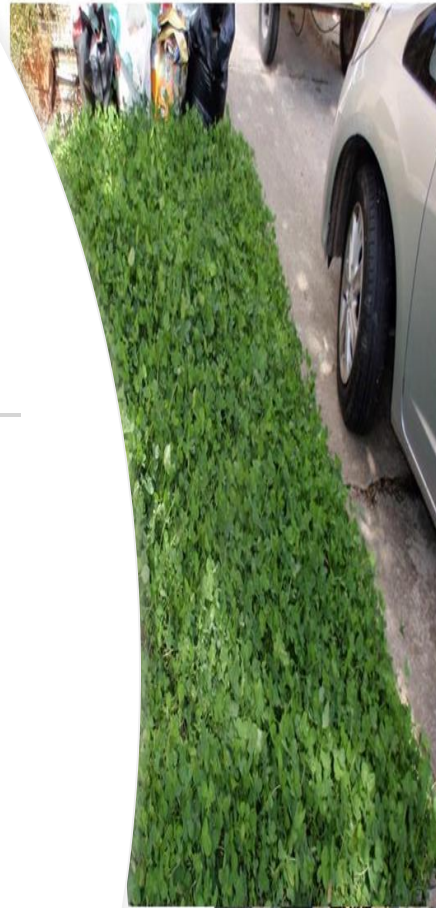
Natural flood management: re-landscaping of a park in Southmead to store water during heavy rainfall events



Living
roofs in
the city



Managing runoff in the existing city – enforcing and advising on good practice



Despite funding constraints we have to maintain existing assets, and facilities and discourage bad practice

Maintaining the existing city



Adding
shade
features
to the
existing
city

To deal with urban heat we also have to invest in shade features and heat resilient buildings and spaces – new tree planting where missing; rethinking public spaces, adding shade

