

# A Catchment Based Approach to Managing Flood Risk



Image: Floodplain scrape on River Cocker. © West Cumbria Rivers Trust



Image: The Flood Hub



Image: The Flood Hub



Image: Lakeside Flood Solutions



Image: Environment Agency



Image: Dave Porter / Alamy Stock Photo

# INTRODUCTION

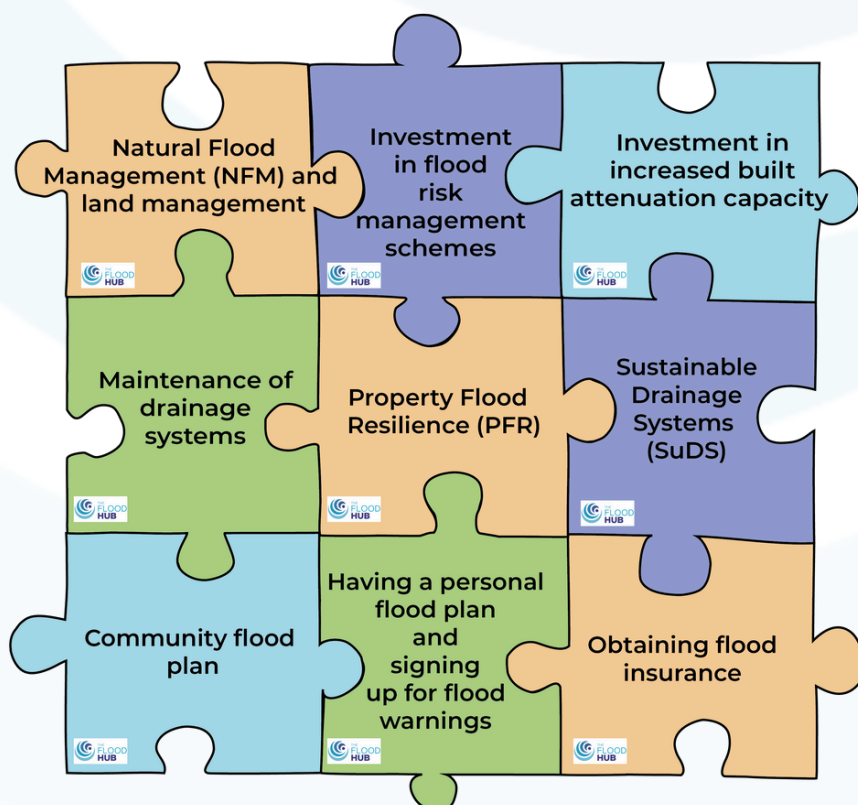
Throughout history, communities have settled on floodplains (the area of land directly adjacent to a river which experiences flooding during periods of high discharge). With climate change science predicting an increase in the frequency and severity of high rainfall events, we need to change the way we think about managing flood risk to protect vulnerable communities.

A catchment-based approach to managing flood risk looks at the catchment holistically, rather than a disjointed, piecemeal approach. It can help to better manage the flow of water through the catchment by using a range of different measures at various places throughout the catchment, not just at the local level.

Government, landowners, water companies, Risk Management Authorities (RMAs), voluntary organisations, communities and businesses could all collaborate on an integrated approach and address how land can be better managed in the catchment to manage the risk of flooding.

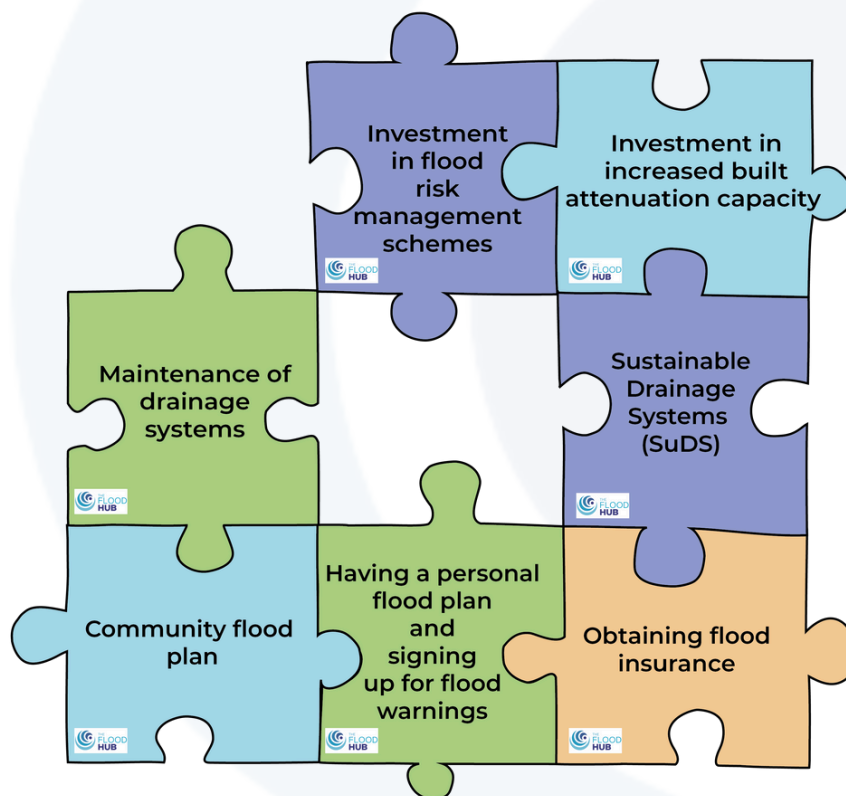
The catchment approach can be likened to a jigsaw puzzle. Each piece of the puzzle represents flood risk management measures and practices that can be utilised at various points across the whole of the catchment.

The pieces of the jigsaw put together shows that when all the flood risk management measures are used and communities, landowners, Risk Management Authorities (RMAs), water companies and other organisations etc all work together, flooding is managed more effectively.





However, when one or more pieces are missing, the full scope and benefits of flood risk management cannot be achieved or realised, as there are gaps within the picture. While a complete picture does not guarantee to prevent flooding, it does help ensure that flood risk is managed in the most effective way by utilising appropriate measures throughout all parts of the catchment.



In this booklet, we look at the following management measures that can be put in place to manage flood risk:

- Natural Flood Management (NFM)
- Flood Risk Management Schemes (FRMS)
- Sustainable Drainage Systems (SuDS)
- Property Flood Resilience (PFR)
- Maintenance throughout the catchment
- Community resilience
- Coastal management

We will also look at the various Risk Management Authorities (RMAs) and other stakeholders who are involved in managing flood risk and the roles and responsibilities that they have.

# HOW FLOOD RISK IS MANAGED

## NATURAL FLOOD MANAGEMENT (NFM)

Within the upper catchment where headwaters form, and at the upper and middle courses of the river, natural flood management (NFM) interventions can be used to store water and slow conveyance within the channel to reduce peak flows further downstream.

NFM aims to restore or mimic the natural functions of rivers, floodplains, and the wider catchment. It is important to combine NFM measures with other techniques for effective flood risk management, rather than relying solely on natural features. NFM can be used alongside existing 'hard' defences, as increasing the height of a wall or embankment alone does not always provide the best or most sustainable long-term solution.

Examples of NFM measures include:

- River and floodplain restoration
- Leaky woody dams
- Tree planting
- Moorland restoration
- Short rotation willow coppice
- Flood Storage
- Agricultural land management

NFM can also be used at the coast, whereby natural materials and methods are used to reduce wave energy and the risk of coastal flooding and erosion.

Examples of coastal NFM measures include:

- Dune regeneration
- Beach nourishment
- Managed realignment



Image: The Flood Hub

NFM can have a number of different benefits, in addition to managing and reducing flood risk and erosion, they can:

- Create green spaces and improve community health and wellbeing.
- Provide financial incentives and capital gains.
- Improve biodiversity and create habitats.
- Improve water quality
- Manage sediment
- Create resilient ecosystems

More information on NFM can be found on The Flood Hub's 'Natural Flood Management' page: <https://thefloodhub.co.uk/nfm/>.



# MULTIPLE BENEFITS OF NATURAL FLOOD MANAGEMENT



## Biodiversity and conservation

Wetlands are one of the most biologically diverse ecosystems due to their unique ecological features and nutrient cycling processes which supports various plants and animals. Woodland creation encourages development of a wide range of species beneath the tree canopy. Improved water quality also has the potential to improve in stream habitats for wildlife.



## Habitat creation and green spaces

Creating habitats such as wetlands, which are one of the most biologically diverse ecosystems, not only improves biodiversity but also improves connectivity between wetlands, allowing more species to move between habitats. Developing green spaces also has massive social benefits, providing better access to green spaces, improving the environment we live in and improving quality of life.

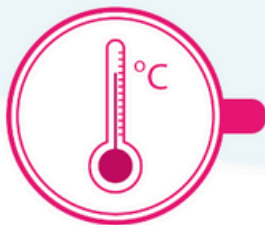


## Community spirit

Making small adjustments to your land management or allowing unproductive land to be used for flood storage can make a difference to those in the community at risk of flooding further downstream, particularly if several landowners work together to implement NFM measures.

## Resilient ecosystems

Wetlands and woodlands are efficient at accumulating and storing carbon and removing carbon dioxide from the atmosphere. Measures that reduce surface runoff and soil erosion, such as contour cultivation, can also reduce carbon loss from soil.



## Financial incentives and capital gains

The Countryside Stewardship Scheme has a range of grants for farmers and land managers who wish to adopt NFM techniques. These can be capital items or management options, for example in-stream structures or river bank restoration. Facilitation funds may be available in your area to assist with your application and provide up to a 20% uplift to your score.



## Reducing flood risk

NFM can help to slow the flow of water through a catchment by reducing run off and increasing the ability of catchments to hold water, which can help to reduce river peak flows.

## Improving water quality

Improvements in soil structure through woodland creation or less intensive land management increases rates of infiltration. Reconnection of wetlands can help to manage high nutrient loads and reduce siltation, contributing to improvements in the status of water bodies.



## Reduced erosion

NFM can help restore coastal sediment processes and morphology. Saltmarshes and mudflats help reduce wave energy at shorelines, sand dunes act as natural buffers for cliffs from waves, and beach nourishment restores the natural coastal defence function of beaches.



## Sediment management

NFM can improve soil structure, reduce loss of top soil and increase soil productivity which can in turn increase agricultural productivity. Measures such as run off pathway management and offline storage areas can help with sediment capture, preventing soil erosion and loss of sediments and fertilisers into the watercourse.

**NATURAL  
FLOOD  
MANAGEMENT**

# HOW FLOOD RISK IS MANAGED

## FLOOD RISK MANAGEMENT SCHEMES (FRMS)

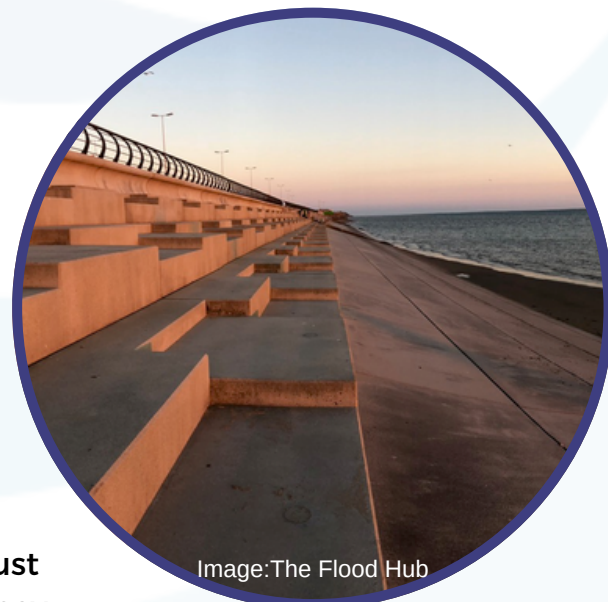
Risk Management Authorities (RMAs) such as the Environment Agency and local authorities use Flood Risk Management Schemes to protect areas that are at risk of flooding, giving consideration to a wide range of options to address flood and coastal erosion risk to communities and property throughout the catchment.

There are many measures that can be used to manage and reduce the risk of flooding as part of flood risk management schemes, such as:

- Built and hard engineered defences
- Flood storage
- Temporary defences and barriers
- Land management and NFM

Flood Risk Management Schemes can provide a number of benefits for:

- **People**
  - Homes, community facilities and infrastructure are better protected from flooding.
  - Create of recreational spaces.
  - Reassurance for residents.
- **The Economy**
  - Businesses, assets and electrical equipment are better protected.
  - Money saved from future flood damage.
  - Increased investment as areas are better protected.
  - Employees of local businesses better protected.
- **Environment**
  - Numerous new trees are often planted.
  - Increased biodiversity.
  - Improvements to footpaths.
  - Protect coastal areas from erosion.



Due to funding requirements, potential flood schemes must go through a thorough options appraisal process before they are approved and implemented.

You can find more information about some of the proposed, in progress and completed flood schemes across the North West on our Flood Risk Management Schemes page:

<https://thefloodhub.co.uk/flood-risk-management-schemes/>.



# MULTIPLE BENEFITS OF



# FLOOD SCHEMES



Community facilities and infrastructure are better protected



Many homes are better protected from flooding



Increased investment as areas are better protected



Businesses, assets and electrical equipment are better protected

## PEOPLE



Reassurance for residents



Creation of recreational space

## BENEFITS OF FLOOD SCHEMES

## ECONOMY

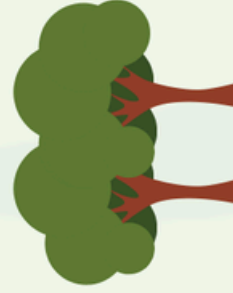


Money saved from future flood damage

Employees of local businesses better protected

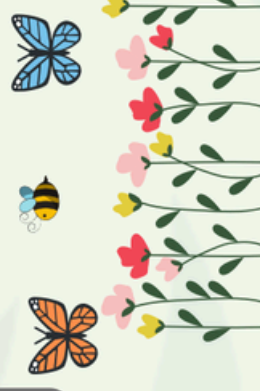


## ENVIRONMENT



Numerous new trees are planted

Protect coastal areas from erosion



Increased biodiversity

Improvements to footpaths



# HOW FLOOD RISK IS MANAGED

## SUSTAINABLE DRAINAGE SYSTEMS (SuDS)

Sustainable drainage systems, or 'SuDS', are ways of managing surface water locally by mimicking how water naturally drains through the environment. Unlike traditional drainage networks which rely on underground pipes and sewers, SuDS slow the flow of water and allow it to soak into the ground, be stored, or used by vegetation. This reduces the amount of water entering drainage and sewer systems and the likelihood of them becoming overwhelmed. Examples of SuDS include:

- Bioretention strips
- Detention basins
- Retention ponds
- Green roofs
- Permeable paving
- Rain gardens
- Rainwater harvesting
- Swales
- Wetlands

SuDS can have multiple benefits for people and the environment, these can include:

- Flood risk management.
- Reduced demand on rainwater.
- Habitat creation and maintenance and an increase in biodiversity.
- Recreation and health, improving the physical and mental wellbeing of communities.
- Improvements in amenity and economy.
- Improved water quality.
- Increased climate resilience.



Image: The Flood Hub



Image: The Flood Hub



Image: The Flood Hub

More information on SuDS can be found on The Flood Hub's 'Sustainable Drainage Systems' page: <https://thefloodhub.co.uk/suds/>.



# Multiple Benefits of SuDS



## (Sustainable Drainage Systems)

### Rainwater Demand



Water is collected year-round in water butts through rainwater harvesting, which can then be used for gardening. This practice reduces demand on mains supplies and proves especially beneficial during drought conditions.

### Biodiversity and Ecology



Habitat maintenance, creation, and linking are essential for supporting both existing and new wildlife. This approach enhances biodiversity and improves the quality of ecosystems in urban environments.

### Recreation and Health



Access to open green spaces facilitates activities such as walking, cycling, and organised sports, thereby enhancing the physical and mental health and wellbeing of communities.

### Amenity and Economy



Large open spaces and increased use of trees and plants enhance the aesthetic value of an area. This not only attracts tourists but also raises housing and land prices, contributing to economic growth.

### Flood Risk Management



SuDS mimic natural drainage patterns & reduce the volume of runoff reaching drains & watercourses. They provide areas to store water & slow the flow of water to reduce flood risk in urban areas.

## SuDS BENEFITS

### Climate Resilience



Vegetation and plants, such as those used in green roofs, can capture and store carbon and greenhouse gases, improving air quality. They also help regulate building temperatures and reduce air and water pollution.

### Water Quality



Sustainable Drainage Systems (SuDS) filter sediment and contaminants from runoff, improving water quality. They intercept rainfall and reduce the volume entering sewers and drains, thereby decreasing combined sewer overflows and the amount that requires treatment.

# HOW FLOOD RISK IS MANAGED

## PROPERTY FLOOD RESILIENCE (PFR)

At an individual level, property flood resilience (PFR) can be used to reduce the impact and damage to your home or business caused by flooding. There are a number of different PFR measures which can be split into 'resistance' and 'recoverability'.

A flood 'resistance' approach aims to prevent water entry or reduce the amount of floodwater that enters a property and it requires the purchase and installation of home flood defence products. These products can be permanent or temporary.

Examples of flood resistance measures include:

- Flood doors and windows
- Flood barriers
- Concrete floors with damp proof membranes
- Water resistant mortar applied to walls
- Non-return valves
- Smart airbricks and air brick covers



Flood recoverability measures aim to reduce the impact and damage caused by floodwater once it enters a property, resulting in quick and easy cleaning, drying, recovery and reoccupation of the property. Installing recoverability measures involves the adaptation and changes to the internal fabric, materials and surfaces of the building with waterproof alternatives, with no further action in the event of a flood.

Examples of recoverability measures include:

- Raised electrics
- Lime render on walls
- Gypsum or magnesium oxide plaster boards fitted horizontally.
- Waterproof membranes on flooring
- Solid concrete flooring or tiles.
- Kitchen fittings made of water resistant materials such as bio composite or stainless steel.
- Raised appliances
- Flood alarms



Installing PFR can have a number of benefits for:

- |                    |                  |                      |
|--------------------|------------------|----------------------|
| • Flood protection | • Property value | • Easier maintenance |
| • Mental health    | • Safer living   | • Reduced costs      |

You can find more information about PFR on 'The Flood Hub's Property Flood Resilience page: <https://thefloodhub.co.uk/pfr/>.



# Flood Resilient House



When protecting a property from flooding, it is effective to use techniques that are both flood resistant (keep water out) and flood resilient (reduce the impact of damage). There are many adaptations you can make to your house and garden, including with the use of sustainable drainage systems (SuDS). Here are some options...

Use resilient wall plaster, water resistant paints or tiles

Store valuables on high shelves or upstairs

Raise electrics and sockets

Retention pond and rain garden

Non-return valves on utility pipes

Kitchen units made from water resilient materials

Hard flooring with easily removable rugs

Raise appliances and units on plinths

Flood barrier or flood door

Sump and pump system

Permeable paving and driveway

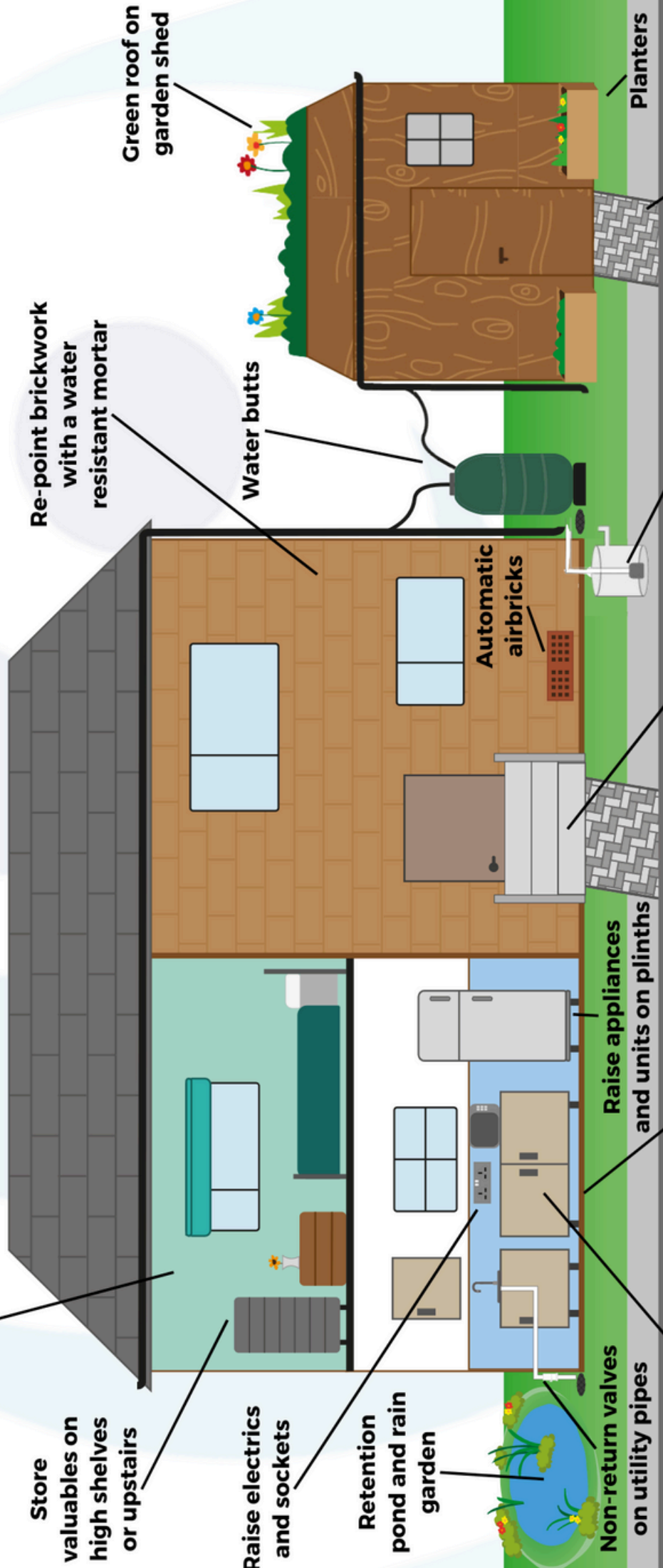
Planters

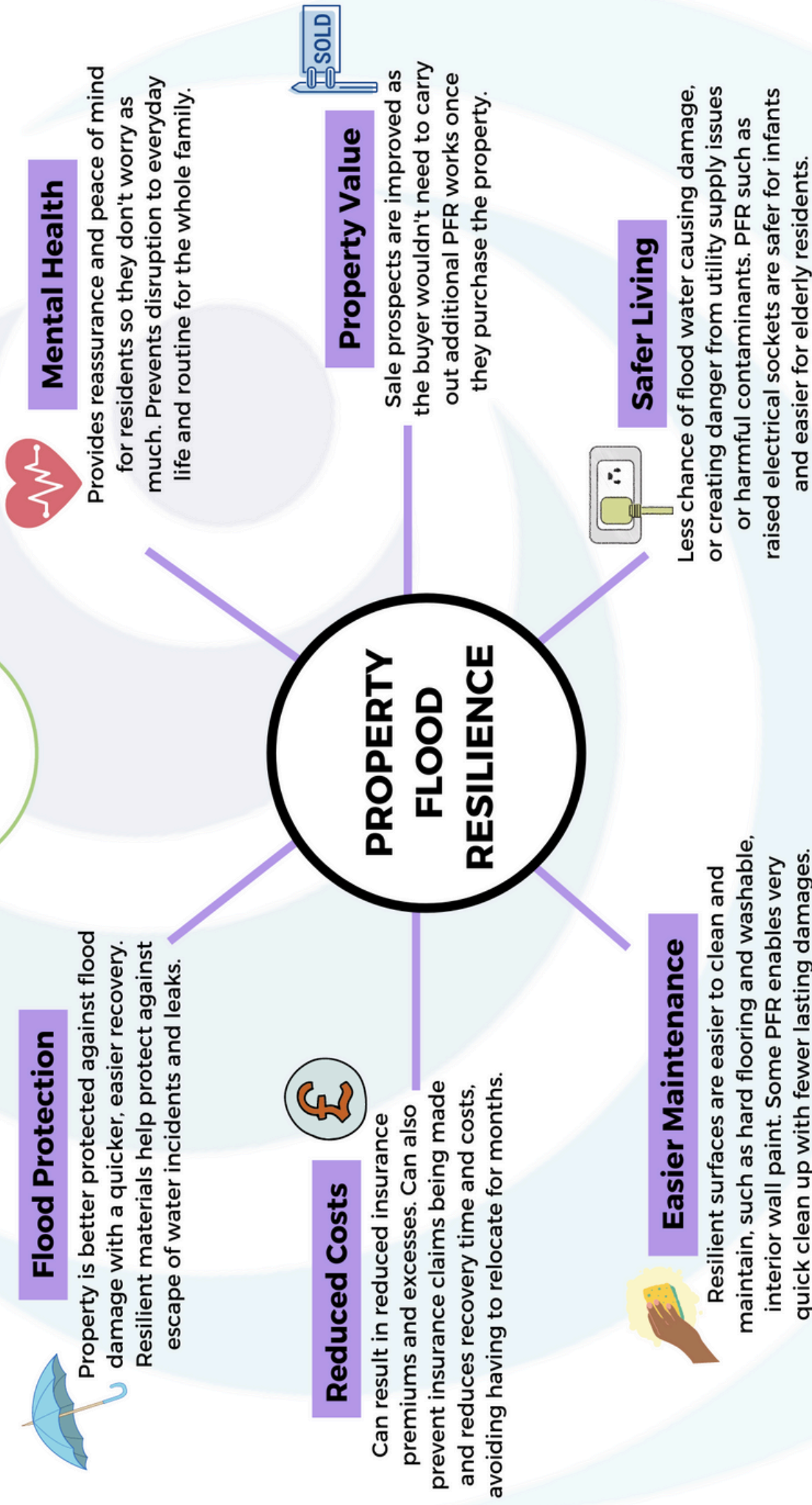
Green roof on garden shed

Re-point brickwork with a water resistant mortar

Water butts

Automatic airbricks







# HOW FLOOD RISK IS MANAGED

## MAINTENANCE THROUGHOUT THE CATCHMENT

Maintenance is an important part of the catchment-based approach to help keep water free flowing and reduce flood risk. This can be carried out by both members of the community and risk management authorities and the scale of the work can vary. Examples of catchment maintenance can include:

- **Gravel removal** – This involves removing silt (a material made of fine sand), clay and small particles of rock from gravel bars that form on the river bed or around in-stream structures such as bridge supports.
- **Highway maintenance** – Gullies on highways and other assets such as soakaways can play a big part in managing surface water runoff. Maintenance of assets is important to ensure they work in heavy rainfall events.
- **Riparian ownership maintenance** – If you own a watercourse you are responsible for ensuring that water flows through it naturally, and for maintaining it by removing blockages that may impede the flow of water or cause flooding. To find out more about riparian ownership, visit our 'Landowner' page:  
<https://thefloodhub.co.uk/landowner/#riparian-ownership>
- **Maintenance of flood risk assets** – Flood risk assets are any structure or landscape feature which has a flood risk management function, such as a culvert, flood gate or trash screen. They require maintenance to ensure they can continue to function effectively, and they may not necessarily be located close to a watercourse.







# WHAT YOU NEED TO KNOW ABOUT: GRAVEL REMOVAL

The role of gravel removal in flood management is often debated after flood events. The primary aim of removing gravel is to clear buildup that could contribute to increased flood risk. However, evaluating the effectiveness of gravel removal in reducing flood risk can be complex, as it depends on factors such as the specific river system, local hydrology, and ecological conditions. Balancing flood risk reduction with ecological impacts remains a challenging aspect of gravel management in flood-prone areas.

## What is gravel removal?

The main goal of gravel removal is to clear silt (a fine sand-like material), clay, and small rock particles from gravel bars that form on the riverbed or around in-stream structures, such as bridge supports.

This process removes buildup at critical pinch points, allowing waterways to flow freely. Gravel removal can also help prevent blockages caused by debris like trees, shrubs and weeds, which can accumulate under bridges and impede water flow.

The material is typically removed by an excavator stationed in the stream or on the riverbank, and how it is disposed of will depend on the local area and the condition of the material.



## Can gravel removal reduce flooding?

Gravel removal may not be a sufficient solution for addressing flooding in localized areas, especially during extreme flood events when the river channel may be inadequate to handle such conditions, even after gravel has been cleared. However, in certain circumstances, gravel removal can play a crucial role in flood risk management at key locations. For instance, in pinch points like culverts and bridges, removing gravel can enhance the natural flow of the river, thereby improving overall water movement and reducing the likelihood of blockages.

## Who is responsible?

The Environment Agency is responsible for managing all main rivers, with the authority and obligation to undertake works aimed at reducing flood risk, including dredging operations and the disposal of related materials. While landowners may conduct small-scale projects on main rivers, they must first obtain an environmental permit before proceeding. If the work involves any other watercourse, it is important to check with your local flood authority or internal drainage board to determine whether additional permissions or licenses are required.

### Advantages

- Increases channel conveyance.
- Reduces water levels and small floods.
- Shortens the duration that water remains on the land.
- Removes blockages at pinch points, allowing water to flow freely.

### Disadvantages

- Dredging can increase the flow of the river, potentially raising flood risk downstream.
- It requires long-term maintenance and can be costly.
- Increased erosion may occur as a result of dredging activities.
- There are environmental impacts to consider.
- There is a potential risk of contamination from disturbed sediments.

Gravel removal can be effective and play an important role in flood risk management strategies. However, it can have significant consequences such as altering the rivers flow resulting in increased erosion and damaging habitats. Therefore, gravel removal should be considered alongside a range of other flood risk management measures and on a case by case basis.



# HOW FLOOD RISK IS MANAGED

## COMMUNITY RESILIENCE

Working together as a community can help a greater proportion of residents to become more resilient to flooding. Flood action groups can be set up in communities at risk of flooding with the aim of increasing awareness of flood risk. The group can focus on emergency planning, flood resilience, warning and informing and can also tackle local issues, whilst providing a unified voice for the community to communicate ideas and queries to others.

Having a Flood Action Group in place can have the following benefits:

- Efficient flood planning
- Creates links with agencies
- Strengthens community resilience
- Funding opportunities
- Utilisation of key skills
- Valuable local flood knowledge
- Increases awareness
- Influence decision makers

### Community Flood Action Group Roles



- |                          |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|
| <input type="checkbox"/> | Spread awareness of flood risk in the community                                   |
| <input type="checkbox"/> | Monitor local conditions e.g. flood wardens keeping an eye out for blocked drains |
| <input type="checkbox"/> | Develop and review a community flood plan                                         |
| <input type="checkbox"/> | Look out for vulnerable members of the community                                  |
| <input type="checkbox"/> | Identify key issues within the community                                          |
| <input type="checkbox"/> | Build relationships with key agencies                                             |
| <input type="checkbox"/> | Prepare for and take action during a flood event                                  |

A community scheme increases a community's flood resilience, tailored to suit the specific needs of the area. The size of the scheme will vary between communities, and can protect the community in different ways, from installing property flood resilience (PFR) measures to individual properties, to deploying larger defences to protect a certain area within the community.

You can find more information about community resilience on The Flood Hubs 'Community' page: <https://thefloodhub.co.uk/community/>.

## COASTAL MANAGEMENT

Coastlines naturally erode over time causing them to retreat inland. However, climate change is causing sea level rise and larger, more frequent storm surges, increasing the risk of coastal flooding which affects coastal communities and infrastructure. Coastal flood management techniques include hard defences such as sea walls, and soft defences such as dune planting and managed realignment.

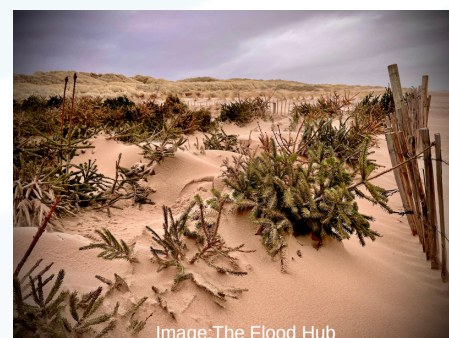


Image: The Flood Hub

You can find more information about coastal change and coastal management on The Flood Hub's 'Coastal' page: <https://thefloodhub.co.uk/coastal/>.

## Creates Links with Agencies



Groups can form positive links with Risk Management Authorities (RMAs) and other organisations and work in partnership with them.

## Efficient Flood Planning



Flood plans set out actions to take before, during and after a flood, making the group more prepared to act efficiently during flooding.

## Influence Decision Makers



Voicing concerns as a group may have greater influence on decision makers than those voicing concerns alone.

## Increases Awareness



Communities are more resilient working together and groups can communicate with other residents to increase their awareness of local issues.

## COMMUNITY FLOOD GROUP BENEFITS

## Strengthens Community Resilience



Groups can use their skills to focus on other emergencies or weather events which could impact the community.

## Funding Opportunities



Constituted groups can access funding for equipment which may be available to help with community resilience.



## Utilisation of Key Skills

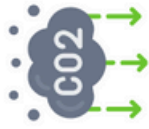
Groups can utilise various skills and resources different members have to help in an emergency.

## Valuable Local Flood Knowledge



Communities have valuable local flood knowledge from years of living in the area that is essential for flood risk management.





## Carbon Sequestration

Intertidal habitats along the coastline, such as salt marshes, serve as important carbon sinks. However, environmental change and human land use have led to their decline. Improved coastal management and managed realignment can help these habitats thrive and increase in size.



## Health & Wellbeing

Coastal schemes can provide access to coastal areas for recreation, offering significant benefits for health and wellbeing. National Cycle Route 62 spans 12 miles from Blackpool to Fleetwood, making it the UK's longest seafront cycle route.



## Reduced Flood Risk

Coastal management reduces the risk of flooding by slowing erosion, dissipating wave energy, and creating defences to hold back waves. With climate change and rising sea levels, these measures are crucial for protection against increasingly frequent and intense storms.



## Economic Benefits

Coastal schemes protect hundreds of thousands of homes and businesses from the losses associated with flooding and erosion. Additionally, coastlines are popular destinations for day-trippers and holidaymakers, providing a significant boost to the economy.



## Biodiversity

Coastal schemes that adopt a natural approach, such as dune regeneration, salt marsh restoration, and managed retreat, can create rich habitats for a variety of wildlife and plant species.



## Protection from Erosion

Hard-engineered coastal schemes can effectively stop or slow erosion, safeguarding homes and businesses at risk. Additionally, critical sites such as power stations and gas terminals, which often need to be situated close to the sea, benefit from long-term management plans.



# WHO IS INVOLVED IN MANAGING FLOOD RISK?

In the UK, there is no one body responsible for managing flood risk, it requires a collaborative approach. Like with how flood risk is managed, who is involved in managing flood risk can be likened to a jigsaw puzzle, with each piece representing the different stakeholders involved in flood risk management.

This section will highlight the various different Risk Management Authorities (RMAs) and stakeholders involved in managing flood risk and the roles and responsibilities that they have.



## RISK MANAGEMENT AUTHORITIES (RMAS)



### ENVIRONMENT AGENCY (EA)

- Responsible for flood and coastal erosion risk management activities on main rivers and the coast, and regulating reservoir safety.
- Work with Lead Local Flood Authorities (LLFAs) and coastal groups to oversee flood and coastal erosion risk management and reduce risk to communities, coastlines, and habitats.
- Deliver the Flood Warning Service to communities and areas at flood risk from rivers and the sea.
- Produce and update publicly available flood risk maps and information for main rivers, surface water, reservoir and groundwater flooding.
- Develop and deliver flood risk management projects to protect properties.
- Strategic oversight of all sources of flood risk and the development of the flood and coastal erosion risk management (FCERM) strategy.
- Regulate flood risk activity on main rivers and the coast, inspect areas of concern, intervene with emergency maintenance and enforcement to reduce flood risk, and encourage compliance with riparian landowners.
- Undertake regulation, surveillance and inspection of reservoirs and ensure owner and operator requirements are met, and flood plans are produced for certain reservoirs, particularly high risk where uncontrolled release of water could pose a danger to life.
- Provide evidence, advice, information, and tools to risk management authorities involving FCERM and act as a statutory consultee on planning and development applications.
- Share knowledge and best practice with others involved in FCERM.



# WHO IS INVOLVED IN MANAGING FLOOD RISK?



## LEAD LOCAL FLOOD AUTHORITY (LLFA)

- Lead on managing flood risk from surface water, ordinary watercourses and groundwater.
- Ensure partnership working between Risk Management Authorities (RMAs) in their area to manage flood risk.
- Maintain a register of flood risk assets.
- Undertake Section 19 flood investigation reports.
- Regulation of flood risk activity for ordinary watercourses, the issuing consents, or enforcing of riparian landowner responsibilities in regard to in or above stream structures, bridges and channel maintenance and ensuring proper flow is maintained.
- Undertake a lead role in emergency planning to help keep communities safe.
- Lead on flood recovery.



## BOROUGH/DISTRICT COUNCIL

- Undertake partnership work with RMAs.
- Act as local planning authority in respect of planning and development decisions.
- Support Lead Local Flood Authorities and other agencies when undertaking flood risk management duties in their area.
- Undertake flood risk management works on minor watercourses (outside of Internal Drainage Board areas).



## COASTAL PROTECTION AUTHORITIES (BOROUGH OR DISTRICT COUNCIL)

- Lead on the development of shoreline management plans (SMPs) for their section of coastline.
- Lead on flood and coastal erosion risk management activities in their area.



## WATER COMPANIES

- Maintain and manage clean and wastewater services, infrastructure and assets within their region and reduce the risk of flooding and pollution.
- Liaise with Lead Local Flood Authorities and provide advice on how water company assets impact on local flood risk.
- Liaise and work in partnership with risk management authorities to coordinate water and sewer system works with flood risk management works.
- Work with developers, landowners and lead local flood authorities to understand and manage the risk of flooding from surface water and sewer networks.

# WHO IS INVOLVED IN MANAGING FLOOD RISK?



## INTERNAL DRAINAGE BOARDS (IDBs)

- Manage water levels in ordinary watercourses, low lying areas, and groundwater.
- Improve and maintain ordinary watercourses, drainage channels and pumping stations to reduce the risk of flooding.
- Supervise land drainage and flood defence works on ordinary watercourses.
- Ensure landowners maintain proper flow and maintenance of ordinary watercourses within internal drainage districts.



## HIGHWAYS AUTHORITIES

- Lead on managing highway drainage and maintenance.
- Liaise and cooperate with risk management authorities to ensure flood risk management activities are coordinated.
- National Highways manage highways drainage and maintenance on motorways and major A roads.

## OTHER STAKEHOLDERS



## RIPARIAN LANDOWNERS

- Maintain their section of watercourse, including bed and banks.
- Maintain any structures or flood risk assets for which they are responsible, such as trash screens, culverts, weirs, and mill gates.
- Let water flow naturally and without obstructing the flow of a watercourse to the detriment of neighbours.
- Only undertake work to watercourses in accordance with regulations and obtaining licenses, consents and permits as required for any works which may temporarily or permanently change the level or flow of a watercourse.
- Must not affect the quantity or quality of the flow in a watercourse.
- Keeping structures clear from obstructions and debris.
- Not allowing the watercourse to become polluted, and refrain from putting waste, debris or grass cuttings etc. in the watercourse or on the banks.
- Protect wildlife e.g. not causing obstruction to migratory fish and preventing invasive plant species.
- Reporting incidents such as flooding, blockages which could cause flooding, pollution, unusual changes in flow, collapsed or badly damaged banks or any activity on or near a watercourse that does not have permission.
- Comply with all byelaws.
- Obtain any discharge or abstraction licenses as required for their watercourse.

To find out more about riparian ownership, visit our 'Landowner' page:

<https://thefloodhub.co.uk/landowner/#riparian-ownership>



# WHO IS INVOLVED IN MANAGING FLOOD RISK?



## PROPERTY OWNERS AND TENANTS

- Have a warning trigger and create a home flood plan.
- Obtain good flood insurance cover.
- Ensure good property maintenance and clear drains and gutters.
- Refrain from putting fats, oils, and grease (FOGs) down the sink.
- Only flush Pee, Poo, and Toilet Paper down the toilet.
- Protect property with Property Flood Resilience (PFR) measures.
- Obtain good business flood insurance cover for repair and alternative accommodation for tenants.
- Integration of sustainable drainage (SuDS) at property level e.g., permeable paving, rain gardens, water butts etc.
- Include flood risk, resilience, and recovery information within tenant pack.
- Provide information on contents flood insurance cover for tenants (Flood Re).
- Explore the retrofit and integration of property level SuDS and rainwater harvesting.



## COMMUNITIES

- Establish community comms channels (WhatsApp, FB Messenger etc.).
- Support and assist vulnerable neighbours.
- Consider forming a Flood Action Group.
- Work with Risk Management Authorities to reduce flood risk.
- Consider developing a community flood action plan.
- Explore options for community led flood schemes.

For more information on everything discussed in this booklet, please visit [www.thefloodhub.co.uk](http://www.thefloodhub.co.uk).

