

NATURAL FLOOD MANAGEMENT

Partnership projects with Thames21

The Environment Agency have calculated there are over 5 million properties in the UK at risk from flooding, costing the UK an estimated £1.1 billion annually. With advances in flood prediction modelling and the added challenges of increasing urban development, climate change and extreme weather events, the impact of flooding is expected to rise.

To increase the protection of homes, businesses and valuable, productive land, local, regional and national authorities are turning to the practice of using Natural Flood Management (NFM).

NFM approaches work with and enhance the natural landscape's ability to store and slow flood waters, and maintain these mechanisms in order to reduce flood risk. The various NFM techniques we are investigating have the potential to be effective and inexpensive, they also have many environmental benefits too.



Source: London Borough of Enfield

A reconnected floodplain and all weather walkway in Enfield

Thames21: A voice for London's waterways

Thames21 Mission Statement:

To bring about effective and lasting improvements for urban rivers by working hand-in-hand with communities and stakeholders to deliver and inspire tangible, measureable changes.



Article 14 of the **EU Water Framework Directive** calls for the active involvement of all interested parties, including the public in its implementation

Thames21: Our Goals and Community NFM



Community NFM Projects naturally help Thames21 work toward the charities 4 core goals.

Partnership working

Thames21 have gained local support and partnered with organisations including the Environment Agency, Thames Regional Flood and Coastal Committee, borough councils, and Brunel University to deliver and gather evidence of Natural Flood Management in action.

We are working on four different Community NFM projects in North London. These are located on the Salmons Brook (Enfield), the Silkstream Headwaters (Harrow), the Rise Park Stream (Havering) and the River Pinn Park Wood (Hillingdon). The size of the pin represents the respective size of the project



Types of NFM measures we will investigate

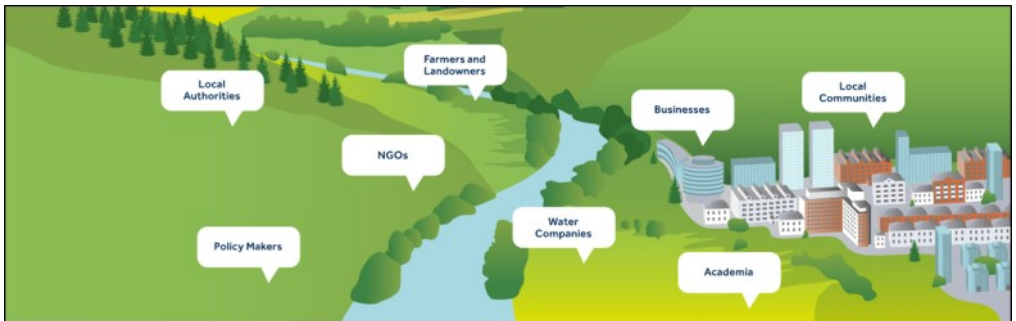
- Rivers and Floodplain management
- Woodland management
- Surface Water Run-off management
- Urban Blue Green Infrastructure (Sustainable Drainage Systems)

Partnership working

Lead Local Flood Authorities (LLFAs)

It is the role of LLFAs to:

- prepare and maintain a strategy for local flood risk management
- coordinate views and activity with other local bodies and the community
- carry out work to manage local flood risks



Source: CatchmentBasedApproach.org

Local Communities

People who live and work in the local area, who are at risk of having their homes flooded and/or use the green spaces where the NFM projects are taking place are vital to the success of these projects. They are:

- Citizen Scientists on the ground
 - ‘the eyes and ears’
 - ‘the local catchment knowledge’
- Spokes people for innovative environmental work
- Helping to ID best location for NFM interventions
- Helping to gather monitoring data
- carry out work to manage local flood risks

Partnership working

DEFRA and the Environment Agency

60 natural flood management (NFM) schemes are being piloted across England, funded by DEFRA

- 26 catchment-scale projects
- 34 community led projects

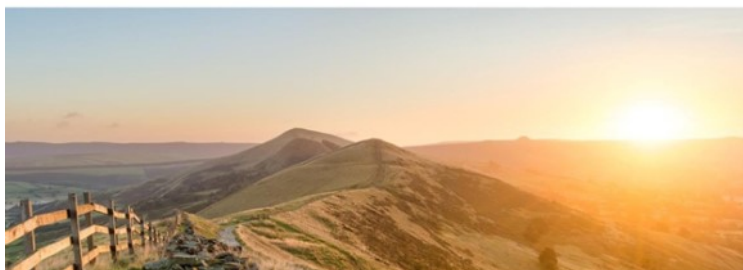
The Environment Agency (EA) are overseeing the evidence findings for each project.

"We are investing £15m up to 2021 to further explore the use of Natural Flood Management, whose wider benefits include better wildlife habitats, recreation opportunities and water quality."

DEFRA, 2018

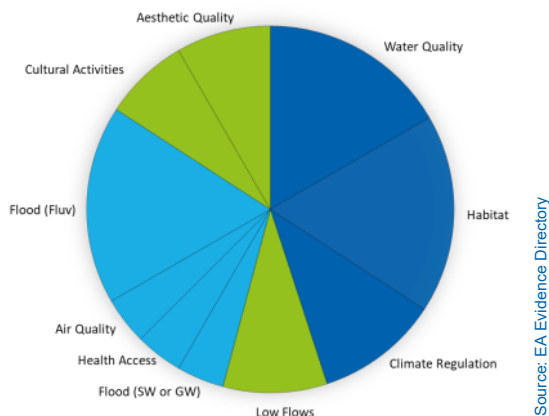


A Green Future: Our 25 Year Plan to
Improve the Environment



The added benefits to NFM

NFM has the potential for many additional benefits for people, wildlife and the wider environment than simply flood alleviation. Habitat and water quality improvements are clear examples along with adapting landscapes to become more resilient to climate change.



Natural Flood Management has many benefits

The knowledge gap

There are few real world case studies of Natural Flood Management and limited data collected. To address this, in 2017 the UK Government published a comprehensive review and announced funding for pilot schemes in the UK.

In order to critically evaluate these projects, a PhD is being part-funded with Brunel University. This research will model and monitor the effectiveness of interventions and measures taken with the aim of steering the projects to deliver the maximum benefits.

Data collected from these four projects will contribute to the EA's Evidence Directory of Working with Natural Processes, helping to inform and add value to future policy decisions in London and across the UK, thereby protecting homes and improving the environment for all.



Source: Thames21

Leaky dam created to slow the flow

Tree Trunk Diverters

By laying and pinning tree trunks across the path of overland flows, water will be encouraged to spread and infiltrate across a larger area of ground. They can also be placed in river channels to slow flow rates down.



Source: Stroud DC

A tree trunk flow diverter in use

Offline Attenuation Ponds

These are seasonal ponds that are dry in spring and summer but provide temporary storage for excess water during flood events, slowing down the flow rate of flood water.

They could be planted with trees and species adapted to intermittent wetting to provide specific habitats for wildlife when not in use.



Source: Rewilding Britain

Holnicote flood storage area, Somerset



Source: NFM Network Scotland

Storing water in ponds and increasing wildlife habitats by connecting freshwater

Hedgerow Planting

Hedgerows can slowing river flows by increasing infiltration, and reducing soil and nutrient runoff. They also provide great habitats for wildlife. In many areas hedgerows have been removed to increase field sizes but we will look at reinstating some of these if possible.



Source: Sussex Flow Initiative

Reinstated hedgerow planting

Soil Bunds

Whether they are located conspicuously across open fields or more prominently in public areas forming wetlands or dry walking/cycling routes, these low level earth banks are designed to hold water back and allow it to naturally infiltrate into the ground.



Source: Newcastle University

A soil bund holding water higher in the catchment



Source: Thames21

Newly planted trees, North Enfield

Riparian Woodland Planting

This specific type of woodland is naturally found adjacent to watercourses. Woodlands can be planted to reduce-bankside erosion and slow the rate of overland-flow, increasing sediment deposition on the land. Riparian woodland provides extra habitats for wildlife in and out of the water.



Source: North York Moors National Park

Riparian woodland and a leaky dam

Woodland Planting

Increasing the amount of trees within the catchment can reduce flood peaks, flood flows and flood frequency by up to 70%. Woodlands can take up water into the canopy, increase the amount of water stored in the soil and help to filter it. They also provide extra habitats for a range of woodland wildlife.



Source: Riparian woodland in Trent Park

Riparian woodland and a leaky dam

Wet Woodland Planting

These biodiverse woodlands consist of water-tolerating trees such as willow and alder. Poorly draining areas unsuitable for farming are the most appropriate locations, enhancing water storage and sediment deposition. They also provide unique habitats for water-loving wildlife.



Source: Nottingham.ac.uk

River restoration in Northern Ireland

Run-off Pathway Management

Simple measures such as ploughing fields parallel to the watercourse will reduce the amount of water running off into nearby streams and increase the amount soaking into the ground; thereby protecting the land from soil and nutrient erosion and local rivers from siltation and pollution.



Source: Gov.uk

Farmer aerating compacted soil

River and Floodplain Restoration

By adding natural features such as meanders back into waterways and replacing some hard-engineered banks with softer edges, rivers can be reconnected to their floodplains. This natural water storage approach prevents flooding downstream.



Source: FG Insight

Farmer ploughing parallel to watercourse

Soil and Land Management

By sowing winter crops earlier, reducing the length of time that fields have bare soil, or by aerating the soil, land managers can increase the amount of water the land can absorb and store, whilst reducing soil and nutrient runoff.

Thames21 have to apply for a permit to undertake NFM works with the partnering local authorities or landowners . How to apply for a permit depends on the classification of the watercourse.

Main rivers are usually larger rivers and streams.

They are designated as such, and shown on the Main River Map. The Environment Agency carries out maintenance, improvement or construction work on main rivers to manage flood risk.

An application to the environment agency requires detailed information including:

- Coordinates of the project
- A site plan based on an ordnance survey map
- A comprehensive method statement
- Environmental risk assessment

Ordinary watercourses are any river or stream that is not a main river. Lead local flood authorities, district councils and internal drainage boards carry out flood management work on ordinary watercourses.

An application including similar information to the Environment Agency Main River proposal must be made to the Local Authority. It will also cover

- Environment Agency interests
- Construction and maintenance
- Water Framework Directive assessment

Main River

Environment
Agency must
give consent

Ordinary
Watercourse

Lead Local Flood
Authority must
give consent

How to get involved

We are keen to work with land owners, land users and local people to find the best locations for NFM interventions in the Salmons Brook catchment.

There will be a variety of volunteering opportunities in Citizen Science, catchment mapping, modelling, intervention building, vegetation planting, maintenance, and more.



Source: Thames21

Volunteers who helped build leaky debris dams in Trent Park.

For more information on each project head to www.thames21.org.uk/natural-flood-management/

Or check our latest events listings: www.thames21.org.uk/events/

Contact us

Get in touch to find out more:

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www.thames21.org.uk
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