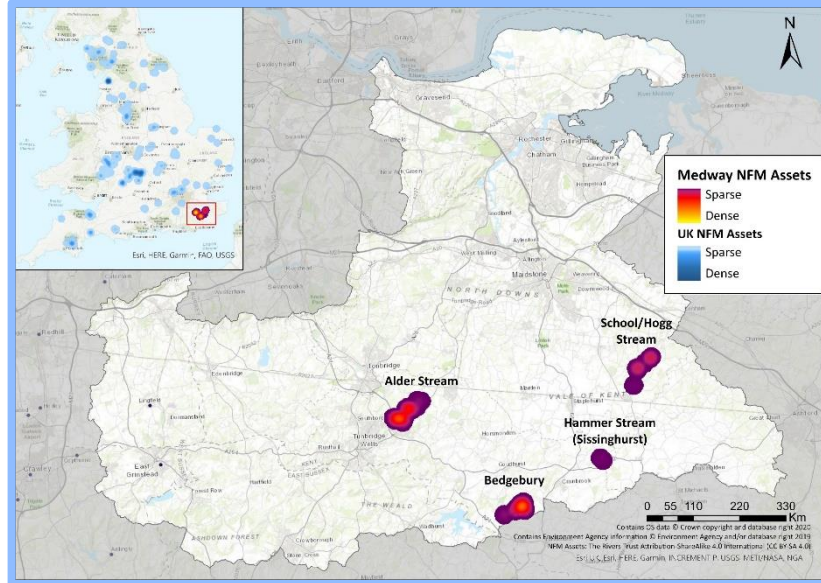# Natural Flood Management (NFM) in the Medway

Working with natural processes to slow the flow and store water to reduce flood risk across the Medway catchment.

Project Name:	Medway NFM
Location:	Medway catchment, Kent
Project Duration:	2018 - 2021
Cost:	£580,000

Aim
To work with the Medway Flood Partnership to apply NFM at a catchment scale and test its effectiveness.

Project Summary

NFM uses natural materials to slow the flow of water, reducing the chance of flash flooding, as well as increasing water storage throughout the landscape.

Using a combination of topography modelling, site visits and local consultation, SERT identified parts of the catchment where NFM could work best and designed a range of practical and effective measures, including:

- 200 Leaky Woody Structures (LWS)
- 3200m^3 flood storage through flood meadow and pond restoration.
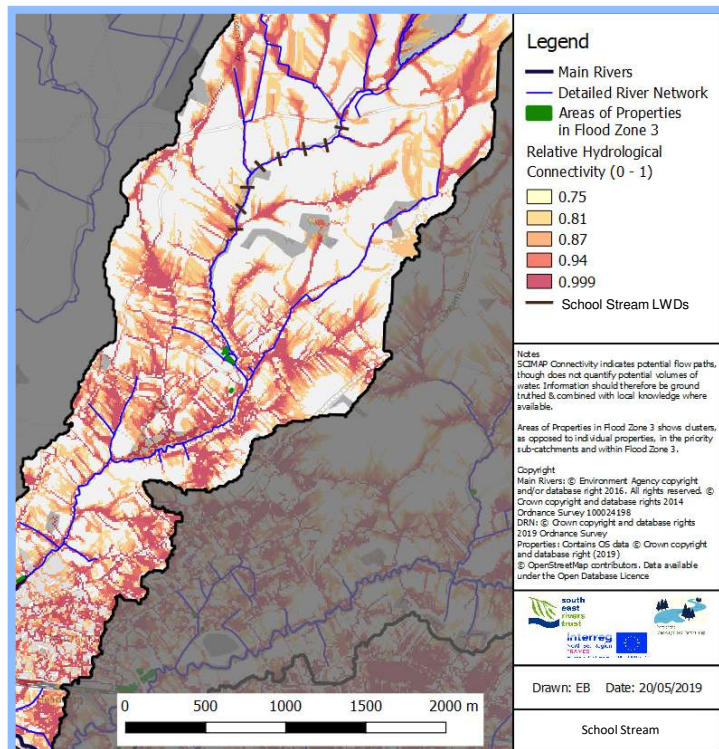

Funders & Supporters

Working with data to design NFM

SCIMAP is a mapping tool originally developed to map diffuse pollution risk within a catchment. It uses topography and land use data to identify pollution sources and their connectivity to a waterbody such as a river.

For NFM, this hydrological connectivity can be used to **identify potential flow paths** within a river catchment. The SCIMAP (right) is from the School Stream, a tributary of the River Medway and has been used to guide **walkovers** and the placement of NFM interventions such as woody dams and field bunds to intercept the key flow paths, and reduce the flood peak downstream.

In addition to SCIMAP, **flood-affected communities** worked with SERT to show staff where flooding occurred and known pathways.

Legend
- Main Rivers
- Detailed River Network
- Areas of Properties in Flood Zone 3

Relative Hydrological Connectivity (0 - 1)
- 0.75
- 0.81
- 0.87
- 0.94
- 0.999
- School Stream LWDs

Notes
SCIMAP Connectivity indicates potential flow paths, though does not quantify potential volumes of water. Information should therefore be ground truthed & combined with local knowledge where available.

Areas of Properties in Flood Zone 3 shows clusters, as opposed to individual properties, in the priority sub-catchments and within Flood Zone 3.

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DRN: © Crown copyright and database rights 2019 Ordnance Survey
Properties: Contains OS data © Crown copyright and database right (2019)
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Drawn: EB   Date: 20/05/2019

School Stream

0   500   1000   1500   2000 m

Four sites selected to demonstrate NFM:

Bedgebury Forest	Partnership project with Forestry England. Installation of Leaky Woody Structures (LWS) and bunds to slow the flow and enhance wet woodland habitats. Demonstration LWS installed for visitors with information boards.
Sissinghurst Castle	Partnership project with National Trust at Sissinghurst Castle Garden. Meadow creation in the flood plain.
Alder Stream	NFM applied at a sub-catchment scale to reduce flood risk to properties in Five Oak Green. Interventions included LWS, expanding the woodland along flow paths and redirecting flood flows away from local homes.
School Stream	NFM applied at a sub-catchment scale to reduce flood risk to properties in Headcorn. Interventions included LWS and an offline storage pond.

Case studies for each site are available on the Trust website.
wwww.southeastriverstrust.org

Monitoring the effectiveness of NFM

NFM techniques are still relatively new and the Trust is working with partners to monitor the effectiveness of NFM interventions at a sub-catchment scale.

Monitoring includes traditional methods such as flow meters and level loggers, as well as mobilising citizen scientists and trialling innovative monitoring equipment such as Free Stations (pictured right monitoring a woody dam).

Free Station

Nine hectares of ancient woodland fenced off for restoration – increasing rainwater interception.

Restored Kingsnoad pond with 600m³ of flood storage

Sissinghurst flood plain meadow storing 2600m³

200 LWS installed in three streams on the Medway.

Project Outcomes

1. Flood Storage
One of the primary benefits is the increased flood storage.
- 2600m³ of storage was created by the restoration of a flood meadow at Sissinghurst.
- 600m³ was made available through the construction of Kingsnod, an offline pond.
- Over 200 LWS are working together across the Medway to slow and store flows during periods of intense rainfall.

2. Ecological Benefits
NFM works with nature, and by doing so can enhance biodiversity.
- **6000m² of wetland habitat formed** as NFM holds water back in the landscape and creates wetter habitats.

- **20ha of enhanced priority habitats** including wet woodland, ancient woodland, meadows and rivers.

- **6.9km of river enhanced** as LWS diversify flows and are known to help filter out sediment from rivers, improving local **water quality**.

- **Increased resilience to climate change** for the wet woodlands targeted by the work.

3. Community Engagement
Working with landowners and communities has been integral to this project:
- Increased awareness of NFM.
- Increased understanding and receptiveness to NFM measures.
- Generated interest for further NFM.
- Example LWS installed at Bedgebury Pinetum with half a million visitors per year.
- Interpretation board at Sissinghurst reaching up to 200,000 visitors per year.