



Direct Dial/Ext: 03000 416749
e-mail: andrew.tait@kent.gov.uk
Ask for:
Date: 12 March 2020

Dear Member

KENT FLOOD RISK MANAGEMENT COMMITTEE - MONDAY, 9 MARCH 2020

I am now able to enclose, for consideration at next Monday, 9 March 2020 meeting of the Kent Flood Risk Management Committee, the following presentations that were unavailable when the agenda was printed.

Agenda Item No

- 4 **Update from the Environment Agency on Flood and Coastal Risk Management - Presentation by Sally Harvey, Environment Agency Kent and South London Area Director (Pages 1 - 16)**
- 5 **Natural Flood Defences - Presentations by Phil Williams (Natural England) and Tom Cook (Environment Agency) (Pages 17 - 58)**

Yours sincerely

A handwritten signature in black ink, appearing to read 'B. Watts', is written over a faint circular stamp.

Benjamin Watts
General Counsel

This page is intentionally left blank

Flood and Coastal Risk Management vision in Kent

Name: Mark Douch – Area Flood and Coastal Risk Manager
Date: March 2020

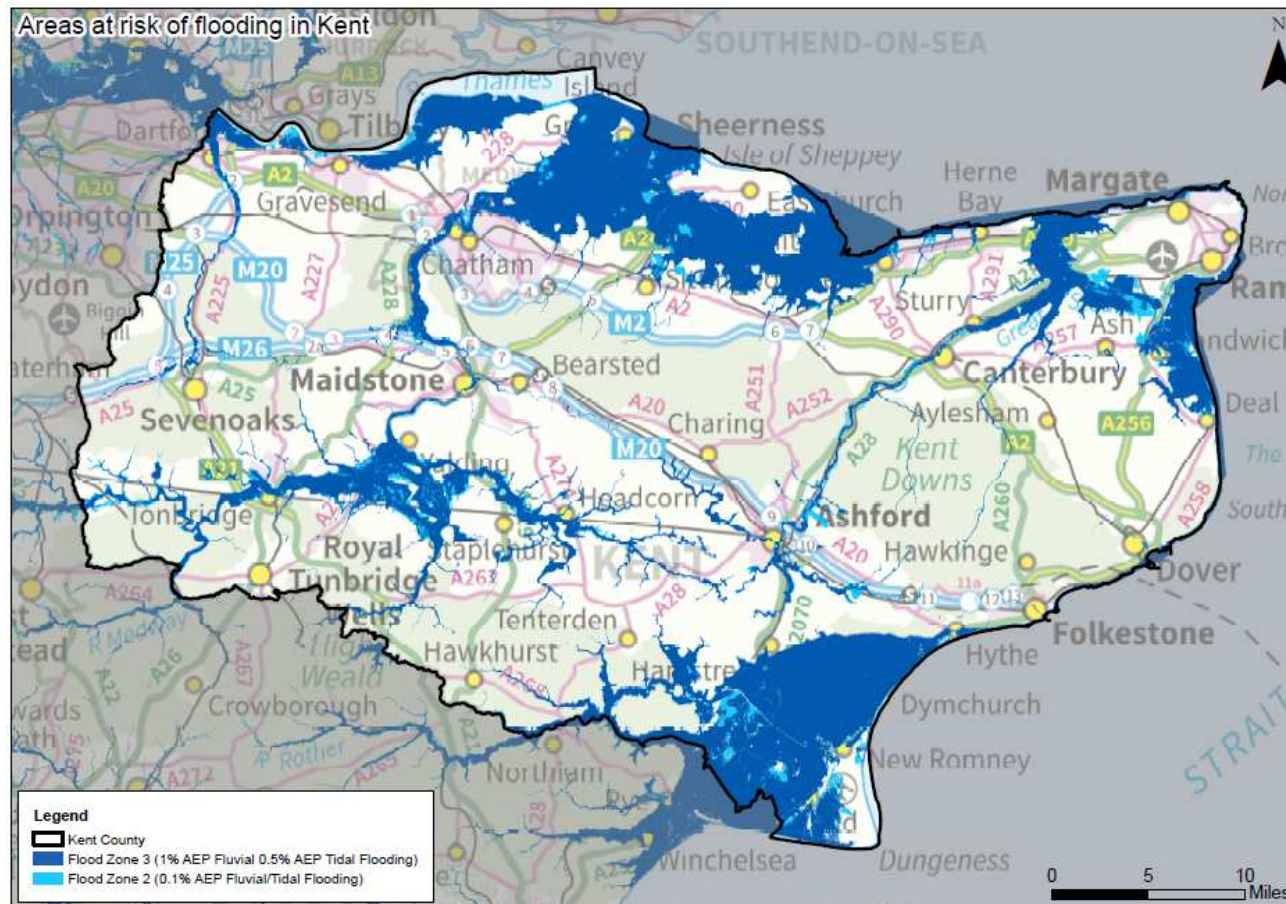
National flood and coastal risk management strategy

- 25 year Environment Plan
 - We have committed to better protect at least 300,000 homes from flooding by 31 March 2021
 - Challenges – EU exit, securing partnership funding
 - Supported by our corporate strategy ‘creating a better place’



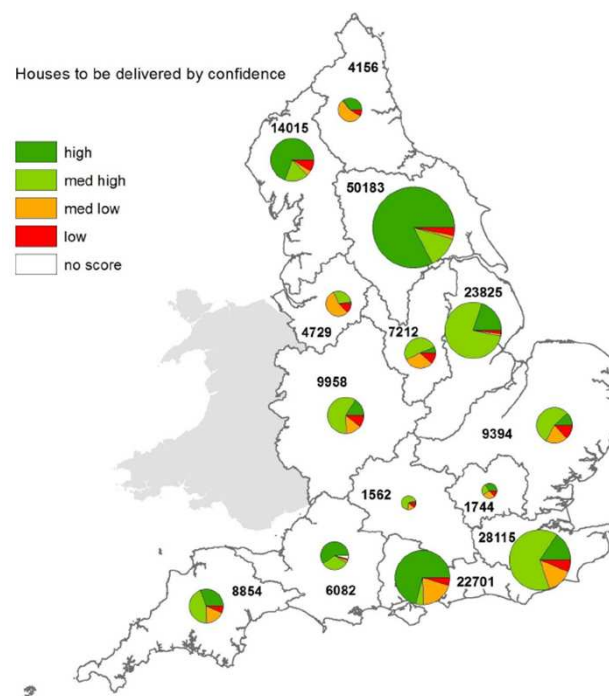
Flood risk in Kent overview

- In Kent currently there are 60,000 properties (residential and commercial) at risk of flooding from rivers and the sea



Flood and Coastal Risk Management Capital Programme 2019-21

- ➔ 2019-21 capital programme
 - ➔ National allocation is £845.7M
 - ➔ Kent and South London allocation is ~£113.8M
- ➔ Within Kent and South London we are forecasting to reduce flood risk to 21,022 properties over the next 2 years
- ➔ 2018/19 – flood risk reduced to 7,575 properties in Kent and South London



The number of properties that will benefit from a FCRM scheme by area between 2018-2021, for all flood risk sources and all RMA projects

EA FCRM Capital Schemes 2019-21

Project name	Project expenditure (£)			Total Project Expenditure (£) 19/20 - 20/21 total	OM2 - 2019/20	OM2 - 2020/21	OM2b - 2019/20	OM2b - 2020/21
	GiA funding - 2019/20	GiA funding - 2020/21	Contributions (£) 19/20 - 20/21 total					
Leigh Expansion and Hildenborough Embankments	0	0	1,448,500	1,448,500	0	0	0	0
East Peckham Walls	60,500	0	0	60,500	0	0	0	0
Northern Sea Wall Beach Management 20/21 to 21/22	0	115,000	0	115,000	0	28	0	0
Northern Sea Wall Beach Management 18/19 to 19/20	115,000	0	0	115,000	27	0	0	0
Hythe Ranges Scheme	3,831,643	13,200,000	0	22,477,264	0	746	0	475
Leigh FSA Improvements	100,000	100,000	0	200,000	0	0	0	0
Littlestone Beach Management 2018/19-2019/20	160,000	0	0	160,000	59	0	0	0
Littlestone Beach Management 2020/21-2021/22	0	160,000	0	160,000	0	59	0	0
Denge (Lydd Ranges) Beach Management 2019/20 - 2020/21	550,000	550,000	0	1,100,000	1,724	1,724	0	1,230
Middle Medway Flood Resilience	400,000	0	1,800,000	2,200,000	0	163	0	0
Romney Sands Coastal Defences	232,000	0	0	232,000	0	20	0	0
Appledore Pumping station	50,000	2,000	0	52,000	14	0	0	0
Sheerness Defences Structural Repairs	50,000	0	0	50,000	0	0	0	0
Sandwich Town Tidal Defences	19,000	5,000	0	24,000	0	0	0	0
Sandwich Bay Sea Defences (Deal)	2,000	0	0	2,000	0	0	0	0

EA FCRM Capital Schemes 2019-21

Year	FD GiA - EA KENT Projects only (£k)	FD GiA - LA KENT Projects only (£k)	OM2 + OM3
15-16	11,142	2,349	4,428
16-17	7,595	5,250	5,105
17-18	10,319	4,572	6,528
18-19	13,462	1,989	4,058
19-20	15,895	1,068	5,158
20-21	23,723	4,443	6,117
TOTAL	82,135	19,670	31,394

Local Authority FCRM Capital Programme 2019-21

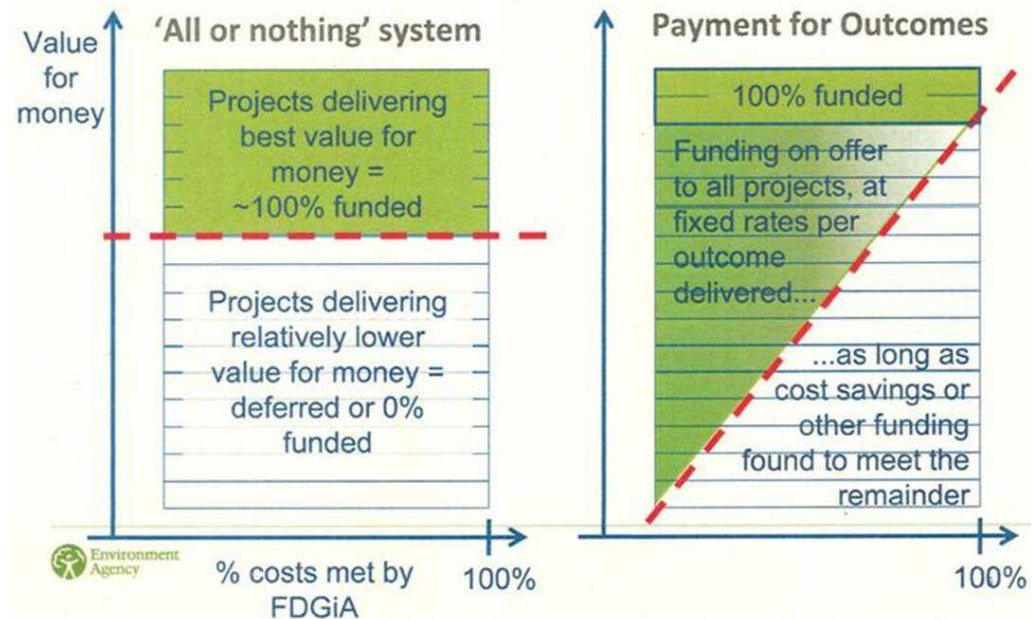
Project name	Lead RMA	Project expenditure (£)			Total Project Expenditure (£) 19/20 - 20/21 total	Outcome Measures (OM3 - 2019/20)	Outcome Measures (OM3 - 2020/21)
		GiA funding - 2019/20	GiA funding - 2020/21	Local Levy funding - 2019/20			
Chatham Waterfront	Medway	25,000	0	0	25,000	0	0
Hythe to Folkestone Beach Management 2020 - 2025	Shepway District Council	0	252,000	0	252,000	0	438
Hythe to Folkestone Beach Management 2015 - 2020	Shepway District Council	250,000	0	0	250,000	438	0
Hythe to Folkestone Beach Recharge	Shepway District Council	30,000	5,005,000	0	5,035,000	0	2,190



➔ Capital programme £5.78M (2019-21)

Funding for capital schemes

- Partnership funding (pf) model
- Funding allocated based on the costs of the scheme and benefits delivered (number of properties protected)
- Under this model not all schemes attract 100% capital funding
- We seek external contributions to make up any funding shortfall



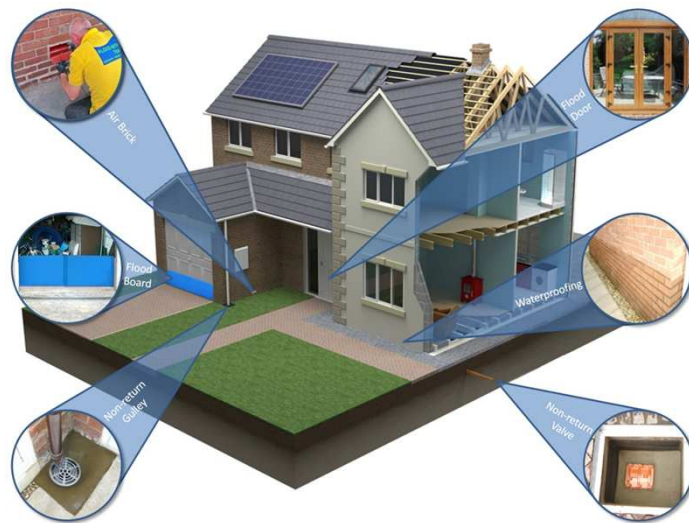
Previous funding allocation process (left) and partnership funding model (right)

Forward look – Next 6 year capital programme 2021 and beyond

- ➔ We have developed a robust pipeline of future projects
- ➔ The next generation projects are likely to be those with lower benefits and larger pf gaps to fill
- ➔ We will continue to work closely with our partners to align our programmes via groups such as the Kent County Flood Partnership (EA, KCC and SW)

Forward Look – Future schemes

- ➔ Some schemes are unfunded in the next two years
 - ➔ Great Stour Flood Alleviation Scheme ~ 300 properties at risk Canterbury and the middle Stour
 - ➔ East Peckham Flood Alleviation Scheme ~192 properties at risk, project has a pf score of 33% with £1.7M required in contributions to progress scheme



➤ Nailbourne Schemes

➤ Awaiting completion of Nailbourne options appraisal



Forward look – capital programme 2021 and beyond

- Rother Tidal Walls East and West
- River Stour FAS
- Tillingham and Scots Float Sluice Refurbishment
- Romney Marshes Pumping station refurbishment
- Medway Estuary and Swale schemes
- Capital Maintenance to EA and LA defences
- Lydd Sea defence project
- Five Oak Green

Shoreline Management Plans (SMPs) refresh

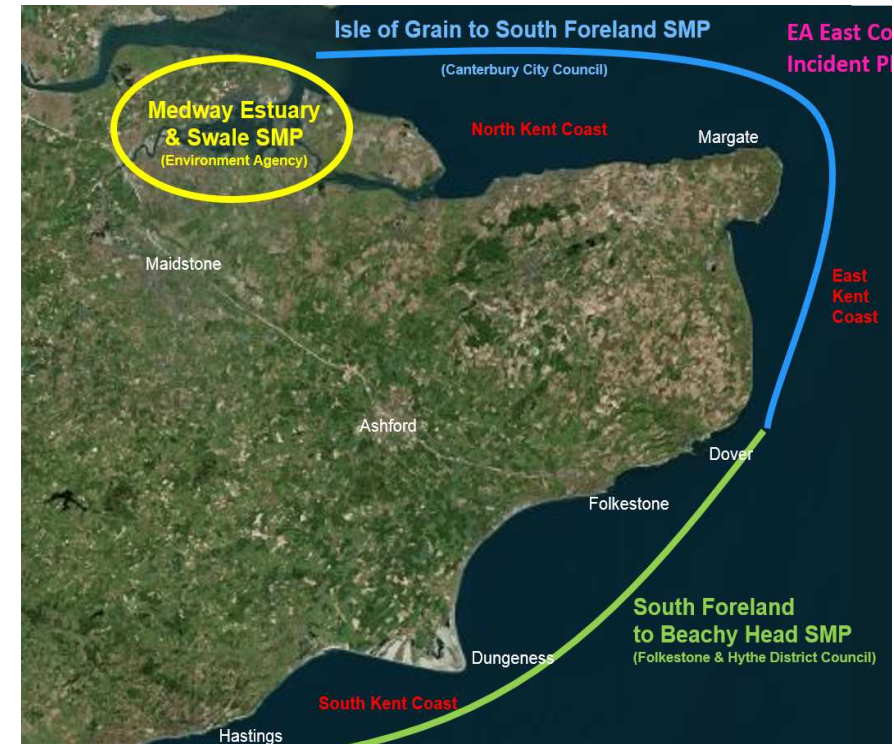
➔ SMPs set the strategy for coastal management over the next 100 years

➔ Management approaches:

- ➔ Hold the line
- ➔ No active intervention
- ➔ Manage Realignment
- ➔ Advance the line

➔ Delivered via strategies and individual schemes

➔ SMP refresh currently underway



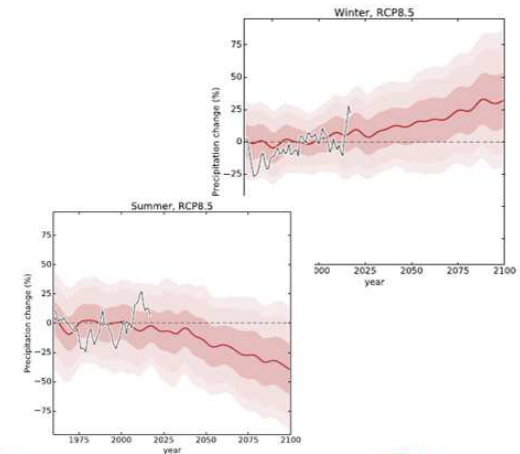
SMPs covering the Kent coastline

Accounting for climate change

➔ UKCP climate change projections

➔ We are incorporating the updated predictions into our plans, strategies, schemes and flood risk models

- Winter precipitation is expected to increase significantly
- Summer rainfall is expected to decrease significantly
- But when it rains in summer there may be more intense storms



➔ Funding gap could increase if **Future precipitation** scheme costs increase to account for climate change

➔ Future proofing and adaptation will be key

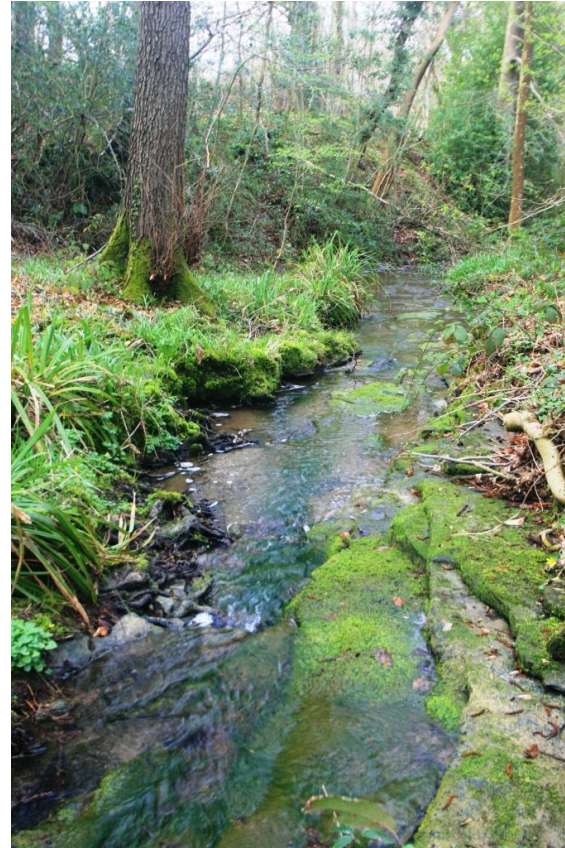
Questions ?

This page is intentionally left blank

Natural Flood Management: Medway

Medway NFM

Page 17



For more information or updates:
Tom Cook – Biodiversity Technical Specialist
Kent, South London & East Sussex Area



Part of the
Medway Flood Partnership



Presentation contents

- Defra Catchment Scale NFM Pilot Projects
- Our Partnership
- Demonstration sites
- School Stream, upstream of Headcorn
- Alder Stream, upstream of Five Oak Green
- Outputs
- Legacy

Page 18

Medway NFM



Leaky wood structure Alder Stream



Defra Catchment Scale NFM Pilots

Medway NFM

- November 2016 – Secretary of State for Defra announces that £15 Million will be made available to deliver and test Natural Flood Management measures
- Medway NFM offered £300K
- Strong emphasis on contributing to the evidence base, reducing flood risk to properties, drawing in other funding, community engagement and the delivery of multiple benefits – all to help inform future spending.



Our Partnership

- Part of the Medway Flood Partnership
- South East Rivers Trust

Leading & Co-ordinating delivery of NFM

- Match funding from FRAMES (EU funding)

& additional funding from Maidstone Borough Council

& In-Kind support from other partners

- EA providing most of the funding and will report on:

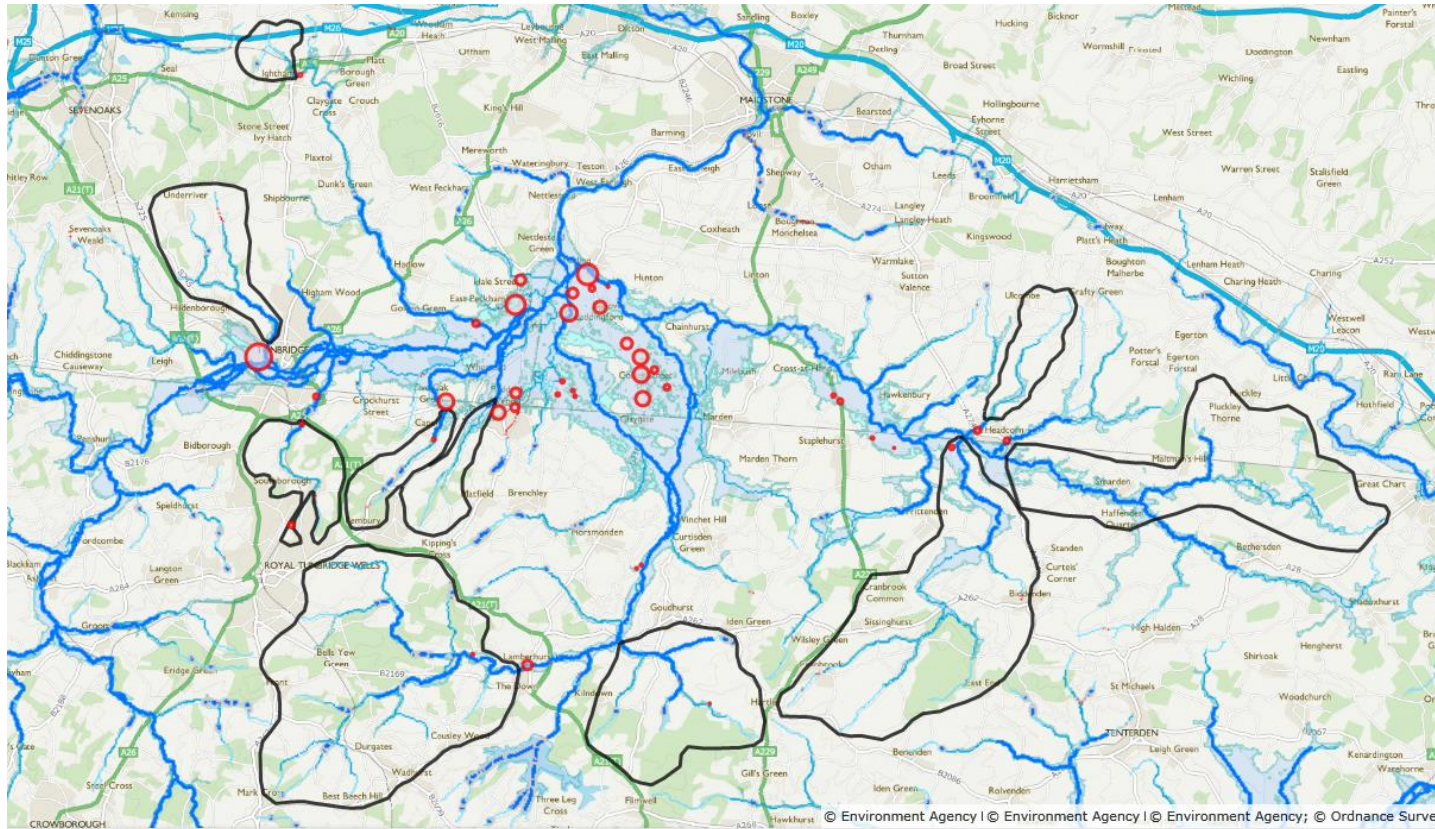
Property benefits, biodiversity and landscape character improvements,

Monitoring and evidence data, Capture the learning for future NFM

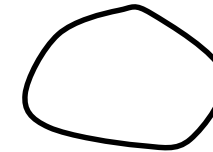


Prioritising Delivery

Medway NFM



Priority waterbodies
to investigate



Property clusters at risk



Location of priority areas chosen to initially investigate NFM opportunities

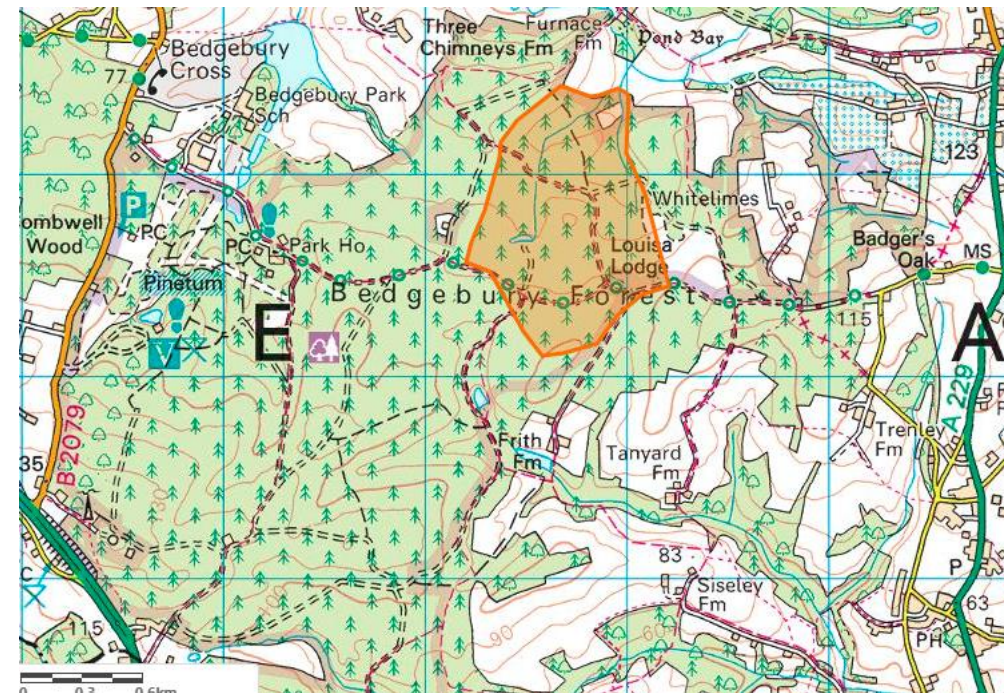
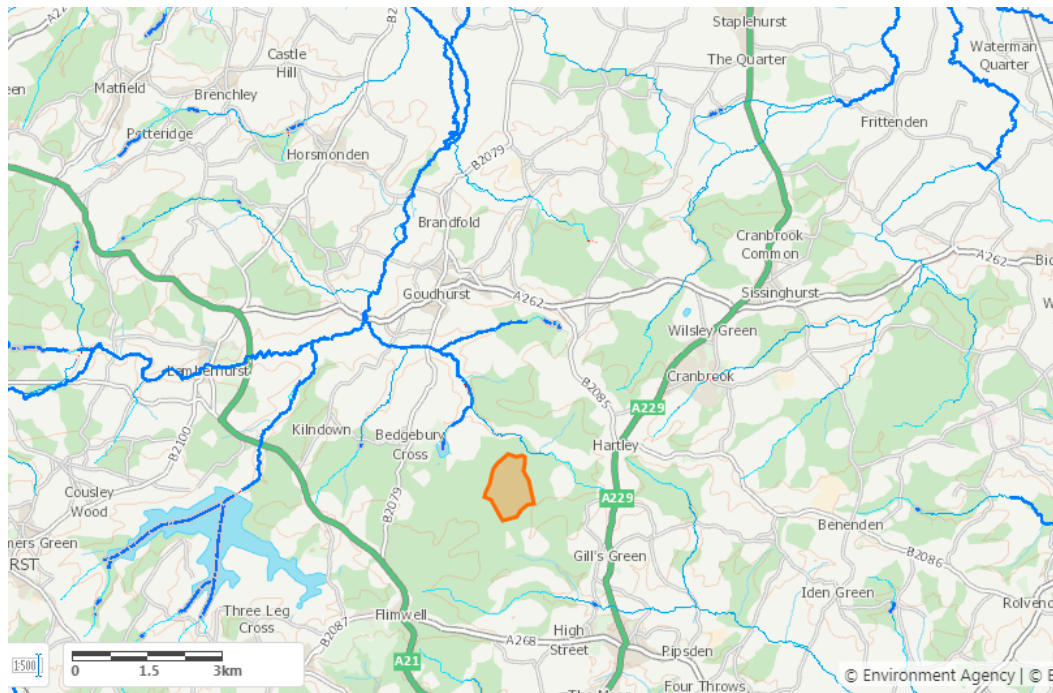


Bedgebury Forest

Forestry Commission

Medway NFM

Page 22



Bedgebury Forest Project location



Part of the
Medway Flood Partnership



Bedgebury Forest

Forestry Commission

Medway
NFM

Page 23



Leaky dam in action



Flooded woodland clearing



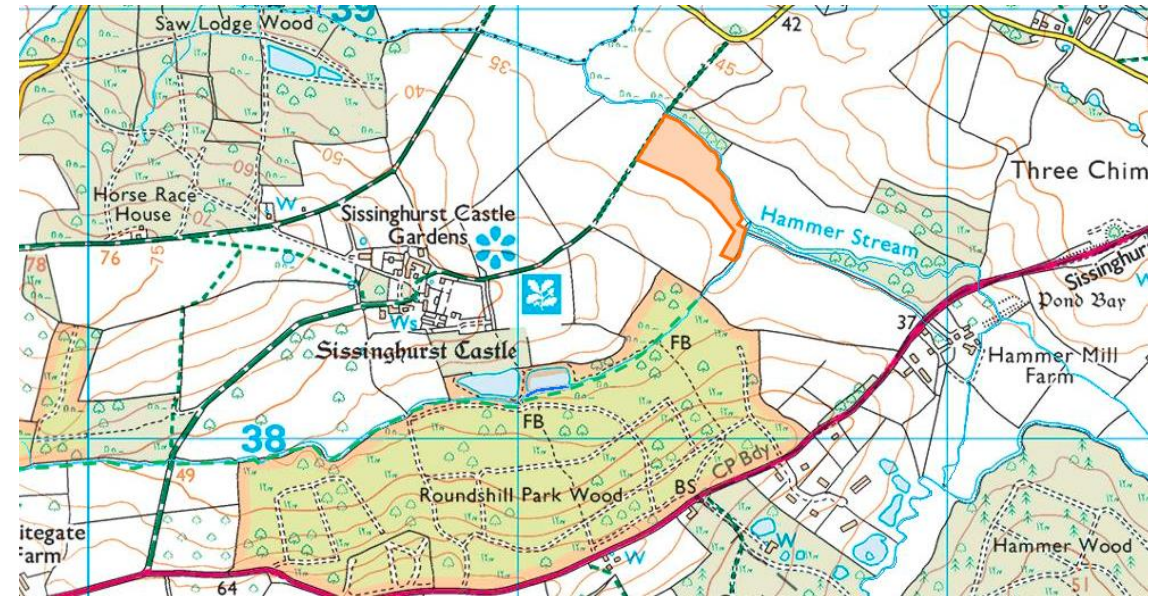
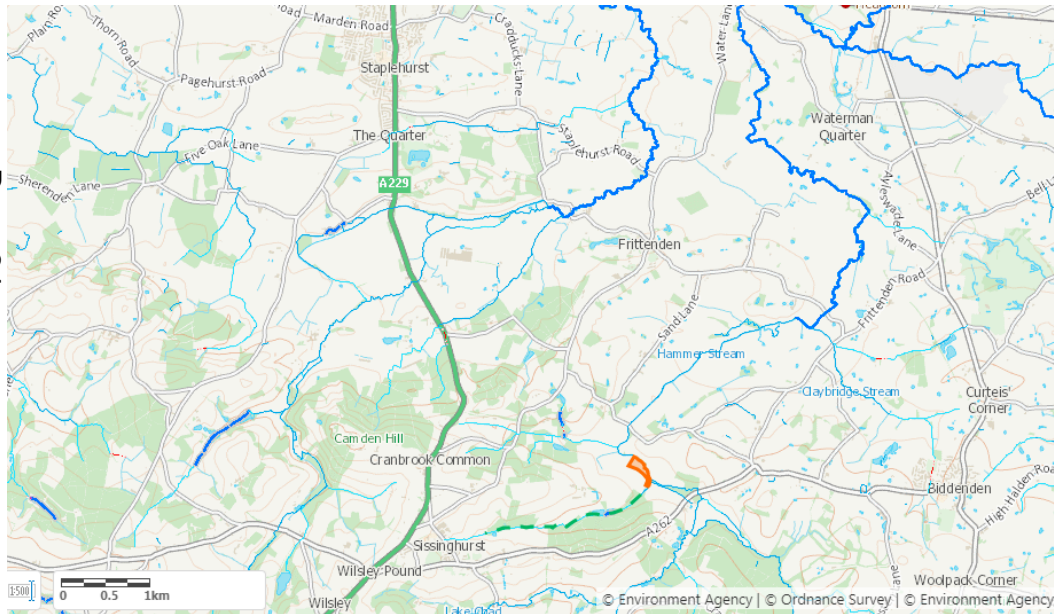
Part of the
Medway Flood Partnership



Sissinghurst Castle National Trust

Medway NFM

Page 24



Sissinghurst Castle Project location



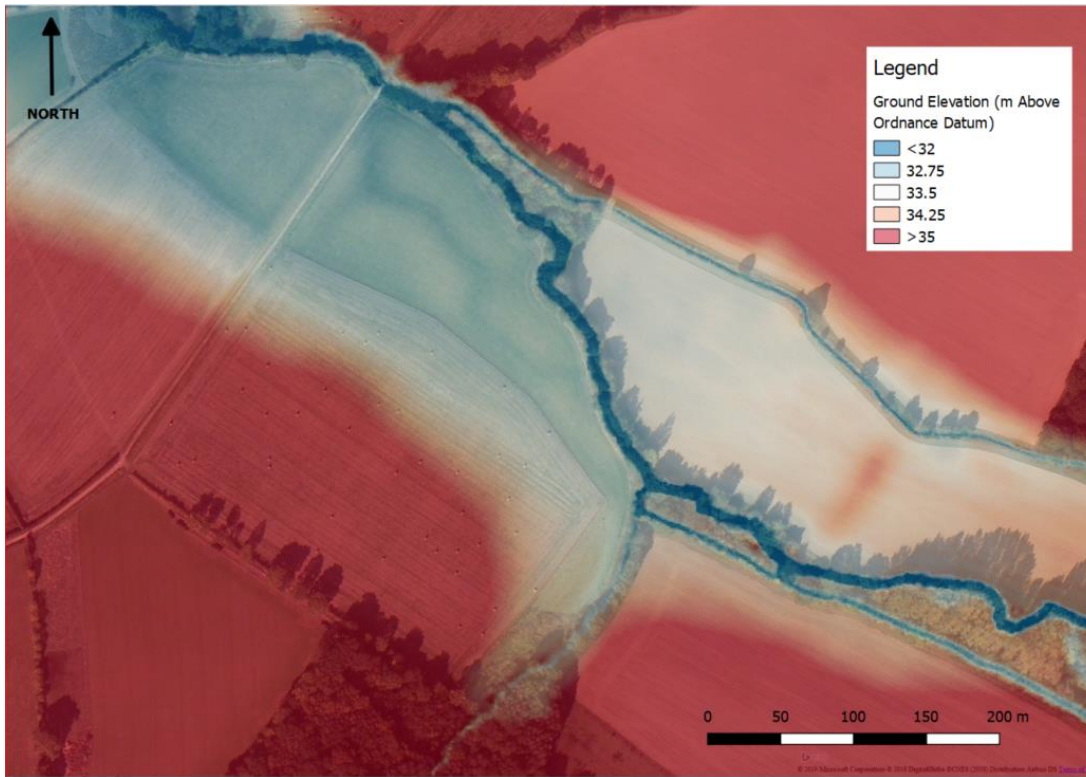
Part of the
Medway Flood Partnership



Sissinghurst Castle National Trust

Medway NFM

Page 25



Lidar pre-project delivery

Hammer Stream – approx. 3m below floodplain



Part of the
Medway Flood Partnership

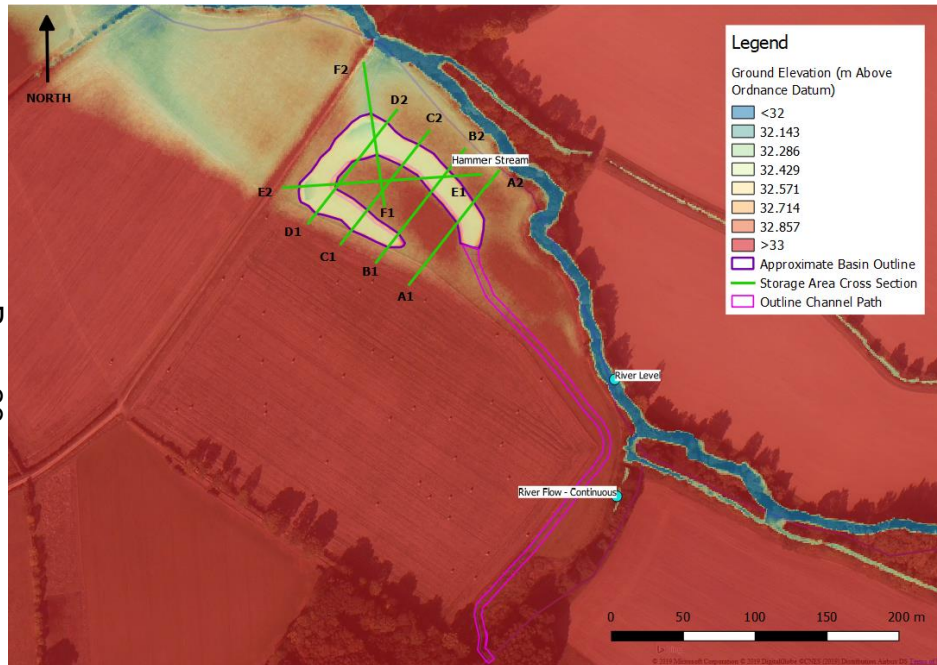


Sissinghurst Castle

National Trust

Medway NFM

Page 26



Outline project design

Storage at Sissinghurst



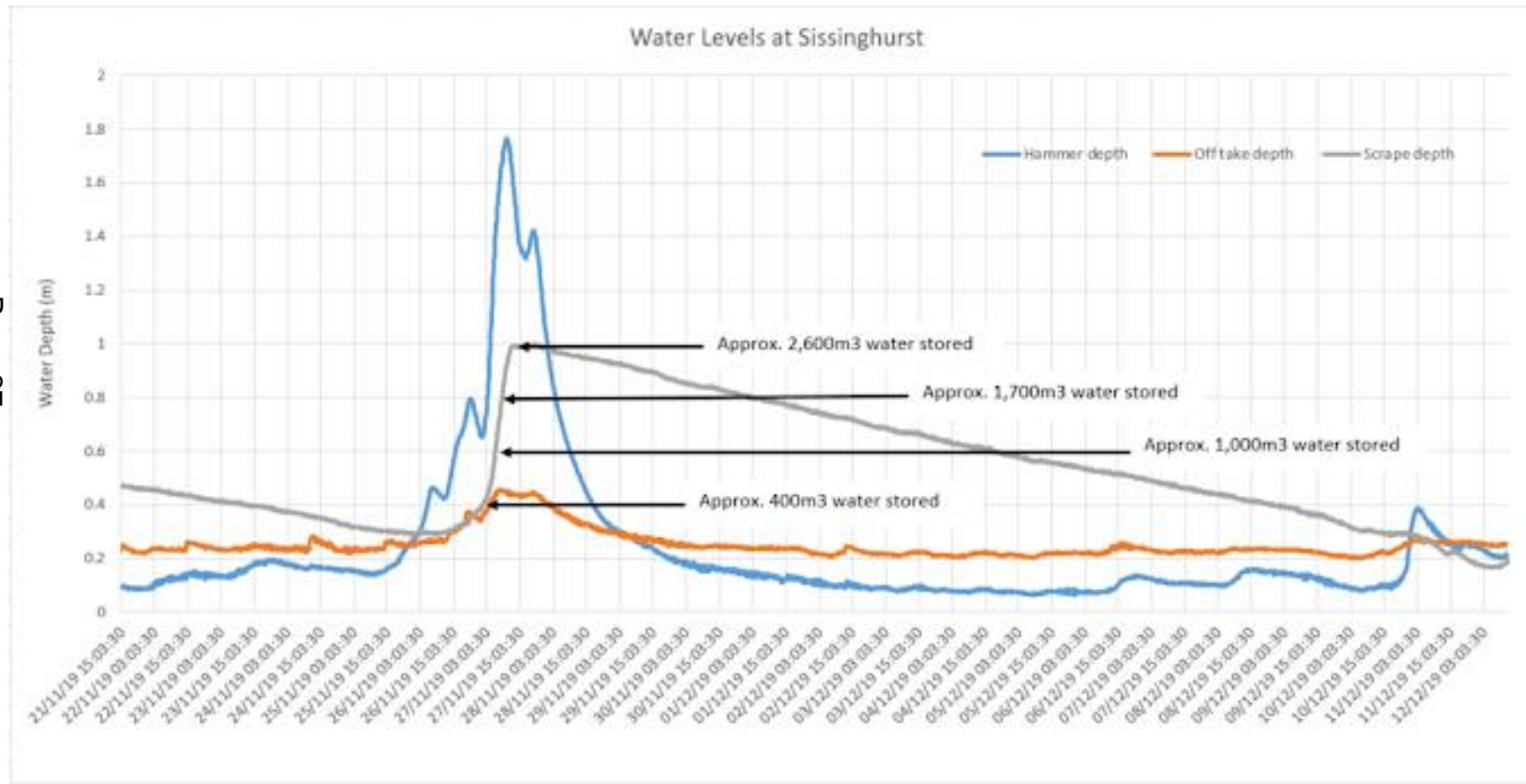
Part of the
Medway Flood Partnership



Sissinghurst Castle National Trust

Medway NFM

Page 27

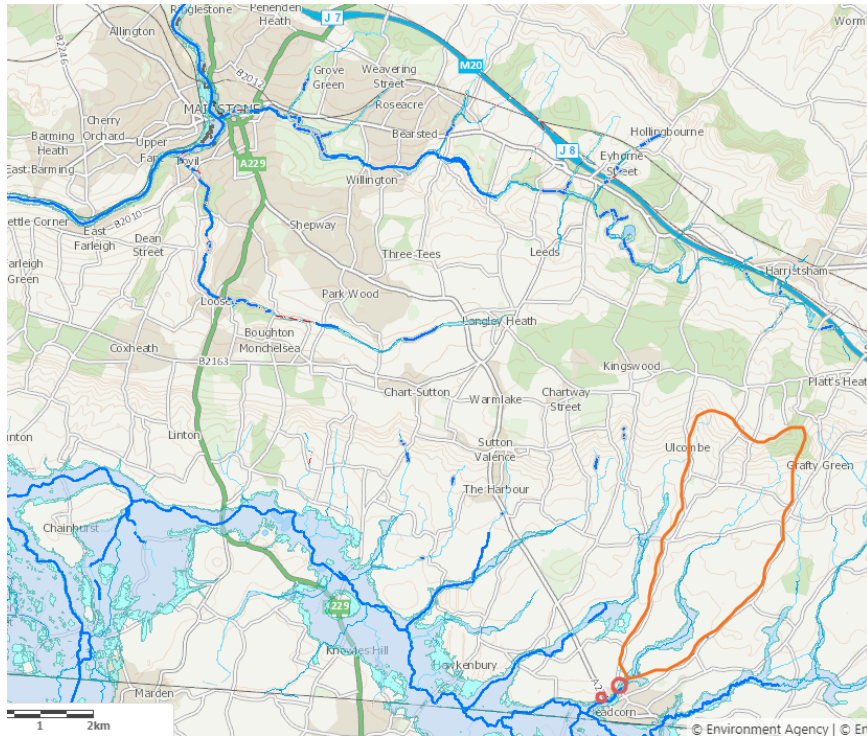


Hydrograph showing storage and emptying of the scheme (grey) as part of the testing on performance versus peak flows on the Hammer Stream (blue)



School Stream, Headcorn

Medway NFM



School Stream Project Area



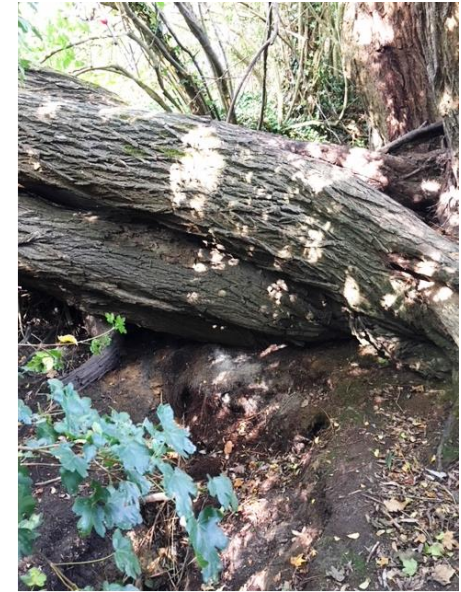
Part of the
Medway Flood Partnership



School Stream, Headcorn

Medway
NFM

Page 29



April 2019

Typical School Stream appearance

Existing NFM!



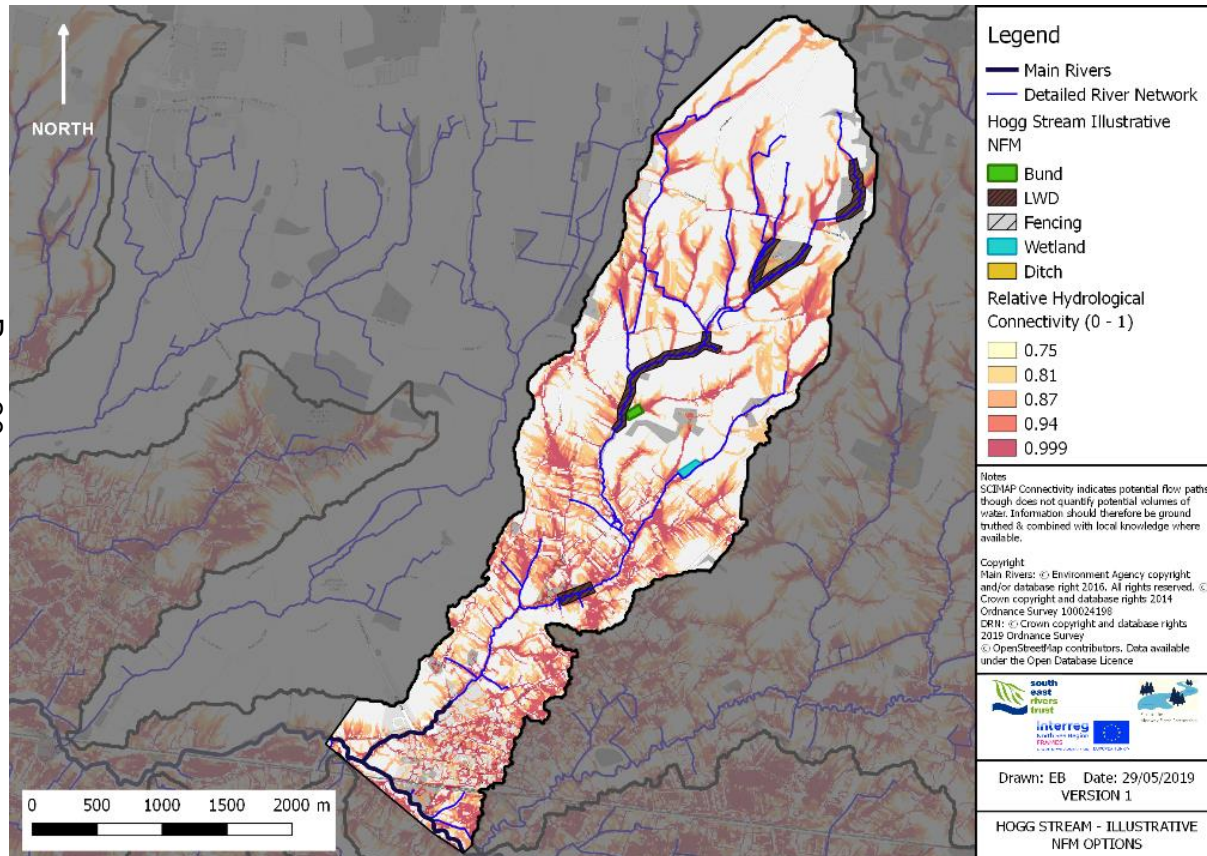
Part of the
Medway Flood Partnership



School Stream, Headcorn

Medway NFM

Page 30



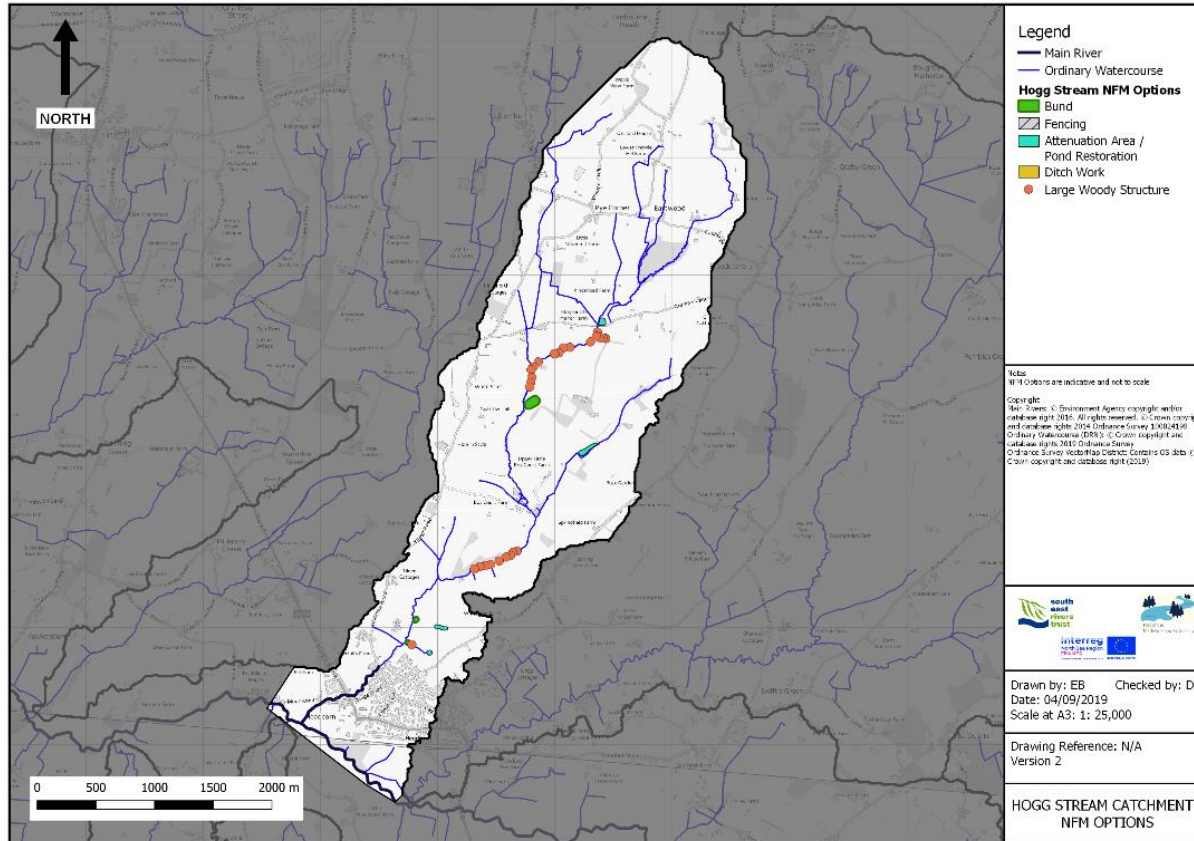
Scimapping – flow paths on the stream catchment as defined by mapping tools



School Stream, Headcorn

Medway NFM

Page 31



Proposals currently under construction demonstrating that there is a lot more that could be carried out in this catchment with future funding and successful engagement/ Environmental Land Management scheme.



School Stream, Headcorn

Medway NFM

Page 32



Kingsnoad Farm offline pond storage:

Old Pond area before construction- former pond had virtually gone.



School Stream, Headcorn

Medway NFM

Page 33



Kingsnoad Farm offline pond storage:

Pond area after construction filling up during Storm Dennis.

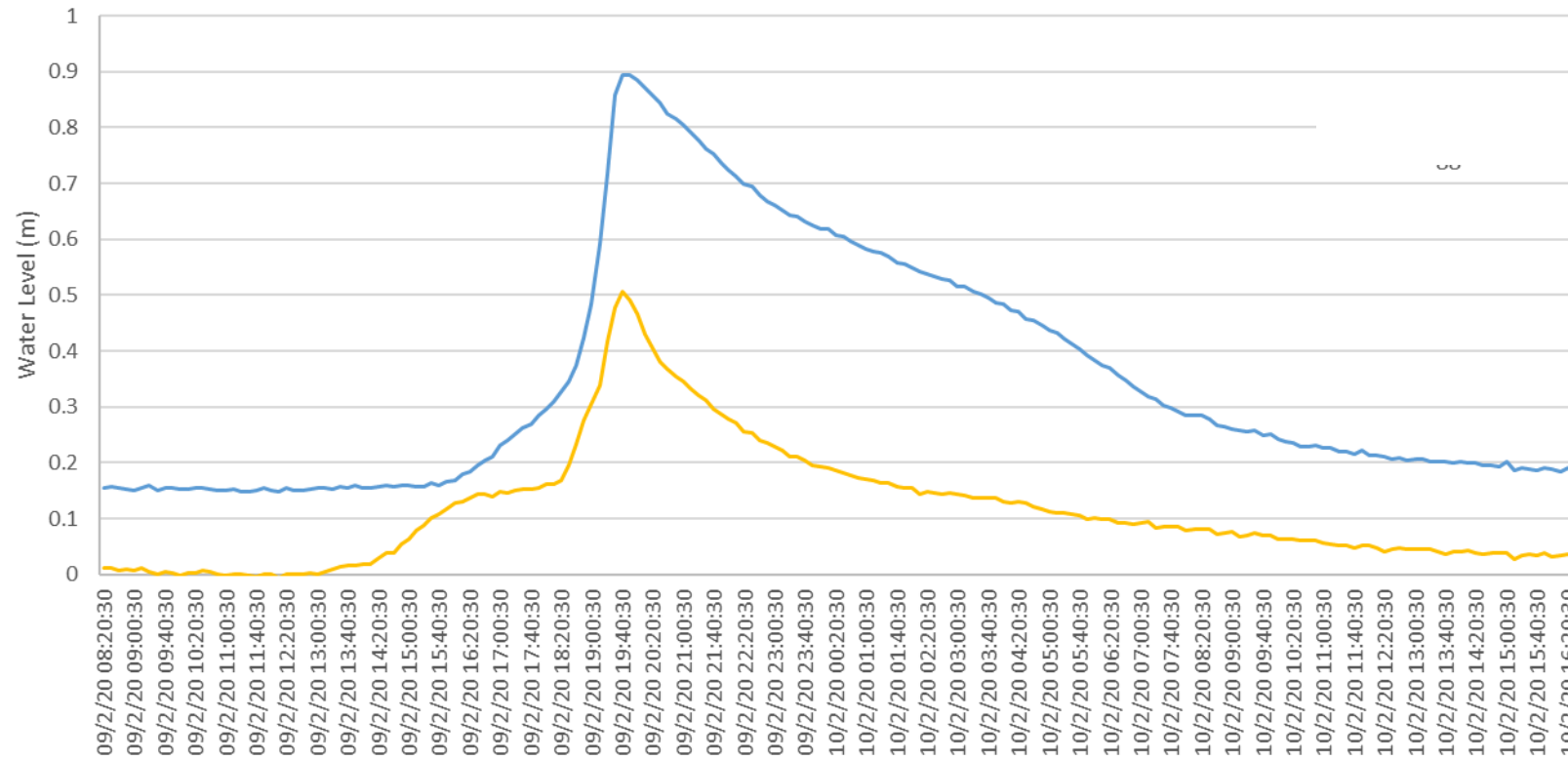
Showing the outfall pipe that drains the feature.



School Stream, Headcorn

Medway NFM

Water Levels at Kingsnoad - February 9th/10th Storm



Kingsnoad Farm offline pond storage:

Level loggers demonstrating rise and fall in the stream and the pond.

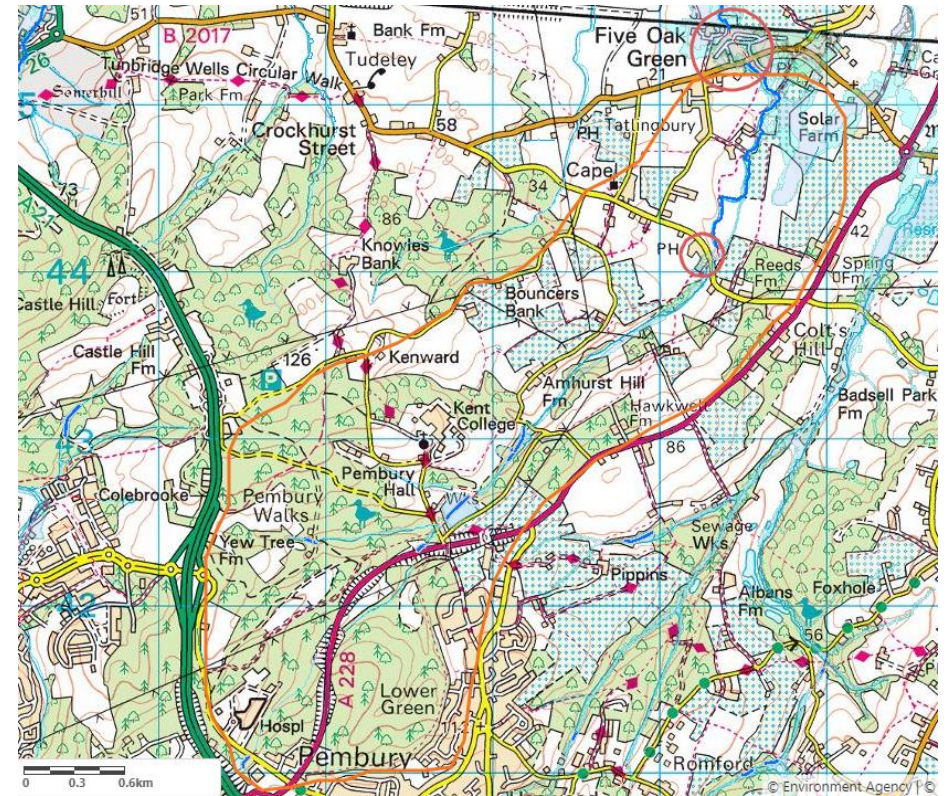
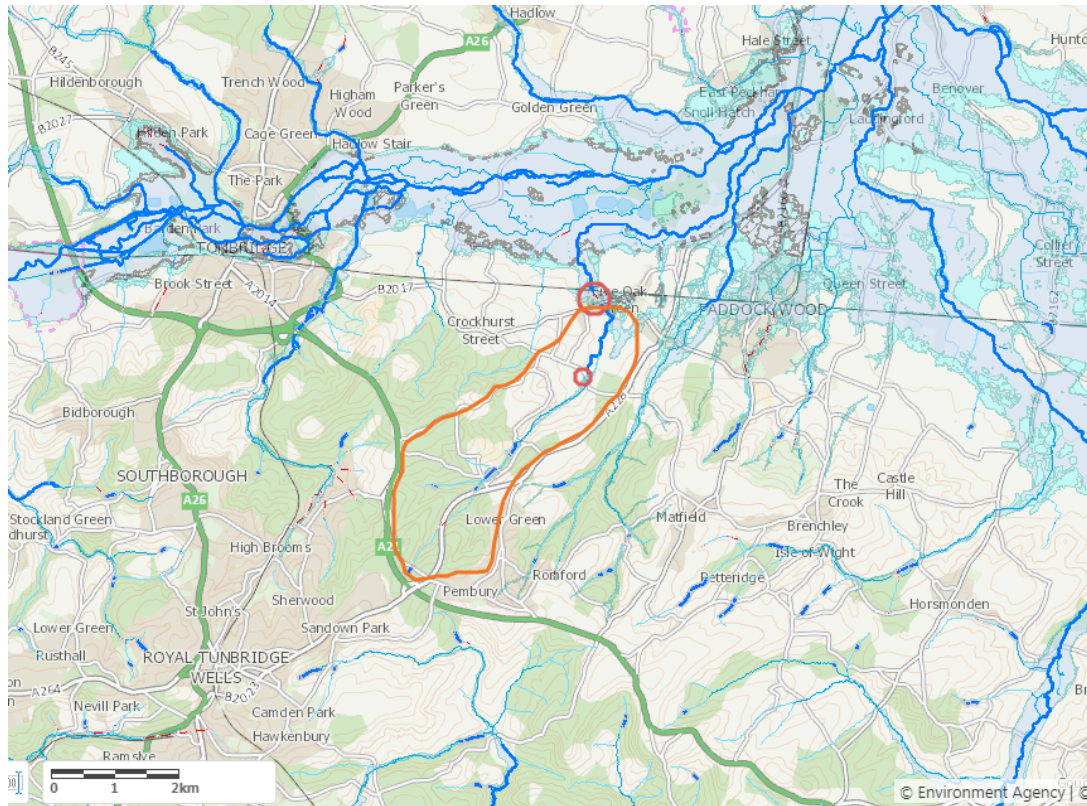
Blue: pond filling
Orange: levels in the stream



Alder Stream

Medway NFM

Page 35



Alder Stream Project Area



Part of the
Medway Flood Partnership

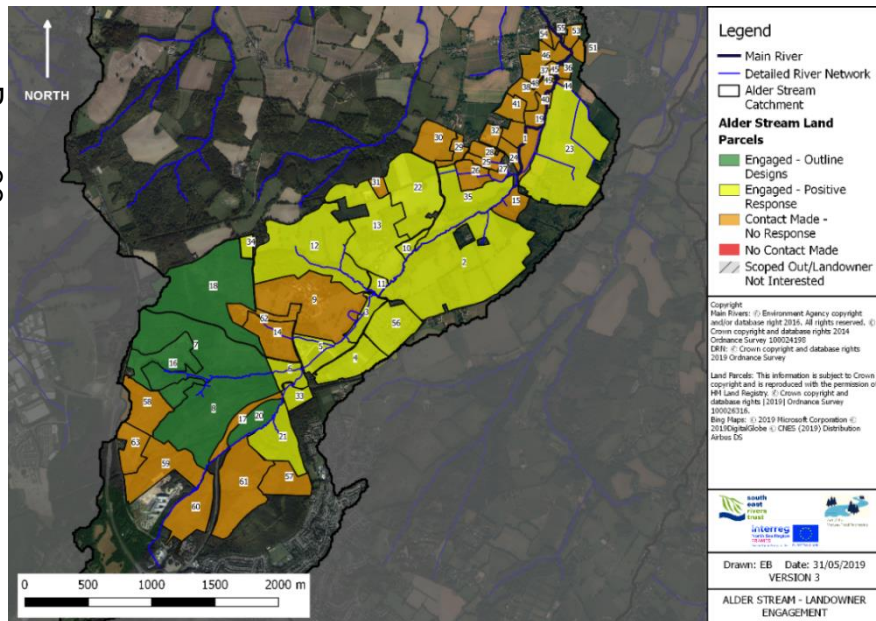


Alder Stream

Medway NFM

➔ All landowners engaged with including Hadlow Estate & South East Water

Page 36



Engagement mapping

Green Hadlow Estates, Project mostly complete.

Positive engagement and project soon to be delivered in Yellow areas

Assessing the Risk



Assessing the Potential Hazards of using Leaky Woody Structures for Natural Flood Management



Part of the Medway Flood Partnership



Alder Stream

Medway
NFM

➔ Tudeley Woods RSPB reserve/Hadlow Estate

Page 37



Alder Stream

Medway
NFM

➔ Tudeley Woods RSPB reserve/Hadlow Estate

Page 38



Part of the
Medway Flood Partnership



Alder Stream

➔ South East Water land

Medway NFM

Page 39



Alder Stream

Medway NFM

Page 40



Reeds Farm

Left
spring/run off flow path where
measures will be installed to slow
water & restore the understorey.

Right
Alder Stream showing where the
ancient woodland has been cattle
grazed, denuding vegetation and
poaching the ground.



Outputs

- Broad range of land managers interacted with and two key demonstration sites that are easily accessible for education/engagement.
- SERT will promote the project further this summer as construction finishes, via workshops and other communication tools.
- Data will include all flow/level data gathered and locations of all structure, watercourse length altered, and habitat areas improved to determine all the multiple benefits of the project.
- End of July draft report will be complete; formal monitoring ends March 2021.



Legacy

Medway NFM

- Working with range of partners including Natural England, Forestry Commission, National Trust and RSPB is successfully influencing land management beyond the current geographic area, and will do after 2021.
- The learning from the Defra pilot projects, and local knowledge must be used to help inform targeting for future land management grants.
- There is a large opportunity for authorities to strengthen working together on water management to deliver multiple benefits close to our communities including, more drought & flood resilient farming, carbon offsetting/ Biodiversity Net Gain through habitat creation, landscape and recreational benefits.



Any questions?

Medway NFM

Page 43



Frogmead meadow
Sissinghurst

An artist's impression



Part of the
Medway Flood Partnership

This page is intentionally left blank



Natural Flood Management Natural England Policy Paper

January 2019

Page 45

www.gov.uk/natural-england

NFM: securing environmental outcomes

- **Background to NFM**
- **How NFM links to NE's priorities**
- **How can we ensure NFM delivers for the natural environment?**

A range of perspectives

NATURAL
ENGLAND



Protecting and restoring
natural processes

Emulating and managing natural
processes



What does NE want?



Natural England is interested in NFM that is:

- **Holistic**
- **Sustainable**
- **Integrated**
- **Based on the principles of natural function**
- **and delivers for the natural environment**
- **NOT just using nature as engineering material**



Start with natural function...

NATURAL
ENGLAND

Good projects 😊

Clear objectives and expectations

Recognise and articulate compromises

Spot opportunities (risks) for environment

Mitigate sustainably + build natural capital

Flooding + role in natural (modified) systems

Natural ecological function + catchment processes

The evidence for NFM



Evidence: Working with Natural Processes

- **NFM is effective for flooding at moderate scales**
- **NFM can deliver other benefits**
- **More research is needed**

How should we use NFM?



NFM is part of the solution

- **NFM won't solve flooding alone**
- **NFM can plug the FCERM viability gap**
- **Quality NFM is worth doing anyway!**
- **(as long as you don't make flooding worse)**
- **(and depending whose funding you're spending)**
- **Greater risk requires greater certainty**
- **We should look at benefits in the round**

NFM is widely applicable



NFM is relevant...

- **At large and small scales**
- **From source to sea**
- **From rural to urban (NFM = SuDS!)**

Think laterally

NATURAL
ENGLAND

Think spatially and laterally about NFM...

- NFM doesn't always go where the problems show
- NFM isn't a competing land use – it's not (necessarily) NFM **OR** something else
- NFM doesn't have to be good for flood risk **OR** the environment – it's a layer cake, not a pie!





Leaky woody dam

**More ecologically
functional = less
flood risk benefit?**

**River morphology
Floodplain topology
Wet woodland**



River Seven, Pickering Slow the Flow

Promoting good NFM delivery



Through our land management work, we can:

- **Push for quality NFM**
- **Show how conservation management can reduce flooding**
- **Show how FCERM projects can do more for the environment**
- **Promote landscape-scale delivery (C21)**

Promoting good NFM delivery



Through our land use planning work, we can:

- **Push for sustainable planning decisions**
- **Promote a green infrastructure approach**
- **Use Net Gain as a tool to build in NFM**

What next for NFM in NE



Next steps

- **Tell government that quality NFM is important**
- **Push for NFM principles in new FCERM strategy**
- **Shape approach to NFM in ELMS**
- **Support local teams with NFM toolkit**
- **Add flooding to CSF advice remit** ✓
- **More evidence on effectiveness and value of NFM**