



Innovation in managing flood risk and urban rivers

**DEFRA Policy Challenge –  
Retrofitting drainage and water  
management arrangements in urban  
areas**



Department  
for Environment  
Food & Rural Affairs



**METIS**

## Revision History

Version	Date	Description	Prepared	Approved	Project Manager
0.1	December 2022	First draft (for project team review)	Natalie Seeger	Mike Mair	Dani Parfitt
0.2	January 2023	Second draft (for Recommendations workshop)	Natalie Seeger	Mike Mair	Dani Parfitt
0.3	April 2023	Third draft (for final project team review)	Natalie Seeger	Mike Mair	Dani Parfitt
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*“Rainwater should be seen as a resource and not a nuisance”*

## Foreword and Acknowledgements

We welcome this opportunity to provide our thoughts directly to DEFRA through this Policy Challenge programme – an opportunity from those working operationally on the front line of flood and water management, those who must manage the day-to-day workload, write reports, deliver policy and strategy, and deliver projects and maintenance services.

Flood and water management must protect both people and the environment with an approach that considers both parties. It must be acknowledged that whilst people and their property must be protected, this must work in tandem with improving the status of the natural environment to allow for a sustainable approach. There are current concerns for the health of the environment in urban areas due to increased pollution and continuing urbanisation. The implementation of Sustainable Drainage Systems and nature-based solutions improve flood risk, but also deliver on improving the status of the environment, for example by improving water quality and making space for water. Water is one of our most important resources; it is essential to life and needs to be treated as such. **We ask you to consider whether it is treated as a vital resource?**

There have been significant changes within local and central Government over the past few years, with new pressures such as housing targets, a cost-of-living crisis, and economic change. There is a pressure to build new infrastructure to keep up with rising demand, and to increase GDP growth, and whilst this is recognised, it should also be acknowledged that the increased urbanisation of the UK is increasing the risk of flooding and impacting the environment. Combined with the impacts of climate change, there is a greater need to recognise flooding and water conservation as a key issue facing the country, and one that needs to be addressed through **the implementation of good legislation, policies, strategies, and plans** which can help to manage this risk. They should be made with the end user in mind, by allowing those users to influence how legislation and policy will directly affect them, so that these can be written in a way that allows them to successfully deliver their subsequent roles and responsibilities within flood and water management.

Whilst undertaking this piece of work, proposals for significant legislation changes have been announced (the intention of enacting Sustainable Drainage System Approving Bodies in 2024) and other industry-related papers have been released (the Government's new [Plan for Water](#), the National Infrastructure Commission's [Surface Water Flooding review](#) and the Chartered Institution of Water and Environmental Management's [Surface Water Management: A review of the opportunities and challenges](#) paper). Commentary within this report should be noted as being valid at the point of the interviews (October 2022).

We would like to acknowledge the involvement of the project team for their input into the production of this paper which included Michael Bradshaw (London Borough of Harrow), Ruchi Sayal (London Borough of Barnet), Cherie Lumby (Lumby Consultancy), Danielle Parfitt, Emma Rowlands, Michael Mair, Natalie Seeger, Thomas Whitworth and Valentina Aleotti (all Metis Consultants). Peer reviews have also kindly been completed by Alastair Chisholm (Chartered Institution of Water and Environmental Management), Jo Bradley (Stormwater Shepherds) and Michael Arthur (Metis Consultants NZ).

Additionally, we extend our thanks to those interviewed from the following organisations: Cardiff City Council, Chartered Institution of Water and Environmental Management, Crane Valley Partnership, Durham County Council, Environment Agency, Future Nature Consulting, London Borough of Croydon, London Borough of Harrow, London Resilience Forum, Thames Regional Flood and Coastal Committee, Thames Water Utilities Limited, and Transport for London.

## Executive Summary

This report has been written in response to DEFRA's request to the London Boroughs of Barnet and Harrow to produce a Policy Challenge Paper, with a specific focus area of 'retrofitting drainage and water management arrangements in urban areas'. It is in parallel with the Action for Silk Stream (AfSS) project, one of 25 projects within the Government's [Flood and Coastal Resilience Innovation Programme](#). This paper highlights where policy and legislative change is needed across the water management industry, by identifying the challenges experienced **by those on the front line** delivering the actions in the plans and strategies in the current legislation and policy framework.

The report highlights the importance of water as a resource throughout the paper. The main purpose of the flood and water management industry is to protect people and property from flooding, but these activities should not be at the **expense of the natural environment**.

This can be exceptionally challenging in an urban context and should not be forgotten in the process of delivering on the responsibilities required. The combined result of all the legislation and policies should provide those key players within the industry with the tools to enable the protection of the environment. However, this needs to be improved, and this report identifies where these changes are needed and why.

This project has used a combination of desktop research and active engagement to better highlight challenges to implementing flood and water management. 13 specific acts of legislation were reviewed (chosen due to their relevance to the water sector), their most important objectives were identified, and significant points were discussed (*Section 2*). It identified some of the challenges that exist due to the specifics of the wording within the acts, and how it is difficult to define the roles and responsibilities which exist, and who these should fall to.

A workshop was held in February 2022 with 27 people within the industry to discuss the issues, barriers and priorities which currently exist in the flood and water management sector. Additionally, 12 sets of people within the flood and water management industry were interviewed between September and October 2022 and asked a set of questions pertaining to their roles, what works within their roles, and what challenges they face within the industry. Some of the topics discussed included the importance of clearly defining roles and responsibilities, the difficulties with resourcing, the impacts of deregulation, and the challenges surrounding the laws on permitted development. Many of the interviewees identified the importance of implementing smaller scale source control Sustainable Drainage Systems features to manage surface water flood risk and **viewing water as important a resource as the air we breathe**, both of which are taken for granted. A summary of each interview can be found in *Section 3*.

Following the review of the acts and the interviews, the overarching emerging themes were identified and discussed (*Section 4*). These were:

- **Legislation, policy, strategies, and plans**
- **Competing public and private sector priorities**
- **Regulation and accountability**
- **Roles, responsibilities, and enforcement**
- **Resourcing and competence**
- **Partnership working**

- **Behavioural change and education**
- **Funding, monitoring, evaluation, and protection of investment**

The themes bring together the topics and points discussed from the review of the acts, the interviews, and subsequent discussions within the project team. They highlight the issues identified with links to relevant acts, case studies mentioned in the interviews, and include figures which further explain the nature of these challenges.

The recommendations that have been written, based on the key theme discussions, are summarised below. Specific sub-recommendations have been assigned to each recommendation and are included in *Section 0*. *Section 0* proposes where some of the sub-recommendations could be implemented into the AfSS project to demonstrate how they could be taken forward.

- **Recommendation 1:** Redefine legislation and policy to enable the protection of and **making space for water**.
- **Recommendation 2:** Use development to proactively manage surface water, approved by the SAB, **so that betterment is provided as the norm**, rather than 'not making it worse'.
- **Recommendation 3:** Deliver an integrated water management approach (not flood risk management), based on hydrological catchments, and **stop referring to rainwater as wastewater** in water bills.
- **Recommendation 4:** Make 'making space for water' a fundamental collaborative flood risk opportunity (SAB) requirement for the delivery of all public and private sector works through **partnership working**.
- **Recommendation 5:** Invest and build community ownership using green financing and Biodiversity Net Gain for water management to **change behaviours** and set the foundations for a sustainable future.
- **Recommendation 6:** Implement and improve training to **address the skills gap** and ensure sustainable levels of resourcing within the water industry.
- **Recommendation 7:** Develop a programme for **research and development for the water management industry** that is monitored and evaluated by water management professionals.

This paper concludes that legislation, policy, strategies, plans and modernising funding processes must be updated in line with the current climate situation to allow for the effective and sustainable management of water. **Conservation and the quality of and making space for water needs to be the key message** that is taken forward when improving the status of flood risk, both within an urbanised context, and across England and Wales. Although the focus of the paper has been on retrofitting drainage and water management arrangements in urban areas, it aims to go further to identify how water is managed across England and Wales. By improving the key pieces of policy and legislation, it will enable those on the front line to implement sustainable change and deliver their core responsibilities on improving the status of water management.

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## Acronyms and Abbreviations

Abbreviation	Definition
AfSS	Action for Silk Stream
Barnet	London Borough of Barnet
BC	Building Control
BRF	Borough Resilience Forum
CCC	Committee on Climate Change
CIC	Construction Industry Council
CIL	Community Infrastructure Levy
CIWEM	Chartered Institution of Water and Environmental Management
CVCIC	Crane Valley Community Interest Company
CVP	Crane Valley Partnership
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EU	European Union
FAS	Flood Alleviation Scheme
FCERM	Flood and Coastal Erosion Risk Management
FCRIP	Flood and Coastal Resilience Innovation Programme
FRR	Flood Risk Regulations
FWMA	Flood and Water Management Act
GiA	Grant in Aid
Harrow	London Borough of Harrow
IDB	Internal Drainage Board
LA	Local Authority
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
LRF	London Resilience Forum
MAFP	Multi Agency Flood Plan
MoL	Mayor of London
NFM	Natural Flood Management
NHBC	National House Building Council
NPPF	National Planning Policy Framework
OBC	Outline Business Case
PFC	Partnership Funding Calculator
PFR	Property Flood Resilience
PPG	Planning Practice Guidance
RBD	River Basin District
RFCC	Regional Flood and Coastal Committee
RMA	Risk Management Authority
SAB	SuDS Approving Body
SuDS	Sustainable Drainage Systems
SWC	Smarter Water Catchment
TfL	Transport for London
TWUL	Thames Water Utilities Limited
WaSC	Water and Sewerage Company

# 1. Introduction

## 1.1 Background

In 2021, 25 areas across England were awarded a total of £150 million of funding by the Department for Environment, Food and Rural Affairs (DEFRA) to develop innovative solutions to flood and coastal resilience in their communities as part of the new [Flood and Coastal Resilience Innovation Programme \(FCRIP\)](#), allocated from the [Flood and Coastal Resilience Innovation Fund](#). The Programme is running for six years and is managed by the Environment Agency (EA). It fulfils a key commitment of the [Government's policy statement on flood and coastal erosion risk management](#) and the EA's [National Flood & Coastal Erosion Risk Management \(FCERM\) Strategy](#) to develop and test new approaches to tackle the threat of flooding and coastal change.

The Programme is funding 25 projects to demonstrate how innovative, practical actions can improve resilience to flooding and coastal erosion. This project, the Action for Silk Stream (AfSS) (formerly known as the Silk Stream Flood Resilience and Innovation project) managed by the London Borough of Barnet (Barnet) in partnership with the London Borough of Harrow (Harrow), is one of them. The project is led by Barnet and Harrow's Lead Local Flood Authority (LLFA) teams.

As part of the AfSS project, DEFRA has requested the project team to produce a Policy Challenge Paper, with a specific focus area of '*retrofitting drainage and water management arrangements in urban areas*'. The focus area goes further and includes a more holistic approach to flood and water management, which integrates other public works and private utility works and arrangements and incorporates both flood and pollution mitigation in urban areas. The aim of the Policy Challenge Paper is to provide robust evidence based on our findings and present a key set of recommendations to DEFRA and other Risk Management Authorities (RMAs), identifying what works well and what needs to be improved across the flood and water management industry, locally and nationally, from legislation, policy to strategy, processes, and engagement across numerous partners. The recommendations not only aim to enhance and strengthen the existing legislation, policies and processes but also suggest simplified new approaches to urban drainage and water management. Some of these approaches / recommendations will be implemented in collaboration with the relevant partners as part of the AfSS project during the remainder of the Programme duration. In addition to recommendations for long-term change, the aim will be to also present and share the key recommendations of this paper to the strategic parties, the FCRIP national programming team, the Thames Regional Flood and Coastal Committee (RFCC), the (EA Board, the Greater London Authority (GLA) and Thames Water Utilities Limited (TWUL) to see if any quick win recommendations could be implemented in the short term.

## 1.2 Methodology

In order to build strong evidence for DEFRA, an extensive review of the existing and relevant legislation (summarised in *Section 2*) and dedicated cross-sector interviews were undertaken (summarised in *Section 3*). This information was collated and through various project workshops, common themes of barriers / gaps of what currently does not work well were identified and ideas of how some of these barriers could be overcome were highlighted. These laid the strong foundation of the recommendations being put forward to DEFRA as the key output of this paper (summarised in *Section 0*). The methods of data collection used in this report are summarised in *Figure 1.1*.

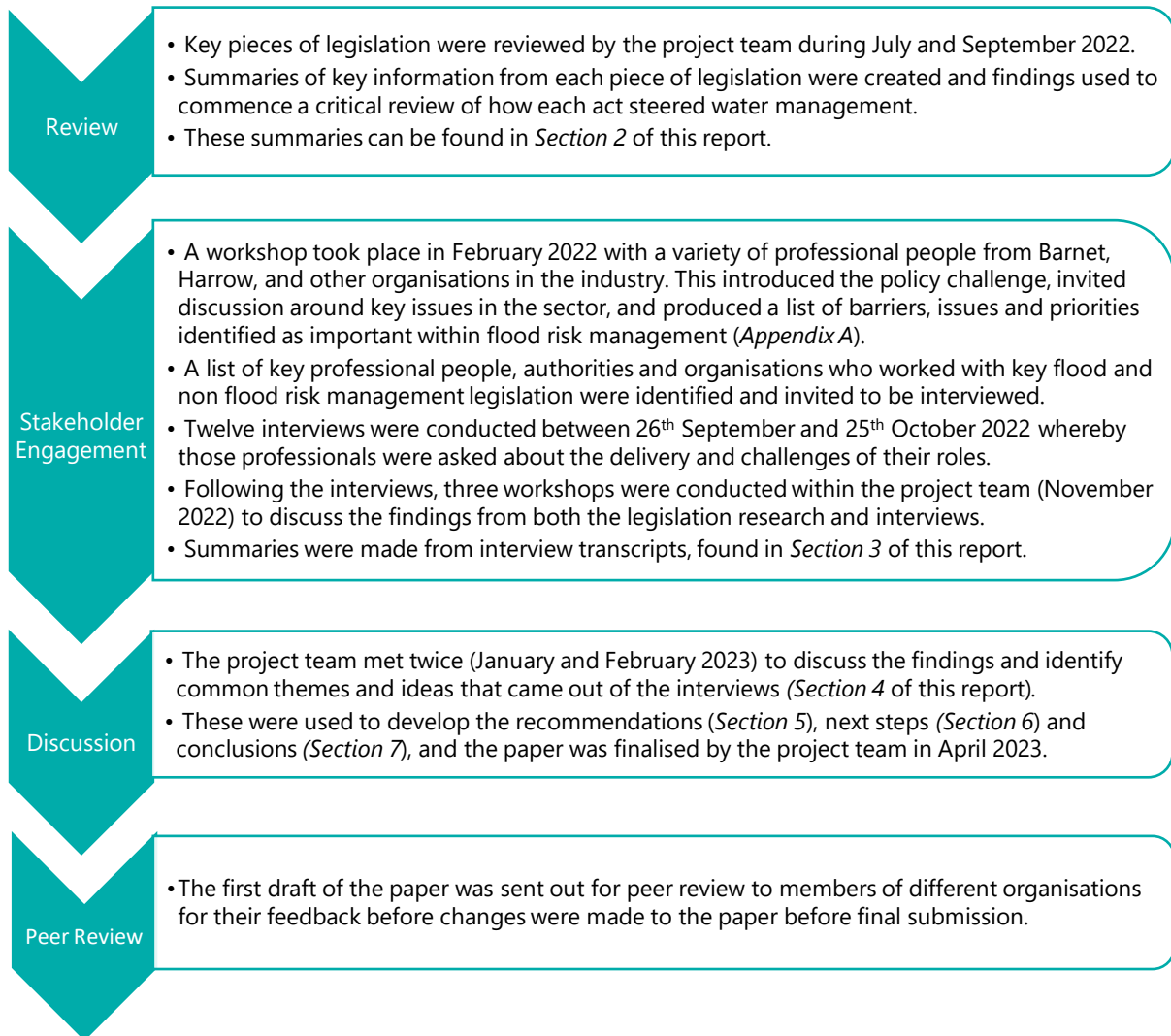


Figure 1.1: Methods of data collection and review

## 2. Legislation Review

### 2.1 Policy Overview

The following key pieces of legislation relating to flood and water management were identified and reviewed. The main elements which steer flood and water management have been highlighted and critically assessed against factors such as clarity, relevance against present day needs and objectives, ease of delivery, requirement of cross-authority working and the varying priorities across authorities. A summary sentence introduces the relevance of each act to the focus area of this project:

- **Building Act:** concerns Building Regulations which influence the provision of drainage within buildings.
- **Civil Contingencies Act:** defines emergency planning responsibilities and powers, including those which impact the response provided in a flooding event.
- **Climate Change Act:** considers the effect of climate change and sets risk-related targets that affect flooding.
- **Environment Act:** aims to protect the environment, including making sure that water quality and waste reduction is improved upon.
- **Environmental Protection Act:** sets out the legal responsibilities for environmental welfare, such as the pollution to rivers and the sea and misconnections of drainage systems.
- **Flood and Water Management Act:** a key piece of legislation which brings together many of the other acts, and specifically is an act created for flood and coastal erosion risk management.
- **Highways Act:** sets out the duties for the management and operation of the highway, including the consideration of drainage from the highway.
- **Housing and Planning Act:** contains several new housing measures including planning powers such as the review of policies and legislation which relate to sustainable drainage.
- **Land Drainage Act:** specifically relates to drainage including the powers that Local Authorities (LAs) have with regards to land drainage and making sure that this does not increase flood risk.
- **National Planning Policy Framework:** (NPPF) sets out the many planning requirements development must meet, including flood risk and Sustainable Drainage Systems (SuDS).
- **Planning Act:** similarly, to the NPPF, addresses sustainable development and enforcement measures that can be taken if an offence is committed.
- **Water Industry Act:** sets out the main powers and duties of water and sewerage companies (WaSCs) and outlines their responsibilities and penalties that they may give.
- **Water Resources Act:** defines the functions that the EA has over water resource management.

The following sections provide a summary of the above legislation, highlighting the key objectives and sections, related policies, and some initial discussion points for use in later stages of this project. Some of these directly fed into the stakeholder engagement work through the creation of specific questions which were asked within the interview stage.

## 2.2 Building Act

The [Building Act 1984](#) is an act created to consolidate enactments concerning buildings and related matters. It sets out the legal framework for the construction, alteration, and maintenance of buildings in England and Wales.

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### What are the most important objectives of this act?

Some of the powers of this act include those for:

- Setting the status of Approved Documents
- Dangerous structures
- Demolition of buildings
- Enforcement of Building Regulations
- Powers of entry to premises

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### Discussion points

This act predominantly sets out the responsibilities regarding the standards for which buildings must comply with. It mainly references duties with regards to the LA and the powers they have, and the responsibility of the owner of the building to comply with Building Regulations.

It is an older act but does account for the provision of drainage under Section 59, which allows the LA to require the owner of a building to make satisfactory provision for the drainage of the building if the current drainage provided is unsatisfactory, in poor condition, or prejudicial to health or a nuisance. Section 61 allows the LA to give notice to require the owner of a building to execute works to allow for satisfactory drainage of a court / yard / passage. Whilst the act does provide these powers, it is down to the LA to identify these issues. There is little reference to the role of statutory undertakers in this act, which assumes that most of the responsibility falls to LAs through Building Control (BC).

Some of the sections refer to the conveyance of rainwater, and rainwater pipes, **but as there is little reference to surface water specifically** this could be made clearer within the act. The act focuses on the regulations within the property boundary, so could further consider the wider implications for when water enters the public sewer network. There is specific consideration of inner London under Schedule 3 of the act, with respect to building and the drainage of buildings, and therefore the potential to create byelaws by such boroughs.

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 21. Provision of drainage](#)

[Section 22. Drainage of buildings in combination](#)

[Section 59. Drainage of building](#)

[Section 60. Use and ventilation of soil pipes](#)

[Section 61. Repair etc. of drain](#)

[Section 63. Improper construction or repair of water-closet or drain](#)

[Section 84. Paving and drainage of yards and passages](#)

[Section 88. Inner London](#)

[Section 91. Duties of local authorities and the regulator](#)

[Section 95. Power to enter premises](#)

## 2.3 Civil Contingencies Act

The [Civil Contingencies Act 2004](#) sets out emergency planning responsibilities and powers for relevant organisations within the UK through a statutory framework. Category 1 responders include the Emergency Services, Health Bodies, LAs and the EA. Category 2 responders (the 'co-ordinating bodies') include those within the transport and utilities sectors, plus the Health & Safety Executive. Both Category 1 and 2 responders make up an area's Borough Resilience Forum (BRF).

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### What are the most important objectives of this act?

- Category 1 responders must assess the risks of emergencies and create and manage plans, accordingly, manage business continuity, co-operate with other responders, and make information publicly available to warn, inform and advise.
- Category 2 responders must co-operate and share relevant information and would be involved in incidents relevant to their workstream.
- The aim of emergency planning is to prevent, where possible, emergencies and, in the event of occurrence, explain how the effects of the emergency are mitigated and reduced.

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### Discussion points

The act clearly defines which organisations have which roles, promoting consistency and structure. The responders are aware of their responsibilities in a similar way to how LLFAs are under the Flood and Water Management Act (FWMA) 2010. The multi-agency BRFs are managed by Category 1 responders and supported by the Category 2 responders, and plan and prepare for incidents and emergencies. This requires transparency of resources and occasional testing of plans and processes to mitigate the effects of emergencies upon the local community. Having RMAs as Category 1 responders would give more strength to the response to emergencies. Additionally, **flooding could be defined as an emergency rather than an incident** by relevant RMAs, which would allow it to be treated as such, as flooding can cause all the mentioned events or situations caused in an emergency (see right hand panel). Alignment with LA Risk Registers could also be promoted to ensure flooding is resourced according to local risks.

BRFs develop Multi Agency Flood Plans (MAFPs) to cover river, coastal / tidal, surface water and groundwater flood risks, but there is no statutory requirement for one. They could be made a statutory requirement and include all sources of flood risk.

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 1. Meaning of emergency](#)

[Section 2. Duty to assess, plan and advise](#)

LAs and EA are Category 1 responders, but WaSCs are Category 2.

Guidance on MAFPs was last updated in 2020 by [DEFRA](#).

## 2.4 Climate Change Act

The [Climate Change Act](#) was established in 2008 and highlights the UK's approach to responding to climate change. The key mission of the act is to encourage activities that will reduce greenhouse gas emissions and adapt to the risks of climate change. It provides an action plan for the country to adhere to, to prepare the UK for the expected impacts of climate change.

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### What are the most important objectives of this act?

- The most important goal of this act is to work towards reducing the net UK carbon account by the year 2050.
- This involves setting out a carbon budget and preparing proposals and policies that can meet the carbon budget.
- These must contribute to sustainable development.

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### Discussion points

This act is current and crucial given the changes in climate and the impacts on the country. It is updated every five years and can be changed according to the current climate issues and data. This should enable the most up to date methodology and research to be reflected, important given that it is constantly evolving.

Any regulations must consider the advice of the Committee on Climate Change (CCC), a statutory body established under this act. The CCC identify the UK as being at a lower risk of flooding as a direct benefit from having a lower risk from climate change.

The UK Government is required to publish a Climate Change Risk Assessment every five years which sets out the risks and opportunities facing the UK. The risks and opportunities include themes such as terrestrial species and habitats, and infrastructure services. The impact of changing climates and extreme events including flooding. Although flood risk is rarely mentioned in the act itself, the risk assessment allows for it to be assessed and considered.

The act could signpost to the FWMA, and the ambitions of the act need to be reflected at a local level, aligned with local objectives. It needs to set out expectations of who is responsible for the actions suggested. There is an overarching target to work towards, but it needs to be clearer on how LAs and RMAs could be involved to contribute to the overall target for 2050.

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 1](#) It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline.

[Section 2. Amendment of 2050 target or baseline year](#)

[Section 48. Procedure for making regulations](#)

[Section 56. Report on impact of climate change](#)

[Section 61. Guidance by Secretary of State to reporting authorities](#)

[Independent-Assessment-of-UK-Climate-Risk-Advice-to-Govt-for-CCRA3-CCC.pdf](#)

## 2.5 Environment Act

The [Environment Act](#) was passed in 2021 and is an ambitious act that includes a variety of targets aimed at protecting the environment. These include improving air quality, biodiversity, water, waste reduction and resource efficiency. It was introduced following the UK's exit from the European Union (EU) to prevent loss of EU environmental law.

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### What are the most important objectives of this act?

- To provide legislation that will protect and enhance the environment for future generations.
- To enforce measures that will improve the environment across key areas.
- Requiring regulations to be developed and consulted on, containing key dates for when targets should be met, including long-term ones for 2030.

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### Discussion points

This act has recently become part of policy and provides impacts and opportunities for flood RMAs. Public authorities are required to actively carry out strategic assessments of the actions they can take to enhance and conserve biodiversity, something that Internal Drainage Boards (IDBs) already do.

The act establishes a new independent body called the Office for Environmental Protection, which monitors the implementation of environmental law and has enforcement powers over public authorities who fail to comply. It also makes various changes to the Water Industry Act, for example, including requiring the Secretary of State to prepare a **storm overflow discharge reduction plan** by 2022.

The act has been created in response to the recent shifts in public understanding and interest in the environment, enabling an opportunity for positive change. Improvements could be made through integrating regulation and accountability into existing legislation, including a change to duties for organisations other than existing regulators. From 2023 Ofwat has been given new powers by the act to change WaSC licenses without their consent and is also able to take enforcement action if required. This aims to both improve the environmental performance and financial health of WaSCs. Targets have been established by the act in improving plans for the environment, however there are no direct duties for most RMA organisations under this act, which therefore could be better incorporated to ensure that these targets are met within the timescale specified.

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 22](#) The Office for Environmental Protection is established.

[Section 16. Environmental monitoring](#)

[Section 78. Water resources management plans, drought plans and joint proposals](#)

[Section 80. Storm overflows](#)

[Section 102. General duty to conserve and enhance biodiversity](#)

[Land Drainage Act 1991](#)

[Water Industry Act 1991](#)



## 2.6 Environmental Protection Act

The [Environmental Protection Act](#) defines the legal responsibilities for environmental welfare. In 1990 it superseded the Control of Pollution Act 1974 and has brought changes to environmental law regarding pollution control, waste disposal, and statutory nuisances.

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### What are the most important objectives of this act?

The Environmental Protection Act targets the following key topics:

- Integrated pollution prevention and control
- Controlled waste disposal on land
- Statutory nuisances
- Litter and genetically modified organisms

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### Discussion points

This act is one of the most important statutes in force in the UK in the way that it provides a framework for being environmentally conscious and limiting the impact on the environment. Specifically with regards to waste management, it refers to responsibilities surrounding drainage systems which relates to flooding that may be caused by sewer issues.

The act enforces the responsibility for the illegal misconnection of drainage systems, and states that the property owner or landlord has a duty to ensure that they are properly installed and working correctly. Failure to do this can lead to fines and potential imprisonment. The impact of drainage misconnections is severe as it has a detrimental effect on the environment, wildlife, and public health.

The act sets out some clear guidelines, however sewer misconnections are commonplace, and it is likely that many remain unidentified. For this reason, it is important for the act to be able to **identify clear responsibilities for misconnections and who is required to enforce this**, together with Section 109 of the Water Industry Act 1991. To support this, there must be clear enforcement actions where the sewer system is being illegally misused.

The EA is referenced as the waste regulation authority for England, as are other relevant authorities including the Common Council and any London Boroughs. The role of WaSCs is not specified; instead, the act focuses on the responsibilities of the EA and LAs. They ensure that waste is suitably handled so that both human and environmental health are protected. The act does allow each of these authorities to have responsibilities, but it is not consistently clear where the responsibility lies for certain actions.

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 34. Duty of care etc. as respects waste](#)

[Contaminated Land \(England\) Regulations 2000](#)

[Pollution Prevention and Control \(England & Wales\) Regulations 2000](#)

[Environmental Permitting \(England & Wales\) Regulations 2010](#)

[Waste Management Licensing Regulations 1994](#)

[Water Industry Act 1991](#)

## 2.7 Flood and Water Management Act

The [FWMA 2010](#) relates to the management of risk concerning flooding and coastal erosion in England and Wales. It included the creation of LLFAs and RFCCs and sets out the powers and duties to manage flood risk. Prior to the FWMA, the 2009 Flood Risk Regulations were incorporated into UK legislation in response to the EU Floods Directive and as a result from the recommendations from the [Pitt Review 2007](#). This also designated LAs as LLFAs with duties to prepare Preliminary Flood Risk Assessments, to prepare Flood Hazard Maps and Flood Risk Maps, to prepare Local Flood Risk Management Plans, and a duty to cooperate with other relevant authorities.

### What are the most important goals of this act?

- Define risk management and RMAs
- The need to develop, maintain, apply, and monitor a strategy at both a national and local level
- Establish RFCCs for approving objectives and deliver funding
- Set powers to request information and cooperation from RMAs
- Establish funding mechanisms for flood risk
- Set out duties to be led on by the LLFA, including investigation, reporting and asset registers

### Discussion points

The act focuses on defining risk, risk management and the functions required to manage flood risk and coastal erosion. Most sections set the emphasis on the EA and LLFAs to undertake these functions, supported by their need to develop and implement National and Local Flood Risk Management Strategies and associated guidance. At LA level, funding from DEFRA's Added Burdens assessments was not ringfenced to specifically deliver the required statutory functions, typically slowing progress for LLFAs. The EA has made more progress on their FCERM functions through wider resource and allocated funding. A suitable similar level of allocated funding should be made available at a local level for resources to enable successful and timely delivery of functions under the act by LLFAs. Sections 4, 13, 14, 16, and 17 of the FWMA would benefit from improvement to allow for an improved process for delivering flood risk management functions. The enactment of Schedule 3, which is yet to be implemented in England, would further help support the successful implementation of flood mitigation solutions and SuDS through **a SuDS Approving Body (SAB) which should sit within a technical team** with a close relationship with the Local Planning Authority (LPA) so that ongoing ownership or adoption is clear so future maintenance (a significant issue in delivery of such schemes) can be assured.

### IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 4. "Flood risk management function"](#)

[Section 7. National flood and coastal erosion risk management strategy: England](#)

[Section 9. Local flood risk management strategies: England](#)

[Section 11. Effect of national and local strategies: England](#)

[Section 14. Power to request information](#)

[Section 18. Reports about flood and coastal erosion risk management](#)

[Section 19. Local authorities: investigations](#)

[Section 21. Lead local authorities: duty to maintain a register](#)

[Flood Risk Regulations 2009](#)

[Water Resources Act 1991](#)

[Land Drainage Act 1991](#)

## 2.8 Highways Act

The [Highways Act](#) was established in 1980 and consolidates the Highways Acts 1959 to 1971 and related enactments. It is a long-standing act that is the only act that deals with the highway. It defines the responsibilities with regards to the highway, which within London is between London Boroughs, the Common Council, and Transport for London (TfL).

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### What are the most important objectives of this act?

This act encompasses the management and operation of the road network in England and Wales. Its key purpose is to deal with the creation, maintenance, and operation of the highway. The aim is for the highway to be accessible and safe for users. In terms of flood risk, the act stipulates that road projects do not increase flood risk.

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### Discussion points

The most relevant theme of this act in relation to flood and water management regards drainage of the highways. This allows the highways authority to construct or lay drains to prevent surface water from flowing onto it and divert surface water as necessary. The highways authority can adopt a highway drain if it was also intended to convey water generally into the sewerage system.

A LA is also termed a Highway Authority. The highways authority can undertake any powers exercisable by a sewerage undertaker for the purpose of drainage of highways within that area. This may create some overlap between the two authorities which could be made clearer in terms of who should be doing the work in an area. In addition to this, LAs are allowed to enter into agreements with relation to construction, alteration, improvement, and maintenance. This allows different authorities to have power over how the highway is managed and maintained with regards to drainage, especially if any flooding were to occur on the highway.

It is a separate act that works well with regards to highway responsibilities, however improvements could be made to improve its integration with flood and water management. There are some sections in the act that specifically reference flooding, including:

- the provision of posts to indicate depth of flood water; and
- the duty to keep the highway free from flooding.

Aligning the act with other drainage acts (such as the Land Drainage Act 1991) would help and should help reinforce the importance of **public works needing to make space for water**. Although this is a separate act, it is still important to consider the responsibilities surrounding drainage and the influences of the highway.

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 41. Duty to maintain highways maintainable at public expense](#)

[Section 100. Drainage of highways](#)

[Section 103. Provision of posts to indicate depth of flood water](#)

## 2.9 Housing and Planning Act

The [Housing and Planning Act 2016](#) makes provision about housing, estate agents, rent charges, planning and compulsory purchase.

### What are the most important objectives of this act?

The key contents of this act are:

- New homes in England
- Rogue landlords and property agents in England
- Recovering abandoned premises in England
- Social housing in England
- Housing, estate agents and rent charges: other changes
- Planning in England
- Compulsory purchase
- Public Authority Land

### Discussion points

The Mayor of London (MoL) has planning powers to decide applications of potential strategic importance and may prescribe matters by reference to the Spatial Development Strategy, or a Development Plan Document. It is important that LLFAs are still consulted on proposed drainage elements of some such major planning applications.

There is very limited mention of sustainable drainage or flood risk within the act. The Secretary of State must review policies and legislation in England relating to sustainable drainage, however no further explanation is given of what these policies and legislation should contain. If this were outlined within the act, it would highlight the importance to planners and developers of considering SuDS and flood risk reduction within the planning process. This would help future developments to become more sustainable, climate- and flood-resilient.

There are competing priorities for a LPA given high and varying targets that need to be met, including housing targets and environmental targets. For example, comparing the need for green roofs versus solar panels. Intensification puts stressors on infrastructure and the green environment leading to problems such as overcrowding, poor maintenance, and makeshift drainage connections. Clarity as to which are the most important targets that need to be met is required, so that better key decisions can be made, and **flooding and drainage can be a higher priority.**

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 171. Sustainable  
Drainage](#)

[Planning Act 2008](#)

## 2.10 Land Drainage Act

The [Land Drainage Act](#) was created in 1991. It consolidates the enactments relating to IDBs and sets out the functions and powers of boards and LAs in relation to land drainage, including flood risk management works powers.

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### What are the most important objectives of this act?

The overarching aim of the act is to provide powers to relevant authorities with regards to land drainage. It defines where the responsibilities are, dependent on the area and feature concerned. These responsibilities should ensure that any works in relation to land drainage do not increase flood risk.

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### Discussion points

IDBs and LAs are given powers to maintain existing works, improve any existing works, or to construct new works. The same powers exist for land outside their district or area that are for the benefit of their district or area. **This allows for a cross-boundary approach which considers the wider hydrological catchment.** LLFAs are also allowed to carry out flood risk management works if the work is desirable with regards to their Local Flood Risk Management Strategy, and the purpose is to manage flood risk from surface water runoff, ordinary watercourses, or groundwater. The act does contain permissive powers but there are limited references to enforcement.

The act falls short and prevents LLFAs being a key player with regards to land drainage, specifically in urban areas. LAs and LLFAs are referenced in relation to what their duties are regarding drainage, and authorising landowners to carry out work. However, the focus of the act is largely on IDBs, of which none are in London, and therefore can be limited in potential uptake within large urban conurbation areas. By focusing on IDBs (which are typically found in rural areas), this does take away from large sections of the UK which are important areas for drainage. It is an example of where policy could be changed to provide clear pathways for RMAs, or legislation amended through regulation. Alternatively, there could be a clearer definition of where the responsibilities lie between LLFAs and IDBs, or if they should hold the same responsibilities.

The act is outdated with much of the content signposting elsewhere. It could be superseded by the FWMA, despite being consolidated in 2012 to account for that new legislation.

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 1. Internal drainage districts and boards](#)

[Section 10. Exercise of default powers by local authorities](#)

[Section 14A. General powers: flood risk management works](#)

[Section 22. Powers of Ministers to authorise landowners to carry out drainage works](#)

[Section 23. Prohibition on obstructions etc. in watercourses](#)

[Section 62. Powers of internal drainage boards and local authorities to acquire land](#)

[Section 66. Powers to make byelaws](#)

[Flood and Water Management Act 2010](#)

## 2.11 National Planning Policy Framework

The [National Planning Policy Framework \(NPPF\) 2012](#) sets out the planning policies for England and how these should be applied. It outlines how sustainable development should be achieved by proposing three objectives: economic (help build a strong, responsive, and competitive economy), social (to support strong, vibrant, and healthy communities), and environmental (to protect and enhance our natural, built and historic environment).

The NPPF is supported by the Planning Practice Guidance (PPG), which provides guidance on how to take account of and address the risks associated with, amongst other topics, flooding, and coastal change in the planning process.

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### What are the most important objectives of this act?

The key parts relating to the environmental objective are:

- achieving sustainable development
- making effective use of land
- protecting Green Belt land
- meeting the challenge of climate change
- flooding and coastal change
- conserving and enhancing the natural environment
- conserving and enhancing the historic environment
- facilitating the sustainable use of minerals

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### Discussion points

The NPPF stipulates that inappropriate development in areas at risk of flooding should be avoided. Where development is necessary in these areas, it should be made safe for its lifetime without increasing flood risk elsewhere. The NPPF encourages plans to apply a sequential, risk-based approach to locating development, considering all forms of flooding as well as the current and future impacts of climate change, apply the Sequential Test and Exception Test where required, and include green infrastructure and natural flood management (NFM) techniques. The Sequential and Exception Tests do not work well in the built environment where individual landowners own small pockets of land and limiting development to the LPA Site Allocation is impossible.

The NPPF sets out requirements for site-specific flood risk assessments and SuDS (requirements for major developments). It also states the flood risk vulnerability classification for each development type. It does have an environmental objective which is supported by the PPG. The tools are there, but the application is not as straightforward or beneficial as it could be. The focus needs to be on **redevelopment as a route for achieving betterment not just to not increase flood risk elsewhere.**

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 14](#) Meeting the challenge of climate change, flooding, and coastal change

[Planning Practice Guidance - Flood Risk and Coastal Change](#)

[Planning Act 2008](#)

[Housing and Planning Act 2016](#)

## 2.12 Planning Act

The [Planning Act 2008](#) establishes the Infrastructure Planning Commission and its functions (abolished in 2021 and responsibility passed to the Planning Inspectorate). It makes provision about the authorisation of projects for the development of nationally significant infrastructure, town and country planning and the collection of Community Infrastructure Levy (CIL).

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### What are the most important objectives of this act?

The key contents of this act are:

- National policy statements
- Nationally significant infrastructure projects
- Development consent
- Enforcement
- Changes to existing planning regimes
- CIL

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### Discussion points

The act considers sustainable development in that the Secretary of State must have regard to mitigating and adapting to climate change. The Secretary of State must carry out an appraisal of the sustainability of a policy before it can be designated as a National Policy Statement. Development Plan Documents must include policies designed to ensure that development and land use contributes to the mitigation of, and adaption to, climate change. The act does not make it clear that the reduction of flood risk will contribute to sustainable development and climate change adaption.

The act describes measures which can be taken if it is found that an offence has been committed (for example, if development has occurred where no consent has been granted). It is not stated how LPAs may proactively find out if an offence has been committed, often being reliant on public reporting of incidents requiring enforcement action. **No guidance is given on how LPAs should be inspecting recently completed development to ensure relevant flood risk policies or works have been met**, potentially further encouraging the temptation for poor construction of drainage and other structures by developers.

There could be a broader use of CIL to aid LLFAs through the collection of financial contributions to undertake flood mitigation works (generating partnership funding). Flood risk matters must be addressed earlier in the design process to ensure that future developments are more sustainable, climate- and flood-resilient. This can be done by ensuring that the policy is clear and addresses flood risk matters appropriately.

IMPORTANT  
SECTIONS OF THE  
ACT AND LINKS  
TO FURTHER  
POLICY

[Housing and Planning  
Act 2016](#)

## 2.13 Water Industry Act

The [Water Industry Act 1991](#) sets out the main powers and duties of the WaSCs, replacing those in the Water Act 1989. It defines the powers of the Director General of Water Services (now the Water Services Regulation Authority, Ofwat).

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### What are the most important objectives of this act?

The key contents of this act are:

- Undertaker duties, i.e. duty to provide service, maintenance, water resources management plans, drought plans, standards of performance, supply duties, quality and sufficiency of supply, adoptions of sewers, protection of customers
- Undertaker powers (e.g. compulsory purchase, pipe-laying)
- Rights to connect drains / private sewers with public sewers
- Provisions to protect the public sewers, restrictions of use
- Trade effluent discharge into public sewer, storm overflows
- Financial provisions, i.e. charges

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### Discussion points

The right to connect in respect of surface water is subject to section 106A. Where approval under Schedule 3 of the FWMA is satisfied, the connection may not be refused. While this allows WaSCs and LAs a degree of control on the surface water flows going into the system, **the owner ultimately has the right to connect under the act.** Updating Section 106, 106A since Schedule 3 of the FWMA has not yet been adopted in England, could give more power to WaSCs and LAs to refuse new connections into the foul and surface water sewers on a national level. Development continues to put pressure on the drainage system and can lead to an increase in flood risk in other parts of a drainage catchment.

This act outlines the responsibilities regarding sewer misconnections and the penalties and work that may be undertaken to correct misconnections. Section 109 outlines the penalty given to a person if connection to the sewer is unlawful. It states the responsibility that the sewerage undertaker may have if proceedings have or have not been undertaken in respect of an offence, but there is nothing to say that it is a requirement for action to be undertaken if an unlawful connection is identified. This could be made clearer given the common issues surrounding misconnections and the importance of preventing pollution. Section 160 also allows the WaSC to carry out works which they have required a private property owner to carry out, however they are not given any enforcement powers which require a landowner to carry out the work, only the power to do it themselves.

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 106](#) and [106A](#):

The act states that the owner of any premise or of the private sewer which drains a premise is *"entitled to have his drains or sewer communicate with the public sewer of any sewerage undertaker and thereby to discharge foul water and surface water from those premises or that private sewer."*

[Section 109. Unlawful communications](#)

[Section 113. Power to alter drainage system of premises in area](#)

[Section 117. Interpretation of Chapter II](#)

[Section 159. Power to lay pipes in other land](#)

[Section 160. Power to carry out works for sewerage purposes](#)

[Section 161. Power to deal with foul water and pollution](#)

[Section 171. Entry for sewerage purposes](#)



## 2.14 Water Resources Act

The [Water Resources Act](#) was introduced in 1991 along with four other pieces of legislation (Water Industry Act 1991, [Land Drainage Act 1991](#), Statutory Water Companies Act 1991 – repealed, and the Water Consolidation (Consequential Provisions) Act 1991) whose combined purpose was to consolidate existing water legislation, which had been spread over 20 separate legislations. The [Water Resources Act 1991](#) sets out the functions of the National Rivers Authority (now the EA) and introduced water quality classifications and objectives for the first time.

### What are the most important objectives of this act?

Subsequent acts and updates have modified the water legislation framework, notable ones including the Water Act updates in [2003](#) and [2014](#), the Environment Act 1995, the [FWMA 2010](#), and [the Environmental Permitting \(England and Wales\) Regulations 2016](#).

The key contents of the original act are:

- General duties of the EA and general water resources management functions
- Abstraction and impounding (restrictions, licences, rights, navigation, enforcement etc.) → Water Act 2003
- Droughts and provisions to make emergency drought orders → Water Act 2003
- Control of pollutions of water resources (designation of water protection zones and restrictions of certain activities within)
- General functions in respect of flood defences, main river functions (→ Land Drainage Act 1991), structures within a main river (→ Environmental Permitting Regulations 2016)
- Financial provisions, grants, and loans → Environment Act 1995 and FWMA 2010
- Land and works power (compulsory purchase, accretion of land, lay a pipe, anti-pollution works)
- Provision on information (registers, main river maps, restrictions on information disclosure)
- Setting out the principal offences relating to pollution of watercourses → Section 85

### Discussion points

Parts of this act have been repealed and updated during the years through other acts, as mentioned above. However, key duties and powers of the EA are still defined by this act. It is notable that, compared to the Water Industry Act, the EA has more powers to lay pipes and do works to carry out its duties compared to WaSCs. Another consolidation of the acts could be done, as in 1991. A consolidation of the acts as they are currently would be beneficial to **bring them up to date and in line with current legislation.**

## IMPORTANT SECTIONS OF THE ACT AND LINKS TO FURTHER POLICY

[Section 85. Offences of polluting controlled waters](#)

[Water Act 2003](#)

[Water Act 2014](#)

[Environment Act 1995](#)

[Flood and Water Management Act 2010](#)

[Environmental Permitting \(England and Wales\) Regulations 2016](#)

## 3. Stakeholder engagement

### 3.1 Workshop

On the 16<sup>th</sup> February 2022 a workshop was held with a range of members within the industry to introduce the Policy Challenge and discuss the issues, barriers and priorities which currently exist in water management. 27 people took part in the workshop, from those who are involved in different teams within Barnet and Harrow, and those from other authorities such as 3<sup>rd</sup> Sector River Catchment Hosts, TWUL, DEFRA, GLA and the EA.

The following topics were discussed:

- Topic 1: Flood-related policy and legislation timeline
- Topic 2: Management of river corridors, and how this can cause flooding if not managed properly
- Topic 3: Legal services and managing the immediate public realm
- Topic 4: Partnership based approaches
- Topic 5: Property-level misconnected wastewater and sewer network failure
- Topic 6: Enforcement of misconnections, and the environmental cost and impact that misconnections have
- Topic 7: The importance of education and communication with the public
- Topic 8: How community engagement is working and whether more could be done

Following this discussion, participants contributed to produce a list of their identified barriers, issues, and priorities.

### 3.2 Interview Overview

Collecting information from key authorities who work with the various legislation to steer flood risk was key in understanding the advantages and challenges. These authorities were identified by the project team, and prior to the interviews a list of questions was created with a mixture of consistent and specific questions tailored to each interviewee based on their role and specialism. The interviews took place between September and October 2022 with the following 12 organisations:

- Transport for London – Transport Strategy and Policy Officer
- Cardiff City Council – Lead Drainage / SAB Officer
- Thames Water Utilities Limited – Wastewater Planning System Lead (London)
- Environment Agency – Area Flood Risk Manager for Hertfordshire and North London and the Partnerships & Strategic Overview Team Leader
- Durham County Council – Principal Planning Officer
- London Resilience Forum – London Resilience Manager and Deputy Head
- Thames Regional Flood and Coastal Committee – Chair
- Crane Valley Partnership – Chair and Development Manager
- Chartered Institute of Water and Environmental Management – Director of Policy
- London Borough Council – Building Control Officer
- London Borough of Croydon – Drainage Engineer
- Future Nature Consulting – Freelancer

The interview case studies across sections 3.4 - 3.15 provide a summary of the themes discussed during each interview and the key points taken forward into the development of recommendations. The word cloud below summarises the most frequently referenced points – the bigger the font size of a word, the more it came up during the interviews. Further word clouds have been used in each of the interview case studies.



*Credit: Wordclouds.com*

### 3.3 Peer Review

Following the creation of the first full draft of the paper, it was sent out for peer review (May 2023). The reviewers are all recognised experts in the industry, selected due to their experience from working in both public and private sectors, regional government, and within a chartered institute. Comments were collated and incorporated into this paper prior to being submitted to DEFRA. The reviewers were:

- Alastair Chisholm: Director of Policy at The Chartered Institution of Water and Environmental Management
- Jo Bradley: UK Director of Operations at Stormwater Shepherds
- Michael Arthur: Managing Director (Metis NZ)

### 3.4 Transport for London

An interview was conducted with a Transport Strategy and Policy Officer at TfL in 2022. TfL's Transport Strategy and Policy team wrote the 2018 [MoL's Transport Strategy](#) and led on the development of some environmental policies and proposals in the strategy particularly around SuDS.

#### Themes Discussed

- Priorities and finances – The delivery of SuDS is not a priority for TfL and opportunities are missed during the project management lifecycle or are value engineered. If TfL could obtain funding to trial integrating SuDS in asset renewals this could unlock a big level of change.
- Partnership working – Collaboration with Borough Highways, LLFAs and TWUL regarding understanding risk, future proofing assets and project delivery is key.
- Education – Skills training and case study visits have increased awareness of SuDS, increasing their inclusion in projects.
- Accountability – TfL report to the Mayor's office on targets specified in the MoL's Transport Strategy. The SuDS target is not TfL specific, which reduces accountability and presents a challenge reporting on the delivery of these schemes.
- Monitoring and evaluation – Accountability of policy is important and the responsibilities in relation to SuDS needs to be clearly defined to ensure effective monitoring.
- Enforcement – TfL have legislation but regulating and enforcing is limited.
- Design guidance – There is the 'London cycling design standard' but it does not include anything on SuDS / use of permeable surfaces. Now is the ideal opportunity to change this.
- Data sharing – To deliver more there needs to be an available data source to inform priority locations.
- Definitions – Current policy suggests that SuDS are 'desirable', not 'essential'.



*Credit: Wordclouds.com*

**“There is an awareness that pollution from runoff is getting increasingly worse. Having set targets for pollutant reductions would help reduce the impact on waterways.”**

#### Key Points

- Increase funding to enable trials of different approaches to integrated SuDS in asset renewals.
- To increase SuDS missed opportunities, cross-partnership working between TfL, Borough Highway departments, LLFAs and TWUL is required.
- SuDS targets need to be set and responsibilities clearly defined to ensure targets are met and effective monitoring.
- The Department for Transport have to ensure SuDS / permeable surfaces are incorporated into their guidance documents and design standards.
- Enforcement legislation must be improved, and resources allocated accordingly.
- Policy must reflect the known high risk of surface water flooding by defining SuDS as 'essential' as opposed to 'desirable'.

### 3.5 Cardiff City Council

An interview was conducted with the Lead Drainage / SAB Officer at Cardiff City Council in 2022. The team are working under Schedule 3 of the FWMA, introduced on 7 January 2019, and are helping to deliver the Welsh Government statutory SuDS legislation for the Capital.

#### Themes Discussed

- SAB enactment – Statutory SuDS laws in Wales give greater clarity in design, implementation, ownership, and maintenance responsibility.
- Communication – Engagement with the community is critical for retrofit projects.
- Resourcing and competence – LLFAs are under-resourced and are suffering a lack of experienced personnel. The EA role is critical to protecting rivers, they have the technical knowledge but not the resource to manage them properly.
- Responsibility and crossover – more clarity needed on surface water management responsibilities between WaSCs and LAs.
- Partnership working – A strong working relationship between LAs and WaSCs is essential.
- Education – There is a chronic shortfall of graduates coming through the sector and the drainage modules are not a mandatory part of university highways courses.
- Enforcement – Planning enforcement is not policed, positive changes in relation to retrofit are often lost with changing tastes e.g. paved driveways.
- Design guidance – SuDS documents are based on theory and do not provide practical construction guidance.
- Right to connect – Its **removal should be mandatory**, as it enforces early conversations on the most suitable choice in the SuDS surface water outlet hierarchy.
- Deregulation – **Deregulation has worsened flood risk** and increasing water pollution. It would be more cost effective to have a statutory body to check and enforce.



*Credit: Wordclouds.com*

**“The SAB is a good model to follow, it has changed mindset. Retrofit does however need to be designed right and the installation supervised. It is not about stopping development; it is about enabling development and providing good advice to protect and enhance the environment and reduce the risk of flooding in the catchment.”**

#### Key Points

- The implementation of Schedule 3 of the FWMA in England would be beneficial.
- Engagement, education, and a multi-benefit approach to integrated retrofit delivery is key.
- LLFAs and the EA must have well-resourced, skilled teams.
- Ofwat needs to be pro-active in understanding the importance of LLFAs / SABs and increased partnership working is required in the management of surface water.
- More work needs to be done with universities / CIWEM to drive more skilled people to the sector.
- A set of clearer design guidance standards for use across the sector is needed.
- The removal of the right to connect should be mandatory.
- Regulation and enforcement must be enabled to ensure long term success.

### 3.6 Thames Water Utilities Limited

An interview was conducted with TWUL's Wastewater Planning System Lead (West London). Their strategic ambitions include delivering brilliant customer engagement, investing in resilient systems and assets, and generating public value.

#### Themes Discussed

- Development – TWUL support LPAs to ensure policy is met yet are instructed by Ofwat to do what is appropriate to support development.
- Priorities and finances – The Drainage and Wastewater Management Plan work shows that with growth TWUL are unlikely able to accommodate combined foul and surface water flooding without adapting the existing network. TWUL can start reducing flooding with increased financing and good growth planning.
- Resourcing – Within 12 months of WaSCs seeing a planning application Ofwat expect them be able to accommodate that capacity. This is a simplistic view and not practical for highly urbanised catchments.
- Legislation – The WaSC will accommodate a connection unless it is going to damage the fabric of the existing pipe (capacity does not determine application).
- Right to connect – Should be terminated. Sewer abusers and misconnection polluters are difficult to regulate.
- Communication – Communication between TWUL, LLFAs, Ofwat and the GLA should be improved.
- Deregulation – TWUL have had some very specific issues about both flooding and pollution where they have had to investigate Building Control permissions.
- Education and responsibilities – There are a lack of public understanding of sewer vs surface water flooding. It is difficult to distinguish who is responsible / who to contact.
- Attitude – We need to create a culture of valuing our water.
- Enforcement – The EA must respond to Category 1/2 pollution incidents. There needs to be a balance between grassroots activity and policy, resourcing is key to both elements.
- Definitions – Implementation of the London Plan is quite weak. Technical improvements could be made which could see real benefit - in relation to low return periods.



*Credit: Wordclouds.com*

**“Small scale permitted development is having a detrimental impact on the drainage system in London, its consequences are larger than housing developments. We are losing the battle on permitted development; this is where the challenge is.”**

#### Key Points

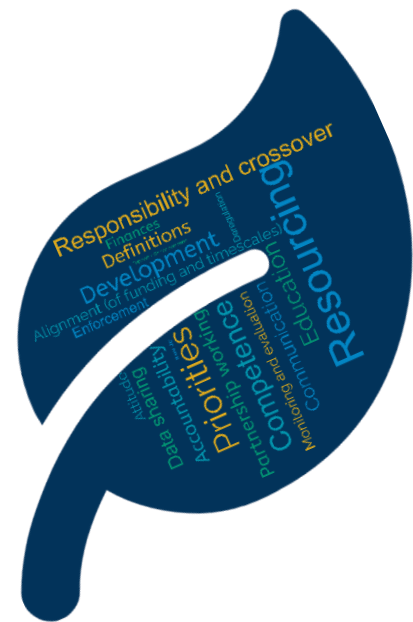
- Enabling the SAB is vital for the sector.
- The right to connect should be terminated.
- Building Control regulation failure should be addressed, permissions could go through LAs.
- Partnership working between Ofwat and LLFAs is required. Public communication also needs to be improved to increase understanding of responsibilities and who to contact.

### 3.7 Environment Agency

An interview was conducted with two officers from the EA in 2022; the Area Flood Risk Manager for Hertfordshire and North London (HNL) and the Partnerships & Strategic Overview Team Leader.

#### Themes Discussed

- Alignment (of funding and timescales) – The EA are looking at streamlining the funding process and producing guidance to support smaller projects e.g. NFM, property flood resilience (PFR), as the process is complex and cumbersome. The Partnership Funding Calculator (PFC) guidance needs to be improved to ensure applicants make the most out of it.
- Resourcing and partnership working – The planning application process is not very holistic in managing all sources of flooding and a more simplified process, increased resourcing, and cross partnership working between LPA, LLFAs, EA and TWUL officers is key to mitigating flood risk. There are limited resources to deal with front line pollution and it is a real issue.
- Priorities – We need more partnership working and a better strategic overview of surface water flood risk, particularly in London, and we need to find solutions, some of which may support the fluvial and sewer network as well.
- Accountability – There is a disconnect between the EA, LLFAs, LA emergency planning teams and the London Resilience Forum (LRF) and a lack of coordinated flood response with some MAFPs not being activated in the HNL area.
- Development and communication – The EA are a statutory consultee on planning applications and despite numerous objections applications have been subsequently accepted. Close coordination with LAs is therefore key.
- Monitoring and evaluation – There are no real tangible monitoring and evaluation on FCERM projects, unlike National Lottery Heritage Funding projects where projects demonstrate they are meeting the outcomes and protecting the investment. Measured reporting would be helpful to assess progress in the funding cycles in relation to the LLFA Local Flood Risk Management Strategy Action Plans.
- Deregulation – Deregulation and not checking 'as built' drawings has probably led to more pollution incidents.



*Credit: Wordclouds.com*

**“We need to be assessing the levels of flood risk over the next 50 years and determining how we manage and mitigate that risk and how we can adapt – this needs collaboration across all partners.”**

#### Key Points

- The PFC and guidance must be improved for surface water schemes.
- The EA, LAs, LLFAs and TWUL need to work better together, and have a deliverable common purpose, for that to happen changes need to be made in legislation, policy, and regulation.
- Public and private sector processes need to be streamlined to enable better outcomes.
- More work must be done with emergency planning teams to take responsibility and improve coordination and management of flooding incidents.
- Monitoring and evaluation processes could be set up to assess progress, successes and lessons learned.

### 3.8 Planning Policy

An interview was conducted with a Principal Planning Officer at Durham County Council.

#### Themes Discussed

- Competence – Resourcing, skills, experience, and expertise are common issues facing the sector.
- Resourcing and data sharing – Regulating and checking ‘as built’ drawings is difficult with limited LA resources. Increased resources to assist with technical investigations and SuDS training for LPA officers to increase understanding and help with scrutiny would be useful. Shared geology mapping showing areas where SuDS are and are not feasible and the possible different types would be helpful at a local level.
- Development – Economic growth needs to be sustainable and sensible. It would be good to see some permitted development rights removed, such as in flood risk areas.
- Definitions – The London Plan policy is helpful as it is widely accepted, but some of the wording could be read as ‘watering down’ requirements e.g. ‘where possible’ in relation to making space for water and ‘aiming’ for development to be set back from watercourse banks. This wording is not helpful as it enables a caveat. Interpretation of the NPPF by the Planning Inspectorate can also prove problematic. If the wrong developments are approved, they set a precedence against other similar development.
- Partnership working – The relationship between LPAs and the EA is not as strong as it used to be; it would be helpful if the EA were involved at pre-app stages.
- Deregulation – The issue lies with building contractors and developers not using a LA’s BC officers. There is lots of unregulated work going on, many cases of no inspections or testing of drainage connections – new outbuildings, extensions etc., twinned with non-permeable surfaces, that are creating cumulative problems for flooding and pollution. Misconnections are a huge contributor, impacting the quality of watercourses.
- Design guidance – We must ensure flood risk and drainage are considered early in design processes.



Credit: Wordclouds.com

**“The NPPF wording could be stronger as it often is not helpful. There are a lot of references to the words ‘where possible’ e.g. ‘where possible provide multifunctional benefits’, this then sees developers arguing it is not possible because of viability.”**

#### Key Points

- Flood risk and drainage must be considered first for all new development at pre-app stage.
- Implementation of Schedule 3 of the FWMA in England would be beneficial but must be resourced.
- The PPG, and ultimately the NPPF, must be changed to have more detail and more specific wording.
- The PPG on surface water flooding refers to non-statutory standards from 2015 and The SuDS Manual, with no emphasis on the potential multiple benefits or implications for climate change. We must have nationally accepted good practice methods / standards.



### 3.9 London Resilience Forum

An interview was conducted with the London Resilience Manager and one of the Deputy Heads at the London Resilience Group in 2022. The [LRF](#) ensures London's preparedness in the event of emergencies and coordinates the activities of a wide range of organisations to achieve this. It also provides a link between emergency preparedness and resilience at the local and national levels.

#### Themes Discussed

- Communication and education – The LRF would favour flood preparedness guidance and advice for the community being made publicly accessible. Some work has been done, partly on the back of learning from the summer 2021 flooding, to standardise the content published on LLFA, GLA, TWUL and London Fire Brigade's websites. More work could be done to ensure advice is standardised and consistent.
- Partnership working – Across the sector there needs to be more collaboration and communication and better partnership working so that all better understand roles and responsibilities.
- Accountability – Flooding is managed in the same way as several other risk-related or risk-based capabilities. There is a framework setting out each capability. It sets out what BRFs are supposed to do in preparation to flood warnings and in response to flooding. It is weak in that sense because Borough Resilience Forums are a planning body, not a response body.
- Resourcing –MAFPs are useful but more could be done to assess the adequacy of their capability.
- Definitions – Flooding is described as both an incident and an emergency. Local Resilience Forums use terminology such as 'major incident' – a flooding incident could be declared as a 'major incident' by an agency when the consequences reach a point where special arrangements are required. Different types of flooding are risk rated in different ways. They are not all defined as very high risks, but collectively they are one of the highest risks facing London as a whole.



*Credit: Wordclouds.com*

**“As the nature of flooding incidents are very high risk and a relatively common occurrence, they require specific plans – a strategic flood response framework and MAFPs at a Borough level.”**

#### Key Points

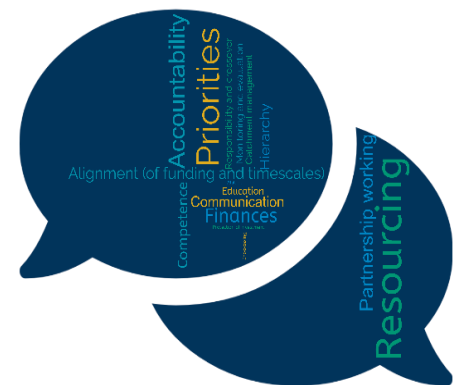
- More could be done to review actual capability (resources each LA and WaSC can deploy etc. in relation to flooding) and there must be a flood risk equipment and capability inventory undertaken to set out minimum and maximum standard requirements that are available for flood response emergency.
- Self-preparedness should be better promoted but advice needs to be standardised and consistent at high level, both locally and nationally to take into account site specific needs.

### 3.10 Thames Regional Flood and Coastal Committee

An interview was conducted with the Chair of the Thames RFCC in 2022. The Thames RFCC was established by the EA under the FWMA.

#### Themes Discussed

- Alignment (of funding and timescales) – We have a funding mechanism that was designed for large scale projects and the approval process does not translate into the need for a light touch approach for approving funding for small scale projects to tackle surface water flooding. We have made progress by having partnership funding contributions from other government departments now included in six-year settlements, but the idea of putting Local Levy together with FCERM Grant in Aid (GiA), with an additional contribution from a LLFA and possibly funding from a private source, adds tremendous cost. The most difficult challenge is that the funding mechanisms for flood risk management and the WaSCs’ business cycles are not aligned, making it near impossible to have properly integrated projects.
- Resourcing – There is a disparity in LLFA resourcing across LAs. The development phase for FCERM project system is so bureaucratic that change is too slow to retain resources leading to high staff turnover. It is symptomatic of the bigger problem – to deliver FCERM projects you need long term commitments and resources.
- Partnership working – public bodies need to move away from annualised budget management and align funding cycles so they can genuinely work holistically together.
- Priorities – The EA have limited resources to focus on pollution and crime prevention work, damaging their reputation as environmental protectors.
- Accountability – Silo working on flood and water management into single departments within LAs, despite having a new FCERM strategy, is a real misconnection, and more political support is required to affect change. The strategy is full of good intent but how it is delivered on the ground is not wholly considered. The July 2021 surface water flooding gave rise to a consideration of a London wide strategic partnership to create some critical mass, however it is difficult to make these partnerships work.
- Communication – More communication with both politicians and senior management is required within LAs to increase understanding of the importance of Local Levy to ensure it is retained.



*Credit: Wordclouds.com*

**“Some of the greatest barriers are the PFC and the misalignment of budgetary periods.”**

**“Funding structures need a review; we need a holistic approach to water husbandry and need to think about how we prevent floods and where we store water.”**

#### Key Points

- Review funding structures and make them more accessible for smaller surface water schemes.
- The basic concept of partnership funding was designed to bring in private contributions and this is not really happening, therefore it should be reviewed.
- Funding timescales should be aligned to encourage collaborative working.
- LLFAs need to be fully resourced with skilled and experienced personnel to implement imaginative solutions.

### 3.11 Crane Valley Partnership

An interview was conducted with the Chair and the Development Manager of the Crane Valley Partnership (CVP), the former also being the Director of the Crane Valley Community Interest Company (CVCIC), in 2022. CVCIC are the host organisation for the CVP, working with TWUL leading on the Smarter Water Catchment (SWC) Programme.

#### Themes Discussed

- Partnership working – Better, more formal relationships between LLFAs and Catchment Partnerships should be established.
- Education – The sector should be communicating flood risk more effectively. Language is a key barrier in enabling public understanding e.g. the terminology ‘return periods’ is difficult to comprehend. Misconnections, ignorance; education and enforcement are key.
- Catchment management & finances – The SWC Programme is an interesting experiment in a collaborative approach to water management – CVCIC are the first urban catchment to be funded this way. Key is making this sustainable in the longer term to ensure hydrological catchment partnerships are appropriately funded and resourced.
- Resourcing – The SWC Programme is a trial for what can be done if the partnership is better resourced.
- Priorities – Funding cuts have led to the EA becoming a shadow of its former self, unable to deliver the core services the public expect an environmental regulator should do.
- Data sharing – There is a lack of communication and a lack of shared data across the sector. Data sharing could help resolve some surface water flooding, misconnections, pollution issues across the country.
- Definitions – Too much of our water is being called wastewater and it is not. Promoting saving, preserving, and conserving our precious resource is essential. **We need to revise our terminology and language in the sector so that people value water.**
- Enforcement – The number of outstanding misconnections are of concern. There needs to be clarity regarding TWUL enforcement powers to support environmental health officers who have a wide remit and are often under resourced. It would be good to have a dedicated misconnections troubleshooting team.



Credit: Wordclouds.com

**“Partnership working can be of real benefit to schemes, coordination and communication is key to ensuring a catchment-based approach.”**

**“There is a concern that the sector is beginning to rely heavily on volunteers – citizen science activity is fantastic but relying on goodwill is a high-risk strategy.”**

#### Key Points

- Catchment Partnerships need to be better resourced and appropriately funded. The sharing of lessons learned from the SWC Programme is a must.
- More needs to be done about education in this sector – more could be done to help people better understand the risk and promote PFR, riparian ownership etc. The terminology and language used publicly, e.g. ‘wastewater’ and ‘return periods’, needs a review and should be consistent.
- Clarification and discussion with EA, LLFA & WaSC must happen to definitively decide in law who has the duty to enforce rectification of misconnections is required.

### 3.12 Chartered Institution of Water and Environmental Management

An interview was conducted with the Director of Policy at CIWEM in 2022.

#### Themes Discussed

- Education – There is a lack of public understanding about what they can do to help themselves in relation to mitigating flood risk. In 2023 CIWEM will be publishing advice for home owners on managing water at home.
- Priorities – A major current challenge is storm overflows. **We should be linking water industry activities with surface water flood risk management activities to tackle that.**
- Resourcing – From an EA systems perspective there should be a bigger capital programme for flood risk, but it should not be at the expense of environmental regulation. **Environmental regulation should be self-financing. Given the nature of the challenges we face, we need stronger, more independent environmental regulators.**
- Alignment (of funding and timescales) – There is a need to amend the FCERM GiA process for small projects so that is it more accessible in urban areas and is deliverable on a shorter timescale.
- SAB enactment – CIWEM are pro commensurate of a body being the guardian of SuDS standards approval and delivery and adoption routes. It would ensure SuDS are delivered consistently well – where it has worked well, authorities have good supplementary planning documents, but this consistency is not nationwide.
- Catchment management – In relation to the management of surface water a move to a statutory responsibility for hydrological catchments could work as LLFAs are too small to achieve the scale required to manage the risk – the EA would need to play a role in this.
- Development – Paving over your front drive should not be permitted development.
- Deregulation – Often what gets approved for planning does not get enforced when it is built. All responsible bodies have resourcing pressures.
- Right to connect – The right to connect should be conditional on delivering the SuDS standards.



Credit: Wordclouds.com

**“There is a capacity challenge across the sector and more should be done to address this and the sector generally feels completely overwhelming and impenetrable.”**

**“There is enthusiasm to collaborate across RMAs but there are challenges in the practicalities of delivering collaborative schemes as most are operating within constrained budgets, funding and resources.”**

#### Key Points

- The implementation of Schedule 3 of the FWMA in England would be beneficial.
- All RMAs need the statutory duties of partnership to collaborate and coordinate infrastructure.
- Amend the FCERM GiA funding process for small projects so that is it more accessible in urban areas.
- A statutory responsibility for hydrological catchments would improve the management of surface water.

### 3.13 Building Control

An interview was conducted with a BC officer at a London Borough Council in 2022.

#### Themes Discussed

- **Enforcement** – The Council used to be reluctant to take formal enforcement action due to financial restrictions. This is now changing and enforcement period has been extended from two to ten years. TWUL take little enforcement action even when LA BC report known issues.
- **Development** – There are many examples of poor development. Not all information is disclosed outside of the curtilage. BC decisions should be informed and based upon what is happening beyond the boundaries and more emphasis should be placed on drainage and flood risk.
- **Definitions** – Introducing Flood Risk Assessment checks to LA BC Service Plan Checkers via public information websites at Plan Checking stage would help strengthen existing regulations to reduce flood risk and improve drainage. **All Building Regulations applications submitted should contain a section that highlights the 'consideration of flood risk'** that demonstrates flood risk zones and surrounding buildings and infrastructure that affect or can have a detrimental effect to the proposal and surrounding area. It should be a requirement for Approved Inspectors to consider the associated risks in their Initial Notices and enforce via the Building Regulations 2010 and Construction Industry Council (CIC)'s Approved Inspectors Register.
- **Communication** – Usually there is no communication between National House Building Council (NHBC) and LA BCs whereby NHBC are conducting the BC duties. It is unknown how they perform. Initial Notices are accepted and that is it – the LA BC cannot get involved unless they start the work early, or the work is reverted. If the LABC was involved initially, such issues could be avoided.
- **Accountability** – Home Builders Federation have too much influence in building standards, affecting regulations.
- **Data sharing** – There needs to be more joined up working and data sharing between the LLFA and BC to allow BC to request full testing of a potential misconnection – they are a contravention of the Building Regulations.



Credit: Wordclouds.com

**“Deregulation has created, particularly in relation to drainage, less governance and worsening standards in terms of what actually gets built, what is checked, and what we can do after the event when it does go wrong.”**

**“Permitted development, has a knock-on effect as there is no flood risk assessment requirement.”**

**“Individual competency across the BC sector must be established.”**

#### Key Points

- Individual competency and accountability across the BC sector must be established.
- BC bodies should incorporate a dedicated section into their 'application proforma' that will highlight the need for consideration of flooding. This could include a check box asking if this is a proposal within a flood risk zone as this is currently missing. It would need to work in conjunction with a LA's Planning department and ideally, the CIC would also incorporate this into their initial notice to ensure there is full consideration about drainage connections at all levels. This could be rolled out nationally through London District Surveyor Association meetings and LA BCs.
- There needs to be greater communication between the NHBC and LA BCs to avoid reversions.

### 3.14 London Borough of Croydon

An interview was conducted with a Drainage Engineer from the London Borough of Croydon in 2022. Croydon's LLFA sits within the highways department.

#### Themes Discussed

- Resourcing and responsibility crossover – Collective responsibly across the LA regarding surface water management and drainage would be useful rather than it being the sole responsibly of one drainage officer. The LLFA try to address this through hosting the quarterly internal flood group meetings.
- Support / Senior personnel – Increased understanding across the LA's senior management and the Cabinet would be helpful.
- Education – Many years ago, Lambeth were offering residents an incentive to de-pave their driveways. Croydon are currently looking into trying to prevent people from paving their front gardens – education is key but limited. LLFA resourcing makes delivering it exceedingly difficult.
- Partnership working – The EA used to be more involved in projects, but EA changes, remote working and high staff turnover has resulted in less partnership working.
- Communication – Increased communication, sharing of information and collaborative working between LLFAs, LPAs and BC would be beneficial.
- Competence – Contractor resources, skills and knowledge and competency is a key challenge. A procurement decision to appoint a single contractor has meant the contractor cannot deliver the work fast enough as they do not have enough skilled drainage staff – there is a skills gap in the sector to be addressed.
- Development – If residents apply for the installation of a dropped kerb they must demonstrate they have an adequate drainage system in place prior to approval (previously this was not considered).
- Alignment (of funding and timescales) – The HM Treasury's Outline Business Case (OBC) and EA's FCERM GiA process is complex and does not work for smaller schemes.



Credit: Wordclouds.com

**“The LLFA is under-resourced despite Croydon being the fourth worst flood risk area in England; flood risk should be higher on the agenda.”**

**“There needs to be a greater awareness and understanding that the work we do affects surface water flooding e.g. street cleansing, grass cutting blocks gully grates – improved education would enable shared ownership.”**

#### Key Points

- LLFAs and the EA need well-resourced, skilled teams and the management of surface water should be a collective responsibility.
- Increased understanding across LAs' senior management and Cabinets is needed.
- Education of the public and awareness raising plays a key part in reducing flood risk.
- Review funding structures and make them more accessible for smaller surface water schemes.

### 3.15 Future Nature Consulting

An interview was conducted with Peter Massini, a freelancer, former GLA member of staff, experienced in green infrastructure and natural environment policy making, in 2022.

#### Themes Discussed

- Catchment management – A key issue is the underfunded arrangements for catchment hosts; they are not recognised and funded sufficiently for the work they do. GLA funding to support partnerships at a local level is needed. The management of surface water flooding has to be done on a catchment basis but the political structure of each Borough does not operate on a catchment basis.
- Alignment (of funding and timescales) – The EA’s FCERM GiA funding processes are cumbersome for smaller urban projects. The GLA funding processes are annualised making project management of multi-funded schemes difficult. Private investment works largely for rural geographies, but urban catchments are more complicated as often the beneficiary and investor are the LA.
- Resourcing – The GLA needs to provide the policy framework and then back it up with some resources, to enable strategic management at a sub-regional level.
- Responsibility and crossover – Although TWUL are a private company, they also have a quasi-public function. They are caught between this difficulty of trying to run a business around water supply, whilst also managing the public functions of managing drainage and flood water.
- Hierarchy – There needs to be a hierarchy in terms of policy and strategic groups e.g. DEFRA, EA, GLA, RFCCs and London Councils. Policies across the GLA are siloed; it would be useful to pull a group together to help look at policy implications to deliver multi-benefit projects.
- Accountability – With regard to legislation and regulation, a vehicle that works on a statutory basis is needed for urban catchments. It needs a team of LLFA officers from each Borough to work with the EA and TWUL across catchments.



Credit: Wordclouds.com

**“TWUL are often blamed for things not within their responsibilities e.g. surface water drainage overwhelming their systems resulting in sewage overflows. There needs to be a conversation with Ofwat and the Government about splitting off that element of water dysfunction into some sort of public body that operates on a functional level.”**

**“We don’t need to update, modernise or improve legislation - we need a catchment vehicle to implement legislation and policy.”**

#### Key Points

- The management of surface water needs to be delivered on a hydrological catchment basis. There is a need to set up an effective funded, statutory catchment body to focus on this, which can coordinate planned investment, and carry out regulatory functions.
- Amend the FCERM GiA process for small projects so that is it more accessible in urban areas.
- Writing policy and legislation should be done in collaboration with LLFAs before they are implemented – it is important to apply policy in the real world first to work out the resource required for delivery, flaws, and the outcomes, both good and bad.

## 4. Key Themes

The overarching purpose of flood and water management is to provide long-term protection to people, infrastructure, property, business continuity and the environment. This is what the policies and legislation within this sector are aiming for, although this might often seem to be a secondary goal due to the imperfections causing more issues than it solves. Policy should pave the way towards this long-term aim, which it has been doing through the acts, most specifically the Environmental Protection Act 1990 and the Climate Change Act 2008, however there is still improvement needed to address the issues identified within the themes of this paper. These can be addressed, and policy improved and strengthened to better allow RMAs to continue their work to improve the status of water management for the benefit of all – people, wildlife, habitat, flora, and fauna.

Several overarching themes have emerged during the writing of this Policy Challenge Paper. These have been identified below:

**4.1 Legislation, Policy, Strategies and Plans:** scene setting of creating laws and enabling policy, strategies, and plans.

**4.2 Competing Public and Private Sector Priorities:** sets out the multitude and mismatch of priorities which can prevent environmental and climate change requirements to **sufficiently mitigate human activity**.

**4.3 Regulation and Accountability:** to ensure that the legislation and policies are **monitored, evaluated, regulated, and enforced** if necessary.

**4.4 Roles, Responsibilities and Enforcement:** sets out how and who has the responsibility for specific flood risk actions and enforcement **to protect the environment**.

**4.6 Partnership Working:** sets out the **fragmented and misaligned approach** in the water sector since privatisation.

**4.7 Behavioural Change and Education:** sets out the misunderstanding and **lack of care for water as a resource** and the importance of educating the public on flood risk and surface water schemes.

**4.8 Funding, Monitoring, Evaluation and Protection of Investment:** sets out the lack of **integrated public and private sector works** in the water sector, hindered by differing funding cycles and lack of real time evidence, monitoring and evaluation.



## 4.1 Legislation, Policy, Strategies and Plans

When the government enacts new legislation, LAs and relevant RMAs develop their policies, strategies, and plans in line with it. New strategies and projects must be carefully planned for and delivered to ensure that they achieve the desired outcome(s) of the policy.

Policy outlines the core responsibilities and powers RMAs have to manage flood risk. Without clear policies, it is difficult to deliver this successfully. Many of the relevant policies referenced in this paper were written prior to 2000, yet the UK has witnessed its ten hottest years since this point. They are **outdated** and do not necessarily reflect the current situation. There are many good policies, but often **inadequate resources** to implement them. For example, the Environment Act published in 2021 provided extra powers, but LAs were not given funding, resources, or sufficient time to bring in, and train people to deliver this. There are also a lot of different policies, the scale of which can make it hard to use without summaries or explanations as to where overlaps are and what should take precedence.

The way that policy is written requires more clarity as much of the **legal language is complicated** and difficult to understand for most RMA staff, let alone members of the public. Section 21 of the FWMA 2010 states that the LLFA 'must establish and maintain a register of structures or features which, in the opinion of the authority, are likely to have a significant effect on a flood risk in its area'. However, there is a lack of definition about what defines 'significant', therefore leaving this open to interpretation and leading to national and local inconsistencies.

Many of the acts are not strong enough to enforce flood risk policies using '**may**' but not '**must**'. Section 25 of the Land Drainage Act 1991 for example states that 'where any ordinary watercourse is in such a condition that the proper flow of water is impeded... the drainage board concerned may by notice... require that person to remedy that condition'. By saying that an authority may do something, it implies that it is not necessary.

There are positive and clear instructions in policy where there is responsibility for an action. Section 9 of the FWMA 2010 requires the LLFA to develop, maintain, apply, and monitor a strategy for local flood risk management in its area. It specifies what the strategy must include, who they must consult, and that they must publish a summary of the strategy. There is, however, no requirement for these to be reported on, making it difficult to regulate if any of the actions are completed and the quality of them.

Flooding is **declared an 'incident' by the EA and not an 'emergency'** which hinders a LA's emergency planning team from declaring flooding as an emergency. This in turn prevents the LA from being able to activate the MAFP, providing no weight or instruction on operational requirements to respond to flooding. This is all despite the fact that the Civil Contingencies Act 2004 defines an emergency as something which impacts the homelessness and which damages property, of which flooding does.

An interview discussed a recent live response between the London Resilience Partnership and a London LA's emergency planning team following a Yellow Thunderstorm Warning. Updates from a Met Office Advisor, Thunderstorm Warning and Flood Guidance Statement were provided, but none of this was disseminated to those on the front line who could have prepared for it. If flooding is not treated as an emergency, it is difficult to respond to it as needed.

A key area of focus in policy is development, with wider legislation including the London Plan, NPPF, PPG, and numerous local policies. It is noted from an interview that there are too many planning policies, lots of duplication, and weak wording. There is often a reluctance for the LPA to refuse development for fear of potentially costly appeals and losing when referred to the **Planning Inspectorate** who is usually a non-technical person without the necessary knowledge of such a complex subject.

The London Plan states that developers should 'aim to achieve greenfield runoff rates' and that 'there should be a preference for green over grey features'. This is not specific enough and **open to interpretation** by developers and LA officers. Harrow's Development Management Policies ask for the developer to achieve greenfield runoff rates unless doing otherwise can be clearly justified by the applicant, as the London Plan policy does not require this. This runs the risk of developers playing one LA's policies and planning requirements off against those of a neighbouring LA if there are sizeable differences.

The Sequential / Exception Tests do not work well in built-up environments where individual landowners own small pockets of land. It is not possible for them to move their development site elsewhere. This means that developers are still able to build on high-risk sites. With the Exception Test, it needs to be shown that the benefits of the development to the community outweigh the flood risk. Some wider sustainability benefit examples are provided, but lack of clarity and consistency leaves this to the LA to make the final decision, which then cannot be strongly backed up by policy if they decide to refuse an application. The housing targets are often argued as a greater priority (and need for the community), and outweigh the risk associated to the flooding.

Application of policy is an opportunity to reduce flood risk, but the **weakness in the wording** of the policy prevents what the LAs are trying to achieve and does not enable them to challenge based on the policy. For example, the rules about developing in a flood zone are not strict enough to prevent development from taking place in these areas. Chapter 14 of the NPPF specifies that inappropriate development should be directed away from areas at highest risk, allowing the

The interview with TWUL stated that we are losing the battle on permitted development which, although on a smaller scale, has potentially larger cumulative consequences than the bigger housing developments. TfL mentioned that their highways schemes are also deemed permitted development and there is no requirement for urban greening, further demonstrating how flood risk and wider green infrastructure benefits are not valued sufficiently, despite what policy may suggest.

consideration of both surface water and fluvial flood risk, but this approach is not strong enough to prevent development from taking place, especially when the wording includes the phrase 'where possible'. Policy provides an opportunity for SuDS to be incorporated within development, without inhibiting positive development. Enabling the SABs is an opportunity to make that process much more robust. The weakness in the existing wording prevents the implementation of SuDS in some cases, and Schedule 3 should address this and improve the situation. In principle, the aims of the SABs will enable LLFAs to control flood risk better, however the challenges surrounding resourcing and implementation will need to be accounted for. There is current concern within the industry that not enough is being done to enable a realistic and resource-able implementation to occur within 2024 (DEFRA's present aim for commencement).

## 4.2 Competing Public and Private Sector Priorities

There are competing priorities within LAs and within other RMAs that come to the fore when looking into where flood risk and sustainable drainage sits compared to other priorities that exist within these organisations. Competing priorities within a LA particularly impact planning decision making, but also impact resource allocation. In an anonymous London Borough, there were three people sitting in a street lighting team compared to one person doing an entire LLFA role. The allocation of CIL and S106 funding is also unclear, and very few large scale flood risk schemes are LA funded. Without there being more clarity, it is difficult to quantify and make sure that the money is spent on the projects which need it.

There are also competing environmental priorities within the sector. **Intensification** is increasingly putting stressors on infrastructure and the green environment, such as overcrowding, greater demands for food, increased poverty, and poor maintenance of properties. The problem with this is that it can be difficult to identify what needs to be addressed first, and what should be prioritised which is dependent on several factors such as the different roles, requirements and targets a LA has, or the scale of the problem. Water is important to those in the sector, but there are other challenges such as housing, education and healthcare which also have significant importance.

**Housing targets are taking precedence** over flood risk. An example of this is with the Byron Park / Wealdstone Brook flood alleviation scheme (FAS) where Harrow and TWUL have investigated resolving flooding and river pollution in the Wealdstone Brook catchment, identifying a space which is available in an 8ha LA park. There is space downstream for a 1.5ha 300 home housing development, however this would be better used for a proposed above and below ground 25,000m<sup>3</sup> flood storage area. It is widely understood that green over grey infrastructure is better as it provides multiple environmental benefits and is cheaper, however in terms of making a business case it is the importance of profit over environment, and in this and most cases, irrespective of which is better, it is profit or cost that is the determining factor. Flood risk issues are therefore often side-lined and on the lower end of the list of priorities compared to the provision of housing.

### EXTENSION OF EA TARGET DATE TO CLEAN UP

The EA in 2022 extended their schedule to clean up most England's rivers, lakes and coastal waters. None are in good ecological and chemical health at present.

The original plan prior to Brexit under the EU Water Framework Directive was for all 3,651 water bodies to achieve good chemical and ecological status by 2027 at the latest.

The target has now been pushed back to 2063, and by 2027, only 4% of waters are currently on track to achieve good status. Ambitious targets are needed to remedy the situation.

£5.3bn is being invested in the River Basin Management Plans into waterways over the next five years to prevent further deterioration. John Leyland, EA executive director: "it is clear that considerable time and investment will still be needed if we are to see the further improvement in our water environment that we want."

Source: *The Guardian*, 2022

There are also competing priorities within other RMAs. The Thames RFCC and CVCIC interviews identified that the EA has limited resources and funding to be able to deliver their core fundamental role as an environmental regulator. Their umbrella is too wide for their capabilities with their **key priorities not being defined**. They have been steered in the direction of sustainable growth which has seemingly reduced their ability to look after their number one responsibility of looking after the environment, as identified in the case study where their target for all water bodies to achieve good chemical and ecological status has been shifted from 2027 to 2063. And largely due to FCERM taking precedence over their statutory mission they are in conflict to protect and improve the environment, help people and wildlife adapt to climate change and reduce its impacts, including flooding, drought, sea level rise and coastal erosion, improve the quality of our water, land, and air by tackling pollution.

When resourcing is stretched and there is no clear guidance on what to prioritise, this leads to **confusion and de-prioritisation** of certain areas. We need to find solutions which support surface water flood risk, which in turn should improve the fluvial and sewer networks as well as the environment.

There are even competing priorities within sustainability, where it seems acceptable for there to be a 'one or the other' approach. TfL in their interview acknowledged that they do not prioritise the delivery of SuDS as they have **no legal obligation** to improve water quality as part of their schemes, and budgetary factors and a lack of experience in delivering nature-based solutions also contributes to this. Additionally, within LAs there is often debate between the use of solar panels versus green roofs. It is difficult to identify the most important issues, and given the number of factors to be considered, not everything can be considered fully within a planning application given time and cost pressures. Without the importance of drainage being taken into consideration at master planning stage, it is difficult to control the effect that intensification has on the environment, and therefore flood risk.

### 4.3 Regulation and Accountability

It is evident from the interviews that the importance of drainage and flood risk is a low priority. When reviewing applications for new development the LPA are presented with concept plans setting out buildings, road and landscaping with site drainage and flood risk strategies typically not being detailed enough at the start to ensure that it will be compliant with the legislation surrounding sustainable drainage. This is to ensure from the beginning that a new development will be compliant with any sequential and exception testing, that any matters arising from new sewer connections are agreed, and any flood storage mitigation, if required, can be confirmed early on.

The interview with Cardiff City Council confirms how deregulation has worsened flood risk and increased water pollution. There is no overarching regulating body for flood risk, such as Ofwat regulating WaSCs. It is therefore unclear who is accountable for **regulation failure** across the industry, and who should be held accountable if a problem does occur or responsibilities are not progressed. Failure within the inspection process for drainage and flood risk proposals within new development is leading to an **increase in pollution incidents**. There is further evidence that regulators are failing in their duties highlighted by the case study in Victor Road.

BC has an important role to play in checking that developments are compliant and built as per what has been approved by the LA. The loss of resource for LA BC teams and the rise in the use of private BC inspectors has increased the potential for construction to occur without sufficient levels of site testing, inspection, and approval. The interview with the BC officer noted that BC does not have a section for flood risk within their application proforma, even though they do generally check the drainage and SuDS features using dedicated plan checkers. An anonymous LA has also admitted that there had been developments to a property next door to a LA office that had been completed prior to LLFA consent being given, and there was no enforcement to follow up.

The **Home Builders Federation**, National House Builders Association and Construction Industry Council who hold the register for Approved Inspectors use the word 'Council' in their name, giving homebuyers a false impression that it is in some way regulated by the LA BC. The interviews and investigation in the BC sector suggest there should be an independent Building Control Regulator to ensure technical standards and regulations are being met, particularly for below ground flood storage controls and new sewer connections and that mandatory evidence is maintained by developers and WaSC Developer Services.

#### BUILDING CONTROL REGULATION FAILURE – VICTOR ROAD HA2 6PU

In March 2018 Harrow's drainage team observed foul sewage effluent flowing into the Yeading Brook in Headstone Manor Park from a surface water sewer. TWUL were informed and their team located a new foul to surface water connection in Harrow View draining the first phase of a new 400 home development. The site owners were informed and closed the connection.

Harrow officers visited the site office and were informed the BC Inspectors were NHBC. LBH requested to view the site records and evidence to ensure that the works were compliant with specification and regulation. No records were available on site to that effect.

A request was made for the relevant information to be sent to Harrow, but none was forthcoming, leading to the assumption that there were no records and no site visits made by NHBC, and that there was a complete failure in the site management.

TWUL highlights some cases where they have had to investigate BC permissions. Records were found and every case resolved for those where BC has been the LA, but records have often not been found for where this was not done by the LA. TWUL also state that **sewer capacity in their network** does not determine a S106 application, and that this is more of a notification. The LLFA have statutory consultee powers over the surface water discharge rate into the sewer, but if there is no information on what the current capacity issues are, it is difficult to regulate this. Welsh Water lost a legal case with Barclay Homes in 2008-2009 when they told them that they could not discharge foul water at a location that they chose but legislation states that the WaSC will accommodate a connection unless it damages the fabric of the existing pipe. This is an issue as the legislation therefore is not strict enough to enable WaSCs to refuse a connection to the sewer if there is not sufficient capacity, often allowing developments to discharge at high rates unless this is challenged by the LLFA. Even then, it is not uncommon for developers to play suggested WaSC acceptance of proposed discharge rates or approval of a new surface to foul water sewer connection off against those requested by a LLFA, despite WaSCs not being a statutory consultee.

Runoff from trunk roads and motorways is often **too polluted to be dealt with in a standard vegetative SuDS** scheme without pre-treatment. The pollutants in the runoff include **microplastic tyre-wear particles, toxic metals, and priority hazardous substances**. Discharges containing these pollutants are **not regulated** enough to limit the pollution to that which can be tolerated by the receiving environment. Failure to enforce these regulations on drainage systems that serve trunk roads and motorways leads to **widespread, chemical pollution** of rivers containing these pollutants and have been highlighted by many River Catchment hosts. Better **regulation, accountability, and enforcement** through the **Environmental Permitting Regulations**, to limit the pollution to that which can be tolerated by the receiving environments is needed to protect the environment.

## 4.4 Roles, Responsibilities and Enforcement

There are **blurred lines** within flood and water management. The lack of clarity on who is responsible for what in the water sector is an issue, and therefore also difficult to manage and enforce if **ownership is not explicitly clear**. LAs and Highway Authorities for example are responsible for managing the risks from surface water but the WaSCs own the sewers that runoff typically drains into. *Figure 4.1* highlights the issue when it comes to identifying who is responsible for flooding from different sources. When looking to the left of the image it is clear who is responsible for each flood source, however when flooding occurs it becomes much more complicated to define who should be responsible given the overlap between the sources and the confusion between residents and authorities in trying to identify who is responsible.

Policy is **not consistently clear** on who has what responsibility. The Environmental Protection Act 1990, or other relevant building and water acts for example are not clear on where the responsibility lies for certain actions, such as **wastewater misconnections** to sewers and rivers and **who is required to manage, remediate, and enforce** if necessary. The Water Industry Act 1991 does have the exact legislation for the sewerage undertaker to enforce, fine, stop, repair, and claim back expenses for misconnections, **despite TWUL stating that they do not have the power** to do anything. **Section 106 of the Water Industry Act 1991** details that a misconnection is not allowed under the act and **section 109** details that any contravention to **section 106 is an offence**, and that the sewerage undertaker **has the power to close any misconnection** and recover any expenses from the offender. Additionally, **section 160 gives the sewerage undertaker the power** to carry out any works that the sewerage undertaker themselves have required a private property owner to carry out. This contrasts with the **Building Act 1984, used by LAs, which has broad nonspecific legislation** regarding insufficient property drainage, which was for use before the privatisation of the water industry. There is, however, nothing to say that it is a requirement for action to be undertaken if an unlawful connection is identified. Without these responsibilities being clear, it is easy to ignore some of these issues if there is no requirement to undertake enforcement action where it is necessary. **Some RMAs are working with TWUL** to work with homeowners who have misconnected drainage without enforcement, but without clear legislative changes the **piecemeal fragmented process** will continue.

There are so many other organisations, possibly too many with varying levels of responsibility for or with flood and water management (with or without vested interests), other than the RMAs, as demonstrated in *Figure 4.2*. They each have different and often multiple roles, many that provide technical expertise, development and delivery, partnership working and innovation in technological materials and products. With this also comes some conflicting priorities, e.g. **environment vs profit**. Despite these roles each having their own importance, the end game should be the same: working towards improved water management and reducing flood risk.

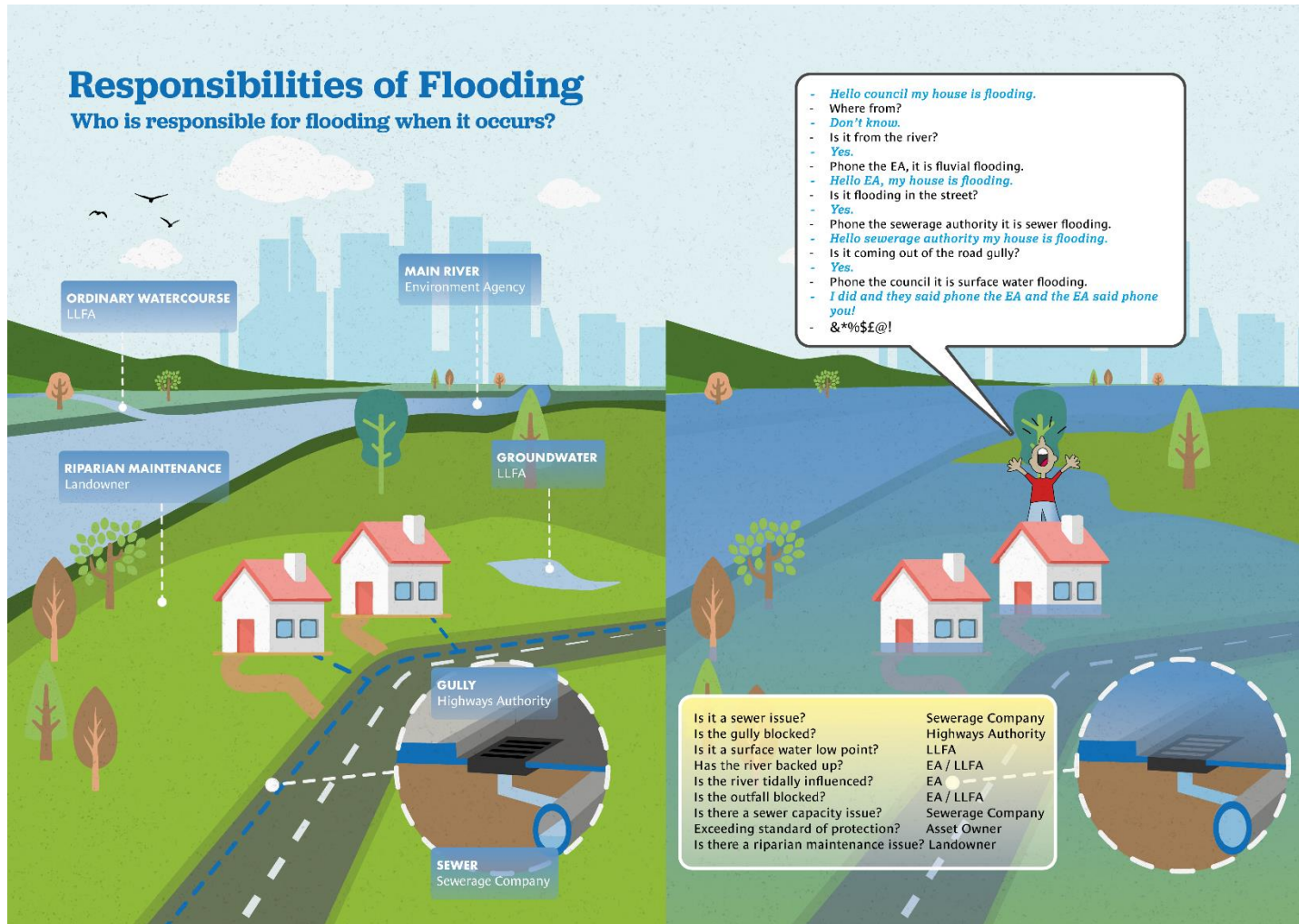


Figure 4.1: Responsibilities of flooding





Figure 4.2: Other organisations with an interest in flood and water management

A **lack of control** in ensuring new developments are completed to standard is worsening flood risk and water pollution, caused by the lack of ownership and enforcement powers, combined with deregulation and limited resource. TfL, for example, confirmed that they have legislation for highway and transport regulation, but regulating and enforcing that legislation is non-existent. Paving over front gardens is another example, and Cardiff City Council stated that permeable paved driveways are often overlaid in five years as tastes change and planning enforcement is not policed. It depends on the individual borough as to what the regulations are and how this is enforced. Harrow requires all surfacing installed to the front of a property (over 5m<sup>2</sup>) to be 25% permeable material. Designs comprising entirely of non-permeable block paving without a minimum of 25% permeable area will be rejected, or alternatively applicants can provide a 25% soft landscaped planting space area. New vehicle crossings can be controlled in this way by the LA having a policy requiring applicants to retain 30% permeable area in their front garden before a vehicle crossing will be constructed. However, this does not do anything for those that are already built or prevent homeowners who simply pave over the 30% later without any consequential follow up or enforcement.

## 4.5 Resourcing and Competence

There is a **skills gap** in the water sector which needs to be addressed. This is not just at professional level but also at apprenticeship level. There is a chronic shortfall of graduates, leading to limited entry into the sector post-degree. CIWEM acknowledges a lack of skills and experience as a key concern within the water industry. One issue that has been recognised is that drainage modules at HNC / HND / Degrees are no longer incorporated, preventing graduates from having the skills needed when they enter the construction industry and particularly the water sector. Without this, increased time must be spent on training and education, which increases the pressure on resources which are already limited.

Resourcing is varied across all London borough LLFAs as well as nationally. In many cases, LAs do not have a LLFA team and in some cases not even a full-time officer. Croydon is the fourth worst flood risk area in England, and in the interview with Croydon Council they state that they are under-resourced with only a lead drainage engineer and part time LLFA support officer. When LAs became LLFAs it was not specified as to where the responsibility should lie within the LA. When queried with **DEFRA at a Drain London** meeting it was confirmed that it was up to the LA, hence why resourcing is inconsistent, resulting in **poor performance** combined with **conflicting priorities**.

The LLFA team tends to manage a multitude of different tasks within a planning or highways team and day-to-day issues. This means that less time is spent on planned, strategic matters, including furthering their own FASs and therefore less flood risk specific experienced officers and in many cases non-technical are delegated to attend forums such as the London Drainage Engineer's Group and sub-regional Strategic Partnerships who are not able to voice the actuality of the problems. The people 'on the ground' are **missing out on being heard**, and valuable input is therefore being missed. Even where responsibilities lie with specific senior staff or Elected Members, it is not uncommon for communications to be limited or non-existent between those feeding into certain meetings and those who are trying to drive the change and deliver the projects.

**Professionals with limited time** are not able to get as involved with organisations as they would like. Given the multiple number of different organisations, professionals often find themselves having to pick which ones they get involved in, resulting in missed opportunities and data sharing with others. It is typical across the sector that good progress is made only where there are individual professionals who are committed and lead the way for their respective RMA, rather than having the desired level of understanding and support from other departments or the wider industry for positive change.

### REDUCTION IN HIGHER EDUCATION COURSES

Until a year ago there was a suite of DEFRA-led higher education courses specifically in place to increase the number of people joining the industry. Most recently hosted by Brunel University but previously by the University of the West of England, the River (and then Flood) and Coastal Engineering Foundation Degree typically supported 10-25 students a year.

Initially run as a distance learning course, at first exclusively for EA before branching out to include LLFAs, in 2013 the work-based learning element was reduced, limiting the scale of opportunity for students on the course to gain valuable, practical experience within their host organisation. Upon completion of the course, most students would stay in EA or LLFA positions or join consultancies, thereby being viewed successfully, but the EA indefinitely paused the intake in 2022. Aside from a small number of standalone specific courses (including at Chester, Cranfield, Hull, Lancaster and Manchester Universities), it seems an opportunity missed.

The Civil Contingencies Act 2004 does not make MAFPs a requirement and different boroughs have different levels of assets as well as resource. For example, some LAs have their own gully maintenance vehicles and reactive teams, whereas for others this may be limited or shared across boroughs. This then **limits their ability** to be able to react to flooding incidents. Just because flood risk is a recognised, increased risk to a borough in a LA's Risk Register, that does not necessarily secure resources to manage or mitigate the risks, flooding or otherwise.

It is not only the LLFA that has resourcing difficulties. Each RMA has their own **resourcing scarcity**, the EA in their interview state that they have limited resources to deal with front line pollution, and the interview with CVCIC also confirms that the EA has limited resources to be able to follow up on incidents. The London Boroughs of Barnet and Harrow fall within the EA's Hertfordshire and North London area that also includes all of Hertfordshire and South Bedfordshire. There are only three EA officers dealing with land and water pollution incidents in this area.

TWUL similarly reported having limited resource. It is felt that the resources that they had pre-privatisation are different than what they have now. Pre-water privatisation when LAs had responsibility to manage large parts of the sewer infrastructure, **each borough had certain resources circa three tankers, ten skilled operatives and ancillary equipment**, which is not reflective of the resources available now. Following privatisation, **drainage engineers were TUPE'd to the WaSC or left the business** entirely due to feeling undervalued or moved to more secure employment.

## 4.6 Partnership Working

The water sector encompasses many different organisations, each with a different but important role to play in managing flood risk, as highlighted in *Table 4.1*. These organisations should cooperate fully, with Section 13 of the FWMA 2010 stating that a relevant authority must cooperate with other relevant authorities in the exercise of their FCERM functions, however they may also discharge this duty. These organisations have a **common goal**, so need to work together in a structured and transparent way.

Table 4.1: RMAs’ environmental responsibilities

Flood Risk Responsibility	Risk Management Authorities			
	LLFAs	Environment Agency	WaSCs	Highways Authorities
Fluvial flooding from main rivers & estuaries		✓		
Tidal flooding		✓		
Ordinary watercourses (small, designated rivers)	✓			
Flooding from public sewers			✓	
Groundwater flooding	✓			
Reservoir flooding		✓		
Surface water flooding	✓			
Highway flooding				✓

Catchment partnerships have led to a more collaborative approach between relevant RMAs, but often they are volunteer led and insufficiently funded for the work that they do. With resources being low and skills sought after, we should be sharing knowledge and roles to get things done rather than competing for resources with each other. Schemes can be developed with other organisations to realise multiple benefits and share the costs, for example a **LA highways team could join forces with a LLFA team** to install permeable paving or SuDS along the highway when reinstating the surface or redesigning a road. These types of schemes do not often work out through multiple factors including a lack of programme sharing, lack of communication, and funding avenues not aligning. A positive example of where this has worked is on the London Strategic SuDS Pilot Study with the London Borough of Enfield, which involved expertise from Enfield Council’s watercourses team, and was commended for its strong partnership approach in implementing small, strategically distributed SuDS. Having a ‘one dig’ approach to roadworks and aligned maintenance schedules across RMAs would also increase the potential for SuDS through reduced costs through efficiency savings.

Different organisations may have different responsibilities on paper, however many overlap when managing surface water. An example of this is managing storm overflows and removing surface water out of combined networks, which is between the LLFA and WaSCs. Without clear discussion and communication, it can lead to blame, ineffective management of industry-wide challenges, and the **avoidance of issues**. Future Nature Consulting stated that TWUL is often blamed for surface water

overwhelming their systems resulting in sewer overflows, however they have limited ability to **control** the surface water flow into their systems.

There are areas of **missed opportunity** for communication. Ofwat has limited or no discussion with LLFAs, as they do not have a specific role to do so. Cardiff City Council stated that their LLFA would want to find out more about Ofwat's involvement with WaSCs and would welcome more partnership working with them so that this can be more transparent, and regulations could be clearer across all sectors.

Discussions have demonstrated that there may be **too many bodies**, all claiming to be the **voice of the water sector**, but often no one body has the scope, range or backing to implement real change, particularly across a national scale. The sector could be clearer and better structured to allow for a coordinated approach to water management. Collaboration is currently limited, meaning that opportunities are missed, which is due to several factors including resourcing issues.

We are reliant on gathering data from different organisations to inform our own work and being able to make strategic decisions. A Strategic Flood Risk Assessment for example requires data from the LLFA, LPA, EA, WaSC, and sometimes additional organisations. Without easy access to data, it is difficult to identify issues, or obtain the information needed to inform projects. Section 14 of the FWMA 2010 states that an authority may request information in connection with the authority's FCERM functions, and that this information **must** be provided within the time specified in the request. There is however **limited data sharing** across the sector. Without any data sharing enforcement, and no accountability for private developments to share data on significant assets for example, data requests are often ignored.

The accessing of data is often **reliant on personal relationships**, and as the central process is often poorly managed with the additional difficulty of resourcing issues, this can lead to delayed or no responses. Data records not being kept up to date or a lack of monitoring of assets, typically due to stretched resources, also means that the potential usage of data, shared or otherwise, is often limited. Examples of data sources which have gaps are WaSC sewer records, in some cases not having been updated since privatisation, and RMA asset condition records.

## WHERE PARTNERSHIP WORKING HAS WORKED – HEADSTONE MANOR PARK

The Headstone Manor Park regeneration of park infrastructure, river restoration, constructed wetlands and flood storage area was multi-planned, multi-funded and delivered using an integrated partnership approach. The original projects were twofold:

- LLFA: divert a Yeading Brook tributary entering the Historic Scheduled Monument moat to reduce silt load into a sediment pond, with wetlands to improve water quality and prevent further degrading of this historic asset,
- EA: proposal for the construction of a flood storage area via an EA Strategic Outline Case.

In 2017 Harrow's Flood Risk Manager and Landscape Architect submitted a successful National Lottery Heritage Fund Round 1 bid that provided a £229k development grant. In 2018 they were awarded £1.26m of capital funding. Internal funding from the Infrastructure team's flood defence budget, the planning policy team's Green Grid budget, Section 106, BCIL, the Park team's Capital budget, and volunteer match funding in kind. Further funding was secured via the GLA, EA, Thames RFCC, and TWUL's Smarter Water Catchment fund.

The project team delivered a multi-funded, multi-benefit project using an integrated approach with multi-public, private, third sector and local communities over a five-year planned period in 2022.

## 4.7 Behavioural Change and Education

To generate the shift that is required in the public's understanding of water being a precious resource that should be carefully managed, re-education must go back to basics. Water should not be thought of as an issue but a resource. Across the industry, rainwater is termed 'wastewater', further promoting the view that it is a nuisance, as stated by CVCIC. Even the phrase 'management of water' could be deemed as incorrect to be used – 'living with water' better reflects our reliance on and need for water.

**Water cannot be viewed in separation from the environment.**

The improvements required to achieve true partnership working also reflect the fractured nature of water, overcomplicating the issue. Within development, drainage should be one of the first things set out. It must guide the master planning of where a building can and, more importantly, cannot go (with or without mitigation). Water is acknowledged as a positive attribute when advertising the improved aesthetics of a development, yet the very same thing is, at best, a frustrating hurdle during the planning stages for the very same development. **The water cycle and the importance of water, taught in every single school to young children, is well understood**, yet is overlooked if ever a building is nominated for construction on a floodplain (*Figure 4.3*). The creation of a flood attenuation feature, where water may not even be visible at all times, can unlock land downstream for development, but is viewed with suspicion by members of the public.

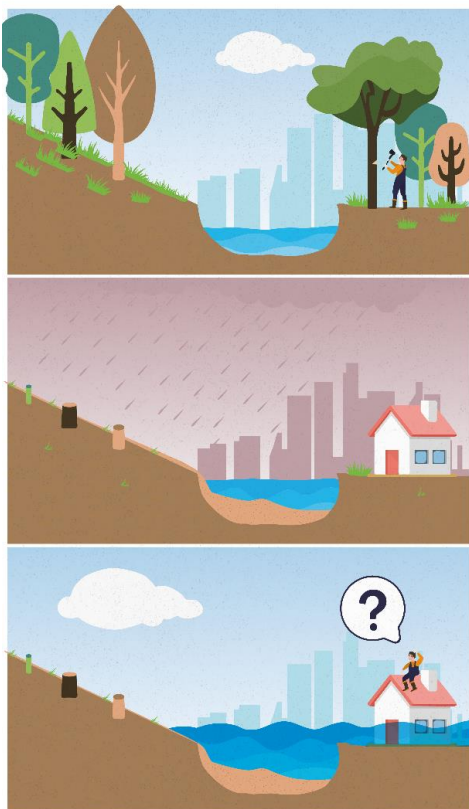


Figure 4.3: Building on floodplains

As well as the multiple benefits of water, the language used to communicate the messages coming from the industry can be **unnecessarily confusing**. Climate change is, widely, acknowledged, even if not as well understood or addressed as needed, yet the terminology used to describe the level of flood risk and actual flooding incidents is in a commonly misunderstood '1 in x years' format. For a constantly changing climatic situation the language could be argued as staying still. This further impedes an improved level of engagement with water and the environment by members of the public – limited reporting, heightened by the fragmentation of the responsibilities across multiple authorities, leads to frustration and heightens a blame culture, the opposite effect to what the industry is trying to achieve through improved communication and engagement. Although there is guidance available on communicating with communities about flood risk, including CIRIA's [Communication and engagement in local flood risk management \(C751\)](#), it is often not considered or applied by LLFAs.

Drought and flooding are rarely discussed in the same environmental agenda but should be integrated; water

reuse is poorly implemented, leading to increased water quality treatment, but most people see water bills as too high. By increasing the accepted **value of water**, it will act as the foundation for improved understanding and attitudes towards water. The perceived infinite amount of water heightens the expendable attitude, and the cycle of increased mismanagement and carbon costs continues.

Holistic water management underpins the need for the **catchment-based approach** to be implemented. Landowners better managing the runoff from their land, at any scale, will have a cumulative impact. Direct benefits of reduced costs, direct or indirect, through water usage and / or increased risk protection, will demonstrate that it is on every individual to play their part, rather than it being an issue that lies with public and private authorities alone.

Cardiff City Council acknowledged the importance of education about retrofit schemes and that local knowledge can also improve designs by through increased public input and buy-in. The complexity and, typically, multi-year process for a FAS to progress through the various stages of assessment, design, and build, often exacerbated by the need for evidence of scheme feasibility and viability for funding processes, makes it challenging for RMAs to decide when to engage with residents and beneficiaries. Too early and the scheme may not progress, but too late and the community may not buy into the proposed features.

This in turn leads to missed opportunities to include a wider integrated narrative about water and the environment and reflects the weakness in the very narrow and limited PFC OM4. A thread through this paper touches on learning and lack of people coming into the water and environment sector but this should not be a surprise considering the 'environment', not being part of the national curriculum from primary through high school.

And whilst some primary schools do deliver very good 'forest school' lessons they do not generally have no focus on the water cycle which is reflected to a greater or lesser degree (*Figure 4.4*).

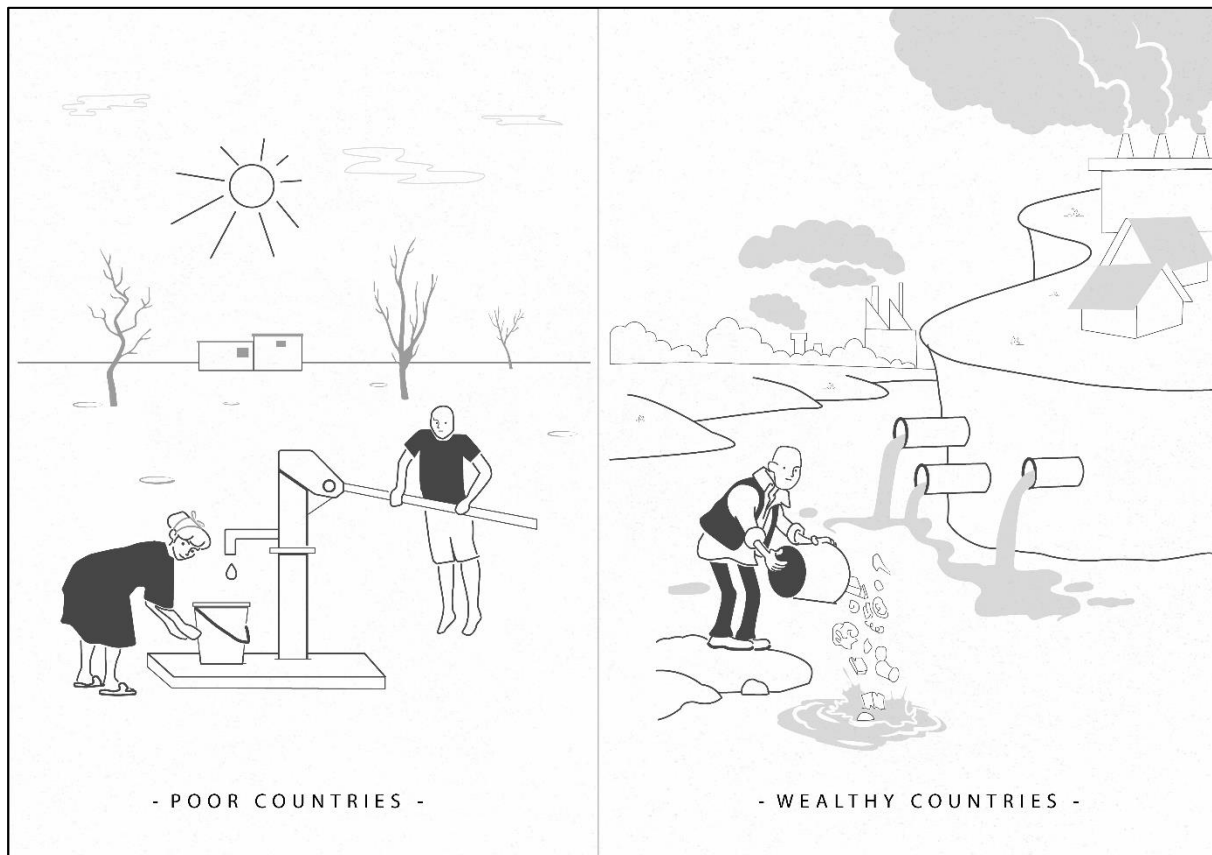


Figure 4.4: The treatment of water in different parts of the world



## 4.8 Funding, Monitoring, Evaluation and Protection of Investment

Funding holds with it the ability to deliver schemes and legislative duties. **Revenue funding is not ringfenced**, and without this and without adequate resourcing it is difficult for LLFAs to deliver on their duties under the FRR 2009 and FWMA 2010.

Capital funding mechanisms are not aligned, making it very difficult to integrate projects, even when drivers are complementary or identical. The issue with the alignment of funding processes is an issue that has been identified across multiple interviewees, including the Thames RFCC. Differing private and public funding processes often have **unaligned timescales and frequencies**. This is highlighted in *Figure 4.5*, which identifies some of the available funding sources from 2022 onwards that have been identified across multiple projects, and where key elements of the process have taken place. Regular funding processes can suffer from semi-regular shifting of requirements, resulting in schemes spending an unproportionate amount of time and public money before business case stage and to progress beyond this. Because the process to obtain funding is complex and changes frequently, a lot of money is spent upfront to ask for funding which means that projects end up with less funding later to then deliver the schemes. This becomes more complicated the more time it takes to approve, meaning that costs get higher due to inflation and more resources need to be spent. Less regular or one-off funding routes typically require the schemes to be progressed enough to ensure confidence in scheme viability but without being so progressed that there is reduced opportunity for supplementary design.

FCERM funding is not explicitly available for **engagement, partnership working, adequate monitoring and evaluation and maintenance** to ensure ongoing successful scheme identification, post-delivery, ongoing improvement and assessment and continued functionality. Section 17 of the FWMA 2010 allows the EA to issue levies to the LLFA for an area to exercise their flood risk management functions. Local Levy funding is not available for the maintenance of surface water flood risk schemes, whereas the EA can claim maintenance for the 100-year lifespan within the OBC / PFC for new flood defences. The existing FCERM process for concluding a project (i.e. the completion of FCERM 5 & 8) falls short in terms of any comprehensive evaluation and legacy planning to protect the investment over its intended life span. The evaluation process developed and implemented by the National Lottery Heritage Fund is a good example of how Monitoring and Evaluation (M&E) is an integral part of any project. It has clearly defined outcomes from the outset, with a requirement to ensure evaluation is budgeted for and well-resourced during the development phase (to ensure a robust framework and M&E plan is developed and data is baselined ahead of project delivery) and that data is collected and reported on throughout the delivery phase. For such projects progress against each outcome is reported on annually, an interim evaluation is conducted at the mid-point of the project and an end of project evaluation report is produced hence there is a budget allocation and appropriate resource for M&E throughout the duration of the project.

The acts provide powers to LAs, but this is not always supported with funding to be able to exercise these powers. One example is the Environmental Protection Act 1990 – LAs were given powers to deal with environmental welfare such as waste management, however there was no funding given to do this. Without adequate funding, despite having legislation providing the necessary authorities with powers, they often do not have the means to be able do this.

The PFC is a much-discussed topic, and it is well known more generally amongst LLFA and FCERM professionals and the HNL PSO team that improvements are required for the process to better align with specific challenges commonplace for urban schemes, which has a particular impact on restricting

the number of surface water schemes from being taken forward. Previous attempts have been made to influence Defra policy, by analysing schemes which have not met the requirements of the PFC and providing evidence for how the current FCERM PFC does not work for the multiple benefit approach. Case studies included the London Strategic SuDS Pilot Study, and the Newton Park River Restoration and Flood Storage Area project. The HM Treasury **five business case model** is good in principle for funding distribution, consistency, and accountability, but evidence herein has reiterated that it is not fit for use for surface water management in London or quite possibly any major conurbation – it is based on what were initially fluvial metrics and the funding is managed by the EA who have fluvial responsibilities and not surface water. Typically, the **benefits value** of surface water schemes do not rank as highly in the PFC when compared to fluvial schemes, and therefore are less likely to receive funding. Both the Thames RFCC and the EA stated in their interviews that the system is cumbersome for smaller schemes, and the process needs to be improved.

The Outcome Measure 2 (OM2) indicator is a significant obstacle to progressing surface water FASs in urban areas. Outcome Measure 2A properties are counted by comparing households at risk today (thus, without accounting for climate change) to the households at risk with the proposed scheme, at the end of the scheme's life (with the relevant climate change allowance based on the chosen benefit duration). Outcome Measure 2B compares the same option scenario to the households at risk in year 2040 (with the relevant climate change allowance, which will be lower than the proposed scheme option's climate change allowance if the life of the scheme goes much further than 2040, as in most cases). Significant surface water urban flooding is often not the result of only one flow path, but several that converge to that point, and it is unlikely that there will be opportunities for FASs along each flow path, with enough space to increase the size of each scheme to also account for climate change.

When small / medium size urban schemes progress to OBC stage, they go through a lot of modelling, analysis, and reporting, often just to demonstrate why they cannot deliver any or enough OM2s for the scheme to be viable. This process often becomes quite repetitive with the OBC being reviewed by different departments within the EA and leads to additional updates of the analysis and the modelling to fit the different comments, new guidance etc. Once the scheme is proven to have a benefit / cost ratio above 1, additional modelling, economic appraisal and guidance changes typically do not impact the design of the schemes, which is tied to the site's constraints and space availability, and instead are only for the sake of getting the business case approved. This leads to a significant increase in the costs unproportional to the scale of these schemes that have as their main objective reducing the pressure on the existing drainage system.

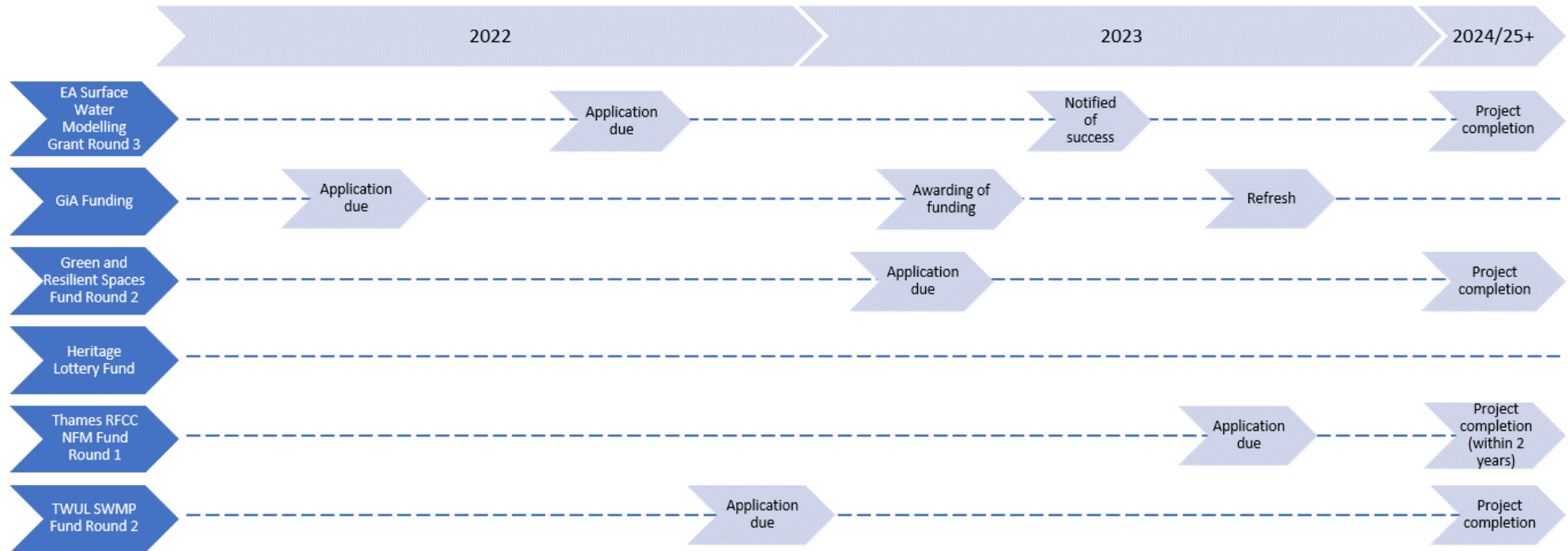


Figure 4.5: The misalignment of funding timescales and processes

## 5. Recommendations

Following the review of the legislation, the interviews with key stakeholders, and the identification of themes by the project team, it is apparent that some legislation and policy as it stands is currently not fit for purpose. Whilst there is a need to change this, not everything will be able to be addressed immediately. Seven overarching recommendations highlight the key focuses which aim to change the overall approach to how water should be managed, and each recommendation has a set of sub-recommendations which are more specific and hence provide more clarity on how these recommendations can be met. These recommendations are intended to be constructive for the benefits of the future of the flood risk, and wider water industry, rather than being critical of existing organisations.

**Recommendation 1:** Redefine legislation and policy to enable the protection of and making space for water.

- Create a summary document of all policy roles and responsibilities.
- Policies should provide strict, direct duties for organisations, clearly setting out responsibilities and accountability.
- Policies should be archived / condensed where necessary, and a consolidation of environmental legislation should be undertaken on a cyclical basis.
- Policy and legislation should be written in conjunction with key front line RMA officers and should be tested through pilot studies before they are implemented.
- Provide funding and clarity on all regulation and enforcement powers and define processes.
- Improve clarity on the definition of flooding at different stages, allowing for the ownership of flood water to be more distinguishable and therefore providing clear distinction on which RMA has what flood risk source responsibilities (if the current RMA structure is to remain in situ).
- The national climate change emergency should be used to update policy to reflect the current situation to include water conservation, flood risk and pollution issues as a climate emergency. The opportunity should also be taken to update all policy to align to climate change adaptation to generate the legislative links between different environmental sectors and workstreams.
- All LLFAs (if the current RMA structure is to remain in situ) should produce land drainage byelaws subject to their own local plan policy needs.
- Have national triggers and definitions where applicable (e.g. Section 19 triggers, significance definition of assets, and when flooding is deemed an emergency).
- Make all RMAs Category 1 responders.

**Recommendation 2:** Use development to proactively manage surface water, approved by the SAB, so that betterment is provided as the norm, rather than 'not making it worse'.

- Make wording in policy and legislation explicit, e.g. remove 'where possible' in NPPF and make Sequential and Exception Tests explicit. Apply methodology to all flood risk sources.
- The permitted development rights should be removed in Flood Zone and Critical Drainage Areas.
- Regulate installation of wastewater appliances (e.g. Gas Safe and Electrical Installation Contracting-style certification and accreditation) to prevent / make accountable misconnections. Make sure any installations are checked by an appropriately qualified and accredited person.

- Developers to submit evidence that drainage has been installed correctly to the SAB for approval e.g. as built drawings.
- Drainage Proformas and Local Plan Validation Checklists must set out surface water requirements. BC must inspect and sign-off as built drainage features to align with SAB approved application.
- Remove the right to connect to the sewer system.
- Provide clarity on the mutual benefits and need for the tying together of other water benefits (i.e. non-flood risk alone benefits) within planned development through improved, holistic planning policies and processes. This must ensure that new build and retrofit requirements for the application of water quality and pollution control measures complement those of drainage rather than being isolated planning considerations.
- Make the inclusion of rainwater capture and reuse mandatory on all developments through improvement of national planning policy.
- Consideration must be given to mitigating the loss of permeable space in front and rear gardens with the onus on the homeowner to not increase surface water disposal onto the highway or into public sewers, watercourses, and rivers and must be regulated and enforced if necessary.
- The NHBC and the CIC should remove the word 'Council' from their names. There is a need for an independent register for Approved Inspectors that should be maintained by the LAs (Unitary, County or Borough / District Councils) and not the CIC.

**Recommendation 3: Deliver an integrated water management approach (not flood risk management), based on hydrological catchments, and stop referring to rainwater as wastewater.**

- Replace 'flood risk management' with 'water management' and bring water quality and water supply together for an integrated management approach of resource and complementary policy making. Remove the term 'wastewater' from water bills and / or any references as the current description includes surface / rainwater.
- Work with WaSCs to encourage the building of their own community rainwater harvesting systems, providing non-potable water to homes for toilet flushing, garden use and other non-potable uses.
- The EA should be re-purposed to focus solely on environmental protection, regulation, and enforcement to re-balance their priorities in terms of their core role and be properly resourced.
- The FCERM roles currently with the EA and LAs should be combined within a newly established single 'water management' organisation. The organisation should be responsible for the management of all sources of water and managed through a hydrological catchment approach. This could be aligned with the existing River Basin Districts (RBDs) (including associated management catchments) with improved governance roles for the RFCCs.
- Improve communication between regulatory organisations (Ofwat) and RMAs and implement a peer review system for strategies and programmes to ensure accountability.
- Create an auditing process on implementation and progress of RMA actions (i.e. asset management plans, flood risk management plans, local flood risk management strategies) and scheme development monitored by a newly restructured RFCC.
- Create a standard process for the integration of central and local water management-related targets which promote holistic working (e.g. tying together SuDS incorporation, water pollution incident and climate change adaptation).

- Processes for proactive monitoring, evaluation, and asset management to align with an integrated catchment management approach to flood risk enabling the sharing of data across the sector and progress against authority targets.

**Recommendation 4:** Make ‘making space for water’ funding aligned where there are proposed public and private sector works, to enable collaborative action and responsible delivery through partnership working.

- Ensure any flood risks on RMA Risk Registers are used to highlight its local significance and priorities and strengthen funding applications and business cases to generate suitable levels of resources.
- The current formula of the PFC is not fit for purpose in an urban setting. A new funding mechanism must be developed to enable flexible integrated multi-benefit, multi-funded private and public sector works that include funding for community engagement and can be planned, monitored, evaluated, and delivered in a partnership approach with sufficient revenue maintenance planned into all sized schemes for the life of the asset.
- Utilise funding grants to trial innovations and share findings but ensure a monitoring and evaluation framework is in place to ensure robust and ongoing data collection to inform interim and final evaluation reports.

**Recommendation 5:** Invest and build community ownership using green financing and Biodiversity Net Gain for water management to change behaviours and set the foundations for a sustainable future.

- Work with relevant professional institutions, research and 3<sup>rd</sup> sector organisations (e.g. CIWEM, South East Rivers Trust, Thames21 etc.) and catchment partnerships to simplify the language used in water management.
- Encourage the use of simplified language and clear definitions on RMA websites to allow for greater public understanding of flooding and who to report it to.
- Increase community awareness and understanding of flood risk and RMA duties through improved public relations and increased, tangible linkages to the climate change emergency.
- Invest in community engagement and develop better routes into volunteering and citizen science and focus on future sustainability by fostering community ownership and legacy through Community Champions.

**Recommendation 6:** Implement and improve training to address the skills gap and ensure sustainable levels of resourcing within the water industry.

- Increase awareness of water management across all central and local Government departments.
- Upskill Elected Members (politicians, cabinet, and senior management) on flood risk management processes to allow improved education of communities on flood risk in their local area.
- Have a revitalised recruitment drive to get more people involved in the water management sector.
- Higher education courses / modules which focus on water management and drainage should aim to increase the numbers of new professionals joining the industry.
- Encourage professionals in the industry to seek professional accreditation such as CIWEM and to attend relevant CPD courses to increase their knowledge and experience.

- Annual training should be provided by appropriate officers across partner organisations in the industry to enable greater understanding of their roles and responsibilities to prevent silo working. For example, officers with and without emergency response roles, and officers involved in planning and / or enforcement matters.
- If changes proposed under Recommendation 3 are not implemented, give RMAs the tools and resources (i.e. tankers, equipment, and skilled personnel) to manage their own flood risk, as they had pre-privatisation.
- There should be a minimum, standardised resourcing level for an LLFA/RMA team to fulfil their statutory obligations based on the level of local risks and acknowledging the two distinct roles of an LLFA (i.e. scheme development and day-to-day duties and quite possibly the emerging SAB duties).
- Streamline industry forums and such attendance to reduce inefficiencies caused by group crossovers to strengthen outputs and discussions to enable sector improvements.

**Recommendation 7: Develop a programme for research and development for the water management industry.**

- To enable the long-term singular ‘water management’ organisation approach (proposed in Recommendation 3), GIS and improved monitoring mechanisms should be developed to enable:
  - The creation of basins / catchments / sub-catchments within each RBD which better reflect hydrological, topographical and sewer features.
  - Methods for efficiently quantifying benefits that attenuation schemes provide, tying financial and environmental elements together through suitably resourced monitoring and evaluation.

This could be governed by restructured RFCCs utilising refined EA PSO and, where in existence, RFCC Flood Advisor teams.

- There should be some SMART objective research conducted as to the most effective and successful water management techniques for use in an urban setting. Case studies complete with monitoring and, where possible, evaluation over several years should form the basis of future recommendations and action plans. Examples could include:
  - Types and designs of SuDS effective in an urban environment, considering runoff pollutants and space constraints.
  - Methods to quantify the impacts of holistic cumulative catchment techniques, for example de-paving, across a larger area equates to attenuation storage features.
  - The potential for Stormwater Utility Levies to create a centralised and ringfenced ‘pot’ of money to be used exclusively for stormwater management, as used elsewhere in the world.
  - Opportunities for joint working to harness opportunities with works done in the highway and public realms.

## 6. Next steps for AfSS and concluding thoughts

It is proposed to implement some of the sub-recommendations during the delivery of the AfSS project to demonstrate real change. This paper highlights where change is needed, and the AfSS project aims to work with DEFRA to deliver a framework for improved water management which can be built upon. The recommendations align with the key elements of the AfSS project including a catchment-based approach, good partnerships, community engagement and robust monitoring and evaluation. Many of the recommendations (i.e. changing policy) have longer timescales, however the following have been identified as being achievable and therefore having the potential to be integrated into the AfSS project.

- Drainage Proformas and Local Plan Validation Checklists must set out surface water requirements. BC must inspect and sign-off as built drainage features and confirm they align with the flood risk application proformas permitted by the SAB.
- Work with catchment partnerships to simplify the language used in water management and increase community awareness and understanding of flood risk and RMA duties through improved public relations.
- Invest in community engagement and develop better routes into volunteering and citizen science and focus on future sustainability by fostering community ownership and legacy through Community Champions.
- Increase awareness of water management across all central and local Government departments.
- Upskill Elected Members on flood risk management processes to allow improved education of communities on flood risk in their local area.
- Utilise funding grants to trial innovations and share findings but ensure a monitoring and evaluation framework is in place to ensure robust and ongoing data collection to inform interim and final evaluation reports.
- Annual training should be provided by appropriate officers across partner organisations in the industry to enable greater understanding of their roles and responsibilities to prevent silo working. For example, officers with and without emergency response roles, and officers involved in planning and / or enforcement matters.

The focus of this paper has been on retrofitting drainage and water management arrangements in urban areas; however, the paper aims to go further than this as it is important to consider how water is managed within England and Wales. It has been identified within the paper where the challenges exist within legislation and policy and, how this is affecting the effective and sustainable management of water. Flooding is a key risk that needs to be considered, but to effectively manage flooding, it is important to consider how water is managed and how water needs to be viewed as one of our most vital resources. Conserving and making space for water needs to be the key message that is taken forward when improving the status of flood risk, both in London and across the country. The policy and legislation that is written needs to reflect this and allow those on the front line to implement change and deliver their core responsibilities of improving the status of water management.

We would also like to highlight the current good work in progress with the Defra led Flood Resilience and Thames Water Smarter Water Catchment programs that certainly include progress and similarity of objectives. **We call on DEFRA to review this and other Policy Challenge Papers so that the recommendations will be taken forward and implemented across the industry, protecting the future of water and how it is managed.**