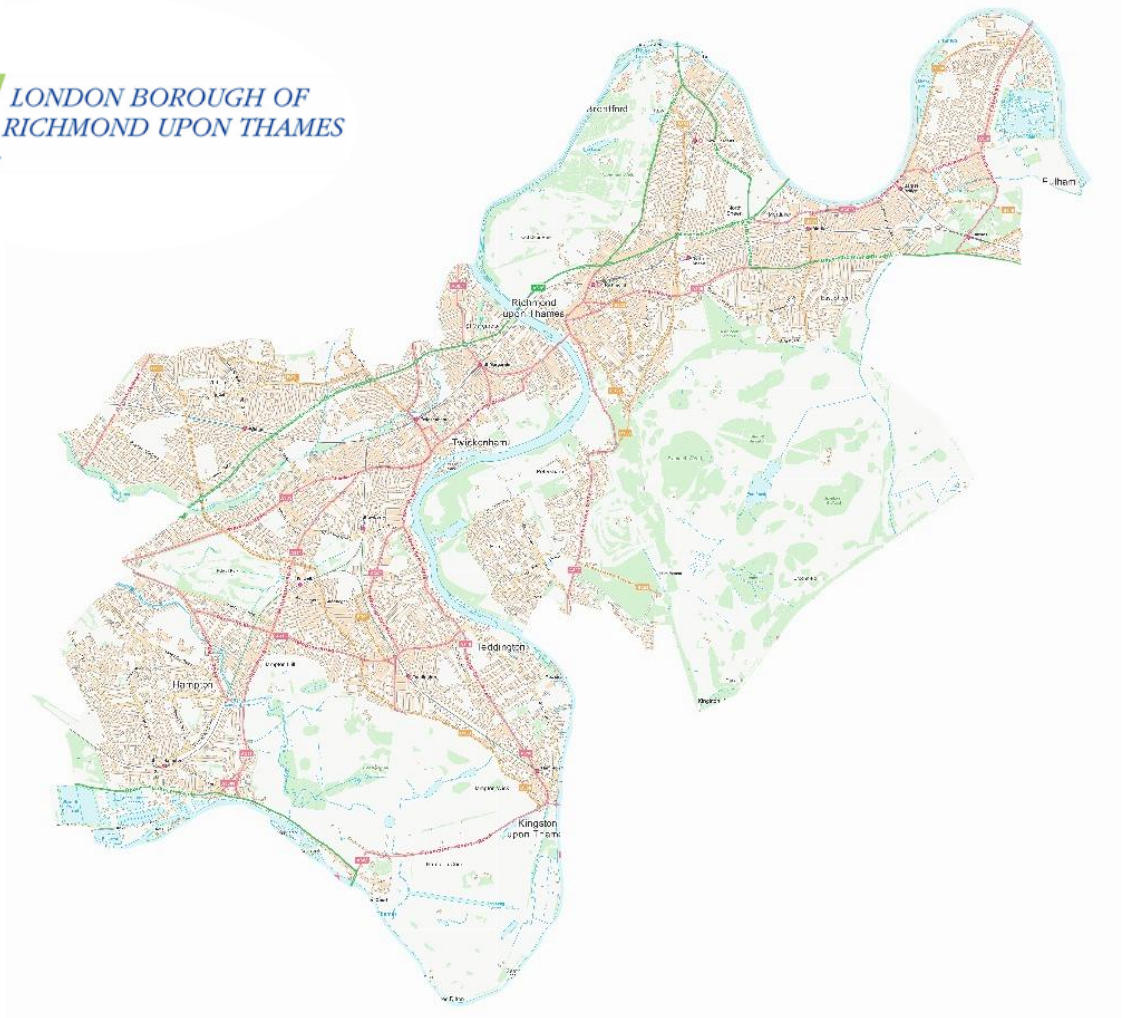
LOCAL FLOOD RISK MANAGEMENT STRATEGY

PREPARED FOR THE LONDON BOROUGH OF RICHMOND UPON THAMES

LONDON BOROUGH OF RICHMOND UPON THAMES



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EXECUTIVE SUMMARY

The purpose of the London Borough of Richmond upon Thames (Richmond)'s Local Flood Risk Management Strategy (LFRMS) is to set out a plan of action for managing local flood risk within the Richmond borough. The LFRMS will establish how the Lead Local Flood Authority (LLFA) and Risk Management Authorities (RMAs) will deliver a collaborative approach to flood risk management.

The Richmond borough is vulnerable to many types of flood risk including fluvial, tidal, surface water, groundwater, sewer and artificial sources. When managing these risks there are different responsibilities for different RMAs. The LLFA is responsible for the management of flood risk from ordinary watercourses, groundwater and surface water. The LLFA may also assist with the management of surface water flood risk on public highways, alongside Richmond Council's Highways department. Other areas of flood risk management are managed by the Environment Agency (EA), Thames Water (TWUL), Transport for London (TfL) and National Highways, as well as landowners. The shared responsibility of flood risk is why effective communication is important for local flood risk management.

Local information and current international, national, regional and local policies have been collated to provide a strong background to the LFRMS strategic objectives. These objectives observe recent changes in climate change predictions and other strategic aims by Richmond Council that can be incorporated into flood risk management. The shared staffing arrangement between the London Borough of Wandsworth (Wandsworth) Council and Richmond Council means that both the Richmond LLFA and Wandsworth LLFA functions are managed as one. To allow for consistent flood risk management between the two boroughs joint LFRMS strategic objectives have been produced, these are:

A. To improve our knowledge and understanding of the risk of flooding and the interactions between different sources of flooding across the London Borough of Richmond upon Thames.
B. To encourage appropriately mitigated development across the London Borough of Richmond upon Thames by promoting sustainable multi-beneficial solutions to contribute to wider social, economic, and environmental outcomes.
C. To seek and identify funding and resources available for a targeted approach to flood risk management.
D. To proactively manage sources of local flooding to homes, critical infrastructure, and transport networks by establishing and maintaining partnerships with key organisations, including the Environment Agency and Thames Water.
E. To work with Risk Management Authorities to raise awareness of flood risk with communities, residents, and businesses, and how they can take action to protect themselves and their property by contributing to the management and reduction of flood risk.
F. To use knowledge of flood risk and climate change projections to inform and adapt the emergency response to flooding within the London Borough of Richmond upon Thames.

The LFRMS strategic objectives are targets for the LLFA to better manage changes in local flood risk. These are supported by a list of appropriate actions detailed within the LFRMS Action Plan. This Action Plan and the LFRMS have been developed for use over the next six years. Any adaptions made during

this time will be to reflect policy, guidance or legislative changes. The LFRMS proposes these actions in order to appropriately adapt its management to flood risk to support improved resilience and sustainability within the Richmond borough. Richmond Council acknowledges that to effectively manage flood risk we must understand and follow guidance from the latest findings on climate change. The LFRMS proposes to use sustainable flood risk management practices such as Sustainable Drainage Systems (SuDS), Natural Flood Management (NFM) and Property Flood Resilience (PFR), and to look for opportunities to implement such practices.

Stakeholders involved in the delivery of the LFRMS were invited to participate in a public consultation process for the LFRMS and its associated documents between the 8th of March 2023 and 3rd of May 2023. This was to ensure that the LFRMS, Action Plan, Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA) had considered a range of interests within the local community. Richmond received 21 responses from the consultation as well as various emails providing additional feedback from community groups, and internal and external stakeholders. This feedback has been used to create the final version of this LFRMS.

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FIGURES AND TABLES

ACRONYMS AND ABBREVIATIONS

Abbreviation	Definition
CDA	Critical Drainage Area
CFMP	Catchment Flood Management Plan
CVP	Crane Valley Partnership
DEFRA	Department for Environment, Food and Rural Affairs
DWMP	Drainage and Wastewater Management Plan
EA	Environment Agency
EU	European Union
FCERM	Flood and Coastal Erosion Risk Management
FRMP	Flood Risk Management Plan
FRR	Flood Risk Regulations (2009)
FWMA	Flood and Water Management Act (2010)
GLA	Greater London Authority
HRA	Habitats Regulations Assessment
IPCC	Intergovernmental Panel on Climate Change
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
NFCERMS	National Flood and Coastal Erosion Risk Management Strategy

Abbreviation	Definition
NFM	Natural Flood Management
NPPF	National Planning Policy Framework
PFR	Property Flood Resilience
PFRA	Preliminary Flood Risk Assessment
RFRA	Regional Flood Risk Appraisal
Richmond borough	The administrative area of the borough
Richmond Council	The administrative body of people formally constituted for the London Borough of Richmond
Richmond town centre	The specific geographical area of Richmond town, not referring to the Richmond borough
RMA	Risk Management Authority
RoFSW	Risk of Flooding from Surface Water
SDS	Strategic Development Strategy
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Drainage Systems
SWLSFG	South West London Strategic Flood Group
SWMP	Surface Water Management Plan
TE2100	Thames Estuary 2100 Plan
TfL	Transport for London
TRFCC	Thames Regional Flood and Coastal Committee
TWUL	Thames Water Utilities Limited
UKCP18	United Kingdom Climate Change Predictions (2018)
Wandsworth	London Borough of Wandsworth
WFD	Water Framework Directive (2000)
WWT	Wildfowl and Wetlands Trust

1 INTRODUCTION

1.1 What is flooding

Flooding in its brief definition is the submerging of an ordinarily dry area by an excess amount of water, as defined by the Flood and Water Management Act 2010 (FWMA). In 2020 there were more than 5.2 million properties in England at risk from flooding and coastal erosion as stated in the National Flood and Coastal Erosion Risk Management Strategy (NFCERMS) for England.

Under the FWMA there are six main types of flood risk. These are fluvial, surface water, tidal, sewer, groundwater, and reservoir/ artificial sources, but not all areas are affected by all types of flood risk. The specific types of flood risk which affect the Richmond borough are identified in *Section 3.2*.

Flooding is dynamic and cannot be fully prevented, and with growing pressures from climate change and sea level rise, flood risk is an issue that is likely to increase in the future without further action. However, there are many methods which can be implemented to aid in effective flood risk management. This Local Flood Risk Management Strategy (LFRMS) is one such document which helps play an important role in managing flood risk for local people, businesses, and the environment. Flood risk can be managed effectively for local communities by identifying the areas at highest risk of flooding and by developing plans to facilitate mitigation measures in reducing the risk of flooding. This creates resilient local communities.

1.2 Background

Richmond Council's Flood Risk Management Team is appointed the Lead Local Flood Authority (LLFA) for the Richmond borough in line with the FWMA. LLFAs are responsible for the management of surface water, groundwater, and ordinary watercourses (defined 'local flood risks'). Under the FWMA (2010), the LLFA are required to produce and maintain a LFRMS. This document is an updated replacement for the existing LFRMS, published in August 2015. The LFRMS and its Action Plan should align with documents such as the NFCERMS for England and all existing local flood risk planning documents.

1.3 Purpose

The overall purpose of a LFRMS is to outline how the LLFA and other stakeholders will manage flood risk within their borough. It covers flood risk from local sources such as surface water, groundwater, and ordinary watercourses (small rivers, brooks, and drainage ditches). The LFRMS sets out the LLFA's objectives for managing these flood risks and outlines the actions which will be taken to achieve these, including the creation of a detailed Action Plan.

The LFRMS aims to manage flood risk in a way that will provide the greatest benefit to the residents, businesses, and environment of the Richmond borough. The LFRMS will act as a guide to local flood risk management for the LLFA (and other Council departments), RMAs, and local residents and businesses to ensure all groups are aware of the local flood risk and their responsibilities in managing them.

With the uncertainty that climate change brings to flood risk, it is important to develop a flexible and resilient LFRMS. This should consider these uncertainties in order to help reduce the probability and effects of flooding. In addition to recognising that flooding is a naturally occurring phenomenon that will continue to occur.

1.4 LFRMS structure

The LFRMS document will take on the following structure:

- ***Section 1: Introduction*** - Summarises topics covered in the LFRMS and explains the context behind the LFRMS, noting its background and purpose additionally stating the new LFRMS strategic objectives.
- ***Section 2: Roles and responsibilities*** - Draws attention to the roles and responsibilities of the LLFA and other RMAs. Local and regional partnership groups relevant to local flood risk management.
- ***Section 3: Local flood risk*** - Provides a background to local flood risk in the Richmond borough by exploring historic flooding, present and predicted future flood risks. Here local flooding characteristics are stated together with the specific types of flood risk the Richmond borough is vulnerable to.
- ***Section 4: Adaptation and resilience to flooding*** - States flood risk management links with climate change and summarises differences between resilient and adaptive response strategies. This section provides guidance and the actions the LLFA will be undertaking to support resilient local communities.
- ***Section 5: Sustainable management*** - Introduces sustainable flood risk management by looking at different strategies. This includes sustainable drainage systems (SuDS), natural flood management (NFM), and property flood resilience (PFR), leading on to future plans for sustainable development.
- ***Section 6: Community and stakeholder engagement plans*** - Includes actions and engagements since the previous LFRMS and details plans for taking community and stakeholder engagement further in this new LFRMS.
- ***Section 7: Action Plan for delivering flood risk management between 2023-2029*** - States the results and benefits of actions taken since the last LFRMS, informing the steps to move forward through the new Action Plan.
- ***Section 8: Conclusion and next steps*** - Summarises the LFRMS document and Action Plan, provides recommendations whilst also establishing the monitoring and reviewing approach for these documents.

1.5 Legislative content

Legislation around flood risk management in the UK can be linked back to the European Union (EU) directives, namely the EU Water Framework Directive (2000). This requires all Member States to improve the state of all water in order to achieve "good" ecological status, and the EU Flood Directive (2007) which defines a framework for approaching flood risk management. Both directives were originally adopted into UK law in 2003 and 2009 (as the Water Environment (Water Framework Directive) Regulations and Flood Risk Regulations) respectively.

Following the severe flooding that took place over the summer of 2007, the Government commissioned Sir Michael Pitt to carry out a comprehensive review of the state of flood risk management in England. The recommendations formulated in the Pitt Review were used to develop the FWMA which defines the roles and responsibilities of the RMAs involved in flood risk management. Large Councils, such as Richmond Council, were appointed the role of LLFA and the responsibility to

lead on local flood risk management which is usually designated to an internal Flood Risk Management Team. *Table 1-1* below summarises the relevant international, national, regional, and local FRM legislation and policies which the LFRMS must align to.

Table 1-1 Summary table of relevant FRM legislation and policies

International	
EU Water Framework Directive (2000)	The EU Water Framework Directive (WFD), published in 2000, makes it a requirement for Member States of the EU to improve and maintain the state of all waters, including surface waters and groundwater. All waters are to achieve a "good" ecological status by 2015 or, at the latest, by 2027. The WFD request that water management plans are developed using a river basin approach. The WFD was adopted into UK law in 2003 and will become part of new UK law following the UK's departure from the European Union.
EU Flood Directive (2007)	The EU Flood Directive dictates how Member States should approach the flood risk management of all types of floods. A three stage process is to be followed. By 2011, Member States have to produce Preliminary Flood Risk Assessments (PFRAs) to identify areas where water courses and coast lines are potentially at risk of flooding. By 2015, mapping of flood risk areas showing the extent, assets and number or inhabitants at risk must be carried out. By 2015, Flood Risk Management Plans (FRMPs) for areas at high risk of flooding must be produced, including measures to reduce flood risk. The EU Flood Directive was implemented in UK law through the Flood Risk Regulations (FRR) (2009) and will be a continuing law following the UK's departure from the EU.
IPCC Climate Change Report (2021)	The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report aims to assess the physical science basis of climate change. The headlines from the 2021 report include predictions of +1.5^{O}C temperature change in the next two decades and that climate change is presently affecting every populated region of the globe.
National	
Civil Contingencies Act (2004)	The Civil Contingencies Act is a legislative framework for civil protection in the UK that establishes the roles and responsibilities on organisations that play a role in preparing for and responding to emergencies. Under the Act, local authorities are a Category 1 responder. Some of their duties include putting in place emergency plans, sharing and co-operating with other local responders to enhance efficiency.
The Pitt Review (2007)	Following the extreme flooding that took place in the summer of 2007, a comprehensive review lead by Sir Michael Pitt known as the Pitt Review was commissioned by the UK Government. The Pitt Review provides 92 recommendations to improve flood risk management in England, notably that County Councils, large metropolitan boroughs, and Unitary Authorities should take lead on the management of flood risk. The Pitt Review recommendations were accepted by the Government and gave way to the FWMA.
Climate Change Act (2008)	The Climate Change Act sets various targets to be achieved by the year 2050, including reducing or removing greenhouse gas emissions from the atmosphere and providing a system for carbon budgeting. Part 4 of the act sets out the impacts of and adaptation to climate change.

Flood Risk Regulations (2009)	The FRR implements the EU Flood Directive in England. Flood risk management, as set out by the framework, requires the production of PFRAs, the identification of flood risk areas, mapping of such areas and FRMPs.
Flood and Water Management Act (2010)	FWMA aims to provide better, more sustainable management of flood risk and coastal erosion along with improving the sustainability of water resources. The FWMA defines structures and responsibilities for managing flood risk, notably with the introduction of LLFAs which impart the role of managing local flood risk to County Councils, large metropolitan boroughs, and Unitary Authorities. The EA is appointed to hold the strategic overview role of all sources of flooding, in addition to managing the flood risk from main rivers and the sea. The FWMA also places a statutory duty on the EA to develop a NFCERMS for England.
Flood and Coastal Erosion Risk Management Policy (2020)	The Flood and Coastal Erosion Risk Management (FCERM) Policy Statement reflects the government's long-term ambition to increase the resilience to flood and coastal erosion risk nationwide.
National Flood and Coastal Erosion Risk Management Strategy (2020) NFCERMS Action Plan (2021)	The NFCERMS sets out a framework for RMAs involved in managing flood risk in order to increase the nation's flood resilience. The publication of the NFCERMS was followed by an Action Plan aligned with the long-term objectives of the NFCERMS.
National Planning Policy Framework (2021, revised)	The National Planning Policy Framework (NPPF) sets out the planning policies to provide sustainable development and is published by the Ministry of Housing, Communities & Local Government. The NPPF provides guidance on developing Local Plans in line with national planning policies. These policies include avoiding and managing risks from flooding, in line with the role of local planning authorities to prepare local plans and to decide on planning application permissions.
Regional	
Thames Catchment Flood Management Plan (2009)	The Thames Catchment Flood Management Plan (CFMP) is a plan which helps RMAs such as the EA to plan and agree the most effective ways to manage flood risk in the future. A CFMP considers all types of inland flooding from rivers, groundwater, surface water and tidal flooding but not directly from the sea (coastal flooding) which is instead covered in Shoreline Management Plans. CFMPs also consider likely effects of climate change, land use change/ management and the need for future development.
Mayor of London's Climate Change Adaptation Strategy (2011)	This Mayor of London's Climate Change Adaption Strategy sets out the framework for improving the quality of life in London and for protecting the natural environment. It provides an action plan for making London more sustainable by using three 'pillars': retrofitting London, greening London and cleaner air for London. The strategy presents the understanding of main climate change effects on London as well as analysing the effects on cross-sector issues including health, economy, and infrastructure. The strategy also provides a 'roadmap to resilience' outlining actions, with lead and partner organisations.
Thames Estuary 2100 Flood Risk Management Plan (2012)	The Thames Estuary 2100 (TE2100) Plan was developed by the EA and provides strategic direction for managing flood risk in the Thames Estuary to the end of the century. The TE2100 plan is an adaptive strategy and is reviewed on an interim basis every 5 years and on a full basis every ten

	years. The plan considers different long-term options for managing tidal flood risk depending on changes in factors which determine the level of flood risk, including sea level rise.
London Regional Flood Risk Appraisal (2018)	The London Regional Flood Risk Appraisal (RFRA) provides an overview of all sources of flooding in London and addresses both its probability and consequences. The evidence of the London RFRA subsequently informs the London Plan and should inform local-level flood risk assessments and local plans.
The London Plan (2021)	The London Plan is a general Strategic Development Strategy for London. Producing a Strategic Development Strategy is a requirement of the London Mayor established under Greater London Authority (GLA) legislation. The London Plan establishes an integrated economic, environmental, transport and social framework for the development of London for the next 20-25 years.
Local	
Local Plan (2018) *Currently undergoing consultation on 'Pre-Publication' Draft Local Plan, estimated date of adoption in Autumn 2024.*	The Local Plan is developed by the Local Planning Authority and sets out a vision and framework for the future development of the area. Richmond Council's Local Plan sets out policy and guidance to manage growth and guide development within the Richmond borough. It addresses needs and opportunities in relation to housing, the economy, community facilities and infrastructure, as well as conserving and enhancing the natural and historic environment, mitigating, and adapting to climate change and achieving well designed places. The plan is made up of the combination of strategic policies, addressing important priorities for the Richmond borough, and non-strategic policies.
Biodiversity Action Plan (2019)	The local Biodiversity Action Plan outlines the actions that must be taken at a local level to achieve the objectives of the National Biodiversity Action Plan, which was published in 1994. The Biodiversity Action Plan for the Richmond borough sets out a strategy for the conservation of species and habitats within the Richmond borough.
Climate Emergency Strategy (2019-2024)	The Climate Emergency Strategy provides an overarching framework and action plan to drive the delivery of action on climate change and achieve the target of Richmond becoming carbon neutral by 2030. The strategy builds on existing progress and plans to provide more clarity and focus, highlighting linkages between approaches being taken across the organisation and identifying additional key future actions and approaches.
Strategic Flood Risk Assessment (2021)	A Strategic Flood Risk Assessment (SFRA) is required by the NPPF and provides a strategic overview of all forms of flood risk within a designated area. A SFRA assesses the risk from all sources of flooding, the cumulative effect that development or changing land use could have, and the effect of climate change on the risk of flooding. A SFRA should also identify opportunities to reduce the causes and effects of flooding, including potential areas of land for flood risk management infrastructure. The SFRA provides guidance for the local plan, individual planning applications, future flood management, emergency planning and how to adapt to climate change.
Surface Water Management Plan (2021)	The Surface Water Management Plan (SWMP) is a plan produced by LLFAs that presents the surface water flood risk for an area and forms a strategy on how to manage this with local partners. While this LFRMS provides an

	overall outlook on flood risk within the Richmond Borough, it signposts to the SWMP to offer the reader a more detailed analysis of surface water flood risk. The SWMP considers flooding from sewers, drains, groundwater, and surface runoff from land, small watercourses and ditches that occur as a result of heavy rainfall. The SWMP also includes a long-term Action Plan to manage surface water flood risk which will influence land-use planning, emergency planning and future developments. The SWMP Action Plan aligns with many of the actions from the LFRMS Action Plan. SWMPs also aim to identify SuDS opportunities to manage surface water flood risk which contributes towards the WFD requirements.

1.6 Strategic objectives of the LFRMS

A requirement of the LFRMS is to produce a set of strategic objectives which set the targets for the LLFA for the next six-year LFRMS period. The strategic objectives for the LFRMS have been aligned with those for the neighbouring borough, the London Borough of Wandsworth (Wandsworth). This is due to the working partnership between the two boroughs in delivering local flood risk management. The updated strategic objectives also follow the three core objectives laid out in the updated NFCERMS set by the EA, which are:

- Climate resilient places: working with partners to bolster resilience to flooding and coastal change across the nation, both now and in the face of climate change.
- Today's growth and infrastructure resilient in tomorrow's climate: making the right investment and planning decisions to secure sustainable growth and environmental improvements, as well as resilient infrastructure.
- A nation ready to respond and adapt to flooding and coastal change: ensuring local people understand their risk to flooding and coastal change and know their responsibilities and how to take action.

The strategic objectives for the Richmond borough are presented on the following page. Clear actions for each of these strategic objectives have subsequently been laid out in an Action Plan presented in *Appendix 1* – Action Plan. An internal Council version of the Action Plan will include a detailed monitoring and reviewing section which will observe and track the progression of these actions to assess the work implemented towards achieving each of these objectives.

The strategic objectives cover a wide range of bases and conform to the current agenda for managing flood risk. Each of these six objectives have a specific area of focus which are as follows:

A. Knowledge of flooding
B. Development and wider contributions
C. Funding and resources
D. Partnership working
E. Raising awareness of flood risk with local communities, residents and businesses
F. Emergency response plans and climate change

Strategic Objective A:

To improve our knowledge and understanding of the risk of flooding and the interactions between different sources of flooding across the London Borough of Richmond upon Thames.

Strategic Objective B:

To encourage appropriately mitigated development across the London Borough of Richmond upon Thames by promoting sustainable multi-beneficial solutions to contribute to wider social, economic, and environmental outcomes.

Strategic Objective C:

To seek and identify funding and resources available for a targeted approach to flood risk management.

Strategic Objective D:

To proactively manage sources of local flooding to homes, critical infrastructure, and transport networks by establishing and maintaining partnerships with key organisations, including the Environment Agency and Thames Water.

Strategic Objective E:

To work with Risk Management Authorities to raise awareness of flood risk with communities, residents and businesses, and how they can take action to protect themselves and their property by contributing to the management and reduction of flood risk.

Strategic Objective F:

To use knowledge of flood risk and climate change projections to inform and adapt the emergency response to flooding within the London Borough of Richmond upon Thames.

1.7 Other strategic documents

In conjunction with the LFRMS there are three additional appendices which include the LFRMS Action Plan, Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA). The SEA and HRA are important assessments which determine whether the LFRMS will pose any significant impacts to local environments or habitats.

1.7.1 Strategic Environmental Assessment

The SEA is presented in *Appendix 2* – SEA Screening Report. The purpose of the SEA is to review actions, plans and strategies which are likely to pose significant environmental effects to a specified area. This is required under the European SEA Directive (2001) which establishes five stages of assessment:

- **Stage A:** Setting the context and objectives, establishing the baseline and deciding on the scope.
- **Stage B:** Developing and refining options and assessing affects.
- **Stage C:** Preparing the environmental report.
- **Stage D:** Consulting on the draft strategy and the SEA report.
- **Stage E:** Monitoring the significant effects of implementing the strategy.

The Richmond borough SEA responds to the requirements for Stage A as an initial screening report which assesses whether progression onto later stages is necessary. Baseline data including biodiversity, flora and fauna, infrastructure assets, population, public health, air quality, climate factors, soil and water, and historic and cultural environments was assessed. This provided evidence for the establishment of a list of environmental issues facing the Richmond borough, which informed the creation of six SEA objectives. Through the assessment of the SEA objectives against the LFRMS strategic objectives it has been concluded that the Richmond borough LFRMS and its Action Plan will not have a detrimental effect on local environmental issues.

1.7.2 Habitats Regulations Assessment

The HRA is presented in *Appendix 3* – HRA Screening Report. The purpose of the HRA is to understand any risks and implications posed by the LFRMS and its Action Plan to habitats and protected areas. This is required under the Conservation of Habitats and Species Regulations (2017) known also as the Habitats Regulations. Three tasks complete the full HRA process which are:

- **Task 1:** Screening. To check if the strategy, plan, or proposal is likely to have a significant effect on a European site's conservation objectives.
- **Task 2:** Appropriate Assessment. To assess the likely significant effects of the proposal in more detail and identify ways to avoid or minimise any effects.
- **Task 3:** Derogation. To consider if proposals that would have an adverse effect on a European site quality for exemption.

The Richmond borough HRA undertakes Task 1, completing the requirements for screening to determine if an appropriate assessment or derogation are necessary. The HRA requires the assessment of Natura 2000 sites, sites of European Importance, which include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites. The sites of Wimbledon Common (SAC), South West London Waterbodies (SPA & Ramsar), Windsor Forest & Great Park

(SAC) and Thames Estuary & Marshes (SPA & Ramsar) have also been included as relevant sites for investigation. Analysis of each HRA site against each LFRMS strategic objective concludes that none of the proposed LFRMS strategic objectives or associated actions will impose negative effects on the Natura 2000 sites identified in the HRA report.

Figure 1-1 Richmond Riverside (Image source - Richmond LLFA)

2 ROLES AND RESPONSIBILITIES

2.1 RMAs and other stakeholders

A RMA is an agency or organisation which has a role in managing flood risk. RMAs can range from central government organisations to private companies, and each will have different responsibilities to undertake before, during and following a flood event. In order for there to be effective communication during a flood it is important to understand who is responsible for what between RMAs. *Table 2-1* explains which RMA is responsible for different types of flooding and who has jurisdiction within different areas of managing flood risk.

Table 2-1 RMAs responsibilities in managing types of flooding occurrences

Responsibility	Risk Management Authority				
	Richmond Council	Environment Agency	Thames Water	Transport for London	National Highways
Highway drainage and asset management of major A-roads				✓	
Highway drainage and asset management of motorways					✓
Highway drainage and asset management of other public roads	✓				
Management of flood risk and regulation of main rivers, estuaries and the sea		✓			
Management of the flood risk and regulation of ordinary watercourses	✓				
Management of the public sewer network			✓		
Management of the risk of groundwater flooding	✓				
Management of the risk of statutory reservoir flooding		✓			
Management of the risk of surface water flooding	✓				

2.1.1 Richmond Council

Richmond Council has multiple duties and responsibilities as a principal RMA. These responsibilities are shared across different departments within Richmond such as the Highways Department, within which the LLFA is situated, explained in greater detail in *Section 2.2*.

The overarching duty of the LLFA is to manage local flood risks such as flooding from surface water, groundwater, and ordinary watercourses. Details of these types of flooding and others faced in the Richmond borough can be found in *Section 3.2*. To deliver its duties effectively the LLFA must follow the requirements set out in the FWMA:

- Prepare and maintain a LFRMS, consulting with local bodies and the public
- Perform works to manage local flood risk in their area
- Maintain an asset register, which is a record of physical features that have a significant effect on flooding in the area
- Undertake flood risk investigations of significant flooding incidents as required by the FWMA. Criteria for the Richmond LLFA undertaking an investigation (in line with Section 19 of the FWMA) is presented in *Figure 2-1*
- Regulate and maintain the proper flow of ordinary watercourses, including issuing consents and enforcing obligations on physical structures
- LLFA to assist local authority in its lead role in emergency planning and recovery after a flood event
- Provide technical advice as a statutory consultee on surface water drainage to local planning authorities

Following the enactment of Schedule 3 of the FWMA, expected in 2024, Richmond Council will be required to undertake the role of a SuDS Approving Body (SAB). More detail on Schedule 3 can be found in *Section 5.2.1*, however at the time of writing this LFRMS, specific details are outstanding.

Further LLFA obligations are detailed in the FRR, namely:

- Determine whether, in its opinion, there is a significant flood risk in its authority area. Identifying the part of the area affected by the risk (flood risk areas) detailing this within PFRAs
- Prepare in relation to each relevant flood risk area (1) a flood hazard map, and (2) a flood risk map
- Prepare a flood risk management plan in relation to each relevant flood risk area
- Co-operate with any other relevant authority which is exercising its function under the FRR

Figure 2-1 presents the flood investigation threshold criteria, required under Section 19 of the FWMA, for the Richmond borough. These are conditions that must be met in order for a flooding incident to require a formal investigation. The LLFA may decide to investigate additional flooding incidents that do not necessarily conform to the listed criteria at their discretion if they consider the flood event to be significant in a different circumstance.

Flood Investigation Threshold Requirements

A formal investigation will be carried out if one or more of the following occurs:

- If internal flooding* of a single residential property, business or office premises has occurred.
- Where a flooding incident impacted on an identified item of critical infrastructure.

*Definition of internal flooding: Where water crosses the threshold of a commercial or residential building.

Figure 2-1 The threshold criteria for when the LLFA will conduct a flood investigation

2.1.2 The Environment Agency

The Environment Agency (EA) is the national flood risk authority for the UK. The EA has responsibilities and powers with regards to flood warnings (in partnership with the Met Office), flood risk mapping and the construction of flood defences and the consenting and enforcement of works near to or within main rivers. Large watercourses, known as 'main rivers', are within the regulatory control of the EA however the EA has strategic overview of all sources of flooding and coastal erosion as defined in the FWMA. The main rivers within the Richmond borough which the EA is responsible for managing and maintaining are:

- River Thames
- River Crane
- Beverley Brook
- Duke of Northumberland River
- Whitton Brook
- Portlane Brook

The FWMA also requires the EA as an RMA to produce the NFCERMS for England, as well as cooperate with other RMAs and exchange information. The EA also has a duty to produce guidance for LLFAs on FRMPs, provide tools and data and allocate national Government funding for projects managing flood and coastal erosion risk from all sources.

2.1.3 Thames Water

Thames Water Utilities Limited (TWUL) is the regional water and sewerage company responsible for the Richmond borough. TWUL has the responsibility to manage the risk of flooding in relation to water supplies and sewerage facilities and manage the flood risks posed from their infrastructure if it were to fail. Under Section 94 of the Water Industry Act (1991) TWUL have a duty to ensure that the area they serve is "effectually drained", meaning to provide, improve and extend public sewers as well as maintaining them.

2.1.4 Transport for London

Transport for London (TfL) is responsible for managing the public transport network for London. TfL also has the responsibility to manage certain highway drainage and roadside ditches under the Highways Act (1980). This is undertaken in conjunction with National Highways and the relevant

local authority (Richmond Council in this instance) (as specified in *Table 2-1*). The red routes managed by TfL within the Richmond borough are listed below:

- A205
- A3003
- A3004
- A3008
- A305
- A306
- A307
- A308
- A309
- A310
- A311
- A312
- A313
- A314
- A316

2.1.5 Category One responders

The Civil Contingencies Act (2004) details the following authority divisions as Category One responders to emergencies:

- Local authorities (County Council, District Council, London Borough Council)
- Emergency Services (Police, Fire and Rescue, Ambulance Services)
- Others (EA, Secretary of State)

A serious flooding incident is a type of emergency that these Category One responders will respond to. Richmond Council is a Category One responder, and as such has the responsibility to have plans in place to respond to flooding emergencies and control or reduce their impact. The LLFA team will investigate causes of flooding and manage flood risks but are not expected to respond during a flood event except to assist other RMAs and Category One responders (where possible). The Richmond borough's Corporate Resilience Plan details how the Council prepares for emergencies, and can be viewed online.

2.1.6 Landowners

Private landowners are responsible for taking measures to safeguard their own land and property from flooding. The measures they put in place must not inflict greater harm on surrounding buildings or land by increasing neighbouring flood risk. Riparian landowners have a duty to ensure that any structures on their land which are linked to neighbouring watercourses are clear of debris so that watercourses can flow naturally. Natural right of drainage is allowed however landowners must not artificially channel water in a way that will affect neighbouring property, and if a landowner has flood defences these must also be maintained correctly. Additional guidance on how to manage a watercourse on your property can be found here.

2.2 Internal flood risk governance

Within Richmond Council there are many cross-departmental channels which aid in flood risk management. Most departments within the Council have their own duties and responsibilities in regard to certain aspects of flood risk. The Highways Department in Richmond Council is responsible for maintaining any highway assets on adopted roads which are not owned or managed by TfL. Highway drainage, such as drains, road gullies, ditches and pipes should be routinely inspected to ensure that highway surface run-off can be well managed. Richmond Council's LLFA team sits within the Highways Department.

The Emergency Planning Team within Richmond Council is responsible for preparing and updating Emergency plans for flooding occurrences within the Richmond borough. The Development

Management Department is responsible for evaluating planning applications and reviewing whether development proposals meet the required standards such as greenfield run-off rates and use of SuDS. All these department functions help the LLFA meet its roles and responsibilities as lead RMA. Details on how to contact these departments can be found in *Figure 2-3*, along with general directories for external RMAs.

Figure 2-2 Surface water flooding on a road in Richmond (Image source – Richmond LLFA)

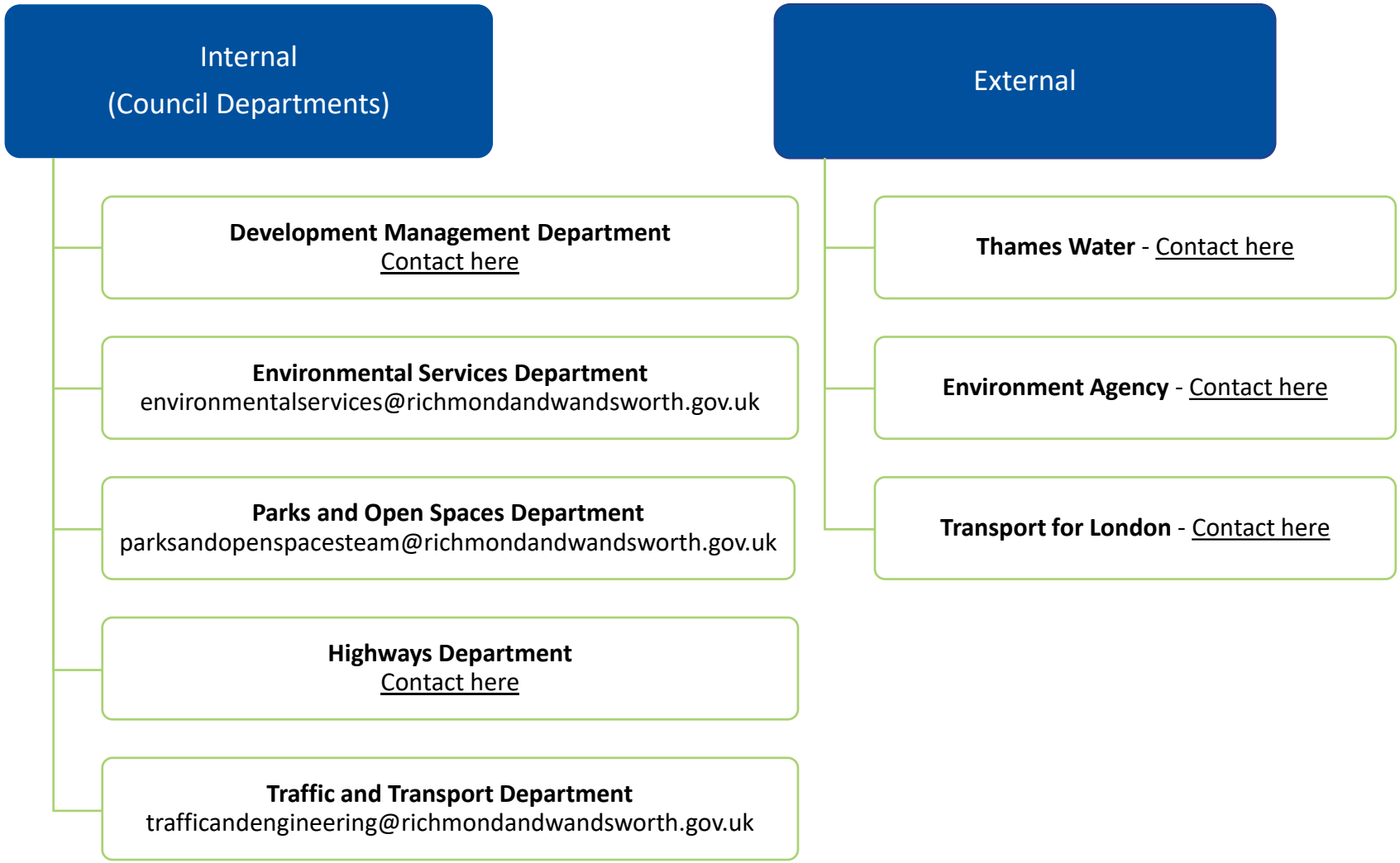

Figure 2-3 Contact information for internal and external RMAs

2.3 Local and regional partnership groups

The LLFA actively work with systems planners at TWUL, TfL for highways matters, London Fire Brigade for emergencies and neighbouring LLFAs to coordinate on strategic matters and joint flood management schemes. When engaging in local flood risk management and associated flood risk projects local groups are frequently engaged with. For instance, the Community BlueScapes Project across the Beverley Brook's catchment which is supported by the Government's Flood and Coastal Resilience Innovation Programme has formed a working group made up of local stakeholders to help complete the project.

2.3.1 South West London Strategic Partnership Flood Group

The South West London Strategic Flood Group (SWLSFG) was established in 2011 and reports to the Thames Regional Flood and Coastal Committee (TRFCC). The multi-agency SWLSFG includes representatives from the EA, TWUL, Thames Flood Advisors and six LLFAs in the region including: the Royal Borough of Kingston upon Thames, and the London Boroughs of Croydon, Merton, Richmond upon Thames, Sutton, and Wandsworth. Neighbouring borough LLFAs, including Surrey County Council and the London Borough of Lambeth, also attend SWLSFG meetings regarding cross-boundary matters.

2.3.2 South London and Surrey Technical Group

The South London and Surrey Technical Group is a regular group meeting of the LLFAs from South London including the Royal Borough of Kingston upon Thames, and the London Boroughs of Croydon, Merton, Southwark, Lambeth, Richmond upon Thames, Wandsworth and Surrey County Council. Any relevant flood risk management topics are discussed and the meeting is conducted as an open forum for any appropriate discussions between these authorities.

2.3.3 Thames Regional Flood and Coastal Committee

The TRFCC is a committee established by the EA under the FWMA and brings together members appointed by LLFAs and independent members for 3 main purposes:

- To ensure there are coherent plans for identifying, communicating, and managing flood and coastal erosion risks across catchments and shorelines.
- To encourage efficient, targeted and risk-based investment in FCERM that represents value for money and benefits local communities.
- To provide a link between the EA, LLFAs, other RMAs, and other relevant bodies to build an understanding of flood and coastal erosion risks in its area.

2.3.4 Crane Valley Partnership

The Crane Valley Partnership (CVP) is a group of stakeholders which reside within the five boroughs within the River Crane catchment (London Boroughs of Ealing, Harrow, Hillingdon, Hounslow, and Richmond upon Thames). Stakeholders included in this partnership include, local charities, community groups, borough councils, private businesses, and government agencies. The goal of the CVP is to restore the natural river system, conserve surrounding habitats and improve public access so that communities have improved access to nature.

2.3.5 Internal flood group

An internal flood group has the purpose of utilising meetings to deliver the LFRMS and its Action Plan, further ensuring collaboration internally. The development of schemes and opportunities in partnership with other internal departments will be a part of the LFRMS delivery. The LLFA is looking to re-establish its internal flood group following the publication of this updated LFRMS. A shared staffing arrangement since 2016 has meant that both the Richmond LLFA and Wandsworth LLFA functions have been managed as one, and departments engaged with accordingly.

2.3.6 Thames Landscape Strategy

Thames Landscape Strategy are a non-profit partnership organisation consisting of 14 major riverside landowners, including Richmond Council. Thames Landscape Strategy are undertaking a project called 'Rewilding Arcadia' to deliver nature-based flood risk management projects which restore lost floodplain of the Arcadian Thames. The project also aims to reconnect water, people, heritage and wildlife with the natural cycles of the Thames. Further information can be found on the Thames Landscape Strategy website. Thames Landscape Strategy are also working on an update to the existing Thames Flood Strategy for the Arcadian Thames and are proposing a joint review within the next three years.

3 LOCAL FLOOD RISK

3.1 Local flooding characteristics

The Richmond borough is situated in southwest London and is the only London Borough to bisect the River Thames. The Richmond borough is bordered by the London Boroughs of Hounslow (northwest), Hammersmith & Fulham (north), Wandsworth (east) and Kingston (southeast). The Richmond borough also borders Elmbridge, of Surrey where the River Thames flows along the southern edge of the Richmond borough.

The terrain of the Richmond borough increases away from the River Thames with the highest points located at Richmond Park and along the western boundary. Lower terrain levels are found in the vicinity to the River Thames where Strawberry Hill and Hampton Wick in the East are located within the River Thames floodplain. Further details on the Richmond borough's topography can be found within the SWMP (2021).

There are a variety of major infrastructure and amenity areas within the Richmond borough that should be accounted for when reviewing flood risk, these are:

- Rail assets (Southwestern Railway line, London Underground (District Line), London Overground railway line and associated railway stations and maintenance assets)
- Town centres (Richmond town centre) and District centres (East Sheen, Teddington, Twickenham, and Whitton)
- Major roads (sixteen A-roads)
- Open spaces (Richmond Park, Bushy Park, Kew Gardens)
- Special Areas (Wildfowl and Wetlands Trust (WWT) London Wetland Centre in Barnes)

3.2 Types of flood risk

3.2.1 Fluvial flood risk

Fluvial flood risk is flooding from main rivers and is experienced when the amount of water within a channel is greater than the capacity of that channel. In the Richmond borough there are several rivers the largest being the River Thames which bisects the Richmond borough. The River Thames is tidal downstream of Teddington Lock. The River Crane is situated in the west of the Richmond borough, north of the River Thames and flows eastwards to join the River Thames at St. Margarets. The third main river is the Beverley Brook which is situated south of the River Thames and flows northwards along the Richmond borough boundary with Wandsworth until it joins the River Thames at Barn Elms.

The EA produces fluvial flood risk zones which categorises the risk of flooding from this source. The probability of flooding within each of the flood risk zones is shown below in *Table 3-1*[1]. Additional information including maps of the Flood Zones in the Richmond borough can be viewed in the SWMP (2021) and the Level 1 SFRA (2021).

Table 3-1 Fluvial / Tidal Flood Risk Zones

Zone	Return Period	Probability of flooding in any given year (% chance)
1	1 in 1000-year	Less than 0.1%
2	Between 1 in 100-year and 1 in 1000-year	Between 0.1% - 1%
3a	1 in 100-year (from rivers) or 1 in 200-year (from the sea)	Greater than 1% (from rivers) or 0.5% (from the sea)
3b	1 in 30-year	Greater than 3.3% (significant risk)

Figure 3-1 The River Thames overflows its banks at Richmond Riverside during high tide (Image source - Richmond LLFA)

[1] Planning Practice Guidance (PPG) was updated in 2022 to change Flood Zone 3b from a 1 in 20-year to 1 in 30-year return period. The mapping of Flood Zone 3b will be updated on the online tool and in the Richmond SFRA once the new dataset becomes available from the EA.

3.2.2 Tidal flood risk

Tidal flood risk is another source which could affect parts of the Richmond borough as tidal flooding can occur during extreme high tides and/or during storm surges. The River Thames flowing through the Richmond borough is tidal downstream of Teddington Lock, and non-tidal upstream. The Richmond borough has in place fluvial defences including flood walls which form part of the EA's Thames Tidal Defence system. These defences help to mitigate the risk posed by tidal flood risk from the River Thames. Areas protected by these defences are included in the watercourses and fluvial flood risk map within the Richmond SWMP (2021).

3.2.3 Surface water flood risk

Surface water flood risk, also known under the term pluvial flooding arises when rainwater cannot drain away quickly enough into the ground through infiltration or via existing drainage systems. This type of flood risk is exacerbated in the Richmond borough because of the underlying London Clay which ordinarily has a low infiltration rate. Other attributes to causing increased surface water flood risk can include the change of land use to more impermeable surfaces such as by paving over gardens to driveways. Blocked drainage channels or overwhelmed drainage systems can also contribute to greater risk of surface water flooding.

The summer of 2021 showed how high magnitude rainfall over short durations in drier months can cause intense flash flooding across the city of London, demonstrating how vulnerable the city is to surface water flooding. More information on surface water flood risk is provided in the SWMP (2021). And details on methods of how to manage surface water flood risk can be viewed in *Section 5.2*.

The Richmond Level 1 SFRA recommends implementing the 1 in 100 year surface water extent as Flood Zone 3a (surface water) for Richmond. The requirements of Flood Zone 3a (surface water) would be similar to those adopted for Flood Zone 3a (fluvial / tidal) as seen in *Table 3-1*, but with some modifications as outlined in the SFRA Strategic Policies Recommendations section.

Ordinary watercourses

Ordinary watercourses include streams, ditches, drains, dykes, non-public sewers, passages through which water flows, and rivers that do not qualify as main rivers. These watercourses are as defined under the Land Drainage Act (1991). Similar to fluvial flood risk, flood risk from ordinary watercourses is caused by an increase in capacity which exceeds a channels capacity. However, flooding from ordinary watercourses is considered to be a combination of different flood risks, fluvial, surface and sewer. In the Richmond borough there are ordinary watercourses, such as the Longford River, some of which are tributaries to the main rivers noted in *Section 2.1.2*, and the risk of flooding from these sources is included in the Risk of Flooding from Surface Water (RoFSW) maps within the SWMP (2021).

Properties at risk of flooding from surface water

As part of conducting a SWMP the number of properties at Risk of Flooding from Surface Water (RoFSW) within an area are calculated. These have been calculated by assuming a property threshold of 100mm and 30mm minimum depth of flooding, applying data from the EA's properties at risk of flooding in a 1 in 100-year rainfall event. An extract of this data is displayed in *Table 3-2*, complete information can be found within the SWMP (2021).

Table 3-2 Number of properties at RoFSW within the Richmond borough

	Residential	Other	Unclassified
1 in 100-year surface water extent (1% probability of flooding in any given year)	2,063	535	255

3.2.4 Groundwater flood risk

Groundwater flood risk is a risk of flooding from water which rises from underlying aquifers or sub-surface permeable strata. Groundwater flooding tends to occur after periods of heavy and sustained rainfall. This type of flooding is also variable over location and time due to varying topography and geology. Groundwater flooding can take a longer time to dissipate compared to other forms of flooding because of these factors. High groundwater levels can also contribute to other types of flooding such as pluvial and fluvial flooding by reducing infiltration capacity.

The Richmond borough also has groundwater throughflow catchment areas, as defined in the Level 1 SFRA, which are at increased risk of flooding from groundwater. A study has also been conducted in Richmond Hill which has helped to define these throughflow areas and improve information on groundwater flood risk for the area. This has subsequently been used to inform changes in the Local Plan for the Richmond borough and planning procedures, including the creation of the Basement Impact Assessment User Guide to prevent increased flood risk as a result of new basement developments. If planning applications are within these areas they require additional analysis of flood risk to ensure developments do not increase the risk of throughflow and groundwater related flood risk, which is detailed in the Local Plan for the Richmond borough.

Permeable substrates can cause groundwater levels to rise leading to flooding below or at the ground level. The overall bedrock geology for the Richmond borough consists of clay, sand, silt and gravel. These rock types have low hydraulic conductivity / poor drainage and can therefore cause ponding where permeable strata are located on higher ground to underlying London Clay formations. Particular areas of note in the Richmond borough are:

- Clay bedrock with upper sand deposits in Richmond Park
- Superficial aquifers along the River Thames, River Crane and Beverley Brook, among other minor areas
- Impermeable silt and clay situated topographically lower than superficial aquifers in multiple locations
- Artificial ground in various locations

3.2.5 Sewer flood risk

Sewer flood risk is a risk of flooding from sewers which can include from different types of sewerage channels such as foul or surface water sewers. Sewer flooding is likely to occur when the volume of rainfall entering a sewer network exceeds the channels capacity. This could be due to a number of factors including increased flow; failure of important infrastructure such as value or pumps; blockages; groundwater infiltration into the pipe networks; a watercourse having been culverted or incorporated into the drainage network; and limited outflow from the sewer network due to high water levels in receiving watercourses.

Sewer flooding is usually localised and short-term but can happen quickly without warning, and the flood waters from sewers are often contaminated with sewerage causing concerns to health. TWUL is responsible for managing sewer flood risk within the Richmond borough, with the majority of the borough served by separate foul and surface water drainage. The surface water sewers discharging into watercourses, can be susceptible to flooding during high tides when water flows cannot fully discharge into the watercourse causing sewer flooding. Some areas, particularly around Richmond town centre, use an older combined system in which foul sewage and surface water are drained through the same pipes.

The sewer system and associated infrastructure is historic and unable to withstand high intensity rainfall such as a 1 in 100-year event. This results in associated sewer flooding where the assets cannot cope with the volume of water. More information on sewer flood risk can be found in the Level 1 SFRA.

3.2.6 Flood risk from other sources

Other sources of flood risk to the Richmond borough are artificial sources typically including reservoirs, lakes, or canals. Artificial flooding is usually a result of infrastructure failure or human interference. A map of risk of flooding from reservoirs can be viewed in the SWMP (2021).

3.3 Flooding history within the Richmond borough

Reports of flooding incidents are recorded as part of Richmond LLFA duties, which will record the location and type of flooding that has taken place for each incident. Prior to a few years ago flood records were inconsistent and lacking in detailed information to inform flood risk plans appropriately. The previous LFRMS for the Richmond borough noted that only minimal flood reports had been recorded historically prior to its publication, including 22 groundwater flooding incidents, 23 reports of flooding from surface water, no flooding events recorded from ordinary watercourses. The recent SWMP update shows that the majority of postcodes in the Richmond borough have below 15 recorded sewer flooding incidents, according to TWUL data, with TW3 2 showing the highest number of incidents >26.

A lack of understanding by residents when reporting is often a factor, in addition to worries of the consequences of making the report. Many homeowners are concerned that reporting flooding will affect their property value, which is not necessarily the case, and instead hinders appropriate flood schemes being developed in areas at high risk.

Steps have been taken to create an online flood reporting tool which was recently completed in November 2020. Having truthful flood records is imperative so that accurate databases can be maintained and are able to strategically inform flood risk management strategies within the Richmond borough. Figures of historic flooding incidents can be viewed in the SWMP (2021) which exhibits two historic flood maps presenting recorded flood outlines and historic flood events for the Richmond borough.

3.4 Future flood risk considerations

Richmond Council acknowledges the many existing and potential impacts of climate change and this is reflected in its Local Plan. The Local Plan policy LP 20 – Climate Change Adaption, and policy LP 21 – Flood Risk and Sustainable Drainage both note the importance of creating developments which will be resilient to future impacts of climate change. LP 21 states that all developments should avoid, or

minimise, contributing to all sources of flooding considering climate change without increasing flood risk elsewhere. Development taking place in the borough will be checked thoroughly to align with the National Planning Policy Framework and London Plan policies. This includes policies on green infrastructure, flood risk, sustainable drainage, and water quality which are also established within standards set by the London Plan Supplementary Planning Guidance on Sustainable Design and Construction.

Richmond Council encourages the use of SuDS in both new and retrofit developments. In Richmond Council's capacity as the LLFA, major planning applications are reviewed to ensure planning practice is adhered to for proposed surface water drainage networks. This is defined in action B1 of the LFRMS Action Plan and is supported by actions B2 and B8. Developers are also encouraged to consider wider benefits of their schemes including but not limited to biodiversity net gain, reducing carbon emissions and other social benefits.

Critical Drainage Area (CDA) feasibility studies and pipeline flood alleviation schemes are currently in progress, subject to securing funding. The information from CDA feasibility studies, further detailed in *Section 5.2*, will help to better understand an area's flood risk as well as suggest drainage solutions and SuDS approaches that may be appropriate. Updates to flood risk data from external sources such as the EA will also be closely monitored for any implications new information can provide for managing local flood risk. Action A3 of the LFRMS Action Plan details the partnership working approach the LLFA looks to achieve with collaboration and support from RMAs.

Although climate change is an important factor upon increasing flood risk concerns there are also other issues which should also be noted, including change in land use, groundwater abstraction and ecological concerns. This LFRMS and its accompanying appendices aim to mitigate and acknowledge these additional factors and implications when planning for flood risk management in the Richmond borough. Environmental and habitat concerns have been thoroughly investigated in the accompanying SEA, *Appendix 2* – SEA Screening Report, and HRA, *Appendix 3* – HRA Screening Report, documents. Actions E2 and E6 in the LFRMS Action Plan demonstrate how the LLFA aims to focus on flood risk education and awareness, and property protection for local residents and businesses.

The Thames Estuary 2100 Plan (TE2100) is a strategic plan for adapting to rising sea levels in the Thames Estuary and will have implications for flood risk management in Richmond throughout the remainder of this century and beyond. The TE2100 has set 23 policy units which govern the localised approach to mitigating flood risk along the Thames Estuary. There are three policy units fully or partly within the Richmond borough boundary:

- Richmond Policy Unit (P3 Policy) (Pink)
- Twickenham Policy Unit (P3 Policy) (Purple)
- Barnes and Kew Policy Unit (P3 Policy) (Orange)

These policy units and their respective locations are shown below in *Figure 3-2*, and can be seen in greater detail on the online map. The Richmond and Twickenham Policy Units adopt the P3 policy which means that flood defences will be maintained at their current level, accepting that flood risk will continue to increase. Alternatively, the P5 policy applies in the Barnes and Kew Policy Unit which means that the Environment Agency and partners must take further action to reduce flood risk which includes upgrading the defences to cope with future sea level rise. Local communities will become more involved to prepare for this flood risk, while the local requirements for tidal flood defence

owners, Richmond Council, the Environment Agency, and the Thames Landscape Strategy team are set out in detail on the Policy Unit webpages linked above.

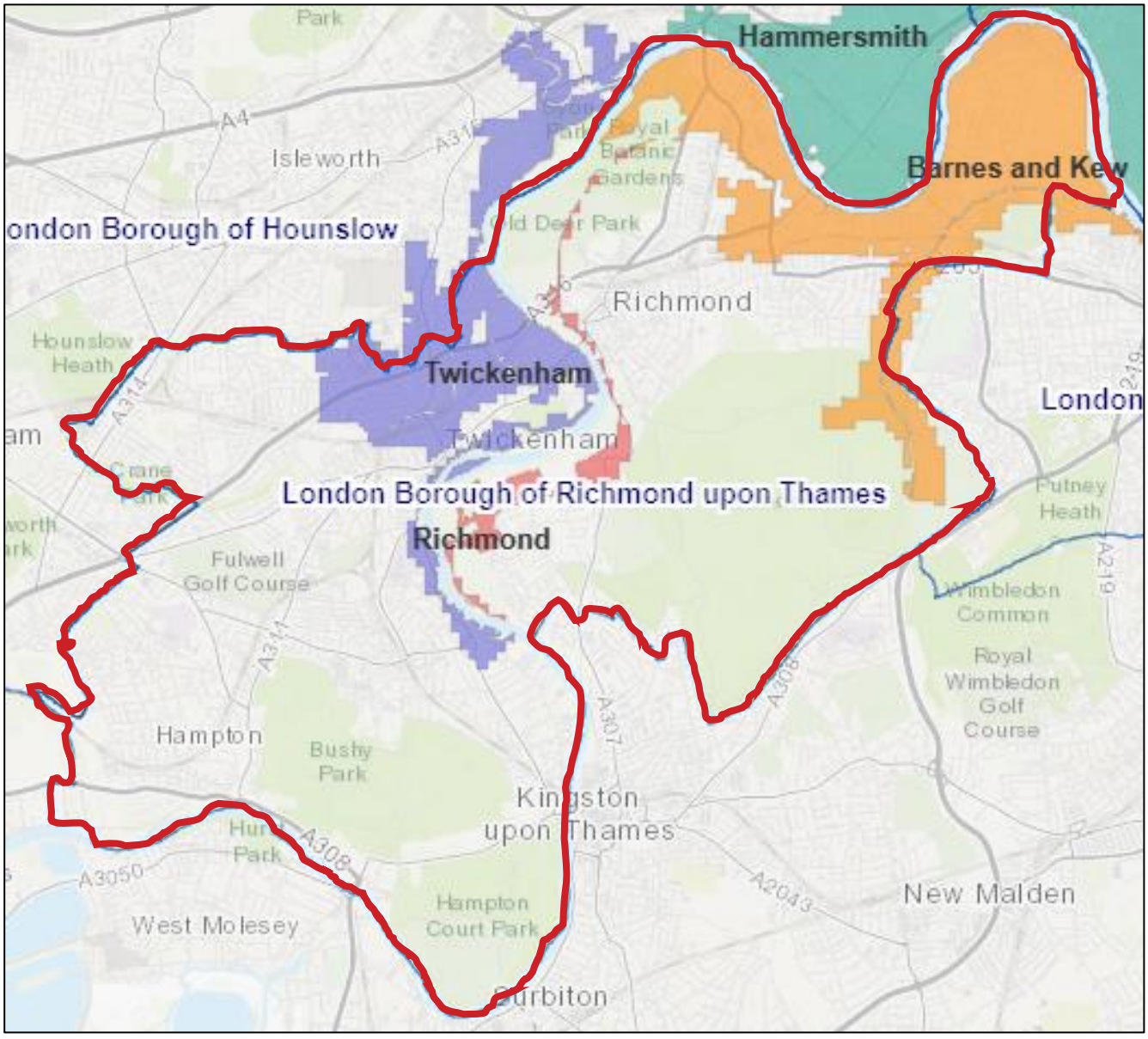

Figure 3-2 Thames Estuary 2100 policy units; Richmond (Pink), Twickenham (Purple), Barnes and Kew (Orange) (Image Source: Environment Agency)

4 ADAPTATION AND RESILIENCE TO FLOODING

4.1 What is climate change

The definition of climate change is the long-term variation in the planet's temperature and weather patterns. Although climate change can be a natural process, human activities that produce greenhouse gas emissions are causing rapid changes in the global climate.

The Sixth Assessment Report published by the Intergovernmental Panel on Climate Change (IPCC) in 2021 emphasises that climate change is already having a definitive effect on global weather extremes. For instance, heavy rainfall and intense heatwaves have become more frequent since the 1950s. In the UK, the Met Office produces UK Climate Change Projections (UKCP18) which forecast how the UK's climate may change over the 21st century. These predictions include "an increased chance of warmer, wetter winters and hotter, drier summers along with an increase in the frequency and intensity of extremes", in line with international predictions. The UK Climate Change Committee produced the Independent Assessment of UK Climate Risk report published in June 2021. This is compiled from the collaboration of hundreds of individuals and organisations, and presents the risks and opportunities faced by the UK in terms of the natural environment, health, homes, infrastructure and the economy.

Climate change is expected to increase the frequency and severity of flooding in the future, with areas historically at low risk of flooding becoming areas at greater risk. Fast and effective climate change mitigation and adaption actions are therefore needed in order to protect properties and infrastructure from the increased flood risk as a result of climate change. It is because of this that Richmond Council declared a Climate Emergency in July 2019. Since this declaration Richmond Council has produced the Richmond borough Climate Change and Sustainability Strategy (2019-2024) which helps establish the vision, challenges and opportunities for tackling climate change issues. Richmond Council has also committed to becoming a carbon neutral organisation by 2030 and zero carbon by 2043. An extended list of achievements made by Richmond Council can be found online here (February 2023 update) and updates will be published regularly. Below is a summary of some of these key achievements:

- Hosted the Richmond borough Climate Week in November 2021, partnered with Habitats & Heritage to host 20 community events
- Secured funding from the Low Carbon Skills Fund and Public Sector Decarbonisation Scheme to deliver decarbonisation of Richmond Council's estates
- Nearly three quarters of streetlights have been upgraded to LED, saving energy, and work has been carried out to install lower Kelvin lights in areas of wildlife value to minimise light pollution
- Supported residents on lower incomes to make their homes more energy efficient, through the Green Homes Grant, and supported the highest sign-up of any London borough to the Solar Together scheme
- Successfully bid for funding from the Government's new Flood and Coastal Resilience Innovation Programme to fund flood risk management in the Beverley Brook catchment (2021-2027)
- In November 2022, Richmond achieved an A rating from CDP (Carbon Disclosure Project), placing it amongst 122 towns and cities worldwide on CDP's Cities A-list and recognising the leadership that Richmond is taking on climate change

- A new communications plan was developed for 2022 to support the RCES, revolving around advising, connecting and supporting residents to act on climate change. As part of this plan, a monthly climate change newsletter was established, and new climate action branding created.
- An online Climate Change Resource Hub has been produced by officers and was launched in May 2022, providing practical advice to schools on how to incorporate climate change into the curriculum This includes ideas for events and specific 'action' days that schools can engage in, as well as links to external organisations who schools can connect with and who are able to go into schools to deliver activities.
- Richmond has been working with the GLA to establish priority areas for tree planting and subsequently planted 1247 trees over the last 3 years, with over 700 trees to be planted during the 2022 winter planting season.

4.2 What is resilience, resistance, and adaptation?

Climate change is already increasing the risk of flooding and will likely continue to increase risk further in the future. Therefore, flood avoidance in most areas is not a realistic goal to set in terms of flood risk management. Instead, it is important to put effective plans in place to minimise the damage caused by flooding, and to improve recoverability for residents and businesses by improving flood resilience.

The NFCERMS defines **resilience** as *'the capacity of people and places to plan for, better protect, respond to, and recover from flooding and coastal change.'* The idea of resilience is to accept that flooding will happen as a result of climate change, but to reduce the impact of flooding and ensure that damage is minimised so that residents return to their homes and resume business as usual as quickly as possible. The NFCERMS encourages the idea of *'building back better'* to improve the resilience of properties and infrastructure for future flood occurrences. An example of resilience in the context of climate change and flooding would be preparing an emergency flood kit, or installing waterproof flooring in your property. Further examples of how to improve flood resilience are listed in *Section 4.4.1* and *4.4.2*.

Supporting larger scale schemes, such as the Rewilding Arcadia project, can also help build resilience within communities. The Rewilding Arcadia project, which is an innovative project aiming to increase the resilience of the floodplain and properties in the Arcadian Thames region. More information about this project and the work of Thames Landscape Strategy can be found in *Section 2.3.6.*

Resistance to flooding is to reduce the amount of water entering your property as much as possible during a flood event. Resistance measures would include installing flood barriers at the entrances to buildings to prevent or delay water from entering.

Adapting to flooding requires measures to be taken over a longer period of time since the climate is continually changing. People and property must continue to adapt to life with the issue of flooding rather than simply mitigate the risks through resistance or resilience measures on a single occasion. An example of where adaptation is required in the context of climate change and flooding would be the TE2100 Plan where there is uncertainty of the future sea level rise due to climate change. The TE2100 Plan has multiple 'adaptive pathways' to enable RMAs to effectively prepare for various climate change scenarios, which would exacerbate flooding risks. Since the risk of flooding is constantly evolving, the NFCERMS outlines that the best means of planning effectively for future flood risk is by optimising a combined method of both resistance and resilience measures with adaptive approaches.

4.3 How Richmond Council will support resilient local communities

The main method for how the LLFA will support resilient local communities is by following its FWMA duties and updating local strategic documents such as the SWMP and Local Plan. Uniting these strategies with others is an important task for the LLFA as they help to establish targets for development management, public realm schemes and Richmond Council's corporate vision. The strategic documents produced by Richmond Council work together to help unite aims and targets for supporting local communities. These plans specifically establish the aims and targets for supporting local communities facing issues such as flood risk as well as concentrating on green spaces and carbon emission reduction.

Richmond Council has identified areas where it will support resilient local communities within its Local Plan objectives, such as promoting zero carbon development, and to be fully resilient to the future effects of climate change in order to minimise vulnerability of people and property. In addition, the draft Local Plan sets out a strategic vision that delivers ten themes to inform the vision for growth in the borough, that include but are not limited to:

- Responding to the climate emergency
- Delivering new and affordable homes
- Delivering new social and community infrastructure

The Local Plan's strategic policy LP21 - Flood Risk and Sustainable Drainage, sets out that all developments will need to be made safe for their lifetime and clearly demonstrate that they avoid, minimise or reduce contributing to all sources of flooding, including fluvial, tidal, surface water, groundwater and flooding from sewers; taking account of climate change and that they do not increase flood risk elsewhere. The Local Plan consultation ended on 24th of July 2023 and has now been submitted to the secretary of State for examination.

The LLFA are investigating opportunities to implement SuDS that offer multiple benefits through their solutions. These SuDS schemes will help to reduce surface water flood risk as well as educate the public and create beautiful amenity spaces, a main example being the forthcoming Marlow Crescent SuDS scheme.,

Progress has already been made towards achieving more resilient communities within the Richmond borough. In April 2021 Richmond Council secured up to £6 million in funding to improve community resilience to flooding in the Beverley Brook catchment area, as part of the Government's Flood and Coastal Resilience Innovation Programme. Details of future sustainable flood risk projects are discussed in *Section 5.3*.

Richmond Council are also promoting the online flood reporting tool which will allow the LLFA to target the areas most affected by flooding. This action works towards the first strategic objective and will be improved through the Council's measures to tackle climate change through the actions by climate change teams and information provided on the Council's Our Water webpage.

4.4 Guidance for local communities

4.4.1 How to reduce the risk

Within the Richmond borough, groups, organisations, and individuals must all play an important role to reduce the risk of flooding. Flood risk cannot be entirely managed by RMAs and developers; property owners and local community groups must make effective and informed decisions to adapt to flooding and help improve the resilience within an area.

Individuals can aid in the reduction of flood risk by better understanding the risk in their local area by reading the Level 1 SFRA, PFRA and SWMP (2021) available on Richmond Council's website. Residents can identify if they are in an area at risk by using the 'Check for Flooding' tool produced by the EA. If located within a flood zone, residents can sign up for flood warnings to receive free alerts via phone, email or text message for their home or business.

There are many ways in which individuals can reduce their flood risk and the risk to their wider area. It is important not to increase the hardstanding surface area around a property, which means that residents should not pave over their driveways or gardens and instead de-pave them if possible. Alternatively, incorporating SuDS such as permeable paving will allow surface water to gradually drain away into the ground, rather than increasing the pressure on the sewer network capacity of the road. Other low-cost smaller SuDS options to consider are water butts to reuse rainwater, planters to disconnect your rainwater downpipes, or planting trees. Trees play a key role in helping us to adapt to climate change and Richmond Council are committed to maximise the benefits of trees through extensive tree planting across the borough with help from the community. More information on Richmond's Tree Planting and Watering commitments can be found here.

If an individual is currently at risk of flooding and wishes to put in place measures on their property to protect themselves against imminent or future flooding, there are a variety of different PFR measures to consider. Further information on PFR is discussed in *Section 5.2.3*.

Some best practice advice for individuals would be to effectively manage the disposal of personal litter, including becoming aware of Thames Water's Bin it – don't block it campaign, and never fly-tipping into watercourses. Property owners should also be aware of the appropriate consents needed when undertaking any works within 5m of an ordinary watercourse.

Local flood groups can also have an important role in reducing local flood risk for their community. A Flood Action Group is a voluntary group of local residents who hold regular meetings and work on behalf of the wider community to reduce the effect of future flood risk. Flood Action Groups should spread awareness of flood risk and keep an eye out for vulnerable members of the

community. They should also build relationships with RMAs and act as a voice for key flooding issues within their community. An example of this would be for a volunteer to monitor the local conditions on behalf of other residents, and report issues such as blocked gullies. Further information on Flood Action Groups can be found on the National Flood Forum's website.

4.4.2 Before, during and after a flood

There are tasks which can be done to prepare and plan for a flooding event and these need to be done before, during and after a flood event. *Figure 4-1* shows a list of steps that should be taken for each stage of a flood event.

More information on what to do before, during and after a flood can be found online through the National Flood Forum and in EA guidance, or by using the following helpline numbers:

- The EA Floodline: 0345 988 1188
- National Flood Forum: 01299 403 055

A directory for how to report different types of flooding is displayed in *Figure 4-2*.

Before

- Find out if you are at flood risk using the EA's online tool
- Sign up to the EA's free 24 hour Floodline Warning Direct Service
- Read National Flood Forum advice
- Check your buildings and contents insurance policy to ensure that you are covered for flooding. It is also advised to take inventory and photographs of your valuables.
- Move valuables to a safe place above the flood line
- Know how to turn gas, electric and water supplies off, ask your supplier for advice if you are unsure
- Prepare an emergency flood kit and a personal flood plan

During

- Keep up to date with weather using the radio, TV, internet or social media
- Check on and try to keep outside drains clear to let surface water escape
- Turn off gas, electricity, and water supplies if safe to do so
- Do not approach fast flowing or deep water
- Move family and pets upstairs or to a high place with means of escape
- Floodwater may be contaminated so keep cuts clean and covered

After

- Only return to your property when officials say it is safe to do so
- Do not turn on electricity until it has been checked by a qualified person
- Have your gas or oil central heating checked by a qualified person
- Record photos and flood height, and contact your insurance provider
- Report the flood to appropriate authority, see *Figure 4-2*

Figure 4-1 Information on actions to take before, during and after a flood, summarised from full EA guidance which can be found here

HOW TO REPORT A FLOOD

For blocked sewers, sewer flooding and burst water mains	**Thames Water** **0800 316 9800** **TWUL online reporting tool**
For blocked public drains, flooded roads, flooding from ordinary watercourses, groundwater flooding	**Richmond Council** **020 8871 7490 (24/7 service)** **Online flood reporting tool**
For blocked or polluted rivers, flooding from the sea and flooding from main rivers	**Environment Agency** **0800 80 70 60 (24/7 service)**
For blocked private drains and flooding caused by private drains	**Property / Landowner**
For blocked highway drains and/or gullies	**Richmond Council** **Street issues reporting tool**
For blocked drains and/or gullies on highways managed by Transport for London	**Transport for London** **Streetcare reporting tool**

Figure 4-2 Details on how to report types of flooding in the Richmond borough

5 SUSTAINABLE MANAGEMENT

5.1 Sustainability and flood risk management

With climate change increasing the number and severity of storms and altering rainfall patterns, it is necessary to build sustainable flood risk management strategies. This is to ensure that existing defences and areas of potentially high levels of flooding are protected for the future. Managing flooding is about building resilience, not necessarily resistance. Flooding as a whole is not preventable which is why applying sustainable flood risk management strategies is crucial for the future.

When delivering sustainable flood risk management there are five potential outcomes that can be aimed for:

- Investing appropriately to protect the most vulnerable and areas which are at the greatest risk of flooding to reduce the number of people, homes, and property at risk of flooding.
- Utilising rural and urban landscapes to store and slow the flow of water.
- Sustainable surface water management that reduces stresses on sewer systems to reduce flood risk and improve water and environmental quality.
- Continually keeping the public well-informed on understanding flood risk and appropriate actions they can take to protect themselves, their property, and businesses.
- Creating adaptable flood managing actions that can adapt to a changing climate.

5.2 Strategies for sustainable development

Sustainable development around flood risk management is particularly important in the present day race for space. The FWMA states that flood and coastal erosion RMAs should aim to contribute towards the achievement of sustainable development when exercising their flood and coastal erosion risk management functions. The definition of sustainable development centres on the theme of improving life in ways which do not restrict the ability of others, now or for future generations.

Part of sustainable development is using alterative engineering approaches in new or alongside existing flood risk management strategies. Increasing awareness and preparedness are also key factors. This can be achieved by supporting individuals, communities, and businesses to build their resilience to flood events and speed up the recovery process. It is important to incorporate greater flood resilience measures into the design of new buildings and the retrofitting of properties at risk, including historic buildings. At present, the LLFA is conducting two CDA feasibility studies in Strawberry Hill and Teddington to assess opportunities for implementing flood schemes such SuDS and/or NFM. Both of these are forms of flood risk management which can be implemented and also applied in planning developments.

5.2.1 Sustainable Drainage Systems

SuDS are a natural method to manage drainage in and around properties and other developments. SuDS work by encouraging natural drainage processes to manage water runoff to reduce the quantity of surface water entering the traditional sewer networks, and to improve the quality of runoff water. There are many variations of SuDS which can be categorised based on the processes they each employ, such as: water harvesting (water butts, blue roofs), infiltration (soakaways,

infiltration trenches), detention or attenuation (bioretention, raingardens, retention ponds, geocellular storage) and conveyance (swales, conveyance channels).

SuDS are strongly encouraged in new developments and also in the redevelopment and retrofitting of existing developments as established in Richmond Council's Local Plan policies LP 17 and 21. The Richmond Local Plan is currently being updated and is out for consultation as of June 2023, before being adopted in Winter 2024/25. The LLFA requires that SuDS are used in all development proposals and planning applicants are required to complete a London Sustainable Drainage Proforma, which can also be found on the SuDS page on the Council's website. Additional technical advice and guidance on planning, designing, building and maintaining SuDS is offered in the CIRIA SuDS Manual.

Defra have announced that Schedule 3 of the FWMA is expected to be enacted in 2024. Schedule 3 sets out a framework for the rollout of drainage systems, a SuDS Approving Body (SAB), and national standards on design, construction, operation, and maintenance. It will also make the right to connect surface water runoff to public sewers conditional upon a drainage system being approved before any construction work can commence. This Section will be updated following the enactment of Schedule 3.

SuDS can also offer a range of multi-benefit solutions targeting flood risk as well as water quality, improving amenity and biodiversity, creation of recreational areas, improving local education on associated environmental matters. The Marlow Crescent SuDS scheme is currently underway and will divert the flow of surface water from the road into the Whitton Brook, reducing pressure on the TWUL sewer, whilst also creating a biodiverse area which provides education opportunities for the community.

COMMUNITY BLUESCAPES PROJECT

This project is using funding from the Government's Flood and Coastal Resilience Innovation Programme to deliver innovative flood resilience measures in the Beverley Brook Catchment within the borough. The project is community led and will deliver measures that work to increase resilience to flooding and climate change whilst delivering multiple benefits for local communities and businesses.

Find out more here

Image source – South East Rivers Trust

5.2.2 Natural Flood Management

The process of NFM involves implementing measures that help to protect, restore, and mimic the natural processes within a catchment, floodplain, river or coast to help reduce the risk of flooding. NFM aims to reduce the maximum water volume of a flood (peak flood flow) and/or delay the arrival of the flood peak downstream. This increases the time for flood preparation.

There are four mechanisms of NFM, sourced from the Catchment Based Approach website, to achieve the above-mentioned aims:

1. Increasing flood storage: the formation of temporary storage to store water during a flood event and then release the water slowly. For example, reconnecting functional floodplains and creating storage ponds.
2. Increasing catchment and channel roughness: this process works by increasing the resistance to surface and in-channel water flow in order to 'slow the flow'. For example, planting trees and hedgerows and restoring river meanders.
3. Increasing losses: by increasing the amount of water that infiltrates into the ground or is lost to the atmosphere through evapotranspiration. For example, methods in reducing soil compaction and infiltration methods of SuDS.
4. De-synchronising peak flows from tributaries: slowing the movement of water in one tributary compared to another to reduce flood peaks in the main body of the river further downstream.

NFM attempts to restore the natural function of the river catchment, or where this is not possible to mimic the processes using particular design techniques. Richmond Council attempts to incorporate NFM schemes wherever possible within the Richmond borough, by working collaboratively with other local RMAs. This has been achieved in the development of the Beverley Brook Restoration Scheme. Further examples of NFM techniques have been collated by the EA to form an evidence base with several case studies of NFM implementation and benefits to flood risk management.

5.2.3 Property Flood Resilience

PFR are measures which can be introduced to households or businesses to help increase a property's resilience to flooding. There are two main targets of PFR: to help reduce the flood risk to a property, and/or reduce the recovery time after a flood for a building to be usable. PFR can be incorporated into new developments and also be added as retrofitted options to buildings. There are many choices of PFR available on the market, such as airbrick covers, flood doors and non-return valves. Individuals living in areas at high risk of flooding or in SWMP hotspot areas are advised to seek PFR advice. A useful handbook for property owners is the Blue Pages, which are the UK's leading independent flood directory to help find PFR products or installers.

5.3 Future plans for delivering sustainable solutions

Richmond Council has set out targets in the Local Plan for the Richmond borough which detail areas of focus for a sustainable future. Richmond Council has a strong focus towards developing the Richmond borough in a conscientious way that will support local people's daily lives, reduce environmental effects, improve accessibility, minimise, and mitigate the effects of climate change. This

specifically includes planning for the impacts of climate change by enacting the Richmond borough Climate Emergency Strategy (2019-2024).

As mentioned earlier in *Section 2.3.6*, there will be an update to, and joint review of, the Thames Landscape Strategy (2012) for the Arcadian Thames. This will realign the strategy to the latest climate change predictions and new policy frameworks from the Mayor's London Plan (2021). The EA have also recommended boroughs to produce a riverside strategy as part of the TE2100 Plan. A Riverside Strategy will portray the community's ambitions for the riverside and enable opportunities to upgrade flood defences through planned developments at reduced cost. More information about riverside strategies can be found on the Government's website.

Developments will take onboard sustainable design in their construction to support the principle of sustainable solutions within the borough. The Richmond LLFA aim to implement SuDS projects on the public highway to relieve flooding with the help of strategic partners. The Richmond LLFA are also directing attention towards minimising the vulnerability to people and property through the SFRA, this includes ensuring that development is located away from areas considered to be at high risk of flooding. Planning developments for the Richmond borough are required to include some form of SuDS to mitigate the impacts of the development on surface water management, including highway drainage, across the Richmond borough. This must be in line with the drainage hierarchy set out in the London Plan Policy SI 13 - Sustainable Drainage.

Infrastructure for improving flood risk resilience frequently offer multiple benefits including but not limited to increasing biodiversity, protecting water resources, improving water quality, and maintaining the Richmond borough's Green Infrastructure Network. All these benefits can come from appropriate choices in flood risk management which encourage the successful adoption of sustainable solutions.

Figure 5-1 A tributary of the River Crane flowing through Marlow Crescent (Image Source - Richmond LLFA)

6 COMMUNITY AND STAKEHOLDER ENGAGEMENT PLANS

6.1 Past engagement since previous LFRMS

Since the previous LFRMS the Richmond LLFA has taken effective steps in maintaining good relationships with local communities and stakeholders. There has been continued engagement with the SWLSFG through frequent meetings and regular communications. The LLFA has also engaged with the EA providing feedback in preparation for the Thames River Basin FRMP update. Further to this the LLFA has also maintained a good working relationship with TWUL and has engaged with them on various operational issues and participated in stakeholder steering workshops on the Drainage and Wastewater Management Plan (DWMP) TWUL are in the process of producing. The Richmond LLFA has also been firmly involved with the Friends of the Barnes Common and the WWT London Wetland Centre on the Community BlueScapes Project.

The Richmond LLFA had its SWMP updated in 2021 which contains updated mapping that developers and planners should use when submitting applications to the local planning authority. The LLFA has a duty to respond to any major planning applications and will assess these using up to date evidence to evaluate the proposed flood alleviation methods. These should follow the drainage hierarchy as mentioned in *Section 5.3*.

6.2 Plans for future engagement

In conjunction with the LFRMS and its suite of appendices there will also be a communications strategy aimed at stakeholder engagement which will demonstrate how local stakeholders will be engaged with the LFRMS going forward. The statement will outline the opportunities for collaborative working and how different stakeholders can use the strategy to support this for the future. The commitment and involvement by each stakeholder will vary dependent on their interest and influence with regard to the actions and when the actions that are due to take place. Stakeholders who will be directly impacted upon by actions in the LFRMS will also be consulted with at the appropriate times, in addition to those who may be affected by any potential policy changes.

Table 6-1 lists various categorised stakeholders which were likely to be involved with the LFRMS through the consultation or will be involved in the delivery of actions. Participation from these stakeholders is strongly encouraged to support effective, balanced, and sustainable solutions to flood risk to be implemented across the Richmond borough. The LFRMS communications strategy will align with the engagement plan presented within the SWMP (2021) and will also consider the communications strategy within Wandsworth's LFRMS as both boroughs are likely to deliver joint actions through partnership engagements.

Table 6-1 Stakeholder categories and examples of individual stakeholders

Stakeholder Categories	Individual Stakeholder
Local Community Groups / Individuals	• Residents • Businesses • Schools • Local community / volunteer groups • Student / youth councils • Disability groups • Flood action groups • Environmental action groups
Public Services	• Emergency services • Hospitals / health care services
Charities and Funding Bodies	• Catchment partnerships • Wildlife groups • Habitats and Heritage (formally the *Southwest London Environment Network*) • Environment Trust • Canal and River Trust
Council Departments	• Climate Change, Policy and Communications Department • Development and Management Department • Environmental Services Department • Parks and Open Spaces Department • Highways Department • Traffic and Transport Department
Government Approving Bodies	• EA • GLA
External Partnerships	• SWLSFG • South London and Surrey Technical Group • Thames Landscape Strategy • TRFCC • CVP • South East Rivers Trust
Private organisations	• TWUL • Network Rail • TfL

6.3 Key stakeholders

6.3.1 Primary stakeholders

Primary stakeholders that are involved in the process of producing this LFRMS and in the delivery of its actions are:

- Council departments
- EA
- TWUL

The feedback and support from these stakeholders is invaluable in the delivery of the LFRMS actions. Internal council departments will be working collaboratively with the LLFA team in delivering actions locally. For instance the Highways department supporting the maintenance of drains and gullies as per action D2 within *Appendix 1* – Action Plan. Strategic objective B has a strong focus on development actions and many of these will therefore involve the Local Planning Authority within Richmond Council. The collaborative efforts between these departments mean that flood risk management can be sustainable and as the potential to offer multi-benefit solutions. By working as a collective the delivery of flood risk can also align with and support the delivery of other council objectives and help to identify new opportunities.

The external primary stakeholders of the EA and TWUL offer additional support and information in the delivery of flood risk management, and it is crucial for these parties to be involved in the production and delivery of the LFRMS. The EA and TWUL were involved in the consultation phase of the LFRMS and will also aid in the delivery of a number of relevant actions to their own duties and objectives. Work carried out as part of strategic partnerships such as the SWLSFG and TRFCC, will further support the delivery of the LFRMS Action Plan. These working relationships also hold the potential for additional sources of funding to help progress particular actions and projects, for example, the implementation of SuDS across the Richmond borough.

6.3.2 Secondary stakeholders

Any other organisation, individual or stakeholder group can be included as a secondary stakeholder. Secondary stakeholders are individuals or groups who won't necessarily be involved as a partner RMA in the delivery of LFRMS actions but will have some involvement particularly for actions which may have a direct effect on the secondary stakeholder. It is important that the Richmond LLFA upholds strong relationships with its neighbouring local authorities, local community groups, partnerships and private organisations when delivering flood risk management to the Richmond borough. The collaboration with these groups will further enable the holistic and sustainable approach to flood risk management. These individuals and/or groups are respected as secondary stakeholders and had the opportunity to offer opinions and suggestions through the consultation of the LFRMS and will be involved in the delivery of any relevant actions.

7 Action Plan for delivering flood risk management between 2023-2029

7.1 Actions since the previous LFRMS

The Richmond borough's previous LFRMS was published in 2015 along with a detailed Action Plan containing tasks and responsibilities for the LLFA and other stakeholders to complete or provide ongoing work. There have been additional tasks completed since the previous LFRMS including guidance updates and strategy updates. In the period since the previous LFRMS the LLFA has targeted working with partnerships and communities to help them understand the potential risks they face from all sources of flooding and what can be done to manage them. *Figure 7-1* has highlighted some important milestones in flood risk management. In 2019 a LLFA review project was undertaken which explored areas where the LLFA could improve its practices. Further to this Richmond LLFA have also designed a new SuDS development project at Marlow Crescent which is due to go to construction in the near future.

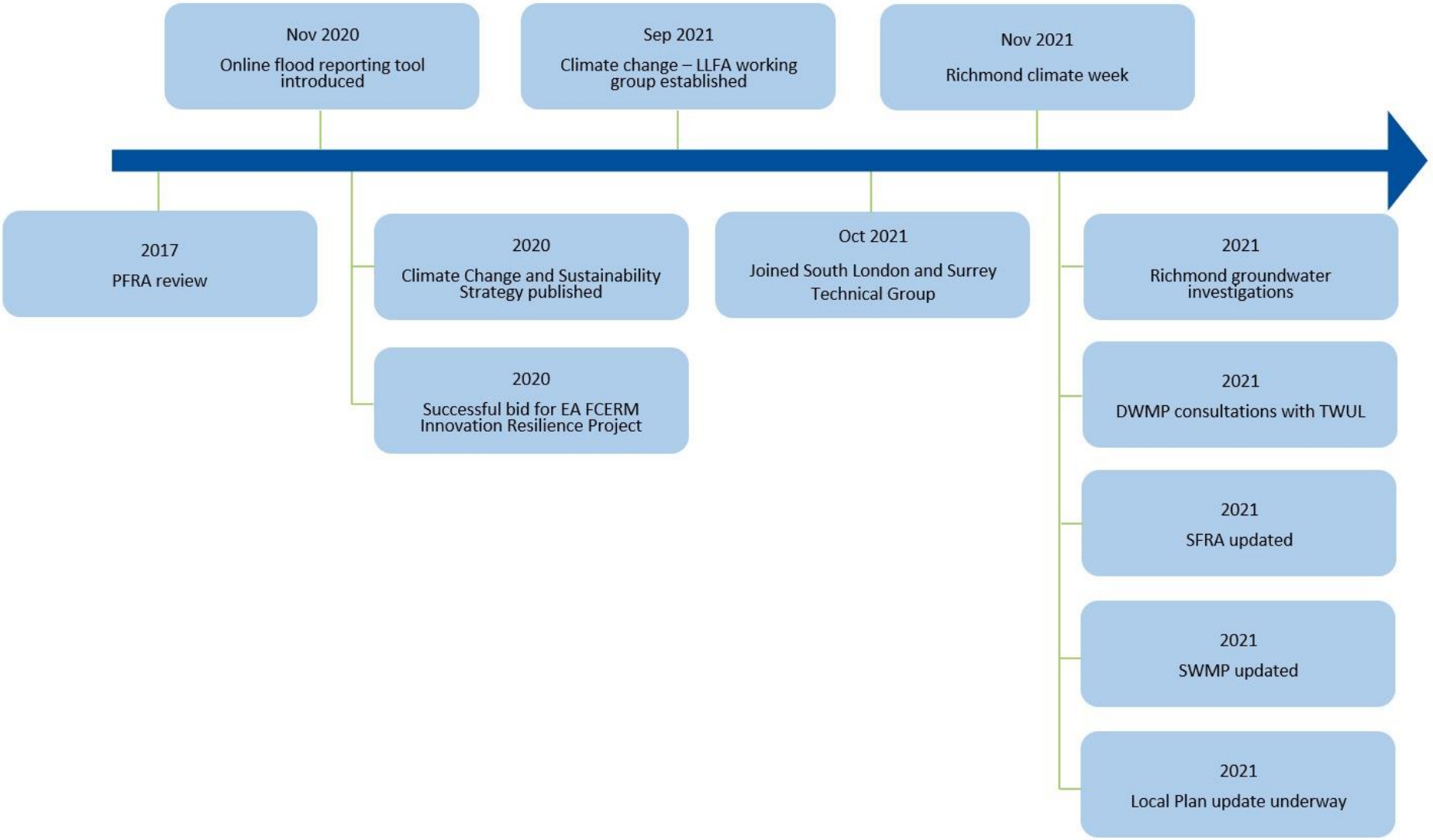

Figure 7-1 Timeline of action milestones since previous LFRMS

7.2 Benefits and results

Many actions have been achieved during the six-year period since the Richmond borough's previous LFRMS, some of which have offered new opportunities to take forward into this LFRMS for the upcoming six-years. One such benefit has been improving partnership working with neighbouring boroughs through increased interaction via joint schemes, flooding investigations, and by joining the new South London and Surrey Technical Group. These projects have also provided multiple advantages by encouraging better collaboration and communication which has benefits for the majority of tasks performed by the LLFA. The Richmond LLFA has also had joint engagement with the SWLSFG and the TRFCC (including the EA and TWUL) to manage the recent flooding in the Summer of 2021. With flooding events like those experienced in the Summer of 2021 expected to increase, the successes of current partnership working and ongoing improvements to communications between RMAs and residents is important to take forward into this new LFRMS.

7.3 New Action Plan

In preparation for the updated LFRMS a new Action Plan has been produced to detail the set actions to be completed in order to work towards each of the LFRMS objectives. These actions follow suit from the previous Action Plan for the 2015 LFRMS, maintaining existing responsibilities as well as adjustment for project updates and changes to National guidance objectives in the NFCERMS. The process of creating this new LFRMS has included an Action Plan workshop with relevant internal Council departments, in addition to a consultation period which allowed external stakeholders to feedback any comments they have based on their own positions and targets.

The new Action Plan for the Richmond borough can be viewed in *Appendix 1* – Action Plan. Criteria such as timescale and current status have been included for each action detailed in the Action Plan. Timescales for these actions have been set at different ranges which are as follows:

- Short-term = 0-2 years
- Medium-term = 2-4 years
- Long-term 4-6+ years

The status for each action is colour coded to track the progress, these adhere to the following criteria:

- Red = The action is not currently in progress
- Amber = The action is in progress
- Green = The action has been completed

7.4 Funding options

There are a number of funding options available for different actions that the LLFA is set to complete through its Action Plan presented in *Appendix 1* – Action Plan. There are various costs involved for different actions and, depending on the funding required, it is expected that the LLFA will look to a variety of different sources. Strategic Objective C, outlined in *Section 1.6*, focuses on funding and resources with its associated actions setting out steps of how the LLFA will work with partners to trial finance options and close funding gaps.

One type of viable funding is sourced from the Department for Environment, Food and Rural Affairs (DEFRA) which provides funding through its Flood and Coastal Erosion Risk Management (FCERM)

Grant in Aid (GiA) fund. To obtain this funding the LLFA must progress through an appraisal process which will test if the proposed scheme / action(s) will benefit the following:

- benefit properties at risk of flooding,
- lessen the indirect impacts from flooding (for example, mental health impacts),
- achieve wider environmental benefits and,
- improve amenity of an area.

Projects which might apply for this funding may include flood alleviation schemes or feasibility studies to investigate potential mitigation options. In conjunction with GiA funding, projects can also be eligible for Local Levy funding. The Local Levy funding is managed by the TRFCC and is raised by a levy on local authorities, with the decision committee made up of appointed members by the LLFA and independents, in partnership with the EA.

Additional types of funding may include revenue provided by the Department for Levelling Up, Housing and Communities (DLUHC) which can help to fund general LLFA related duties. Typically, the LLFA would put forward an internal business case to bid for the amount of funding they require from the DLUHC revenue. TWUL also offers funding for projects which will help to alleviate pressure on the sewer system, for example, SuDS schemes. As and when flood risk management schemes are prepared, funding will be sought from the appropriate sources listed above. Third party funding sources including benefitting property owners, community groups and charities may also be sought. Richmond Council will advertise when this type of funding is being requested for projects taking place in local communities.

8 CONCLUSIONS AND NEXT STEPS

8.1 Conclusions

The LFRMS establishes how the LLFA and other stakeholders will manage flood risk within the Richmond borough. The LFRMS achieves this by stating past, present and future flood risk and putting forward actions which will help to address flood risk impacts. There are six areas of focus for the Richmond borough which are: knowledge of flooding; development and wider contributions; funding and resources; partnership working; raising awareness of flood risk with local communities, residents and businesses; and emergency response plans and climate change. These each link with the six strategic objectives for this LFRMS:

A. To improve our knowledge and understanding of the risk of flooding and the interactions between different sources of flooding across the London Borough of Richmond upon Thames.

B. To encourage appropriately mitigated development across the London Borough of Richmond upon Thames by promoting sustainable multi-beneficial solutions to contribute to wider social, economic, and environmental outcomes.

C. To seek and identify funding and resources available for a targeted approach to flood risk management.

D. To proactively manage sources of local flooding to homes, critical infrastructure, and transport networks by establishing and maintaining partnerships with key organisations, including the Environment Agency and Thames Water.

E. To work with Risk Management Authorities to raise awareness of flood risk with communities, residents, and businesses, and how they can take action to protect themselves and their property by contributing to the management and reduction of flood risk.

F. To use knowledge of flood risk and climate change projections to inform and adapt the emergency response to flooding within the London Borough of Richmond upon Thames.

Clear actions within the Action Plan, *Appendix 1* – Action Plan, will guide the LLFA in performing and improving its duties in managing local flood risk. Each action will be monitored at regular intervals, as stated in the Action Plan, over the six year period of this LFRMS (2023-2029). These actions align with the NFCERMS and appropriately consider the impact of climate change and adopts both resilience measures and an adaptive approach. The LFRMS will enable the LLFA to provide holistic, sustainable and resilient local flood risk management measures better protecting residents, businesses and communities.

8.2 Consultation and next steps

8.2.1 Public consultation

The LFRMS in conjunction with its Action Plan, SEA and HRA went to public consultation between the 8th of March 2023 and 3rd of May 2023. This enabled stakeholders, other RMAs, and members of the public to review the planned flood risk management duties going forward. Richmond received 21 responses from the consultation as well as various emails providing additional feedback from community groups, and internal and external stakeholders. This feedback has been used to create the final version of this LFRMS.

8.2.2 Recommended next steps

The LLFA will maintain and update the Action Plan provided in *Appendix 1* – Action Plan which will be monitored and reviewed in accordance with *Section 8.3* below. This will enable the delivery of the measures proposed to achieve the Strategic Objectives set out in *Section 1.6.*

8.3 Monitoring and Reviewing

Typically, a LFRMS is updated every six-years in line with FRMPs, however the LFRMS may require an update before this if any of the following are met:

- Significant changes are made in the LLFA's understanding of flood risk or flood modelling practices
- Significant modifications in Government guidance and/or legislation

To keep the LFRMS on track and ensure that the relevant RMAs are held accountable when delivering the actions in *Appendix 1* – Action Plan, a monitoring and reviewing plan has been developed within an internal version of the Action Plan. There are two purposes to the monitoring and reviewing section of the Action Plan which are:

- To measure the effects of implementing the objectives
- To assist in the identification of any adverse effects

The Action Plan will be reviewed at least every year, including updating the status for each action. The monitoring plan will dictate with defined frequencies (either monthly, quarterly, half-yearly or annually) when each action should be individually reviewed.

REFERENCES

Civil Contingencies Act 2004 (legislation.gov.uk)

Flooding - Your Rights and Responsibilities (environmentlaw.org.uk)

Managing flood risk: roles and responsibilities | Local Government Association

Flood and Coastal Resilience Innovation Programme - GOV.UK (www.gov.uk)

Flood risk management: information for flood risk management authorities, asset owners and local authorities - GOV.UK (www.gov.uk)

Environment Agency – National Flood and Coastal Erosion Risk Management Strategy for England (publishing.service.gov.uk)

USEFUL LINKS

Below is a table of useful links and descriptions to helpful information on flood risk.

Flooding in the Richmond borough	Directory for specific flood advice for the Richmond borough, including: • Information on reporting floods • Flood insurance • Flood mapping • Sandbags • Watercourse blockages
What to do before, during and after a flood	Government guidance on what to do before, during and after a flood.
Blue Pages – UK Flood Directory	Directory for property flood products and services, also including advice on how to help reduce the risk of flooding to your home or business.
Emergency flood plan template	A useful template for households to use in preparing for a flood, including a checklist and emergency contacts.

APPENDIX 1 – ACTION PLAN

APPENDIX 2 – SEA SCREENING REPORT

APPENDIX 3 – HRA SCREENING REPORT