Local Flood Risk Management Strategy

Prepared for the London Borough of Sutton

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Date	November 2022
Version	2.1

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Revision History

Version	Date	Description	Prepared	Approved
1.0	03/2022	Prepared for Client review	LB	DC
2.0	06/2022	Prepared for final issue	LB	MM
2.1	11/2022	Prepared following internal consultation	AM	ER

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Executive Summary

The London Borough of Sutton (Sutton) Local Flood Risk Management Strategy (LFRMS) sets out a plan of action for how the Lead Local Flood Authority (LLFA) and Risk Management Authorities (RMAs) will manage local flood risk over the next six years. The current flood risks in Sutton Borough are summarised along with past flooding and predicted future flood risk. This local information and current legal requirements and policies are used to propose a list of strategic objectives. The LFRMS is accompanied by an action plan which establishes tasks to achieve the strategic objectives.

Strategic Objective A:

Improve our knowledge and understanding of the different risks of flooding in Sutton.

Strategic Objective B:

Proactively encourage sustainable solutions for the management of local flood risk which take account of climate change.

Strategic Objective C:

Use planning powers to appropriately mitigate flood risk to or caused by developments across Sutton.

Strategic Objective D:

Educate, encourage, and empower local residents, businesses and landowners to take action on reducing flood risk.

Strategic Objective E:

Nurture collaborative partnerships with key organisations and Risk Management Authorities, including for funding and resources.

Sutton Borough is at risk of flooding from multiple sources including fluvial, surface water, sewers, groundwater and artificial sources. The LLFA is responsible for managing the flood risk from ordinary watercourses, surface water and groundwater. The Environment Agency (EA), Thames Water Utilities Limited (TWUL) and Transport for London (TfL) all manage the remaining flood risk to their respective assets. Due to the shared responsibility of flood risk management, collaboration between RMAs is essential.

As the LFRMS and its action plan have been developed to be in use for the next six years, it is crucial that climate change and its associated uncertainties are appropriately taken into account. The LFRMS proposes measures that ensure that Sutton becomes more resilient and sustainable, by adopting an adaptive approach. It is key that Sutton continues to acknowledge and understand the latest findings on climate change predictions in order to best manage flood risk in the local area. 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.

All the stakeholders involved in this LFRMS have been invited to contribute to a public consultation process. This is to ensure that the LFRMS has considered a broad range of interests within the local community. Primary stakeholders, local community groups and individuals are being consulted before the publication of the LFRMS. To ensure that the LFRMS stays relevant, and that the actions progress as they should, a monitoring and reviewing plan has been produced to keep track of the progress made to meet the strategic objectives.

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Acronyms and Abbreviations

Abbreviation	Definition
DEFRA	Department for Environment, Food and Rural Affairs
DLUHC	Department for Levelling Up, Housing and Communities
DWMP	Drainage and wastewater management plan
EA	Environment Agency
FAS	Flood Alleviation Scheme
FCERM	Flood and Coastal Erosion Risk Management
FRMP	Flood Risk Management Plan
FRR	Flood Risk Regulations
FWMA	Flood and Water Management Act 2010
GiA	Grant in Aid
GLA	Greater London Authority
HRA	Habitat Regulations Assessment
IPCC	Intergovernmental Panel on Climate Change
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
MHCLG	Ministry for Housing, Communities and Local Government
NFCERMS	National Flood and Coastal Erosion Risk Management Strategy
NFM	Natural Flood Management
PFR	Property Flood Resilience
PFRA	Preliminary Flood Risk Assessment
RMA	Risk Management Authorities
RoFSW	Risk of Flooding from Surface Water
SEA	Strategic Environmental Assessment
SERT	South East Rivers Trust
SuDS	Sustainable Drainage System
Sutton	London Borough of Sutton Council
Sutton Borough	London Borough of Sutton
TfL	Transport for London
TRFCC	Thames Regional Flood and Coastal Committee
TWUL	Thames Water Utilities Limited
WFD	Water Framework Directive

1 INTRODUCTION

1.1 What is flooding

Flooding is defined in the Flood and Water Management Act 2010 (FWMA) as any instance where an ordinarily dry area is covered by water. The National Flood and Coastal Erosion Risk Management Strategy (NFCERMS) reports that there are more than 5.2 million properties at risk from flooding and coastal erosion in England. Flooding can be caused by a variety of factors such as heavy rainfall, a river overflowing, groundwater, reservoir breeches or lack of permeable surfaces. Instances of sewerage system overflow or burst water mains are not included in the FWMA definition of flooding and are instead included in the definition in the Water Industry Act (1991).

The six main types of flood risk are:

- Fluvial
- Surface water
- Tidal
- Sewer
- Groundwater
- Reservoir or artificial sources

These flood risks do not affect all areas equally, and the specific types of flood risk which affect the London Borough of Sutton (Sutton Borough) are identified in section *3.2*.

Flood risk is a growing issue caused by the effects of climate change and sea level rise, and it cannot be prevented. There are however many methods which can help achieve effective flood risk management. This Local Flood Risk Management Strategy (LFRMS) is one of these methods as it plays an important role in managing local flood risk for people, businesses, and the environment within Sutton Borough.

1.2 Background

Sutton Council (Sutton) is a Lead Local Flood Authority (LLFA) as defined in the FWMA. By law, the LLFAs have statutory duties relating to the management of surface water, groundwater and ordinary watercourses. Under Section 9 of the FWMA, LLFAs must develop and maintain a LFRMS. This document is a replacement for the current LFRMS which was published in 2015 and updated in 2019. The LFRMS and the action plan developed from the LFRMS objectives (see section *1.6*) must align with the NFCERMS for England and should align all current local flood risk planning documents.

This LFRMS is used primarily at the LLFA as the authority responsible for managing local flood risk within Sutton Borough. However, other departments within Sutton are involved in achieving the statutory LLFA duties and should be familiar with this LFRMS. These departments include Highways, Planning, Emergency Planning and Neighbourhood Services. The Environment Agency (EA) also has an interest in this LFRMS as the authority with a strategic role on all types of flooding, as well as being responsible for flooding from main rivers and the sea. Finally, the LFRMS is targeted at residents and businesses who are initially impacted by flooding and therefore the first to benefit from any improvement to the local flood risk management of their area. Residents, businesses and local landowners are encouraged to take action and contribute to the management and reduction of local flood risks.

1.3 Purpose

The purpose of a LFRMS is to describe how the LLFA and relevant stakeholders will manage flood risk in the borough. The LFRMS includes local flood risk sources such as ordinary watercourses (small tributaries, brooks and drainage ditches), surface water, and groundwater. The LFRMS revolves around Sutton's flood risk management objectives and the actions needed to achieve them. All the actions are detailed in the action plan (*Appendix 1* – Action Plan) and progress to date on the actions is included.

The objective of the LFRMS is to manage flood risk to maximise the benefits for residents, businesses and environment of Sutton. This LFRMS is made as a guide to local flood risk management for Sutton service departments (LLFA and others), Risk Management Authorities (RMAs) and the local public (residents and businesses). With this document, all of the above should be aware of local flood risks and their respective responsibilities in managing them.

This LFRMS must be both resilient and flexible as there is uncertainty about future flood risk projections due to climate change. By taking these uncertainties into account, the LFRMS can help to lower the impacts of flooding and better prepare Sutton for a future changes in the UK climate.

1.4 Strategy structure

The LFRMS document has the following structure:

- ***Introduction*** **–** Summarises topics covered in the LFRMS and explains the context behind this document, its background and purpose, and states the new strategic objectives.
- ***Roles and responsibilities*** – Outlines the roles and responsibilities of the LLFA and other RMAs, and local and regional partnership groups relevant to local flood risk management. Details of emergency response plans are also included.
- ***Local flood risk*** – Provides a background of local flood risk for Sutton Borough by exploring historic, present, and future flood risk. Local flooding characteristics are described alongside the specific types of flood risk the borough is vulnerable to.
- ***Adaptation and resilience to flooding*** – Identifies flood risk management links with climate change and summarises the differences between resilient and adaptive strategies. Guidance and the actions the LLFA must carry out to support resilient local communities are introduced.
- ***Sustainable management*** – Covers sustainable flood risk management by describing different strategies such as Sustainable Drainage Systems (SuDS), Natural Flood Management (NFM), and Property Flood Resilience (PFR). Outlines future plans for sustainable development.
- ***Community and stakeholder engagement plans*** – Includes lessons learned the previous LFRMS and detailed plans for taking community and stakeholder engagement further in this LFRMS update.
- ***Action plan for delivering flood risk management between 2022-2027*** – States the results and benefits of actions taken since the last LFRMS which will inform steps to move forward with the updated action plan.
- ***Conclusion and next steps*** **–** Summarises the LFRMS document and action plan providing recommendations and establishing the monitoring and reviewing strategy.

1.5 Legislative context

UK flood risk management legislation can be linked back to EU directives. The EU Water Framework Directive (2000) requires all Member States to improve the state of all water in order to achieve 'good' ecological status, and the EU Floods Directive (2007) defines a framework for approaching flood risk management. Both directives were adopted into UK law in 2003 and 2009 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. London boroughs, such as Sutton, were attributed the role of LLFA and given the responsibility to lead local flood risk management.

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

International	
EU Water Framework Directive (2000)	The EU Water Framework Directive (WFD), made 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 were to achieve a "good" ecological status by 2015 or, at the latest, by 2027. The WFD requested that water management plans are developed using a river basin approach. The WFD was adopted into UK law in 2003 and has been retained in UK law post-Brexit.
EU Floods Directive (2007)	The EU Floods Directive dictated how Member States should approach the flood risk management of all types of floods. A three stage process was introduced, with the cycle continuing every six years. The original requirements are as follows. By 2011, Member States had to have produced Preliminary Flood Risk Assessments (PFRAs) to identify areas where watercourses 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 have been carried out. By 2015, Flood Risk Management Plans (FRMPs) for areas at high risk of flooding must have been produced, including measures to reduce flood risk. The EU Floods Directive was implemented in UK law through the Flood Risk Regulations (2009) which is retained in UK law post-Brexit.
IPCC Climate Change Report (2021)	The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report assessed the physical science basis of climate change. Headlines include predictions of +1.5°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 established the roles and responsibilities on organisations that play a role in preparing for and responding to emergencies. Local authorities are a Category 1 responder with duties that include putting in place emergency plans, sharing and co-operating with other local responders to enhance efficiency.
Pitt Review (2008)	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 provided 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.
Flood Risk Regulations (2009)	The Flood Risk Regulations implemented the EU Floods Directive in England. Flood risk management, as set out by the framework, required the production of PFRAs, identification of flood risk areas, mapping of such areas and FRMPs.
Flood and Water Management Act (2010)	The FWMA aimed to provide better, more sustainable management of flood risk and coastal erosion along with improving the sustainability of water resources. It defined 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 was 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 placed 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 Policy Statement reflected 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)	The NFCERMS set out a framework for RMAs involved in managing flood risk 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 strategy.
National Planning Policy Framework (2021, revised)	The National Planning Policy Framework (NPPF), published by the Ministry of Housing, Communities & Local Government, set out the planning policies to deliver sustainable development. It provided guidance to local authorities on developing Local Plans in line with national planning policies.
Regional	
Thames Catchment Flood Management Plan (2009)	The Thames Catchment Flood Management Plan (CFMP) is a plan which helped RMAs such as the EA to plan and agree the most effective ways to manage flood risk in the future. A CFMP needs to consider 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 impacts of climate change, land use change/ management and the need for future development.
Mayor of London's Climate Change Adaption Strategy (2011)	The Mayor of London's Climate Change Adaption Strategy set out the framework for improving the quality of life in London and for protecting the natural environment. It provided an action plan for making London more sustainable by using three 'pillars': retrofitting London, greening London, and cleaner air for London. The strategy presented the main climate change impacts on London on cross-sector issues including health, economy, and infrastructure. The strategy also provided a 'roadmap to resilience' outlining key actions, with lead and partner organisations.
Thames Estuary 2100 Flood Risk Management Plan (2012)	The Thames Estuary 2100 (TE 2100) 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 TE 2100 plan is an adaptive strategy and is reviewed on an interim basis every 5 years and on a full basis every 10 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) provided an overview of all sources of flooding in London and addressed both its probability and

	consequences. The London RFRA subsequently informed the London Plan and should inform local-level flood risk assessments and local plans.
The London Plan (2021)	The London Plan is an overarching Strategic Development Strategy (SDS) for London. Producing an SDS is a requirement of the London Mayor established under Greater London Authority (GLA) legislation. The London Plan established an integrated economic, environmental, transport and social framework for the development of London for the next 20-25 years. London Boroughs' local plans need to align with the London Plan, and its policies guide decisions on planning applications by Councils and the Mayor.
Local	
Local Plan (2018)	Sutton's Local Plan was developed by the Local Planning Authority (LPA) to set out and deliver the Council's long-term aims and aspirations for the borough and to provide a consistent basis for deciding planning applications. The Local Plan covers 2016 to 2031 and deals with major new regeneration areas, new housing development and infrastructure provision. It set out policy and guidance to plan and manage growth and to guide development across the borough. It addressed needs and opportunities in relation to housing, the economy, community facilities and infrastructure – as well as the basis for conserving and enhancing the natural and historic environment, mitigating and adapting to climate change and achieving well designed places. The plan proposes both strategic and non-strategic policies.
Biodiversity Strategy (2020)	The local Biodiversity Strategy outlined the actions that must be taken at a local level to achieve the objectives on the National Biodiversity Action plan, published in 1994. The local Action Plan set out the strategy for the conservation of species and habitats within the borough.
Strategic Flood Risk Assessment (2015)	The Strategic Flood Risk Assessment (SFRA) is an NPPF requirement to provide a strategic overview of all forms of flood risk within an area. Sutton's SFRA assessed the risk from all sources of flooding, the cumulative impact that development or changing land use would have on the risk of flooding and the effect of climate change on these risks. The SFRA also identified opportunities to reduce the causes and impacts of flooding and any land likely to be needed for flood risk management features and structures. The SFRA provided guidance for the local plan, individual planning applications, future flood management, emergency planning and how to adapt to climate change.
Surface Water Management Plan (2018)	The Surface Water Management Plan (SWMP) is a document produced by LLFAs to outline the preferred surface water management strategy of an area. Sutton's SWMP included flooding from sewers, drains, groundwater and runoff from land, small watercourse and ditches that could occur as a result of heavy rainfall. Sutton's SWMP was updated in 2018 but has not yet been published on Sutton's webpage. It introduced the catchment-based approach to managing surface water flood risks, replacing the previous 2011 SWMP's critical drainage areas.
Borough's Multi-Agency Flood Plan (2022)	Sutton's Borough Resilience Forum is a multi-agency partnership made up of representatives from Category 1 Responders such as local public services, local authorities, the EA, the National Health Service (NHS) and others. Sutton's Multi Agency Flood Plan has been reviewed in 2022.

1.6 Strategic objectives of the LFRMS

The LFRMS must revolve around a set of strategic objectives which shape the actions of the LLFA for the next six-year period. It has been decided to change the objectives of the previous LFRMS, first published in 2015, in order for them to align with the latest guidance and the targets set by the EA in the NFCERMS. The three overarching aims in the NFCERMS are '*climate resilient places*', '*today's growth and infrastructure resilient in tomorrow's climate*' and '*a nation ready to respond and adapt to flooding and coastal change*'. The detailed action plan and corresponding reviewing plan have been developed to achieve the strategic objectives below:

Strategic Objective A:

Improve our knowledge and understanding of the different risks of flooding in Sutton.

Strategic Objective B:

Proactively encourage sustainable solutions for the management of local flood risk which take account of climate change.

Strategic Objective C:

Use planning powers to appropriately mitigate flood risk to or caused by developments across Sutton.

Strategic Objective D:

Educate, encourage, and empower local residents, businesses and landowners to take action on reducing flood risk.

Strategic Objective E:

Nurture collaborative partnerships with key organisations and Risk Management Authorities, including for funding and resources.

2 ROLES AND RESPONSIBILITIES

2.1 RMAs and other stakeholders

RMAs are organisations which have a role in managing flood risk. These include government organisations, private companies and local authorities, each with specific responsibility to carry out actions before, during and after a flooding event. A good understanding of the respective responsibilities is crucial when dealing with flooding and to ensure effective communication. *Table 2-1* provides an overview of the RMAs involved in Sutton Borough, their responsibilities in relation to different types of flood risk and their drainage management functions.

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

Responsibility	Risk Management Authority			
	Sutton	Environment Agency	Thames Water	Transport for London
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	✓			

It should be noted that the roles of the different RMAs can vary according to the severity of the flooding incident. Smaller events such as a 1 in 10 year storm event may be dealt with by the local sewerage company which is Thames Water Utilities Limited (TWUL) in Sutton Borough. Very large, less frequent events such as a 1 in 200 year storm event would likely involve all RMAs, emergency responders and central government due to the widespread impacts caused.

2.1.1 Sutton

Sutton has multiple roles and responsibilities as it is the LLFA, a Highways Authority, a Planning Authority, a Category One Responder, and a landowner.

As the **LLFA**, Sutton is the lead RMA for managing flood risk from surface water, ordinary watercourses, and groundwater sources. The FWMA requires the LLFA to carry out the following:

- Development, implementation, and maintenance of a LFRMS, which includes consulting with the public and stakeholders.
- Maintenance of a register of structures or features (asset register) which are likely to have a significant effect of flood risk in the area.
- Undertaking flood risk investigations as per the FWMA Section 19 (see *Figure 2-1*).
- Reviewing and consulting of surface water drainage proposals for major planning applications as a statutory consultee.
- Regulating works within the proximity of ordinary watercourses (consenting and enforcement).

Flood investigation report thresholds

A formal investigation will occur:

- If internal flooding of one property has been experienced on more than one occasion
- Where internal flooding of five or more properties has been experienced during a single flood incident
- Where critical infrastructure (e.g. main roads impassable to traffic) has been affected by flooding more than once within a 12 month period

Investigations may also be carried out at the discretion of Sutton where the source of flooding is ambiguous.

Figure 2-1: Flood investigation report thresholds

As a **Highways Authority**, Sutton is responsible for maintaining any highway assets on adopted roads which are not on the Strategic Road Network (which is managed by TfL). Highway drainage such as road gullies, drains, kerbs and ditches, have to be managed and routinely inspected to ensure that highway runoff on and from highways is well managed. Sutton's highway drainage responsibilities include highway gullies and pipework up to the point it connects to the public sewer network, where it becomes the responsibility of TWUL. This does not fall under the remit of the LLFA as they do not manage the reactive maintenance functions.

As a **landowner**, Sutton has a responsibility to safeguard their own land and property against flooding. Landowners are required by common law to not increase the risk of flooding to a neighbouring property, through carrying out maintenance tasks on their assets, such as drain cleaning. As a riparian owner, Sutton has the responsibility of carrying out maintenance tasks for the main rivers and ordinary watercourses that fall within Sutton-owned land.

2.1.2 Environment Agency

The EA is the national flood risk authority in the UK. The EA's responsibilities and powers include issuing flood warnings (in collaboration with the Met Office), flood risk mapping, the construction of flood defences and issuing permits for works near or within main rivers. The EA has a strategic overview of all sources of flooding and coastal erosion as defined in the FWMA but has regulatory control over large watercourses, known as 'main rivers', and the sea. The main rivers in the Sutton Borough are the River Wandle, the Beverley Brook and the Pyl Brook (see *Figure A2-1*).

As an RMA, the EA is required under the FWMA to produce the NFCERMS for England, to collaborate with other RMAs and exchange information. Other duties of the EA are the production of guidance on FRMPs for LLFAs and of funding tools and flood risk data. The EA is also responsible for allocating national government funding for flood and coastal erosion risk management projects.

2.1.3 Thames Water Utilities Limited

TWUL is the regional water and sewerage company responsible for managing the risk of flooding from surface water, foul and combined sewers in Sutton Borough as well as from water supply facilities. Under Section 94 of the Water Industry Act (1991), TWUL have a duty to ensure that the area they serve is 'effectively drained', which involves inspecting, maintaining, and repairing their sewers and other drainage assets. TWUL should advise the LLFA on any works being carried out and collaborate with the other RMAs. This involves inviting the LLFA to take a consultation role on their key documents such as their Drainage and Wastewater Management Plan (DWMP) which is currently being updated.

2.1.4 Transport for London

TfL is a local government body responsible for managing the transport services across London. Its responsibilities under the Highways Act (1980) include managing highway drainage and roadside ditches along the TfL red routes. This is usually done in collaboration with National Highways as the red routes are part of the England Strategic Road Network. In Sutton Borough, the TfL red routes are the A24, A17, A232 and A297, none of which fall under the responsibility of National Highways.

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 (Environment Agency, Secretary of State)

Category One Responders have a duty to respond to emergencies such as a serious flooding incident. Sutton, as a Category One Responder, has the responsibility to have emergency response plans and measures in place to control or reduce the effect of an emergency. This responsibility falls under the remit of the Emergency Planning Department of Sutton. The LLFA are not expected to respond during a flood event except to assist other RMAs and Category 1 responders where possible.

2.1.6 Landowners

It is the private landowners' responsibility to take measures to safeguard their own land and property from flooding. Landowners are required by common law to not increase the risk of flooding to a neighbouring property, through carrying out maintenance tasks on their assets, such as drain cleaning. They are also responsible for mitigating any increase in flood risk to surrounding properties when developing their land.

As riparian owners, landowners also have the responsibility of carrying out maintenance tasks for the main rivers and ordinary watercourses that fall within their land. All riparian owners must maintain the watercourse by clearing any obstacles and maintain the banks and bed of the watercourse as well as any flood defences.

2.2 Internal flood risk governance

The LLFA and flood risk management duties and responsibilities are shared across multiple departments within Sutton (see *Figure 2-2*). The Highways and Transport Department is in charge of maintaining all highway assets that are not part of TfL's Strategic Network drainage. These assets include road gullies, drains, ditches, and pipes. They need to be regularly inspected and maintained to ensure that highway runoff will not cause any flooding issues due to poorly maintained assets.

The Emergency Planning team in Sutton is responsible for preparing and updating emergency plans for the borough, including the response to flooding. The Development Management team is in charge of processing and evaluating planning applications against national and local policies on surface water runoff management and SuDS implementation with the statutory consultee feedback from the LLFA on major applications.

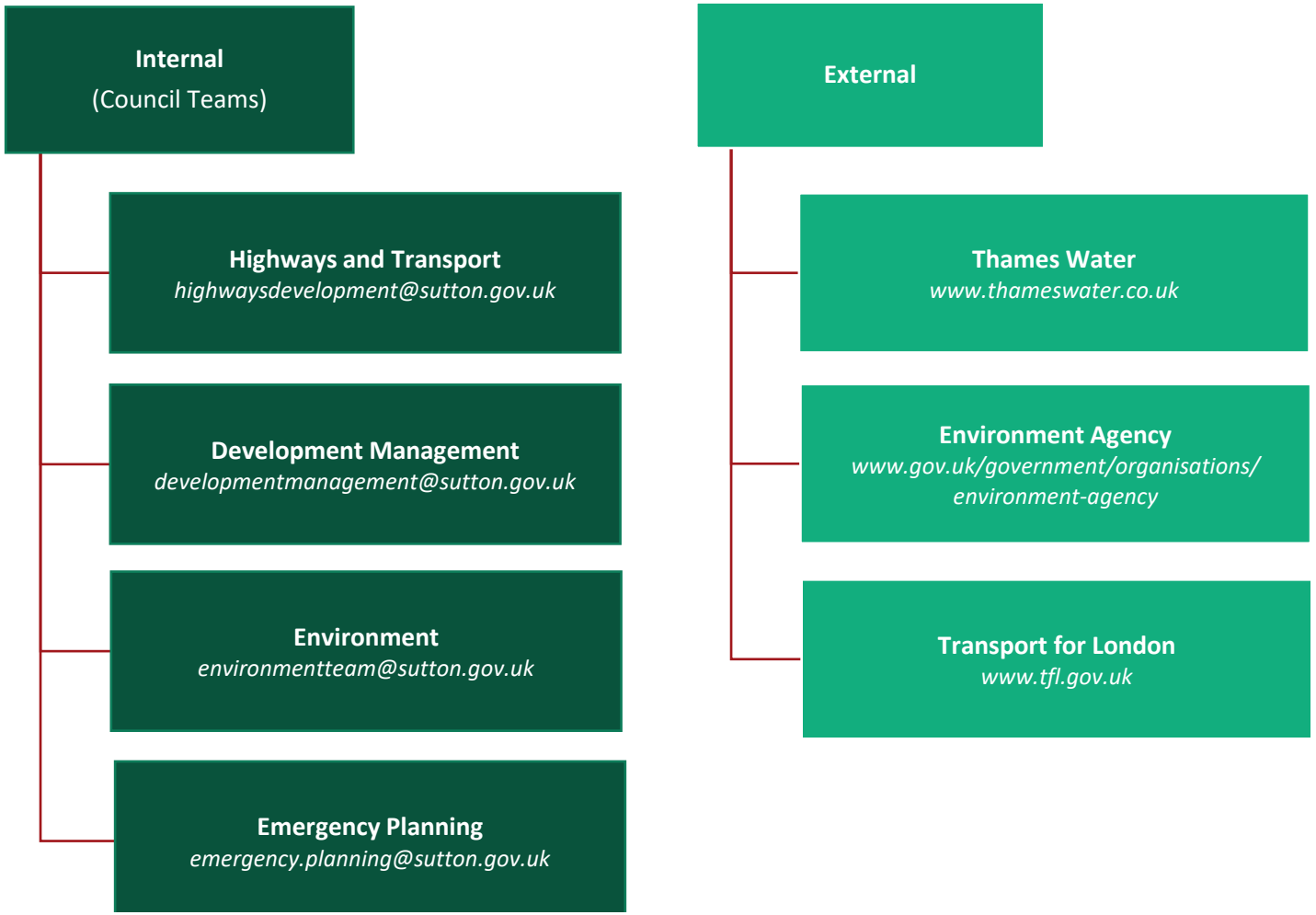

Figure 2-2: Contact information for internal and external RMAs involved with flood risk management

2.3 Local and regional partnership groups

Sutton's LLFA team is involved in a number of groups that relate to flood risk management in line with their duty to lead on local flood risk management. These groups cover both local and regional scales and meet at different intervals. The LLFA actively works with system planners at TWUL, Project Support Officers and Thames Flood Advisors from the EA, TfL for highways matters, London Fire Brigade for emergencies and neighbouring LLFAs to coordinate on strategic matters and joint flood management schemes and cross borough investigations. When engaging in local flood risk management and associated flood risk projects local groups are frequently engaged with. For instance resident groups such as Friends of Rosehill for the Rosehill Park flood alleviation scheme (FAS).

2.3.1 Internal flood group

Sutton's LLFA is currently setting up an internal flood group with an aim to start in May 2022. The group is expected to have attendees from the Highways and Transport, Planning Policy, Emergency Planning and Neighbourhood Services teams. The objective of the internal flood group will be to deliver the LFRMS and its action plan, through internal regular internal meetings.

2.3.2 South West London Strategic Flood Group

The South West London Strategic Flood Group (SWLSFG) is comprised of the six LLFAs covering south west London, namely, London Borough of Croydon, the Royal Borough of Kingston upon Thames, London Borough of Merton, London Borough of Richmond upon Thames, Sutton and London Borough of Wandsworth, plus Surrey County Council, the EA, TWUL and the South East Rivers Trust (SERT). The group was started in 2011 and meets quarterly to share understanding and best practices in flood risk management across the area and with the aim to provide coordinated and collaborative management of flooding.

2.3.3 Thames Regional Flood and Coastal Committee

The Thames Regional Flood and Coastal Committee (TRFCC) is a committee established by the EA in accordance with the FWMA. It is composed of elected members appointed by the LLFA and independent members appointed by the EA. TRFCCs have three 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 flood and coastal erosion risk management 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 understanding of flood and coastal erosion risks in its area.

The SWLSFG is represented on the TRFCC by a Councillor from one of the six boroughs.

3 LOCAL FLOOD RISK

3.1 Local flooding characteristics

Sutton Borough is located in south-west London and includes the main towns of Sutton town centre, as well as Carshalton, Wallington and Worcester Park. It also includes the suburbs of Beddington, Cheam, Hackbridge, Rosehill and part of St. Helier. Sutton Borough is located next to the Royal Borough of Kingston upon Thames (north-west), the London Borough of Merton (north), the London Borough of Croydon (east) and Surrey County Council (south and west).

The terrain elevation varies across Sutton Borough, with an overall increase in elevation towards the southern boundary of the borough. The lowest points are in the area of Worcester Park, North Cheam and Hackbridge. The flood risk in Sutton Borough generally follows the topography of the area, with low lying areas at higher risk. The areas most at risk of flooding are in close proximity to main rivers and ordinary watercourses or in low lying areas where man-made structure such as railway lines prevent water from following the topography.

Flood risk in the Sutton Borough should account for the variety of major infrastructure and amenity areas in the borough, which include:

- Sutton town centre and seven district centres (Croydon Road, Gander Green Lane and Abbotts Road, Oldfields Road, Restmor Way, Hackbridge Besiness Forest, Trading Estate and Gas Holder - Plumption Way and Wandle Valley Trading Estate)
- Major roads (seven A roads)
- Rail assets (ten train stations)
- Open spaces (including Beddington Park, Oaks Park, Cheam Park, Carshalton Park and St Helier Open Space)

3.2 Types of flood risk

3.2.1 Fluvial flood risk

Fluvial flooding occurs when the amount of water in a river channel is greater than the channel capacity. When this occurs, the watercourse can overflow or burst its banks, leading to flooding. The term fluvial flooding is used to refer to flooding from main rivers as defined and designated by the EA. Main rivers are typically larger rivers or streams and their locations can be seen from the statutory main river map.

All the main rivers are located in the north of Sutton Borough, namely:

- **River Wandle:** The largest main river in south-west London, it flows to the north of the Sutton Borough into the London Borough of Merton, the London Borough of Wandsworth and discharges into the River Thames.
- **Beverley Brook:** Rises in Worcester Park to the west of the borough and flows in the north-western region of the borough through London Borough of Merton then London Borough of Richmond before discharging into the River Thames.

- **Pyl Brook:** A tributary of the Beverley Brook and has two main sources which rise in the north of the borough before crossing into the London Borough of Merton and flowing into the Beverley Brook.

Figure A2-1 shows the main rivers in Sutton Borough.

Fluvial flood risk zones have been mapped by the EA and are categorised based on the flooding predictions. Flood Zone 2 areas are predicted to have between a 1 in 100 and 1 in 1000 year annual probability of fluvial flooding and Flood Zone 3 areas are predicted to have above a 1 in 1000 year annual probability of fluvial flooding. The Flood Zones in Sutton Borough are mapped in *Figure A2-2*. The Flood Zones also take into account the risk of flooding from the sea as it also falls under fluvial flooding in the context of tidal influences on the River Thames.

Key areas at risk of fluvial flooding in Sutton Borough are Beddington and parts of Cheam, Rosehill, St. Helier and Worcester Park. Fluvial flood risk is further detailed in Sutton's SFRA.

3.2.2 Ordinary watercourses flood risk

Ordinary watercourses refer to all rivers, streams, ditches, drains, cuts, dykes, sluices, sewers (other than public sewers) and passages that convey water, above ground or culverted, that are not designated as main rivers by the EA (see Land Drainage Act (1991)). Similar to the mechanism of fluvial flooding, flooding from ordinary watercourses occurs when the amount of water in the feature exceeds its capacity. It is however considered that flooding from ordinary watercourses is a combination of fluvial, surface and sewer flooding as these small channels often receive most of their flow from within the urban area.

The ordinary watercourses in Sutton Borough are mainly located in the north of the borough, around Beddington Park and Beddington Sewage Treatment Works. Shorter sections of ordinary watercourses are located around Rosehill Park and Cheam Park (see *Figure A2-1*). The total length of these channels is approximately 20.5km, of which approximately 1.6km is culverted. Some of the ordinary watercourses are tributaries to the main rivers in Sutton Borough. The risk of flooding from ordinary watercourses is included in *Figure A2-3* which shows the risk of flooding from surface water in Sutton Borough.

3.2.3 Surface water flood risk

Surface water flooding occurs when high intensity rainfall generates runoff which flows over the surface of the ground and ponds in low lying areas, before the runoff enters a watercourse or sewer. In urban areas, impermeable surfaces have replaced the natural, permeable surfaces, preventing water from soaking into the ground or slowly flowing overland to watercourses and low-lying areas. Manmade structures, such as railway lines and roads, often form barriers to the natural flow of surface runoff, or create artificial low-lying areas prone to flooding. Blocked or overwhelmed surface water sewers can also increase the risk of flooding from surface water. Sutton Borough is bisected by the railway line that spans across the Borough between Cheam and Waddon. This railway embankment acts as a bund and interrupts natural flow paths from south to north. This increases the risk of flooding from surface water as the ponding water puts strain on the drainage features.

Areas most at risk of flooding from surface water in Sutton Borough include Manor Road below the railway bridge near Wallington Station, the area to the north of The Royal Marsden Hospital and

streets to the south of Sutton Town Centre as shown in *Figure A2-3*. Other areas considered at a greater risk of flooding from surface water based upon the number of properties at risk include Worcester Park, Trafalgar Avenue and Sutton Junction. More information about the risk of flooding from surface water in Sutton Borough can be found in the SWMP, which is undergoing an update at the time of publication of this LFRMS.

The number of properties at risk of flooding from surface water in Sutton Borough has been included in the latest SWMP update produced in 2018. For a property to be considered at risk, it must have a minimum flood depth of 150mm (which corresponds to the doorstep height) and a minimum wetted perimeter of 20%. *Table 3-1* provides a summary of the properties at risk in Sutton Borough. Refer to Sutton's SWMP for detailed information.

Table 3-1: Number of properties at risk of flooding from surface water within Sutton Borough

Predicted Flood Risk Extent	Residential properties at risk	Other properties at risk	Unclassified properties at risk
Within 30-year surface water extent	1,637	121	108
Within 100-year surface water extent	4,557	376	284
Within 1000-year surface water extent	13,480	1,125	866

3.2.4 Groundwater flood risk

Groundwater flooding occurs as a result of water rising up from an underlying aquifer or sub-surface permeable strata. Groundwater flooding tends to occur after prolonged periods of sustained high rainfall and can be sporadic in both location and time in relation to rainfall. This type of flooding often lasts longer than fluvial or surface water flooding as it takes longer for the ground water table to subside, which greatly depends on the underlying geology and on the topography. High groundwater levels can exacerbate fluvial and surface water flooding by reducing rainfall infiltration capacity, and sewer flooding through sewer and groundwater interactions. Planning applications that fall within areas at high risk of flooding from groundwater are required to carry out additional analysis of flood risk. This is to ensure developments do not increase the risk of throughflow and groundwater related flood risk.

The susceptibility to groundwater flooding is not homogeneous across Sutton Borough. This is mostly due to different bedrock geology in the north and the south of the borough. A large proportion of the north is underlain by London Clay bedrock which has low permeability. The south is predominantly underlain by chalk formations which has high permeability. The north-east areas around Beddington, Carshalton and Hackbridge have superficial deposits of sand, gravel, clay and/or silt. These permeable river deposits increase the risk of groundwater flooding by providing groundwater pathways.

Figure A2-4 shows the risk of groundwater flooding in Sutton Borough.

3.2.5 Sewer flood risk

Sewer flooding typically occurs during heavy rainfall if:

- the rainfall entering the sewer network exceeds the capacity of the drainage system,
- the sewer system becomes blocked by debris of sediment or roots growing through the pipe,
- the sewer system surcharges due to high water levels in receiving watercourses, and/or
- the sewer system surcharges due to the ingress of groundwater, either through the fabric of the sewer or due to inundation above the surface.

This type of flooding is generally localised and short term. Flooding from public sewers, whether surface water, foul or combined sewers, is the responsibility of TWUL as the sewerage undertaker.

Most sewer systems in Sutton Borough are separated between surface water and foul sewers except in the areas around Hackbridge, Beddington and to the north-west of the borough where there are combined sewers instead. TWUL has expressed at the planning stage of their DWMP the intention of separating all sewerage systems as a priority. The capacity of sewer network is limited and it is typically only expected to accommodate for up to the 1 in 30 year storm event, but in some areas may be considerably lower due to the age of the sewer network. As was witnessed during the July 2021 floods, storms with higher return periods exceed the network capacity and lead to flooding as it was not designed for these events.

Based on sewer flooding reports, sewer flooding is considered to be a significant flood risk in Hackbridge where the combined sewer can interact with the River Wandle during high tides. *Figure A2-5* shows the number of sewer flooding incidents recorded in the different 4-digit postcode areas of Sutton Borough. However, sewer flooding is not always reported by residents and could therefore be wider spread.

3.2.6 Flood risk from other sources

Other sources of flooding include any water bodies that have not been covered under the other categories and typically include canals, lakes and reservoirs. In 2014, the Carshalton Place Canal, Carshalton Park Canal and Westcroft Canal, which are tributaries of the River Wandle, filled up for the first time in 10-15 years after a period of prolonged rainfall, causing some flooding to nearby properties and Carshalton High Street.

The borough is at risk of flooding from the Russel Hill Reservoir in the London Borough of Croydon as shown in *Figure A2-6*.

3.3 Flooding history within Sutton Borough

Sutton keeps a register of flooding incidents as part of their LLFA duties. This includes all sources of flooding, due to the potential for interaction between sources, and is not restricted to significant flood events. *Figure A2-7* shows the historic flooding incidents across Sutton Borough. Both the previous LFRMS and the SWMP describe historic flooding incidents across the borough. The SWMP has shown that out of the 1,255 flooding incidents reported up to 2018, 84% were cases of external flooding. In terms of the location of flooding incidents it was also found that 42% were in areas at risk of flooding

from surface water in a 1 in 1000-year storm, 9% were in Flood Zone 2 and 5% were in Flood Zone 3, as summarised in .

It is currently possible to report a flood via Sutton's webpage by filling in an online questionnaire.

Table 3-2: Split of historic records and 2017 public consultation responses by predicted flood risk areas

	Surface Water Flood Risk			Fluvial Flood Risk	
	1 in 30-year	1 in 100-year	1 in 1000 year	Zone 2	Zone 3
Number of records	175	305	560	115	67
Number of responses	38	751	89	26	6
% against total of recorded incidents	14%	23%	42%	9%	5%

3.4 Future flood risk considerations

It is important to consider multiple factors when preparing for future flood risk. Climate change is predicted to change the weather patterns in the UK (see section *4.1*) and an allowance needs to be included in flooding predictions to account for the increase in the severity of future storms. Issues such as land use change, groundwater abstraction, and ecological concerns also need to be considered when developing flood risk plans. This LFRMS and the Appendices take the above factors into account and aim to mitigate their impacts on flood risk in Sutton Borough. The recommendations defined in the action plan in *Appendix 1* – Action Plan indicate what the LLFA should do in order to meet their objectives set out in section *1.6*. The ecological and environmental implications of the LFRMS and action plan have been assessed in the Strategic Environmental Assessment (SEA) (*Appendix 3* – SEA Screening Report).

The implications of climate change on increasing flood risk are calculated by the EA by including climate change allowances in flooding predictions. These allowances, which are statistical estimates of the consequences of climate change, impact the predicted peak rainfall intensities, sea level rise, peak river flows, offshore wind speeds and extreme wave heights. It is expected that the fluvial flood zones will increase in line with sea level rise. Seasonal surface water flooding is also predicted to increase, and the type of flooding experienced in July 2021 is expected to become more common. It is important for Sutton to understand how areas within the borough will become more vulnerable as a consequence of climate change, hence the necessity of an action plan that takes this factor into account.

4 ADAPTATION AND RESILIENCE TO FLOODING

4.1 What is climate change?

Climate change is the long-term variation in the planet's temperature and weather patterns. Although it can be a natural process, we are currently experiencing a rapid change in global climate which is due in part to greenhouse gases emitted by human activities.

The IPCC, in their Sixth Assessment Report published in 2021, highlight the fact that climate change is already affecting weather extremes across the globe. For example, intense heatwaves and heavy rainfall have become more frequent since the 1950s. In the UK, the Met Office produces UK Climate Change Projections (UKCP18) which are predictions on how the climate in the UK 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.

Climate change is expected to increase the risk of flooding in the future, with areas historically at low risk of flooding becoming more vulnerable. We recognise that we need fast and effective climate actions to protect properties and infrastructure from the increased flood risk due to climate change.

4.2 What is resilience and adaptation?

Climate change is predicted to increase the risk of flooding, and flood avoidance is not a viable flood risk management strategy. As it cannot be avoided, flooding must be prepared for in order to minimise any damages and to help communities and local economies recover quickly. This approach is referred to as increasing 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. This includes making the best land use and development choices, protecting people and places, responding to, and recovering from flooding and coastal change whilst all the time adapting to climate change*." The NFCERMS proposes to follow the "*build back better*" approach, which focusses on improving the resilience of properties and infrastructure for future flood occurrences.

Flood adaptation refers to measures taken on in the long term for people and places to adapt to the reality of flooding being likely instead of mitigating the risk of flooding through resilience enhancing measures. This adaptation is necessary as the risk of flooding is perpetually changing. The NFCERMS proposes 'adaptive pathways' to enable RMAs and local areas to better adapt to expected changes in climate that exacerbate flood risks.

A sustainable approach to flood risk management requires a combination of resilience measures and adaptive approaches.

4.3 How the LLFA will support resilient local communities

The LLFA will support the increase in resilience of local communities by bringing together all the strategies, plans and action plans as well as providing updates to these documents as required. These documents define how Sutton envisages the future of the borough, by providing visions for town centres, development management and a corporate vision.

Sutton has produced an Environment Strategy and Climate Emergency Response Plan after declaring a climate and ecological emergency alongside the Mayor of London, other local authorities and the UK Government. One of the target areas of the response plan is to 'increase the preparedness of Sutton's residents, public services and infrastructure for extremes of temperature, drought and flooding.' Adequately supporting local communities in increasing their resilience therefore aligns with this focus.

The LLFA is currently overseeing the delivery of the Worcester Park FAS which will protect properties at risk in the area up to the 1 in 50 year rainfall event. The delivery of the project is expected to be completed in 2023, subject to detailed design and stakeholder engagement. Looking for further opportunities for schemes that aim to reduce or mitigate flood risk in Sutton Borough has been included in the action plan in *Appendix 1* – Action Plan. The actions listed in the action plan are designed to best support the local communities against increasing flood risk. By working with local RMAs and neighbouring councils, Sutton is taking measurable steps in meeting the LFRMS objectives. Other current projects in Sutton Borough include Rosehill Park FAS, Beddington FAS and SuDS in Sutton Schools.

4.4 Guidance for local communities

4.4.1 Improving awareness of flood risk

At community level, local flood groups have an important role to play in building their resilience towards flood risk. Flood Action Groups are voluntary groups of residents and local businesses who play a role in monitoring and reporting flooding in their local area on behalf of the wider community. They can be involved in developing emergency plans and act as a representative of the local community to Sutton when discussing issues and ideas around flooding. This infographic provides helpful information about Flood Action Groups and has been developed by the Flood Hub and the EA. With a move towards co-production, these groups are encouraged to create their own campaigns, actions and projects in collaboration with Sutton.

At an individual level, individuals can learn about the risk of flooding in their local area by consulting the SFRA and PFRA, which are online on the Sutton's webpage. EA tools such as the 'Check for Flooding' tool can be used to see whether a property is located in a Flood Zone. If this is the case, it is encouraged that they sign up to the EA's flood warnings to receive free flood alerts via phone, email or text message.

Residents and businesses can follow the guidance from the National Flood Forum which outlines the six step process to protecting your property:

1) Understand the risk
2) Planning a scheme
3) Property surveying
4) Design and specification
5) Product installation
6) Maintenance and operation

More information about PFR is proposed in section *5.2.3*. Other methods for reducing flood risk in a sustainable way are described in section *5.2*.

4.4.2 What to do before, during and after a flood

Whether flooding is imminent, already happening or subsiding, following the steps outlined in *Figure 4-1* can help to mitigate the impacts of flooding. For more detailed information about what to do before, during and after a flood, refer to the National Flood Forum and EA guidance, or by using the following helpline:

- 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 4-3*.

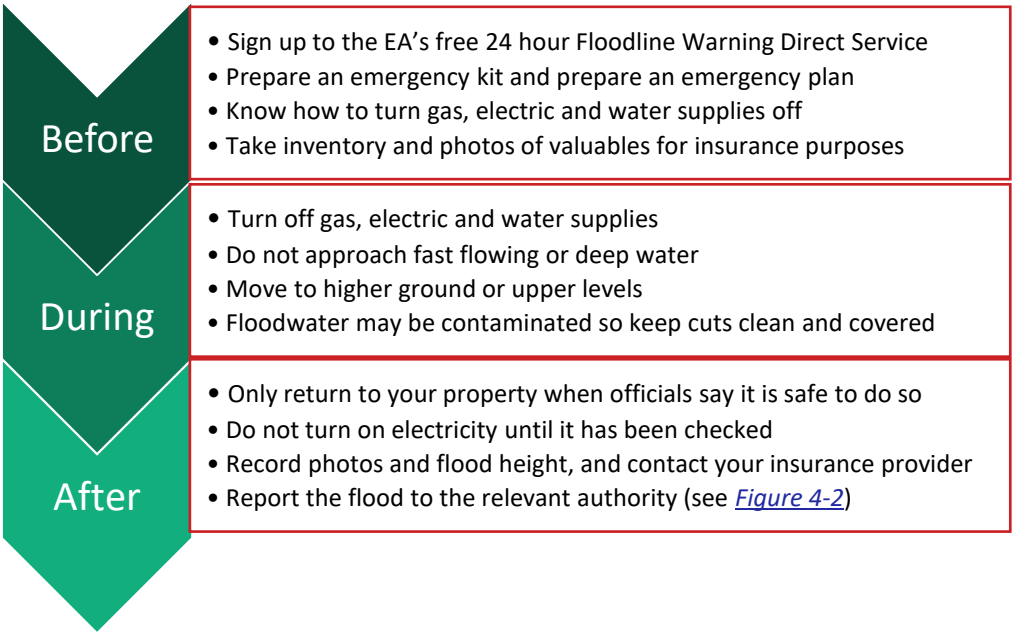

Figure 4-1: Summary of actions to take before, during and after a flood. Full EA guidance can be found here

HOW TO REPORT A FLOOD

For blocked sewers, sewage flooding and burst water mains Thames Water 0800 316 9800 TWUL online reporting tool	**For blocked public drains, flooded roads, flooding from ordinary watercourses or groundwater flooding** Sutton 020 8770 5000 Sutton flood reporting tool Sutton blocked gully reporting tool
For flooding from the sea and flooding from main rivers Environment Agency 0800 80 70 60 (24/7 service)	**For blocked private drains, flooding caused by private drains, soakaways and SuDS** Property / Landowner

Figure 4-2: Details on how to report different types of flooding in Sutton

5 SUSTAINABLE MANAGEMENT

5.1 Sustainability and flood risk management

The frequency and severity of storms and heavy rainfall is predicted to increase as a result of climate change and it is imperative to implement a sustainable flood risk management strategy. This is to ensure that existing defences and areas of potential flooding are protected for the future. Flooding cannot always be preventable and adequately managing flood risk requires building resilience and not necessarily resistance. In order to align with the NFCERMS, sustainable flood risk management strategies should aim to meet these six goals:

- Invest appropriately to protect the most vulnerable areas which are at the greatest risk of flooding to reduce the number of people, homes and property at risk of flooding
- Utilise rural and urban landscapes to store and slow the flow of water
- Reduce stresses on sewer systems to reduce flood risk and improve water and environmental quality
- Effectively manage coastlines and estuaries to reduce flooding whilst respecting the changing nature of the coast and considering impacts of associated interventions
- Continually keep the public well-informed on understanding flood risk and appropriate actions they can take to protect themselves, their property, and businesses
- Create adaptable flood-managing actions that can adapt to a changing climate

5.2 Strategies for sustainable development

The FWMA states that flood and coastal erosion RMAs should aim to contribute towards achieving sustainable development when exercising their flood and coastal erosion risk management functions. The definition of sustainable development focuses on the theme of improving life in ways which do not restrict the current and future ability of others.

Part of sustainable development is to use innovative engineering approaches in new projects or to add benefit to existing flood risk management methods. Increasing awareness and preparedness are also key factors, through educating individuals, communities and businesses to build their resilience to flood events and speed up the recovery process. This involves incorporating greater measures into the design of new infrastructure and retro-fitting at-risk properties, including historic buildings, with flood resilience measures.

5.2.1 Sustainable Drainage Systems

SuDS are a range of drainage systems that are designed to mimic natural drainage processes. SuDS work by managing water runoff to reduce or slow the quantity of surface water entering the traditional sewer networks and to improve the water quality of runoff. Different types of SuDS exist and are often categorised based on the process they employ such as water harvesting (water butts, blue roofs and planters), infiltration (soakaways and infiltration trenches), detention or attenuation (retention ponds, geocellular storage and raingardens) and conveyance (swales and conveyance channels).

SuDS are most easily implemented in new developments and can also be retrofitted in existing developments. In both cases, considering the potential benefits and opportunities when designing SuDS can help deliver the best results. SuDS can provide a range of benefits that are not linked to water management including improving amenity and biodiversity in outdoor spaces, creating recreation areas, and contributing to education by including SuDS in schools and in public or community buildings.

Successfully designing and incorporating SuDS in developments relies on effective design. The SuDS Manual (CIRIA publication C753) is widely used for technical advice and guidance on planning, designing, building and maintaining SuDS. Sutton requires for all development proposals to include SuDS and to provide a completed London Sustainable Drainage Proforma, a document capturing the proposed drainage strategy in line with policy and created by the GLA.

5.2.2 Natural Flood Management

NFM involves implementing measures that help protect, restore, and mimic natural functions of catchments, floodplains, rivers, and the coast in order to reduce the risk of flooding.

The overall aim of NFM is to reduce the maximum water volume of a flood (peak flood flow) and/or delay the arrival of the flood peak downstream, increasing the time available to prepare for floods.

There are four key mechanisms by which this can be achieved:

1) Increasing flood storage: Creating temporary runoff attenuation storage which fills up during a flood event and releases water slowly. This can be achieved by reconnecting functional floodplains and creating storage ponds.

2) Increasing catchment and channel roughness: Increasing the roughness increases the resistance to surface and in-channel water flow which 'slows the flow'. Examples of this include planting trees and hedgerows and restoring meandering rivers.

3) Increasing losses: Increasing the amount of water that infiltrates into the ground or is lost to the atmosphere through evapotranspiration. This can be done by reducing the soil compaction and by implementing infiltration SuDS.

SUDS IN SUTTON SCHOOLS

Sutton has worked in partnership with SERT to implement SuDS in Schools in Sutton.

The three-year project aimed to reduce the amount of runoff entering the sewer network whilst also providing an opportunity to educate about SuDS.

SuDS features have been built on three school sites to date, with one more to follow at St. Helier Open Space.

The lessons learnt include the importance of carefully planning the engagement of partners with design and delivery. See more information here.

4) De-synchronising peak flows from tributaries: Slowing down the flow of water in one tributary compared to another can reduce downstream peak flows in the main river body and therefore reduce flooding.

The EA has developed an evidence base for different NFM techniques, with several case studies on how they can be implemented and the benefits they provide for flood risk management. Sutton promotes NFM in the schemes they consider and implement these measures wherever possible.

5.2.3 Property Flood Resilience

PFR are measures which can be introduced to households or businesses which can help build a property's resilience to flooding. There are two main targets of PFR which are 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 flood doors and permeable paving, and individuals living in areas at high risk of flooding or in hotspot areas are advised to seek PFR advise. A useful guide for property owners is the Homeowners Guide to PFR, and the Blue Pages are the UK's leading independent flood directory to help find PFR products or installers. Councils can apply for PFR schemes for 25 properties or more but individual grant schemes for homeowners are ad-hoc. The last grant available was for flood-hit homes, businesses and charities in communities with over 25 properties flooded between the 8th November and the 18th November 2019 and during storms Ciara and Dennis in February 2020. The grant is not available for flood events which have occurred after these dates.

5.3 Future plans for delivering sustainable solutions

Sutton's Local Plan Policy 32 (Flood Risk and Sustainable Drainage) requires for Sutton's LLFA to seek to implement FASs in priority areas and to retrofit SuDS measures as part of the refurbishment or redevelopment of housing estates, schools, health facilities, transport schemes and parks. Sutton's SFRA is undergoing an update which will influence the Local Plan, promoting the use of SuDS wherever possible in all new developments. This is enforced by the LLFA reviewing all major applications to ensure they align with local policies.

FASs and SuDS projects are currently being implemented and monitored, subject to funding. The LLFA ensures that Sutton continues to find feasible opportunities for building sustainable flood risk management schemes through regular collaboration with internal teams, local groups and other RMAs. With the LFRMS action plan and liaison with local RMAs, Sutton is aiming to ensure that new developments and infrastructure are resilient to flood risk and climate change.

Sutton currently has three projects in the pipeline to tackle flooding. The Worcester Park FAS is currently at detailed design phase. The Rosehill Park FAS is awaiting funding to move to the detailed design phase. The Beddington FAS has a completed feasibility study and the next step will be the concept design.

6 COMMUNITY AND STAKEHOLDER ENGAGEMENT PLANS

6.1 Engagement with RMAs since previous LFRMS

Since the publication of the previous LFRMS in 2015, the LLFA regularly engaged with stakeholders and RMAs through meetings with the SWLSFG, TRFCC and SERT. The LLFA also liaised with TWUL and the EA regularly. Sutton was asked to provide feedback on the Thames River Basin FRMP and was involved in the stakeholder workshops and feedback for TWUL's DWMP. Progress was made on the various FASs across the borough. The LLFA also liaised with the resident group Friends of Rosehill for the Rosehill Park FAS. The LLFA recorded all the progress on the previous action plan and the actions were formally reviewed once a year during the Scrutiny and Committee meeting.

6.2 Plans for future engagement

Along with the publication of the LFRMS, a communication strategy has been prepared. The strategy will outline opportunities for collaborative working and how different stakeholders can use the LFRMS to support this for the future. Different stakeholders will require varying levels of involvement and commitment depending on their responsibility for carrying out the actions as proposed in the action plan in *Appendix 1* – Action Plan. Stakeholders who act as partner RMAs in the actions of the LFRMS will be consulted with when actions are implemented.

Table 6-1 provides an indicative list of the different categories and individual stakeholders which will be involved in the LFRMS. The success of the LFRMS depends on the delivery of its actions and it is strongly encouraged that as many of the listed stakeholders engage with and consult on the LFRMS.

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 • Southwest London Environment Network	• Environment Trust • Canal and River Trust • SERT	
Council Departments	• Development Management Department • Environmental Services Department • Neighbourhood Services Department	• Highways Department • Traffic & Transport Department • Emergency Planning Department	
Government Bodies	• EA	• GLA	
External Partnerships	• SWLSFG	• South London and Surrey Technical Group	• TRFCC
Private Organisations	• TWUL	• Network Rail	• TfL

6.3 Key stakeholders

6.3.1 Primary stakeholders

The stakeholders that play a role in the production and delivery of the LFRMS are referred to as primary stakeholders. These include:

- Council departments
- EA
- TWUL
- TfL

The contribution of these primary stakeholders to the successful implementation of this LFRMS is invaluable. They will be working collaboratively with the Sutton's LLFA team in delivering the actions. In the action plan (*Appendix 1* – Action Plan), a lead RMA is designated for each action along with some partner RMAs. Some actions only involve some of the Sutton service departments while other actions require liaising with external stakeholders. The LFRMS objectives can only be achieved through the RMAs and external stakeholders working together.

The external primary stakeholders are the EA and TWUL and they will be providing support and information in order to carry out the actions. They have also been formally consulted on this LFRMS. As both stakeholders are already involved in the SWLSFG and the TRFCC, the work carried out in these two instances will also support the delivery of the LFRMS action plan. These partnerships also encourage the sourcing of funds for actions and projects.

6.3.2 Secondary stakeholders

All other stakeholders in *Table 6-1* are considered secondary stakeholders. These are individuals or groups that are not necessarily an RMA (under the FWMA) but will have an involvement in the delivery of actions that impact them directly. It is important that Sutton continues to liaise with and nurture strong relationships with neighbouring local authorities, local community groups, partnerships, and private organisations. This ensures that the approach to local flood risk management is holistic, sustainable and serves the local community. The secondary stakeholders will be given the opportunity to comment on the LFRMS and its delivery during the consultation process.

7 ACTION PLAN FOR DELIVERING FLOOD RISK MANAGEMENT BETWEEN 2022-2027

7.1 Actions since the previous LFRMS

Sutton's previous LFRMS was published in 2015 along with an action plan that detailed tasks and responsibilities for the LLFA and stakeholders to complete or provide ongoing work for. *Figure 7-1* shows the key milestones in relation to the last LFRMS since its publication. In this period, the action plan was reviewed annually, and the actions carried out in the previous year were updated. The LLFA has worked with partnerships and communities to raise awareness about the potential local flood risks they were facing and what could be done to manage them.

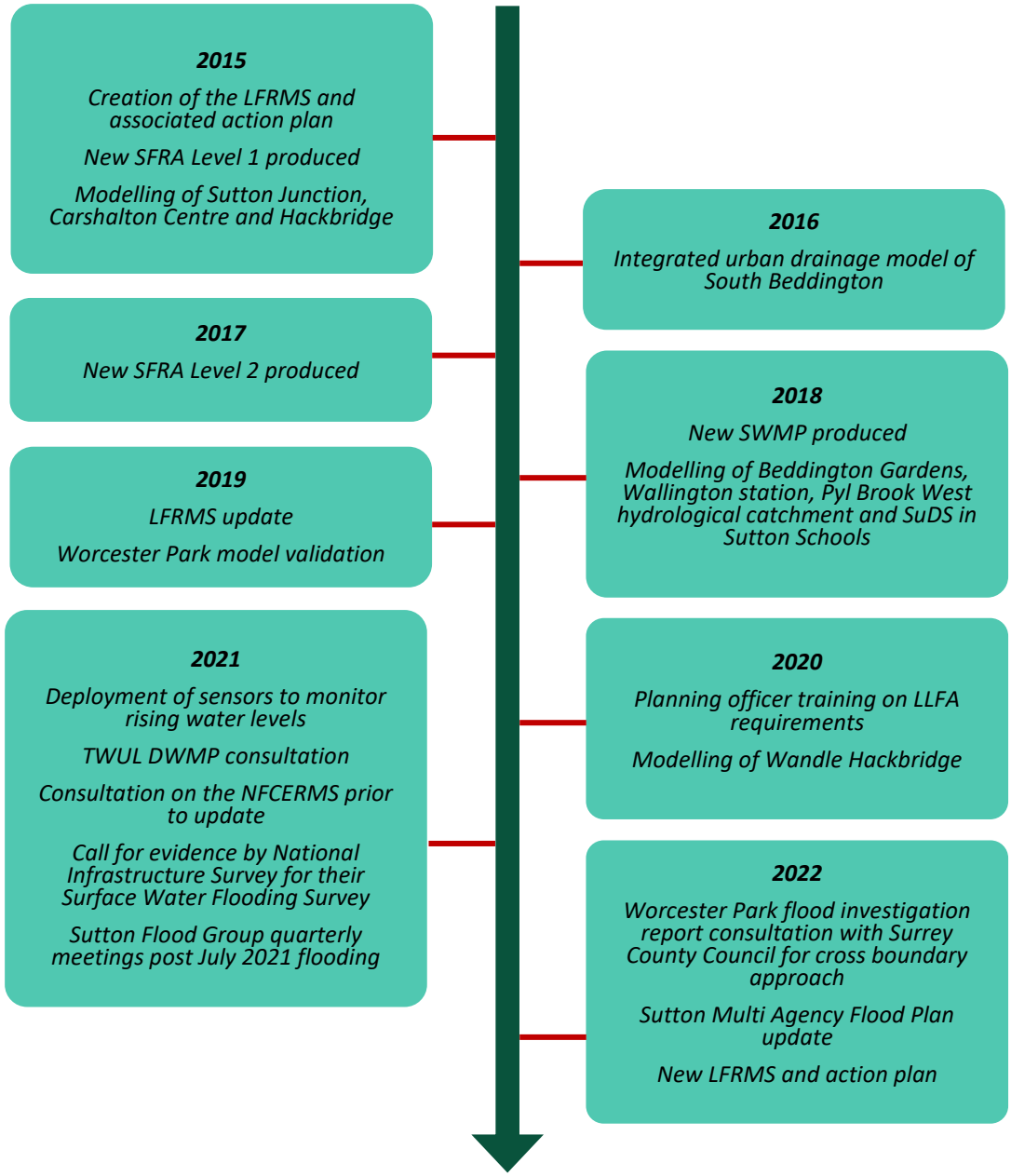

Figure 7-1: Timeline display of key actions since last LFRMS

7.2 Benefits and results

The LFRMS actions carried out by the LLFA and partner RMAs have provided a range of benefits. The partnerships between RMAs and neighbouring local authorities have been re-enforced due to the involvement in groups such as the SWLSFG and the TRFCC (which includes the EA and TWUL). This improvement in collaboration has helped in the sharing of information and in better understanding the flood risks in the area. A closer-knit relationship with the partner RMAs was successful in managing an improved response to significant flooding incidents such as in July 2021.

Another benefit of the collaboration with RMAs is the availability of funding, where schemes with a partnership-working are prioritised. This has enabled Sutton to benefit from a variety of funding sources in the past. With severe events predicted to increase in frequency, the successes of current partnership working and ongoing improvements to communications between RMAs are very important to take forward into the new LFRMS.

7.3 New action plan

A set of actions has been proposed to help achieve the LFRMS objectives and are included in the action plan (*Appendix 1* – Action Plan). The previous action plan, which was last reviewed in 2019, was assessed in line with the changes to the national guidance objectives in the NFCERMS. Existing responsibilities and ongoing actions which were relevant to the new LFRMS have been carried over and their previous action ID has been included for reference. An action plan workshop was carried out with the relevant internal Sutton service departments, the EA and TWUL. A consultation period will allow primary and secondary stakeholders to comment on the proposed actions based on their own priorities and objectives.

For each action, a lead RMA has been designated along with partner RMAs where relevant. A target start date, timeframe for completion and status were included for each action. The target start date reflects the priority of some actions and the timeframes for completion have been set as short, medium and long term, which corresponds to a completion within 1-2 years, 3-4 years and 5-6 years respectively. The status of the actions is either 'Ongoing' or 'Not started'.

7.4 Funding options

In order to fund the actions in *Appendix 1* – Action Plan, it is important to understand the different funding options available to the LLFA to carry out flood risk management work. Depending on the funding required, it is expected that funding will be sought from a variety of sources. Sutton's LLFA team is set to continue working with its existing partnerships, RMAs and other stakeholders to ensure that new and innovative funding opportunities are taken advantage of when they present themselves.

The Department for Environment, Food and Rural Affairs (DEFRA) provides funding in the form of Flood and Coastal Erosion Risk Management (FCERM) Grant in Aid (GiA). This funding is available through an appraisal process during which the scheme proposal must demonstrate that the project will benefit properties at risk of flooding, lessen the indirect impacts from flooding such as on people's mental health, achieve wider environmental benefits and improve amenity of an area. These projects include FASs and studies to investigate flood mitigation options. The TRFCC also provides funding opportunities for local authorities looking to carry out flood risk management schemes. Funds are raised by a levy on local authorities and committee members are appointed by the LLFA and the EA. It is common for projects to be eligible for both GiA and Local Levy funding.

Other sources of funding include the Revenue Support Grant from the Department for Levelling Up, Housing and Communities (DLUHC) which funds general LLFA related duties. This department has recently replaced the Ministry for Housing, Communities and Local Government (MHCLG). Local authorities can also impose a Community Infrastructure Levy on new development in their area. The levy can then be spent on infrastructure needed to support the development of the area, such as parks and green spaces. TWUL also offers funding for projects which disconnect flows or will help to alleviate pressure on the sewer system, such as SuDS schemes. As and when flood risk management schemes are identified, funding will be sought from the appropriate sources listed above. Third party funding sources as well as community groups and charities will also be sought after to fund the projects.

8 CONCLUSION AND NEXT STEPS

8.1 Conclusion

This LFRMS aims to improve the understanding of flooding within the borough, to promote the use of sustainable flood risk management practices, to empower residents in taking action to mitigate their flood risk and to nurture collaborative partnerships with RMAs and LPAs. These aims are formulated as the five strategic objectives below:

Strategic Objective A:

Improve our knowledge and understanding of the different risks of flooding in Sutton.

Strategic Objective B:

Proactively encourage sustainable solutions for the management of local flood risk which take account of climate change.

Strategic Objective C:

Use planning powers to appropriately mitigate flood risk to or caused by developments across Sutton.

Strategic Objective D:

Educate, encourage, and empower local residents, businesses and landowners to take action on reducing flood risk.

Strategic Objective E:

Nurture collaborative partnerships with key organisations and Risk Management Authorities, including for funding and resources.

To achieve these strategic objectives, an action plan (*Appendix 1* – Action Plan) has been prepared which outlines a set of actions, the RMA(s) responsible for carrying them out, and target timeframes.

The previous LFRMS has led to the successful implementation of FASs in Sutton Borough and the reinforcement of collaborative partnerships with RMAs. This LFRMS provides the LLFA with guidance on the work to be done in order to achieve the strategic objectives over the next six years. In line with the NFCRRMS, this LFRMS focusses on appropriately considering the impact of climate change and adopts both resilience measures and an adaptive approach. The LFRMS should enable Sutton's LLFA team to deliver holistic, sustainable and resilient local flood risk management measures, better protecting the residents, businesses and communities.

The ecological and environmental implications of the LFRMS and action plan have been assessed in the Strategic Environmental Assessment (SEA) (*Appendix 3* – SEA Screening Report). The SEA findings show that the strategic objectives do not impose negative effects on Sutton Borough's key environmental attributes. The objectives and associated actions will have either major or minor positive effects or no effect at all on the SEA objectives.

8.2 Next steps

8.2.1 Public Consultation

The LFRMS and associated action plan and SEA will go to public consultation over a four week period from December 2022 to January 2023. RMAs, statutory consultees and members of the public will be able to provide feedback on Sutton's planned flood risk management duties for the next six years.

8.2.2 Planned Action Summary

A planned action summary will be developed following a review of the feedback from the public consultation to outline actions that will be taken by the LLFA beyond its legal duties.

8.2.3 Recommended next steps

Following a review of feedback from the public consultation a list of next steps will be developed for the LFRMS.

8.3 Monitoring and reviewing

This LFRMS should be updated every six years in line with FRMPs. An update should be produced earlier if there are significant changes to Sutton's understanding of flood risk or flood modelling practices or following significant changes to government policies and legislation.

To ensure that the actions proposed meet the strategic objectives are carried out on time, a monitoring and reviewing plan has been developed. This will be a working document for the LLFA and will provide the opportunity to measure the effects of implementing the strategic objectives and assist in the identification of any adverse effect.

Sutton's Scrutiny Committee has been formally reviewing the progress on the previous actions on an annual basis. This is set to continue with this new action plan.

External References

Civil Contingencies Act 2004 (legislation.gov.uk)

Flooding - Your Rights and Duties (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

Flooding in Sutton	Directory for Sutton specific flood advice, including: • How to report a flood • Who to report a flood to • Insurance guidance
What to do before, during and after a flood	Government guidance on what to do before, during and after a flood.
Property Owners Flood Guide	Information on: • Property insurance • Dealing with flood risk to properties • Installing flood defences to properties • Advice on what to do if your property is flooded
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 - MAPPING

APPENDIX 3 – SEA SCREENING REPORT

APPENDIX 4 – HRA SCREENING REPORT

A Habitats Regulations Assessment for the previous LFRMS was undertaken in 2014 (HRA report), which scoped out all impacts on London Special Areas of Conservation. There have not been any changes in landscape geomorphology since 2014 that could have increased the possible linkages from Sutton Borough to any of those sites. As such, it was not deemed necessary to produce a new HRA screening report.