

London Borough of Bromley Local Flood Risk Management Strategy

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THE LONDON BOROUGH
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Foreword

Although in our everyday lives flooding might appear to be minimal, if experience has taught us anything it is that we cannot underestimate the impact of flooding, particularly for the individuals whose homes or businesses have been directly affected. Whilst Government has given local authorities responsibilities to prepare a Flood Risk Management Strategy, we all have a part to play in minimising flood risk and the consequences of flooding. This Flood Risk Management strategy sets out both the Council's role and response and seeks to outline the part different organisations play and the role individuals can play too.

Bromley Council first made preparations to establish a Local Flood Risk management strategy at a time of prolonged rainfall and storms, when there was widespread public concern over the consequences of flooding from a variety of sources. Many of our residents have been affected either directly or indirectly by flooding in recent years, most recently in December 2013 to January 2014, in what was the wettest two month period on record in the South London area. The prolonged heavy rainfall during 2013 caused groundwater to rise to exceptionally high levels which led to significant flooding in parts of South London. In Bromley, groundwater emerged in February and peaked in March but continued to effect properties into July and beyond.

Flood risks do not start and stop at the geographical boundaries of a local authority. To address this, in South East London Bromley, Bexley, Lewisham, and Royal Greenwich Councils have come together as the South East London Flood Risk Partnership to develop the South East London Local Flood Risk Management Strategy. It both describes how we will work in partnership across the four Boroughs and also, crucially, enables a better use of public resources whilst allowing each Borough to respond to local concerns. Other organisations such as the Environment Agency and Thames Water are also expected to play their part to manage flood risk in a local context.

The Bromley Local Flood Risk Management Strategy also sets out the steps we will take over the next six years and beyond to fulfil our flood risk management duties and responsibilities. By working together in this way we will share our collective experience and expertise in managing flood risk to support residents and businesses manage their own individual flood risk.

Our Local Flood Risk Strategy is prepared at a time of unprecedented budgetary pressures on public finances and it is essential that any identified measures are both proportionate and affordable. To get the best value for the money spent we will work with different departments across the Council and partner organisations to reduce the impact that flooding has on our residents and businesses.

In Bromley, we will always seek to work with residents and businesses, as well as other organisations to ensure they are prepared as best they can. It is this enduring partnership that will enable action to be taken, not necessarily to stop flooding but to mitigate the risks and consequences.

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1 Introduction

1.1 Background

After the devastating floods of 2007 the Government, commissioned Sir Michael Pitt to undertake a review of the events in the summer of 2007 and to identify what measures could be undertaken in the future to reduce the risk and the impacts of flooding on communities across the country. The Pitt Review¹ made 92 recommendations and led to new legislation in the form of the Flood and Water Management Act (FWMA), introduced in April 2010. Under this new legislation Bromley Council is a Lead Local Flood Authority (LLFA). As a LLFA Bromley Council was given new roles and responsibilities, duties and powers to enable us to manage flood risk from local sources across the Borough. A key component in delivering improved management is our duty to develop, maintain, apply, and monitor a strategy for the management of local flood risk, which includes all sources of flooding. The strategy we have prepared with our partners describes our commitment to work to address local flood risk and provides a framework of how local flood risk will be managed.

1.2 What are we doing to address the risk?

The London Borough of Bromley as part of the South East London Flood Risk Management Partnership will work to manage local flood risk and fulfil our duties and responsibilities under the 2009 Flood Risk Regulations (FRR) and the 2010 FWMA.

To manage flood risk Bromley will:

- Work in partnership with other Risk Management Authorities (RMAs) for example, the Environment Agency, Transport for London, Thames Water and Network Rail
- Prepare a South East London Local Flood Risk Management Strategy (group)
- Prepare a specific Local Flood Risk Management Strategy for the London Borough of Bromley with an Action Plan that will be reviewed annually (see
- Table 1).

The four Boroughs contributing to the South East London Strategy are:

- London Borough of Bexley
- London Borough of Bromley
- Royal Borough of Greenwich
- London Borough of Lewisham

The four Lead Local Flood Authorities started working together as part of the London Mayors Drain London Programme in 2010. It was agreed that the group be formalised as the South East London Flood Risk Management

1

<http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/pittreview/the-pitt-review/final-report.html>

Partnership (“The Partnership”) The Partnership meets every quarter and is made up of the following members.

- Representative from Thames Regional Flood and Coastal Committee (RFCC)
- Representative from Southern RFCC
- Councillors from each Borough
- Officers from each Borough
- Environment Agency
- Thames Water

The Boroughs Action Plan will be included in the Thames Flood Risk Catchment Plan (a joint submission with the Environment Agency and the majority of London’s LLFA’s)

The Local Strategy

1.3 What is the Local Flood Risk Management Strategy?

The Local Flood Risk Management is a document which sets out how we as a Lead Local Flood Authority are responding to the identified flood risk across the Borough.

Our strategy specifies;

- the risk management authorities in the Bromley area,
- the objectives for managing local flood risk
- the measures proposed to achieve those objectives,
- how and when the measures are expected to be implemented,
- the costs and benefits of those measures, and how they are to be paid for,
- the assessment of local flood risk for the purpose of the strategy,
- how and when the strategy is to be reviewed, and
- how the strategy contributes to the achievement of wider environmental objectives.

1.4 Structure of the Local Strategy

The boroughs of the partnership have produced a South East London Strategy to describe their common aims and objectives, their approach to flood risk management and their commitment to working in partnership. This document is our individual Local Strategy which sets out our Borough specific objectives and individual Action Plan. Links to the other Partnership member’s Local Strategies can be found in Table 1 below.

Table 1 Links to individual Borough Local Strategies

| | | | |
|----------------------------------|---|---|---|
| South East London Local Strategy | London Borough of Bexley The Local Strategy | London Borough of Lewisham The Local Strategy | Royal Borough of Greenwich The Local Strategy |
|----------------------------------|---|---|---|

1.5 Legislative Context

Table 2 below sets out some of the key legislation which is relevant to the Strategy.

| Legislation | |
|--|---|
| Flood and Water Management Act (2010) | The FWMA sets out the role of the Council as a Lead Local Flood Authority (LLFA) and sets out a range of powers and responsibilities. |
| Flood Risk Regulations (2009) and EU Floods Directive (2007) | The Flood Risk Regulations (FRR) transposes the European Union (EU) Floods Directive into English Law. The purpose of the Floods Directive is to establish a framework for assessing and managing flood risk, aimed at reducing the negative impact of flooding on human health, the environment, cultural heritage and economic activity across the European Community. |
| The Land Drainage Act (1991 and amended in 1994) | The Land Drainage Act 1991 requires that a watercourse be maintained by its owner in such a condition that the free flow of water is not impeded |
| Water Resources Act (1991) | This Act aims to prevent and minimise pollution of water. Under the act it is an offence to cause or knowingly permit any poisonous, noxious or polluting material, or any solid waste to enter any controlled water. |
| EU Water Framework Directive (2000) | This Directive sets out to establish a Community framework for the protection of surface waters and groundwater across the EU. |
| Strategic Environmental Assessment Directive (2001) | The Strategic Environmental Assessment (SEA) Directive applies to a wide range of public plans and programmes (e.g. on land use, transport, energy, waste, agriculture, etc.). The SEA Directive does not refer to policies. Plans and programmes in the sense of the SEA Directive must be prepared or adopted by an authority (at national, regional or local level) and be required by legislative, regulatory or administrative provisions. |
| Civil Contingencies Act (2004) | The Civil Contingencies Act establishes a new legislative framework for civil protection in the United Kingdom. It imposes a clear set of roles and responsibilities on those organisations with a role to play in preparing for and responding to emergencies. Local authorities are a Category 1 responder under the Act, and have a key role to play in respect in discharging their duties in the legislation. |
| Climate Change Act (2008) | The Act sets up a framework for the UK to achieve its long-term goals of reducing greenhouse gas emissions and to ensure steps are taken towards adapting to the impact of climate change |
| Conservation of Habitats and Species Regulations (2010) | The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species. |
| The Localism Act (2011) | The Localism Act contains a wide range of measures to devolve more powers to councils and neighbourhoods and give local communities greater control over local decisions like housing and planning. |
| National Planning Policy Framework (2012) | The National Planning Policy Framework sets out the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so. It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities. |
| The London Plan (and amendments 2013) | The London Plan is the overall strategic plan for London, and it sets out a fully integrated economic, environmental, transport and social framework for the development of the capital to 2031 |
| The Water Act (2014) | Water Act will, for the first time, mean businesses, charities and public sector customers will have the freedom to switch supplier from 2017. The Act will: <ul style="list-style-type: none"> • Address growing pressure on water resources by making our supply more resilient; • Ensure that hundreds of thousands of households in the highest flood risk areas will be able to access affordable flood insurance from 2015. |

1.6 Related Documents

There are many different documents which need to be read and considered in conjunction with this Local Strategy. Some of these are set out in Figure 1.



Figure 1 Studies and Plans informing the Bromley Local Flood Risk Strategy

2 Local Flood Risk

2.1 What is a Flood?

A flood is formally defined in the FWMA as

"where land not normally covered by water becomes covered by water."

Flooding can be caused by a range of sources including heavy rainfall, rivers overflowing or river banks being breached, dams overflowing or being breached, , or groundwater emergence. A flood does not include water from any part of the sewerage system unless it is caused by an increase in the volume of rainwater (including snow and other precipitation) entering or otherwise affecting the system. Nor does it include flooding caused by a burst water main.

Our Local Strategy is primarily concerned with but not confined to, flooding that originates from surface runoff, groundwater and ordinary watercourses.

2.2 What is Flood Risk?

Flood risk can be described as the combination of the statistical probability of a flood occurring and the scale of its potential consequences.

Flood Risk = (Probability of a flood) x (scale of the consequences)

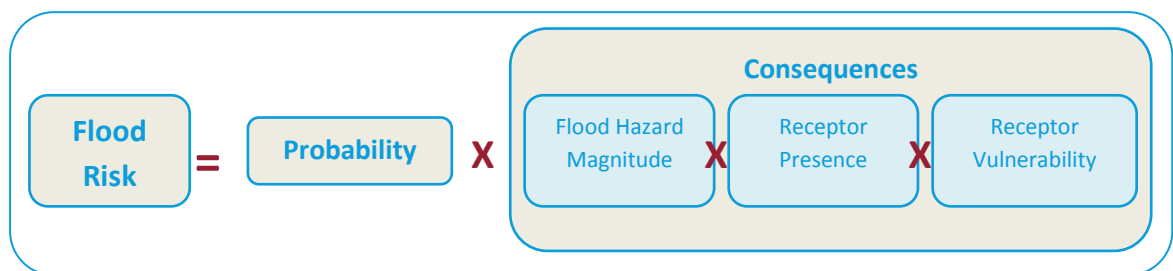


Figure 2 What is flood risk?

- **Increasing the probability or chance of a flood being experienced increases the flood risk.** In situations where the probability of a flood being experienced increases gradually over time, then the magnitude of the flood risk will increase.
- **The severity of the consequences can increase the flood risk.**
- **Flood Hazard Magnitude:** If the direct hazard posed by the depth of flooding, velocity of flow, the speed of onset, rate of rise in flood water or duration of inundation is increased, then the consequences of flooding, and therefore risk, is increased. New development can potentially increase the hazard if it causes an increase in surface runoff flows.
- **Receptor presence:** The consequences of a flood will be increased if there are more receptors affected. Receptors are people, property, habitat or infrastructure (electricity sub-station, pumping station, railway line). Additionally, if there is new development that increases the probability of flooding.
- **Receptor vulnerability:** If the vulnerability of the people, property or infrastructure is increased then the consequences are increased. For example, older or younger people are more vulnerable if they are caught up in a flood event.

2.3 Local flood risk in the London Borough of Bromley

The Borough is outside of the Tidal limit of the River Thames and therefore is not affected by coastal flood risk. However there is a significant risk of river flooding. In an effort to address the flood risk from rivers the Environment Agency, its predecessors and partners have implemented alleviation measures to reduce the risk to the community. This included significant works undertaken on the River Ravensbourne in the mid to late 1960s to improve the channel's ability to convey floodwater quickly to the River Thames. Rivers in the Borough have been extensively culverted (piped underground) which can create significant complications when preparing future proposals to management the flood risk. This is especially in regard to maintenance and risk of blockage during flood incidents.

Environment Agency data indicates that as a consequence existing mitigation works, 85% of the properties at risk of fluvial flooding in the borough are in areas where the likelihood of flooding is low (i.e. the chance of flooding in any year is 0.5 percent (1 in 200 or less)). However, 1252, properties, less than 1% remain at a moderate to significant risk of fluvial flooding within the Borough. These are largely grouped along the length of the River Ravensbourne and its tributaries.

Surface Water Flooding

Will occur as storm water flows over ground toward the Main River network (see Updated Flood Map for Surface Water)

Groundwater Flooding

Normal groundwater affects a tiny proportion of residences, other than those with untanked basements or cellars, but significant emergence did occur in 2014 see below. Emergence of significant groundwater has been a rare event occurring very infrequently (10 years +).

2.4 Historic Flooding

As outlined in Section 3.1.1 Bromley developed the PFRA (Primary Flood Risk Assessment) to address the requirement of the FRRs. Our PFRA set out historic flooding across the borough. This information has not been reproduced here however the following description of some noteworthy flood incidents highlights the importance of managing flood risk.

A number of areas in London suffered during the floods of September 1968 when heavy rainfall caused the Ravensbourne and its tributary the Quaggy to burst their banks creating widespread flooding of several hundred residential and commercial properties in the Borough. .

Records of historic flooding are spread throughout the Borough, but there is a greater intensity of reported events along the Ravensbourne corridor.

Most recently the winter of 2013/14 was a significant event across all boroughs as well as many other parts of South England. The current PFRA predates this event so is not captured therein. The event was caused by prolonged and extreme rainfall during 2013 including the wettest December to January period in the UK since records began. This resulted in fluvial and prolonged groundwater flooding events within the borough.

During 2013/14, Bromley Council worked with other FRM and Emergency agencies to support residents and attempt to mitigate flooding from different sources i.e. fluvial, pluvial and groundwater

In 2014 Groundwater in the south east was unprecedented Bromley continued to experience emerging groundwater until June of 2014

A South East London groundwater “Solution Cell” was initiated to monitor the situation. The Solution Cell consists of a five borough group (Croydon, Bexley, Bromley, Greenwich and Sutton), the London Fire Brigade and the Environment Agency. The “Solution Cell” continues to investigate and develop medium to long-term measures for managing groundwater flooding.

Appendix **Error! Reference source not found.**D contains maps covering Bromley’s historic flood incidents based on a number of sources including Ordinary Watercourses

2.5 Future Risk of Flooding

Appendix **Error! Reference source not found.**D contains maps covering Bromley’s flood risk by source based on predictive modelling. These may include areas that have not previously experienced flooding or show flooding that is predicted to be more severe than has been witnessed in the past. It is important to highlight that just because an area hasn’t flooded yet doesn’t mean it will never flood in the future. It may be that the particular circumstances that would cause a given area to flood haven’t be realised within the period of record. We continue to improve our understanding of local flood risk. We will record instances of flooding and “near misses” to inform our overall understanding of flood risk and flood mechanisms that affect the Borough. The more we know, the more effectively we can manage risk into the future.

Bromley has experienced severe flooding in the past (e.g. 1968) and whilst work has been undertaken by the Council, our partners and others, the risk of flooding will continue into the future. In fact the probability of flooding will increase in the future as a result of factors such as:

- Urban Creep (infill development and loss of green space),
- Ageing Infrastructure (increased pressure on drainage systems and other infrastructure designed for different levels and patterns of use and in deteriorating condition).
- Population Growth (denser populations means the impact of a flood for a given area will impact upon more people).
- Climate Change (increased storms),

2.6 Future Mitigation

We will continue to work with our partners to improve understanding and deliver mitigation of flood risk into the future. We will continue to contribute to key mitigation projects within the flood risk management Partnership area such as the Thames Estuary 2100 Plan, the Ravensbourne Corridors

Improvement Plan and the Cray Valley's set of long-term projects. We will support flagship programs such as the Lewisham and Catford Flood Alleviation Scheme (that seek to provide future mitigation measures through the utilisation of existing open space. Our Action Plan which sets out what and how we are planning to manage over the next 6 years and beyond. It is subject to annual review to take into account a number of factors that will influence our ability to complete tasks set out within our plan. A key factor that will impact our ability to realise our plans will be the availability of flood risk management funding into the future. Funding of flood risk management is discussed further in Section 5.

3.1 Duties and Powers

As a LLFA we have a number of roles and responsibilities under the FRRs 2009 and the FWMA 2010. The ways in which we are working to respond to these new challenges both individually and in partnership across the South East London Boroughs are discussed as follows.

3.1.1 Preliminary Flood Risk Assessment

We have produced our PFRA which was published in 2011 in accordance with the FRR 2009. We developed this document in co-ordination with other South East London Boroughs and through the Drain London forum to apply a consistent approach across London. We will review these documents prior to June 2017 (as required by the FRR 2009).

3.1.2 Co-operation and Arrangements

Under Section 13 of the FWMA 2010, LLFAs must co-operate with other relevant authorities in the exercise of their flood and coastal erosion risk management functions.

Bromley Council may share information with other relevant authorities for the purpose of discharging our duty under Section 13 of the FWMA. We are exercising this responsibility through our work as part of the Partnership. Working with neighbouring LLFAs and other relevant authorities we will seek to maximise any investment in flood risk management.

3.1.3 Power to request information

Under Section 14 of the FWMA we may request a person or organisation to provide information in connection with our flood and coastal erosion risk management functions. We will work with the South East London Boroughs to formulate a common approach in how we request this information from third parties and other risk management authorities. Our approach with regard to information requests will be developed on a case by case basis, and will be dependent on the nature of the information required. Where a third party extends beyond the Borough we will request this information on behalf of the Partnership and share responses within the Partnership.

Where failure to comply with our request for information has had financial, safety, environmental, or reputational impact this may be referred to directly to our Policy Development and Scrutiny Committee.

3.1.4 Funding

Section 16 of the FWMA sets out the Environment Agency's ability to make grants available in respect of costs incurred or expected to be incurred in connection with flood or coastal erosion risk management in England. We will work alongside the other members of the Partnership to co-ordinate the applications for these grants to ensure we maximise the benefits for all residents and businesses. In establishing our Local Strategy we have undertaken a detailed review of flood risk and investment across the Borough so we can take a strategic approach to investment in flood risk management. Using this strategic understanding we can make decisions on the priorities and what is affordable and set these out in an action plan. Section 5 of this document provides further detail on the approach.

3.1.5 Flood investigations

As a LLFA, Bromley has a duty, under Section 19 of the FWMA investigate floods in our area to the extent that we consider it necessary or appropriate. The investigation should assess which risk management authorities have relevant flood risk management functions and whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood. Formal flood investigations under Sec 19 will be published and relevant risk management authorities will be notified of the findings.

Bromley will adopt the South East London Boroughs Partnership common standard to trigger a formal flood investigation. The trigger level is set as

- 5 properties (residential or commercial) internally flooding in any one event
- 1 or more properties flooded internally more than 3 times in a 5 year period.
- 15 gardens or more flooded with risk of internal property flooding which was only prevented by active intervention (e.g. pumps or other measures).
- Any property flooded within a Critical Drainage Area (CDA), recognised catchment or recognised flow path

Investigation triggers apply across Borough boundaries It will be agreed by the LLFA's involved who will lead on the investigation, however findings will be published by all affected LLFA's, and will also be taken to the Partnership meeting.

Bromley reserves the right to undertake informal Flood Investigations at our discretion (e.g. at a lower trigger) as we deem appropriate

3.1.6 Duty to Maintain a Register

Section 21 of the FWMA requires us as LLFA to develop and maintain a register of structures or features which, in our opinion, are likely to have a significant effect or impact on flood risk within our area.

Bromley Council is using existing GIS system to host a series of thematic layers linking to archive metadata. This is the system the Council already use for our highway assets and we are familiar with its operation. The register is still a work in progress and is updated as features are identified which, in our opinion, are likely to have a significant effect on flood risk within the Borough. Where known the Register will contain details of location, ownership, and state of repair for each feature.

At this time we have no plans to make the Register of Flood Risk Features publicly available on our website. However it is envisaged that the Register will be available via existing data request mechanisms e.g. FOI requests.

We will work together throughout the Partnership to identify structures or assets which have the potential to affect flood risk to or from neighbouring

Boroughs i.e. trash screens on Main River these structures will be agreed at Partnership meetings and listed on the neighbouring authorities register. Currently there is no shared definition of what constitutes a ‘significant effect’ with other members of the Partnership. We will review what we define as a ‘significant effect’ on a case by case basis. Registers will be maintained at Borough level.

3.1.7 Consenting to Works to ordinary watercourses

Bromley as LLFA has responsibility for authorising consent for changes to ordinary watercourses across the Borough that may affect flow or flood risk. This includes the temporary or permanent erection or alteration of any mill dam, culvert, weir, bridge or other like obstruction to the flow of an ordinary watercourse. This requirement is in addition to any other permissions or consents that may be required for the work (e.g. planning permission).

We will respond to applications for consent within two months of receipt. Consent isn't approved until the applicant has received formal notification of consent. We will not unreasonably withhold Consent. We may refuse Consent because the proposed changes have the potential to increase flood risk to people and property, either up- or downstream.

Where works have been undertaken without consent we will exercise our Enforcement Powers on a case by case basis.

3.1.8 Flood Risk Management Works

Bromley Council as LLFA has the power to carry out flood risk management work. When funds are available and we believe best value can be achieved, these powers will be employed to fulfil the Local Strategies aims As listed in table 3 below.

Table 3 Definitions of Flood Risk Management Work

| <i>Flood Risk Management Work (after Section 14A(9) of the Land Drainage Act, as amended by Schedule 3 of the Flood and Water Management Act) means anything done:</i> | |
|---|--|
| (a) | to maintain existing works (including buildings and structures) including cleansing, repairing or otherwise maintaining the efficiency of an existing watercourse or drainage work; |
| (b) | to operate existing works (such as sluice gates or pumps); |
| (c) | to improve existing works (including buildings or structures) including anything done to deepen, widen, straighten or otherwise improve an existing watercourse, to remove or alter mill dams, weirs or other obstructions to watercourses, or to raise, widen or otherwise improve a drainage work; |
| (d) | to construct or repair new works (including buildings, structures, watercourses, drainage works and machinery); |
| (e) | for the purpose of maintaining or restoring natural processes; |
| (f) | to monitor, investigate or survey a location or a natural process; |
| (g) | to reduce or increase the level of water in a place; |
| (h) | to alter or remove works. |

3.1.9 Sustainable Development

Section 27 of the FWMA requires that in exercising a flood or coastal erosion risk management function, Bromley Council as LLFA has a duty to aim to make a contribution towards the achievement of sustainable development.

Bromley Council understands the need for sustainable development and the introduction of sustainable drainage, which will contribute to a reduction in

surface water run-off and help alleviate and mitigate surface water flood risk within the Borough.

3.1.10 Schedule 1 Designation of Features

Under Schedule 1 of the FWMA, we as a 'Designating Authority' have powers to designate, where we consider appropriate, structures and features that affect flooding. This designation will require the owner to seek consent from the Council to alter, remove or replace the feature. This is a Permissive power, meaning that we have the 'power' rather than 'duty' and will not be liable for the failure to exercise this power.

As with duty to maintain a register (Section 3.1.6 above), we will work together in partnership with the other three south east London boroughs to identify features which provide a benefit for neighbouring Boroughs.

We have no plans at present to develop a shared definition of what constitutes a significant effect as this will be reviewed on a case by case basis at Borough level. Our register of features will be maintained at an individual Borough level.

3.1.11 Sustainable Drainage Systems (SUDS) Approving Body

Schedule 3 of the FWMA proposed the formation of SUDS Approving Bodies (SABs) to oversee and enforce the National Standards for Sustainable Drainage Systems as published by DEFRA. Furthermore approved systems were to be adoptable by the LLFA for maintenance purposes.

There has been a protracted period of uncertainty around the enactment of Schedule 3 and as a result of consultation the proposals have been amended so as to place the SUDS requirement within the existing Development Control / Planning procedures.

Details of how the Council will manage the modified responsibilities will be included within Appendix E when available.

3.2 Sources of flood risk

There are many different sources of flooding all of which may affect the Borough. However not all sources of flooding are managed by one organisation:

| Type of Flooding | Description | Responsibility |
|--|--|---|
| Surface Water Flooding | Often referred to as "Pluvial" flooding this flooding is when there is too much rainfall for the existing drainage systems to cope with, resulting in overland flows. | LLFA in terms of a strategic overview |
| Groundwater Flooding | This can be the result of a series of complex mechanisms that are not fully understood and further work is underway at a national level to better understand the causes. | LLFA in terms of a strategic overview EA in terms of regional monitoring |
| River Flooding Rivers fall into two categories, | Main River – These are generally large rivers, such as the, Ravensbourne (Beck and Kydbrook) and Cray | Environment Agency in terms of a strategic overview and Riparian owner* |

| | | |
|---------------------------|---|--|
| | <i>Ordinary Watercourse – These are generally the smaller rivers, brooks and streams and some ditches</i> | <i>LLFA in terms of a strategic overview and Riparian owner*</i> |
| <i>Reservoir Flooding</i> | <i>This is when a reservoir fails and the water it holds inundates areas downstream of the reservoir.</i> | <i>The individual owner of the Reservoir</i> |
| <i>Sewer Flooding</i> | <i>Sewer flooding is generally caused by a lack of capacity in the sewer network.</i> | <i>Thames Water</i> |

Riparian Owners responsibility – See Environment Agency Publication ‘*Living on the edge*’

3.3 Who is responsible?

A number of risk management authorities (RMAs) operate across South East London.

The table below sets out their respective responsibilities under the 2010 Flood and Water Management Act.

Table 4 Risk Management Authorities (RMAs) operating in South East London and their responsibilities

| RMA | Responsibilities under the 2010 Flood and Water Management Act |
|-------------------------------------|--|
| Local Council as LLFA | Responsible for managing flood risk from local sources See Section 3 for full break down. |
| Environment Agency | Responsible for managing flooding from main rivers or the sea. Strategic overview for all flooding sources and coastal erosion |
| Thames Water Utilities Limited | Responsible for maintaining, improving and extending their Public Sewers so that the areas they are responsible for are effectively drained |
| Local Council as Highways Authority | Responsible for maintenance of all public roads Under Highways Act 1980, responsible for provision and maintenance of highways drainage and ditches |
| TfL | Responsible for maintaining any drainage and ditches associated with Red Routes in London |
| Neighbouring LLFAs | Carry out duties under FWMA within their own borough boundaries Mutual duty to co-operate with local LLFA as a neighbouring RMA in the undertaking of flood risk management functions Must work in partnership with local LLFA to address cross boundary flood management issues |

3.4 LLFA structure

The LLFA role sits within the Council’s Environment and Community Services directorate. Figure 3 below show where the Flood Risk Management responsibilities sit within the council.

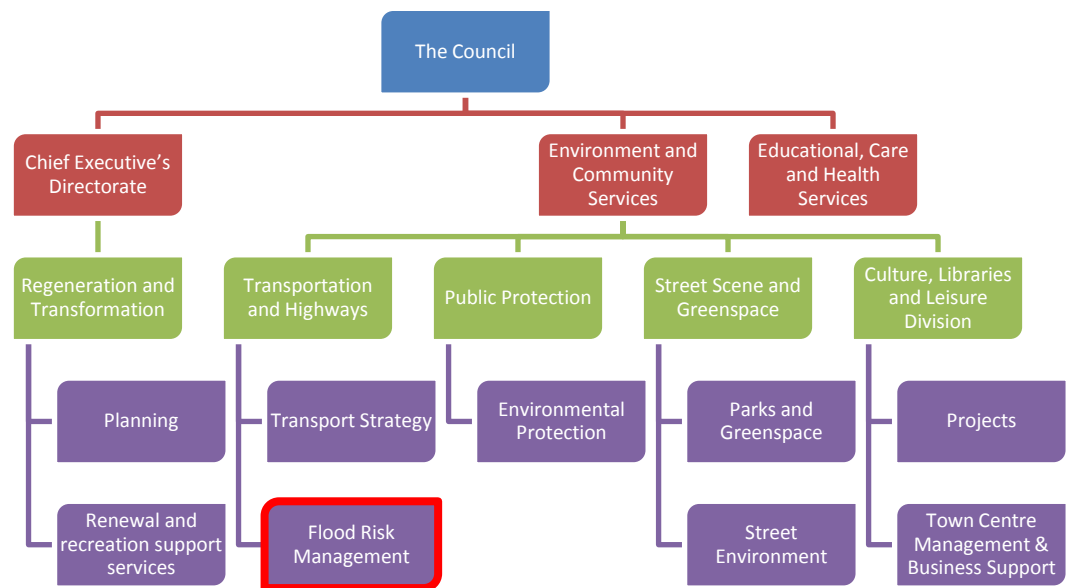


Figure 3 Organogram of Flood Risk Management responsibilities and associated services

As LLFA Bromley Council has set out as part of the South East London Strategy how we will interact with key stakeholders, such as the Environment Agency, Thames Water and the Regional Flood and Coastal Committees.

We have identified the following additional groups of stakeholders who we will work with in delivering our Local Strategy Action Plan:

- Business groups (e.g. Chamber of commerce)
- Environmental and wildlife Groups (e.g. Thames 21, RCIG)
- Emergency Services
- Religious Groups / Places of Worship
- Resident's Groups and Associations (e.g. Friends of Parks groups)
- Neighbouring Local Authorities
- Statutory bodies (e.g. Natural England)
- Transport operators and authorities (e.g. Transport for London)
- Utility providers and operators
- Local Ward Councillors, the GLA Member and local MPs
- Other Council departments
- Landowners, particularly Riparian Landowners

As LLFA Bromley Council will undertake an open, transparent and pragmatic communications approach between the Flood Risk Management Team (FRMT) and other council departments. We will promote links with key stakeholders including Community Groups such Flood Groups. We will provide a point of contact to respond to queries from members of the public.

We have identified the following potential beneficiaries of local flood risk management:

- Residents
- Businesses
- Riparian Owners
- Road users

3.5 How will we monitor The Local Strategy

As LLFA Bromley Council will monitor our Local Strategy through the use of Key Performance Indicators (KPIs). Officers will provide reports of Borough KPIs and key information to the Partnership at our quarterly meetings. Our Local Strategy KPI monitoring will be a standing item on agenda. Our KPIs are designed to be quick reference measures that provide an overview for the four South East London Boroughs.

The provisional KPIs are set out in Table 5 below.

Table 5 South East London Local Strategy Key Performance Indicators

| KPI ID | Metric and description |
|----------------|--|
| FWMA 1a | Number of (Section 19) flood investigations undertaken. Number of flood investigations undertaken under Section 19 of the Flood and Water Management Act 2010 in response to the trigger level being reached. The trigger level is five properties (residential or commercial) internally flooded in any one event or one or more properties internally flooded more than three times in a five-year period. Additionally, the trigger level is reached if five gardens or more are flooded with risk of internal property flooding which was only prevented by active intervention (e.g. pumps or other measures were used to protect the properties) within a critical drainage area or recognised flow path. This measure also includes discretionary flood investigations for incidents below the trigger level. |
| FWMA 1b | Number of (Section 19) flood investigations published. Number of flood investigations at or above the trigger level completed and published (including discretionary investigations if appropriate). |
| FWMA 2a | Number of requests for works to ordinary watercourses received. Number of requests for works to ordinary watercourses under Section 23 of the Land Drainage Act 1991. |
| FWMA 2b | Number of ordinary watercourse consents granted. Number of requests for works to ordinary watercourses where consent is granted. |
| FWMA 2c | Number of ordinary watercourse consents refused. Number of requests for works to ordinary watercourses where consent is refused. |
| FWMA 3a | Number of structures / features added to (Section 21) register of flood risk assets. Structures or features which, in the opinion of the authority, are likely to have a significant effect on a flood risk in its area, and a record of information about each of those structures or features, including information about ownership and state of repair recorded on the Section 21 register. |
| FWMA 3b | Number of structures / features considered for (Schedule 1) 'designation'. Designation is a form of legal protection or status reserved for certain key structures or features that are privately owned and maintained, but which make a contribution to the flood or coastal erosion risk |

| | <p>management of the people and property at a particular location.</p> <p>A designation is expressed as a legally binding notice served by the designating authority on the owner of the feature and is also protected as a local land charge. This means that the designation will 'attach' to the land and will also automatically apply to anyone dealing with the land and to successive owners or occupiers of a particular property or parcel of land.</p> <p>A designated structure must be associated with and, in the opinion of the designating authority, affect a flood risk.</p> | | | | | | | | | | |
|------------------|--|------------------|--------------------|-------------|--|-------------|--|-------------|---|-------------|--|
| FWMA 3c | <p>Number of structures / features designated (Schedule 1).</p> <p>Number of structures / features which meet the four designation conditions and for which the four stage process of designation has been completed.</p> <table border="1"> <thead> <tr> <th>Condition</th> <th>Explanation</th> </tr> </thead> <tbody> <tr> <td>Condition 1</td> <td>that the designating authority thinks the existence of the structure or feature affects a flood or coastal erosion (or both) risk.</td> </tr> <tr> <td>Condition 2</td> <td>that the designating authority has flood or coastal erosion risk management functions in respect of the risk being affected.</td> </tr> <tr> <td>Condition 3</td> <td>that the structure or feature is not already designated by another designating authority.</td> </tr> <tr> <td>Condition 4</td> <td>that the owner of the structure or feature is not a designating authority.</td> </tr> </tbody> </table> | Condition | Explanation | Condition 1 | that the designating authority thinks the existence of the structure or feature affects a flood or coastal erosion (or both) risk. | Condition 2 | that the designating authority has flood or coastal erosion risk management functions in respect of the risk being affected. | Condition 3 | that the structure or feature is not already designated by another designating authority. | Condition 4 | that the owner of the structure or feature is not a designating authority. |
| Condition | Explanation | | | | | | | | | | |
| Condition 1 | that the designating authority thinks the existence of the structure or feature affects a flood or coastal erosion (or both) risk. | | | | | | | | | | |
| Condition 2 | that the designating authority has flood or coastal erosion risk management functions in respect of the risk being affected. | | | | | | | | | | |
| Condition 3 | that the structure or feature is not already designated by another designating authority. | | | | | | | | | | |
| Condition 4 | that the owner of the structure or feature is not a designating authority. | | | | | | | | | | |
| FWMA 4a | <p>Number of actions from the Local Flood Risk Management Strategy Action Plan commenced or in progress.</p> <p>The number of actions from the individual borough Local Strategy Action Plans that have been commenced. Reported against the total number of actions stated.</p> | | | | | | | | | | |
| FWMA 4b | <p>Number of actions from Local Flood Risk Management Strategy Action Plan completed.</p> <p>The number of actions from the individual borough Local Strategy Action Plans that have been completed. Reported against the total number of actions stated.</p> | | | | | | | | | | |

The KPIs will be reviewed as part of our annual Action Plan review to ensure they are still fit for purpose. Amendments to KPIs will be formally agreed at the quarterly Partnership meeting.

3.6 How will we review our Local Strategy

As LLFA, Bromley Council has developed our Local Strategy with the aim of reviewing it every 6 years. Therefore in 2020 we will commence reviewing the success of our Local Strategy and develop plans for the next 6 year period.

The Action Plan will be impacted by existing internal and external budgets and other funding opportunities, in response to significant flooding and in response to changes in development pressures and plans. This Local Strategy is supported by an Action Plan that will be reviewed and as necessary updated annually (or following a significant flooding event). The updated Action Plan will be agreed at Borough level and then presented at the relevant Partnership quarterly meeting.

3.7 How have we consulted on this document

This document was consulted in May June 2015.

4 Objectives and Measures

There are a number of National, Regional (Partnership wide), and Local objectives that govern the work of the partnership and the formation of our Local Strategy. These are set out below

4.1 National objectives

The overall aim of the National Strategy is to ensure the risk of flooding and coastal erosion is properly managed by using the full range of options in a co-ordinated way.

To be consistent with the National Strategy and so that all sources of risk are considered the following national objectives will be taken into consideration and where appropriate addressed in the management of local flood risk:

- Understanding and Working Together: Understanding the risks of flooding and coastal erosion, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them;
- Development Control: Avoiding inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks;
- Reducing Risk: Maintaining and improving Flooding and Coastal Erosion Risk Management (FCERM) systems to reduce the likelihood of harm to people and damage to the economy, environment and society;
- Improve Public Awareness: Building public awareness of the risk that remains and engaging with people at risk to encourage them to take action to manage the risks that they face; and
- Improved Emergency Planning and Recovery: Improving the detection, forecasting and issue of warnings of flooding, co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding.

4.2 Regional (Partnership Wide) Objectives

The underpinning regional (Partnership wide) objectives are based on the terms of reference from the South East London Partnership. They cover the four borough's objectives for their Local Strategies to:

- Develop a robust and consistent understanding of flood risk across South East London actively sharing information where necessary.
- Establish a common understanding of each risk management authority's roles and responsibilities.
- Collaborate in the development of the Local Flood Risk Management Strategies and other tasks required by current legislation to deliver coordinated flood risk management across South East London
- Promote potential options for joint mitigation of flood risk across South East London to ensure that all partners are working together to reduce local flood risk.

- Ensure that there is a common overview of the resources, skills and capabilities available to manage flood risk, alongside an understanding of where the gaps exist and how available funds can best be maximised.
- Discuss issues and obtain advice/guidance from other risk management authorities to ensure that there are robust links to other forums involved in flood risk at both a regional, London and local level in order to shape policy and funding.
- Ensure that elected members are fully briefed as to the current progress of the Partnership, and specifically where there are projects which are likely to be put forward for funding to the Thames or Southern Regional Flood and Coastal Committees (RFCCs).

4.3 Local Objectives

Our local objectives have been developed from reviewing the wider reaching corporate objectives of the Council and applying these to Flood Risk Management. They are set out below.

Locally we will:

- Deliver Outcomes that make best use of public resources.
- Encourage flood management activities by private owners of watercourses (riparian owners) and flood defence structures to take action to reduce the risk to themselves, their property, and others.
- Encourage design and development that integrate high standards with features to reduce flood risk and improve environmental quality.
- Maintain a local SW infrastructure asset register and continue to improve our understanding of flood risk and flood incidents by monitoring and recording records of past flooding and use this information to inform the local Action Plan.
- Avoid inappropriate development and promote new-development and re-development that contributes to a reduction in flood risk elsewhere and creates environmental benefit.
- Encourage public awareness of residual risk and self-help measures in response

4.4 How the Objectives will be Achieved

To address these objectives we have developed a Local Strategy Action Plan. This sets out how we will seek to exercise our role and responsibilities under the FWMA and work to manage flood risk over the next 6 years and beyond.

The achievement of our Action Plan will be linked to the availability of funding. Much of the work we have noted is dependant either partly or wholly on external funding sources (as outlined in Section 5). To manage this we have undertaken to review the Action Plan annually to ensure it is still realistic and achievable. As there are changes to funding availability we will review our programme and the prioritisation we place on each action to ensure it is still appropriate. Over the course of 6 years a number of the funding sources listed in Section 5 may no longer be available however new or alternative funding sources may be introduced. In reviewing our priorities each year the availability of funding will have significant impact on an individual action's position within our Action Plan.

5 Funding and Delivery

5.1 Funding Sources

There are different potential funding sources. Listed below

We will work with other organisations to support their applications for funding where there will be a tangible benefit to Bromley or its residents. The main way we will do this will be via the Partnership.

- Flood and Coastal Erosion Risk Management Grant in Aid (GiA) – This funding is specifically for flood risk management measures. Schemes are more likely to receive GiA Funding where additional Partnership Funding can be found to support their delivery.
- Partnership with other RMAs. This can be sought in order to increase the likelihood of schemes attracting GiA funding.
 - Thames Water – Flood alleviation projects, these projects are Thames Waters commitment to remove all sewer flooding by 2027. It is often the case that potential surface water flooding can be linked to Thames Waters flooding issues where we can both gain benefits.
 - Environment Agency – Fund and manage a range of flood risk management projects with a fluvial / tidal focus. Opportunities to partner on a range of projects including studies to improving understanding of areas at risk of flooding, flood forecasting, flood alleviation works and flood and coastal erosion risk management
 - Highways Authority - responsible for the maintenance of public roads
 - Other LLFAs – work with other LLFAs to partner in delivery flood risk management works. These could be neighbouring authorities, (such as would be appropriate for flood alleviation works spanning two or more LLFA areas,) or with non-neighbouring LLFAs (who are delivering similar projects such as awareness raising or publicity campaigns around flood risk management).
- Private funding – From local communities and business. Contributions from the beneficiaries of measures delivered through the Strategy. This can be sought in order to increase the likelihood of schemes attracting GiA funding.
- Local Levy – This funding is available from the Regional Flood and Coastal Committees.
- Council Capital Funds – Local Authorities sometimes have available funding for one-off projects or schemes.
- Council capital and revenue budgets – Councils often undertake larger major projects ranging from refurbishment of schools to the introduction of large scale public realm improvements. Where possible, officers will influence these projects to include or integrate identified flood risk management projects or influence the design to ensure projects or schemes reduce or mitigate flood risk.
- Community Infrastructure Levy (CIL) – CIL is a charge made against new development that can be used to fund local measures. For Boroughs in London it is composed of two elements – local CIL (optional) and Mayoral CIL (compulsory). The Mayoral CIL goes to the Greater London Authority however the former can be used to invest in local infrastructure including flood relief and resilience works.

- European Funding – Possible sources of funding include; LIFE+ which is a programme providing specific support for the implementation of European environment policy; INTERREG which is a collection of funds aimed at promoting inter-region cooperation across the EU; and the European Fisheries Fund which could fund actions to protect and develop fish habitats.
- DEFRA Grants - These are either allocated directly to support the introduction of new legislation and practices, or made available for local authorities to submit grant applications for funding for specific Government schemes.
- The Growing Places Fund – This is available for Local Enterprise Partnerships (LEPs) and is to make provision for investment in infrastructure which unlocks development.
- Green Investment Bank – UK Government owned bank to set up to fund green projects on commercial terms and mobilise other private sector capital into the UK's green economy, particularly energy and waste infrastructure.
- The Catchment Restoration Fund – This is a fund administered by the Environment Agency aimed at the restoration of more natural features in and around water bodies.
- Business Rate Retention – Fund raised through retention of moneys raised through levy of local business rates.
- New Homes Bonus – Can be used to assist with funding of infrastructure to support new housing build.
- Communities fund – Available for use for delivery of biodiversity projects located within proximity of waste operators.
- Big Lottery Fund (Communities Living Sustainably) – Available for partnerships that bring together the public, private, voluntary and community sectors to build sustainable and resilient communities to help deal with the potential impact of climate change.
- Heritage Lottery Fund – Provides grants to sustain and transform our heritage including parks, historic places, and natural environment.
- Health Agenda - budget specifically for public health, which will allow councils to provide services that meet the health needs of their local community. This might include contributing to projects that encourage activity and exercise.
- Greater London Authority – The top-tier administrative body for Greater London. Administers grants and funding for a range of cross London projects and schemes in line with the Mayor of London and London Assembly's objectives.
- Transport for London – Provide a range of funding streams to deliver projects which support the Mayor's Transport Strategy through a Local Implementation Plan (LIP).

5.2 Delivery

As LLFA Bromley Council will, where possible prepare schemes and measures that provide multiple benefits and target government funding for the most vulnerable communities.

Where appropriate a cost / benefit appraisal will be undertaken for each measure based on the estimated cost of undertaking the measure and the potential benefits it may create.

This process will follow the Governments Flood Defence Grant in Aid (FDGiA) cost benefit process to ensure maximum value for money can be achieved.

A cost / benefit appraisal considers the total expenditure required to deliver and maintain a measure and compares it to the resulting benefits. The total expenditure includes capital costs such as those for studies, design and implementation and maintenance costs.

The approach identifies measures that highlight locations where vulnerable communities might be affected by flooding. In this way our Strategy seeks to make best use of the funding available and target it at our communities with the greatest needs.

The level of detail available on costs and benefits for the measures identified in the Action Plan will depend on the data and information available. At this stage in the preparation of the Strategy there is not enough information to enable the preparation of a formal appraisal of benefits and costs for many of the measures identified. With the preparation and issue of subsequent Action Plans more information will become available and more detail on the benefits and costs will be fully assessed and included.

5.3 Prioritisation

We have prioritised our Action Plan based on the availability of funding to complete actions, and how they contribute to the overall aims and objectives of the Council. We have prioritised actions in areas that have experienced flooding (or a 'near-miss' of flooding) more recently or continue to do so regularly. This is, in turn based on the outcomes of other studies such as the Surface Water Management Plan, and the identification of Critical Drainage Areas (CDAs).

Our ability to fulfil our Action Plan is dependent on the availability of funding. Therefore priorities also take into account the availability of external funding. It is anticipated that this will change in future and consequently our prioritisation will shift to take advantage of availability of funds and make best use of alternative funding streams.

6 Environmental Assessment

6.1 Background

Our Local Strategy required an Environmental Assessment to fulfil the legislative requirements and assess how the strategy might impact or contribute to the achievement of wider environmental objectives (SEA Directive) alongside the Conservation of Habitats and Species Regulations 2010 (HRA) and Water Framework Directive (WFD).

The process we have followed to achieve this is set out below in Section 6.2.

6.2 Environmental Assessment Process



Figure 4 Environmental Assessment process

Screening report, Scoping report and responses to Consultation SEA and HRA report and Statement of Environmental Particulars can all be found in Appendix **Error! Reference source not found.C**.

6.3 Summary of Conclusions

This Section provides an overview of some of the key overriding conclusions from the process and the statement of environmental particulars.

6.3.1 Screening

The screening reports concluded that an Environmental Assessment would be required for Bromley's Local Strategy. The Screening report can be found in Appendix **Error! Reference source not found.0**

6.3.2 Scoping and Consultation

A Scoping report for Bromley's Local Strategy was submitted to the Environment Agency, Natural England and English Heritage for statutory consultation on the 28th July 2014. The final consultation response was received 11th September 2014. All three statutory consultees provided a consultation response. These responses can be found in Appendix **Error! Reference source not found.C.1**.

6.3.3 Statement of Environmental Particulars

A draft Statement of Environmental Particulars has been prepared prior to public consultation and can be found in Appendix **Error! Reference source not found.C.3**. This should be updated following the public consultation on the main Strategy document.

Appendices

- A Glossary and Abbreviations
- B Action Plan
- C Summary of Community Consultation
- D Environmental Assessment
 - D.1 Screening report
 - D.2 Scoping report
 - D.3 Responses to Consultation
 - D.4 SEA and HRA report
 - D.5 Statement of Environmental Particulars
- E Flood Risk Maps
- F Sustainable Drainage Approving Body - This Appendix will be reserved for further details of the SuDS Approval Body process and how this will be address by the Borough once more detail is available.

A Glossary and Abbreviations

| | |
|--------------------------|--|
| CDA | Critical Drainage Area |
| CIL | Community Infrastructure Levy |
| CIRIA | Construction Industry Research and Information Association |
| CONFIRM | Asset Management System |
| DCLG | Department for Communities and Local Government |
| DEFRA | Department for Environment, Food and Rural Affairs |
| Designating authority | The Council |
| FCERM | Flood and Coastal Erosion Risk Management |
| FCERMGiA | Flood and Coastal Erosion Risk Management Grant in Aid |
| Floods Directive | European Union Floods Directive 2007 |
| Fluvial | Flooding attributed to river processes |
| FOI | Freedom of Information Act |
| FRM | Flood Risk Management |
| FRRs | Flood Risk Regulations |
| FWMA | Flood and Water Management Act |
| GiA | Grant in Aid |
| GLA | Greater London Authority |
| HRA | Conservation of Habitats and Species Regulations 2010 |
| INTERREG | A collection of funds aimed at promoting inter-regional cooperation across the EU |
| KPI | Key Performance Indicator |
| LEPs | Local Enterprise Partnerships |
| LIFE+ | A programme providing specific support for the implementation of European environment policy. |
| LLFA | Lead Local Flood Authority |
| Local Strategy/ LFRMS | Local Flood Risk Management Strategy |
| National Strategy | National flood and coastal erosion risk management strategy for England |
| Ordinary Watercourse | Every river, stream, ditch, drain, cut, dyke, sluice, sewer (aside from public sewers) and passage through which water flows which is not considered to be a main river. |
| PFRA | Preliminary Flood Risk Assessment |
| Pluvial | Flooding attributed to rainfall |
| RFCC | Thames Regional Flood and Coastal Committee |
| Riparian owner | Owning property next to or adjoining a river, stream or ditch grants you rights and responsibilities for that section. |
| RMA | Risk Management Authority |
| SAB | Sustainable Drainage Approving Body |
| SEA | The Strategic Environmental Assessment Directive |
| SoEP | Statement of Environmental Particulars |
| Solution Cell | Five-borough groundwater flooding prevention initiative (Croydon, Bexley, Bromley, Greenwich and Sutton). |
| SUDS | Sustainable Urban Drainage Systems |
| TfL | Transport for London |
| The Four Boroughs | South East London Lead Local Flood Authorities (Bexley, Bromley, Greenwich and Lewisham). |

| | |
|-----------------|--|
| The Partnership | South East London Flood Risk Management Partnership (Bexley, Bromley, Greenwich and Lewisham, Thames Water and The Environment Agency) |
| TWUL | Thames Water Utilities Limited |
| WFD | Water Framework Directive |

**Appendix C
Local Flood Risk Strategy**



Summary of local consultation comments

Email from Cllr Nicholas Bennet West Wickham Ward member

Dear Alistair

Thank you for your email, please find below my comments based on my experience as a local ward councillor for West Wickham since 2006. I have copied in my colleagues for Hayes and Coney Hall ward as some of the roads are shared with them.

1. Paragraph 3.1.6 In the interests of public transparency I can see no reason not to publish the Register of Flood Risk Features on our website especially as we would disclose in response to an FOI Request.
2. Parts of West Wickham Ward (largely identified in the Schedule at 12, 13, 24, and 25) are affected by the following:
River flooding – properties in Addington Road, Bolderwood Way
Groundwater Flooding – properties in Courtfield Rise, Corkscrew Hill, Addington Road

Sewer flooding – affected properties in Hawes Lane in 2014 (Not in Schedule)

Rain water flooding – in addition to Red Lodge Road add Rays Road, the private road which serves the downside of West Wickham Station
3. Please add in 3.4 as local stakeholders local ward councillors, the GLA member and local MPs.
4. Local Objectives (Para 4.3)
I welcome to suggestions in this paragraph and would include the following actions:
 - i. I would propose a positive programme to draw riparian owners to their responsibilities perhaps via the circulation of a letter drawing their attention to the EA document 'Living on the edge'
 - ii. Include in Local Plan areas of serious groundwater flooding like the back lands bounded between Corkscrew Hill, Addington Road and Courtfield Rise were there will be prohibition on building;
 - iii. All future planning applications to include a requirement to show how the development mitigates any loss of permeable ground
 - iv. All new developments and alterations to ensure that driveways, hard standings are permeable.

Best wishes

**Cllr Nicholas Bennett JP
West Wickham Ward**

Response

Dear Cllr Bennett

Thanks again for your comments I'm sorry they were not included in the draft version of the strategy presented to the committee.

1. The reason for not publishing lists of SW drainage water assets and individual risks is not to cover anything up but to ensure that the reader fully understands the position and is not misled by erroneous assumptions. As you point out subsequently, Riparian and other drainage responsibilities are not yet well understood by the public, so if a resident has a specific interest in flooding / drainage issues we'd wish to manage their access and ensure their understanding by direct contact. We believe that as LBB flood risk is relatively low this is manageable.
2. The interaction between the Main River, surface water and groundwater flooding is under investigation as part of the EA's ongoing surveys on Ravensbourne South (and East).

Groundwater emergence adding to the riparian and surface water issues was raised by LBB for inclusion in the EA study, the EA is well aware that there is just the one channel draining (non foul) water from the valley. The conversation re that interaction is an ongoing issue, it had commenced long before 2014. The EA had in place an intervention on the Main River channel which came just too late for the GW incident of 2014 but as a result of the emergency there was much more work done than originally planned. Not least the repair to the culvert to rear of 6/8 Courtfield Rise. And in addition LBB as LLFA and a Riparian manager, has installed a control chamber and renewed the very top section at Corkscrew Hill. There is no 'once and for all solution' to the Sparrows Den GW, the most vulnerable properties have been able to improve their resilience through the Central govt Repair and Renewal grant and the penstocks are there to allow for better GW operational management when it inevitably reappears. Work continues on a better system of GW monitoring and warning but unfortunately the GW emergence cannot be stopped.

At Bolderwood Way the exceedance is largely on the drains conveying flows to the Main River rather than the river leaving banks to flood properties. Minor works are planned to ensure that the existing assets are operating to their full potential but short term flooding to the highway cannot be ruled out at the moment. Reports and other evidence are being gathered in order to confirm its position in terms of prioritisation.

The sewer flooding at Hawes Lane is primarily an issue for Thames Water hence not included on our action list specifically.

Red Lodge Road and Rays Road SW flooding is 'known' but didn't make the cut in terms of appearing in the action list. That can change, the action list and strategy itself is conceived as a 'living document' subject to annual review. A significant flooding event could produce changes to the list and its priorities.

3. Agreed and now added, in producing the document we had those parties in mind but had not included them on that list, an omission on my part.

4. i. Highlighting Riparian responsibility Improving public awareness of flood risk is one of our primary objectives. Updating the LBB website to include links to documents such as 'Living on the edge' is included as a departmental objective for 2015/16
- ii. to iii. These issues come under the National Development Control heading ... local measures are included in LBB planning policy which references the requirement of 'the London Plan' in respect of controlling unsustainable development (e.g. Courtfield back land), requiring developers to produce acceptable surface water management plans to control runoff from their developed sites into the future.
- iv. New driveways and those which come under a planning application are controlled, but alteration to individual driveways are a problem as they are generally permitted development. There is guidance on sustainable paving methods, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7728/pavingfrontgardens.pdf
- from which residents are invited to decide for themselves whether their works require a planning application to be submitted.
- Once again public awareness / education is required to convert hearts and minds to the need for sustainable urban drainage, our reworked LBB LLFA web pages will provide access to the information.

I hope that covers the points you have raised, I'd be happy to discuss further before calling the document 'final'.

Alistair Berry, Project Engineer

Transport & Highways | Environmental and Community Services
London Borough of Bromley
Tel: 020 8313 4766 | **Fax:** 020 8313 4796
www.bromley.gov.uk

Email from Cllr Tony Owen Petts Wood and Knoll Ward member

Dear Alistair,

Have you contacted Cllr Colin Tandy in the London Borough of Bexley? He has represented LBB's interests for many years and is one of the most knowledgeable people I know on this subject.

Kind regards,

Tony Owen

Response

Dear Cllr Owen

I was at a Local Flood Risk partnership meeting with Cllr Tandy last Thursday. He chairs a quarterly meeting and brings a wealth of knowledge to the group. Cllr Colin Tandy (Bexley) and Cllr Alan Smith (Lewisham) represent the boroughs on the Southern and Thames Regional Flood Defence committees.

Regards Alistair

Alistair Berry, Project Engineer

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