



Local Flood Risk Management Strategy

2017-2022

November 2017

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Main Glossary:

LFMRS – Local Flood Risk Management Strategy

LLFA - Lead Local Flood Authority

SEA - Strategic Environmental Assessment

SFRA – Strategic Flood Risk Assessment

SPD - Supplementary Planning Document

SuDS - Sustainable Urban Drainage Systems

Executive Summary

The UK was subject to significant flooding in 2007 and consequently, the government introduced new legislation to ensure better flood risk management nationally. The Flood and Water Management Act (2010) designates Westminster City Council (WCC) as a Lead Local Flood Authority (LLFA), with a range of new risk management duties to assess, minimise, mitigate, manage and monitor flood risk. Part of this is to set out a clear strategy for managing this risk. The local flood risk management strategy and action plan proposed in this document (for the period 2017-23) deals with these duties.

Local flood risk in Westminster

Flooding from surface water, groundwater and ordinary watercourses is defined as “local” flooding. In Westminster, local flood risk is predominantly from surface water sources as there are no ordinary watercourses and the risk of flooding from groundwater is considered to be very low. Surface water flooding in Westminster is closely linked to the capacity of the drainage infrastructure including highway gullies and the sewer system.

Assumptions behind the approach to flood risk management in Westminster

The following assumptions underlie the strategy’s approach to managing flood risk:

- Flooding is a natural event that will sometimes occur despite all efforts to prevent it, but it is necessary to improve flood resistance and resilience in the city;
- Effective flood risk management can reduce long term flood damage costs and it is a worthwhile investment for both the public and private sector;
- Local resources will be prioritised for locations identified through flood risk modelling as being at greatest risk of flooding;
- Partnership working is key to funding and effectively managing flood risk and co-operation from public and private sectors and residents is essential;
- Objectives are evidence based, taking into account local knowledge and expertise, the enhanced surface water flood risk, the Strategic Environmental Assessment (SEA), and overall planning policy guidance on related issues e.g. our Basements Supplementary Planning Document (SPD); and,
- It is important to integrate the council’s role as a LLFA with our roles as Local Planning Authority, and Highways Authority, with those of other relevant stakeholders to manage flood risk in the city.

Objectives of the Strategy

The following objectives have been developed for the Strategy:

- **Objective 1:** To better understand and explain the level of local flood risk affecting Westminster;
- **Objective 2:** To take a sustainable, holistic approach to flood risk management in Westminster, proportionately managing the likelihood of flooding versus the risk of harm to people, the economy and the environment (natural, built and historic);
- **Objective 3:** Promote preparedness and resilience to local flood risk; and,
- **Objective 4:** To ensure that the planning process takes full account of local flood risk;
- **Objective 5:** To adopt a collaborative approach to manage flood risk in Westminster with partners, businesses and residents.

The most important part of the LFRMS is the Action Plan, which demonstrates what work has been completed, is underway, or planned by the council and other partners. This allows for transparency and accountability between partners and for the general public.

Funding sources have been identified in this LFRMS and some funding has already been spent and allocated to undertake and support flood risk management activities and business cases for potential schemes.

Wider sustainability implications

An SEA was produced to ensure that environmental issues are integrated and assessed at the earliest opportunity in the policy making process and that concluded that this contributes to positive sustainable development.

Governance

The implementation of the LFRMS will be reported in the Annual Monitoring Report produced by the council.

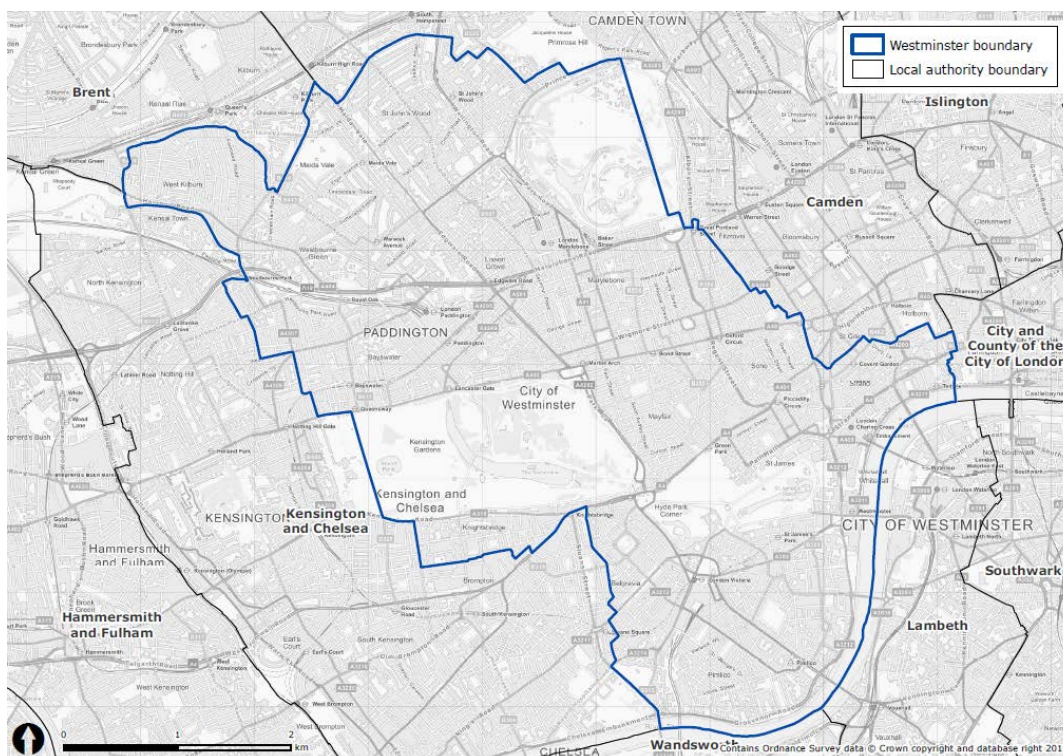
1 Introduction and Context

1.1 Background

The UK was subject to significant flooding in 2007 and consequently, the government introduced new legislation to ensure better flood risk management nationally. The Flood and Water Management Act (2010) designates Westminster City Council (WCC) as a Lead Local Flood Authority (LLFA), with a range of new risk management duties to assess, minimise, mitigate, manage and monitor local flood risk. Part of this is to set out a clear strategy for managing this risk. The strategy and action plan proposed here (for the period 2017-22) deals with these duties and sets out a vision for how the council will manage local flood risk.

1.2 Locality

Westminster is a unique riverside borough, covering 21.5km² in central London. It is not only home to parliament, the Monarchy and Royal Parks, but also has world class tourist attractions, London's two international shopping centres, the highest number of historic buildings in the country, over 250,000 residents, and hosts 14% of all the jobs in London. Westminster accommodates the lively West End and areas dominated by offices and commercial uses; by nationally important tourism and cultural uses, and world famous specialist uses; all sitting cheek by jowl with residential areas and essential local community facilities. The River Thames runs along the south boundary of Westminster, and is an important strategic backdrop to our city and a large part of our identity and history is connected to the river. We are bounded by the London Borough of Brent to the north, the City of London and London Borough of Camden to the east, the tidal Thames to the south and the Royal Borough of Kensington and Chelsea to the west (Map 1.1).



Map 1.1: City of Westminster Boundary

1.3 The need for a Local Flood Risk Management Strategy

Flood risk is likely to increase in the future as the climate is predicted to change significantly, causing an increase in the amount of heavy and disruptive rainfall events. This strategy, along with other key documents such as the City Plan attempts to minimise these risks in the future.

The Flood and Water Management Act (2010) gives the council a number of statutory duties¹, including the development of this strategy. The strategy will be modified and updated as needed, but will be reviewed fully as a minimum every five years to ensure it remains relevant and takes account of any improvements or updates to flood risk modelling undertaken. Also, in the event of either a major flooding incident, a change to legislation or new data becoming available, the timing of any review could be brought forwards.

1. These duties are listed in full here: <https://www.legislation.gov.uk/ukpga/2010/29/contents> (checked correct as of 16th October 2017)

2 Policy context

Following the summer floods of 2007, the Government commenced a number of initiatives to assess the management of flood risk and reduce the associated impacts. One of the most prominent of these was that Sir Michael Pitt was asked to conduct a review into all aspects of flooding in the UK, generally known as “The Pitt Review” (Cabinet Office, 2008).

This review was the basis for the Flood and Water Management Act 2010 (FMWA10), which created Lead Local Flood Authorities for England and Wales. In particular the FMWA10 states that a “lead local flood authority for an area in England must develop, maintain, apply and monitor a strategy for local flood risk management in its area”.

This strategy will be used to allow the council to fulfil its role in providing leadership and co-ordination on local flood risk management as set out in the Act. To ensure consistency from national to local level, the local strategy uses the guiding principles found within the Flood and Coastal Erosion Risk Management Strategy for England (Defra, 2011).

The following sections give details of key flood risk management legislation and details of wider legislation that are also relevant to the LFRMS are contained within Appendix B.

2.1 National Planning Policy Framework (Department for Communities and Local Government, 2012)

The National Planning Policy Framework (NPPF) contains the Government’s policies for planning in England. It states that “inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere”.

The NPPF puts a strong emphasis on Local Plans and localism and therefore the strategy presented here helps to underpin this central framework by providing a strong steer on flood risk management within a borough wide (i.e. local) setting.

2.2 Flood and Water Management Act (2010)

The FMWA10 was initiated and implemented following Sir Michael Pitt’s review of the 2007 floods. His report examined how to reduce both the risk and impact of flooding and the effectiveness of the emergency response. The Act sets out a more comprehensive way of managing flood risk for people, homes and businesses.

The Act specifies a number of ‘risk management authorities’, which are as follows:

- The Lead Local Flood Authority, Westminster City Council;
- The Environment Agency;
- The local water company, Thames Water; and,
- The highway authorities, Westminster City Council and Transport for London.

Under the Act all authorities have the following new responsibilities:

- A duty to cooperate with and provide information to other risk management authorities; and,
- Ability to take on flood functions from another risk management authority when agreed by both sides.

In addition each risk management authority has specific roles and responsibilities, which are fully detailed in Section 3.

3 Roles and responsibility

In order for local flood risk in the city to be effectively managed it is important that the relevant roles and responsibilities of the various relevant organisations are clearly defined.

3.1 Risk Management Authorities

The FWMA10 requires the Strategy to identify the relevant Risk Management Authorities (RMA) in the LLFA's area and the flood risk management functions they may exercise. The FWMA 2010 identifies the following organisations as Risk Management Authorities:

- Lead Local Flood Authorities (Westminster City Council);
- The Environment Agency (EA);
- Water Companies (Thames Water);
- Highways Authorities (Westminster City Council and Transport for London);
- Internal Drainage Boards (not applicable in Westminster); and,
- District, Borough and County Councils (not applicable in Westminster).

3.1.1 Lead Local Flood Authority (the Council)

The council, under the FWMA10 was designated as a Lead Local Flood Authority for its administrative area and it therefore has a strategic role in overseeing the management of local flood risk – namely surface water, ordinary watercourses (Westminster has no ordinary watercourses) and groundwater; along with the following powers:

- To undertake works to manage flood risk from surface water, ordinary watercourses and groundwater;
- To designate structures and features that affect flooding; and,
- To request information from any person in connection with the authority's flood and coastal erosion risk management functions.

The FWMA 2010 also gives LLFAs the following responsibilities:

- Strategic Leadership – bringing together stakeholders and leading the development of a strategy to manage local flood risk in the city;
- Developing and maintaining a Local Flood Risk Management Strategy;
- Meeting the requirements of the flood risk regulations through producing a Preliminary Flood Risk Assessment;
- Producing flood investigation reports;
- Maintaining register and records of flood risk management assets;
- Designating assets;
- Investigate flood incidents and to publish flood incident reports; and,
- Implementing Sustainable Urban Drainage Systems (SuDS) through planning.

The Town and Country Planning (Development Management Procedure - England) Order 2015 – Schedule 4 - Consultations before the grant of permission, made LLFAs statutory consultees for major development planning applications with surface water drainage. Assessment of surface water drainage provision for all other types of development is now the responsibility for local planning authorities.

As well as these new roles, the council has other longstanding responsibilities which play an important role in flood risk management. These include:

- Responsibilities as a local planning authority;
- Responsibilities as a highways authority;
- Responsibilities for civil contingency planning;
- Responsibilities for parks and open spaces; and,
- Responsibilities for social housing.

The council will organise its duties across two directorates. Policy, Performance and Communications (PPC) will hold strategic responsibility for the LFRMS development and revision. PPC will also work in close partnership with City Management and Communities Department who will organise the operational delivery of the LFRMS. The council as LLFA requires cooperation from RMA's to ensure the risk of flooding is effectively managed. In addition, the LLFA and the EA have the power to request information from any person to help them carry out their flood management functions. There is also a role in implementing flood risk management measures for the Planning Team.

The division of the roles and responsibilities of the council as the LLFA is outlined in Table 3.1 below.

Table 3.1: WCC internal roles

Policy, Performance and Communications	Strategic responsibility for flooding strategy (LLLFA) Strategic responsibility for SFRA (for the National Planning Policy Framework) Promotion of SuDS
CMC – Transport and Highways, Drainage	Operational responsibility for flooding Project lead for all LLFA duties, reporting to Environment Agency (e.g. update PFRA) Maintain flood asset register Drainage maintenance

	<p>Investigate flooding incidences, S19 notices and recording flooding events</p> <p>Promotion of SuDS</p> <p>Major infrastructure projects e.g. Thames Tideway</p>
Growth, Property and Housing incl. Planning Department and building control	<p>Ensuring compliance with flood risk management policies within planning applications</p> <p>Statutory consultee on surface water drainage for major development</p> <p>Promotion of SuDS especially through place making activity</p> <p>Consultee on major infrastructure projects</p>
Emergency Planning/Business Continuity	<p>Emergency event coordination</p> <p>Emergency plans</p>
Corporate Services	<p>Customer Services – first receivers of reported incidents of flooding need to be clear on how to respond.</p>

3.1.2 Thames Water

Thames Water own and operate the sewerage system and is responsible for the maintenance and safe operation of the public sewer system. They have the following specific flood risk management responsibilities:

- Provide, maintain and operate a system of public sewers and works for the purpose of effectively draining an area, including maintenance of all drains which serve more than one property or which extend beyond the curtilage of the property;
- Respond to flood incidents involving their assets;
- Undertake capacity improvements to alleviate sewer flooding problems with priority being given to frequent internal flooding problems; and,
- Adopt all new lateral drains and sewers that are to connect to the public sewer from April 2013. In October 2011, Defra recommended the transfer of responsibility for private sewers to water and sewerage companies. This transfer of responsibility allows a more integrated approach for the management of the combined sewerage network and is welcomed by Highways Authorities.

Thames Water does not have responsibility for highways or land drainage until surface water enters the combined sewer network in Westminster, nor does it have responsibility for drainage within a property.

3.1.3 Highways Authorities

In Westminster both the council and Transport for London (TfL) are Highways Authorities.

TfL is responsible for the Strategic Road Network in the City. It is responsible for London Underground and gullies and culverts and for ensuring that these assets do not cause flood risk.

The council is responsible for drainage of surface water and highways flooding of all non-TfL roads, and it is also responsible for the majority of highway gullies and drains. The council does not maintain drainage systems on private land (this is the responsibility of landowner) or public sewers (Thames Water).

The key duties of Highways Authorities with respect to flood risk management that are relevant to Westminster are:

- Maintenance of highways, ensuring that highway drainage systems are clear and that any blockages affecting drainage are removed; this is a duty under the Highways Act (1980); and,
- Powers to undertake work they consider necessary to prevent flooding of highways.

3.1.4 The Environment Agency

The Environment Agency has a strategic role in flood risk management and takes a strategic overview of the management of all sources of flooding and coastal erosion for England with specific responsibilities to:

- Publish a National Flood Risk Management Plan which provides a clear national framework for all forms of flood risk management;
- Managing regional flood and coastal committees (RFCC) and support and advise around decisions made in allocating funding for flood defence and flood resilience schemes;
- Review and support LLFAs;
- Providing data and information and tools to inform government policy and support local delivery of this; and,
- Reporting and monitoring flood and coastal erosion risk management.

Operationally the Environment Agency focuses on flooding from main rivers and the sea, which includes the Tidal River Thames in Westminster. The Environment Agency do not deal with local drainage issues.

3.2 Key stakeholders and flood risk management partners

3.2.1 Residents and businesses

It is the responsibility of residents and businesses to look after their homes and properties, including protecting them from flooding. Guidance and further signposting is available on the Government's website ¹. In some circumstances other organisations or property owners may be liable due to neglect of their own

¹ <https://www.gov.uk/prepare-for-flooding>

responsibilities, although there will be occasions where flooding happens despite all parties carrying out all of their duties and responsibilities.

It is therefore suggested that residents and businesses at ground or basement level may wish to consider:

- Flood insurance;
- Flood resistance and resilience measures;
- Sign up to the EA's flood warning scheme²;
- Prioritising what would be important to save at times of flooding;
- Identify who can help them and who they can help in the event of a flood, or any emergency; and,
- To make a flood plan³ and prepare a flood kit.

Some areas have a higher risk of flooding than others and it is important that the council help businesses and residents understand this risk and consider protection measures, resistance and resilience measures in preparation for a possible flood event.

The council will seek to deliver capital schemes to mitigate flood risk in areas identified with the greatest risk where possible given technical and financial constraints.

All homeowners, landowners and businesses have a responsibility to reduce surface and sewer water risks such as disposing of litter, paint, oil and cooking waste responsibly, and keep their own gullies, gutters and drains clear of blockages. Developers should also ensure that new developments appropriately deal with the risk of flooding and ensuring sustainable surface water management design within the development.

3.2.2 Greater London Authority (GLA)

The GLA is not an LLFA and has no statutory role in flood risk management. However it led the Drain London project to improve knowledge of flood risk in London, which helped the council prepare its first Preliminary Flood Risk Assessment and draft Surface Water Management Plan.

Following the dissolution of Drain London the London Drainage Engineers Group (LoDEG) was established to support LLFAs by facilitating partnership working, developing relevant tools, provide advice (also to the LoTAG – the London Technical Advisers Group) and promote best practice. LoDEG arranges meetings throughout the year.

²

<https://www.gov.uk/sign-up-for-flood-warnings>

³

<https://www.gov.uk/government/publications/personal-flood-plan>

3.2.3 Canal and River Trust

The Canal and River Trust own the canals in Westminster. The Trust does not have any specific statutory responsibilities in relation to flooding and, therefore, its responsibilities are those of an owner and operator of its canals and other waterways. The Canal and River Trust does work with the RMA's in a supporting role.

3.2.4 Network Rail

Network Rail is responsible for the mainline stations in Westminster (Charing Cross, Victoria, Paddington and Marylebone). They manage the entire track including, cuttings, culverts, and tunnels which can be essential for the management of flood risk. They are not a RMA but have a responsibility for ensuring that their assets are maintained and do not result in flooding.

3.2.5 Neighbouring Councils

All of the city's neighbouring boroughs are LLFAs. It is essential that we work in partnership with our neighbours to ensure a catchment based approach to manage flood risk. The Council works with the Central London North Flood Risk Partnership (which comprises Islington, Camden, the City of London, Kensington & Chelsea and Hammersmith & Fulham, the Environment Agency, Thames Water and Transport for London) to ensure a catchment based approach.

3.2.6 Regional Flood and Coastal Committee

Regional Flood and Coastal Committees (RFCCs) help to provide governance for the EA's Flood and Coastal Erosion Risk Management (FCERM) functions and cover all flood risks that are not the responsibility of the water companies. RFCCs have three main purposes as follows:

- To ensure that there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines;
- To promote efficient, targeted and risk-based investment in flood and coastal erosion risk management that optimises value for money and benefits for local communities. This includes administration and allocation of Local Levy funding; and,
- To provide a link between the EA, LLFAs, other risk management authorities, and other relevant bodies to develop mutual understanding of flood and coastal erosion risks in its area.

The council has a seat on the Thames RFCC which is held by an elected member from the authority. Local authority officers attend the meetings in a supporting capacity.

3.3 Partnerships

The Council participates in the Central London North Flood Risk Partnership (PPC and CMC) and LoDEG workshops (CMC).

4 Local Flood Risk in the city

Flooding is typically defined by where the water comes from; Westminster could be affected by flooding from a variety of sources. This strategy is concerned with the management of local flood risk which is defined as flooding from surface water groundwater or ordinary watercourses. The following sections set out our current understanding of local flood risk in Westminster now and how this is expected to change in the future.

4.1 The Westminster Context

Due to the urbanised nature of Westminster and the underlying geology surface Water flood risk is the most prevalent source of local flood risk in combination with overflowing that may occur directly from the combined sewer system. The following sections give an overview of local flood risk in Westminster; however for further details on the different sources of flooding, the Westminster Strategic Flood Risk Assessment gives a more comprehensive assessment.

4.2 Historic Flooding in Westminster

4.2.1 Surface water flooding

There are limited records of surface water flooding within Westminster. The Westminster Preliminary Flood Risk Assessment (Halcrow, 2011) identified five incidents of historic surface water flooding in Westminster. These include closure of Westminster and Victoria underground stations, highway flooding and property flooding on Dorset Street. Flooding from surface water is the responsibility of the council; this includes water flowing overland and along highways prior to it entering the Thames Water combined sewer network.

4.2.2. Groundwater flooding

There are no records of flooding from groundwater sources within Westminster.

4.2.3. Sewer flooding

Problems concerning sewerage flooding are a London-wide issue, but are the explicit responsibility of Thames Water. Thames Water has maintained a database of sewer flooding incidents during the last 20 years and as of 19th October 2017 the total number of incidents was 1411. The number of incidents recorded by Thames Water by detailed postcode area for the city are summarised in Appendix 1*.

Sewer flooding incidents 1996/2006 to 2016 (Westminster SFRA 2017)

4.2.2 Fluvial and Tidal flooding

The potential for fluvial/tidal flooding from the River Thames in Westminster is significant and has caused extensive damage in the past. On January 6th 1928 a

tidal surge, at high tide, came up the River Thames Estuary resulting in the flood defence walls and embankments, of the time, being overtopped. Since then the tidal flood defences for London have been substantially improved with the construction of the Thames Barrier and associated tidal flood walls and gates. There have been no subsequent tidal flooding events in Westminster.

4.3 Current flood risk

4.3.1 Surface water

Surface water flooding occurs when intense rainfall is unable to soak into the ground or enter drainage systems, because of blockages, or breakages in water pipes or where the drainage capacity has been exceeded. Due to the highly built-up nature of Westminster and its limited drainage capacity, surface water flooding is the most likely cause of flooding.

All parts of Westminster may be susceptible to varying degrees of surface water flooding. However, surface water run-off invariably pools in low lying areas with greater risk of surface water flooding. Within Westminster the key infrastructure for management of surface water is the combined sewer system that is operated by Thames Water. This captures rainfall from building roofs and ground surfaces which are then conveyed along with foul sewage, towards sewage treatment works east of Westminster.

The council is currently in the process of updating the Strategic Flood Risk Assessment (2017) for Westminster that gives comprehensive details of the nature of surface water flood risk across the city. This includes enhanced surface water modelling which has identified areas most at risk from surface water flooding, where resources should be focus in the future. A total of 16 individual surface water flood risk hotspots were identified and can be found in Section 3.3 in the SFRA)

4.3.2 Ordinary Watercourses

The River Thames is the only river in Westminster, as other watercourses have been subsumed into the sewerage network, with the exception of the Serpentine in Hyde Park and St James's Park Lake, which are locations where the River Westbourne comes above ground.

4.3.3 Groundwater

The risk of groundwater flooding in Westminster is considered to be low. In Westminster the chalk aquifer of London is fully concealed under a layer of London Clay, which does not allow groundwater in the chalk aquifer to reach the ground surface. Above the London Clay, there are gravels, alluvium, and made ground, and the water contained in these superficial deposits, ultimately derived from rainwater, acts as the source of perched groundwater flooding when insufficiently drained. In Westminster groundwater flooding at the ground surface or shallow basements is often intricately linked with surface water flooding, and maintenance work reducing surface water flooding risks often also alleviates such risk from groundwater.

The management of perched groundwater flooding in Westminster is through abstraction of surplus groundwater under license from the Environment Agency. This enables groundwater levels to be managed to limit the risk of groundwater flooding, in particular to the extensive underground infrastructure located within Westminster.

The Council is currently also in the process of updating the Strategic Flood Risk Assessment for Westminster that gives comprehensive details of the latest information on groundwater flood risk across the city. This can be found on the councils' website.

4.3.4 Sewer Flooding

Most of Westminster is served by combined sewers which receive foul water, water from roofs, hard standing and highways. During periods of heavy rain, the pipes fill up, which can lead to surcharge from manholes or combined sewer overflow into the tidal River Thames and its tidal tributaries. Overflows into the River Thames from the city will be significantly reduced once the Thames Tideway Tunnel is completed (the timescale for its construction is 2016 to 2023).

Thames Water is responsible for managing the risk of flooding from the combined sewer network. This is through their duty to provide, maintain and operate systems of public sewers and works for the purpose of effectually draining their area of responsibility, as specified by Section 94 of the Water Industry Act 1991.

4.3.5 Fluvial and Tidal Flooding

Westminster sits on the north bank of the Tidal River Thames and is therefore potentially susceptible to both tidal and fluvial flooding. The River Thames floodplain is defended by 185 miles of flood walls, embankments, and nine tidal barriers, including the Thames Barrier, as well as 35 major gates and over 400 minor gates which offer protection against a tidal flood event that has a 0.1% annual probability of occurring up to the year 2030. The operation of the Thames Barrier and the associated gates is governed by the Thames Barrier and the Flood Prevention Act 1972. Westminster is also defended from tidal and fluvial flooding by the Embankment flood wall.

This Strategy is primarily focused with Local Flood Risk sources, and in most circumstances tidal/fluvial flooding will not interact with the local flood risk sources due to the presence of the existing flood defences. Only in the event of a breach of the River Thames defences would this occur, interacting with surface water drainage of the low lying areas of Westminster adjacent to the river. There is also an unlikely combined probability event where the combined sewers are not able to discharge into the River Thames during high water levels however this not be as relevant once the Thames Tideway Tunnel is built. Further detail on the nature of tidal/fluvial flood risk in Westminster and the measures to manage this risk are available from the emerging SFRA.

4.4 Future changes to local flood risk through Climate Change

(This is dealt with in more detail in the Council's Strategic Flood Risk Assessment – SFRA 2017)

With climate change, the frequency, velocity, depth, patterns and severity of flooding are forecast to change and to become more damaging. Current predictions for the expected impacts of climate change include changes to rainfall patterns which will have a direct impact on local sources of flood risk.

The predicted impact of climate change on flood risk in England is set out by the Environment Agency's 'Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities'. Climate change is predicted to lead to an increase in the intensity of extreme rainfall, which will lead to an increase in the risk of surface water flooding. Current guidance from the Environment Agency suggests that extreme rainfall intensity is likely to increase by between 20% and 40% over the next 100 years. As rainfall intensity increases the ability of the combined sewer network within Westminster to deal with extreme rainfall events will decrease. Measures will be needed to reduce the amount of water entering the sewer system or increase capacity to meet this challenge.

In addition peak river flows are expected to increase and sea level is expected to rise. This will have an impact on flood risk from the River Thames; however it will be mitigated by the operation of the Thames Barrier and any replacement structures in the future. Upstream of the Thames Barrier, the impact of climate change is less intuitive when considering the impact of joint probability on water levels. Because water levels are predicted to increase in the future, it is likely that the number of actual Barrier closures will increase. If the Barrier continues to operate to the current closure rules, joint probability water levels for a specific event through Central London would be slightly lower under climate change conditions than they are at the present day.

5 Strategy for Local Flood Risk Management

To support the strategic vision for the management of local flood risk in Westminster, the following five objectives have been developed to support the delivery of the Strategy. They have been developed to be consistent with the objectives of the national FCERM. They are set out in Table 5.1 and discussed in detail in the following sections. The Action Plan (Appendix A) demonstrates how these objectives have and will be achieved for Westminster.

Table 5.1: Westminster LFRMS Objectives

Objective	
O1	To better understand and explain the level of local flood risk affecting Westminster.
O2	To take a sustainable, holistic approach to flood risk management in Westminster, proportionately managing the likelihood of flooding versus the risk of harm to people, the economy and the environment.
O3	Promote preparedness and resilience to local flood risk.
O4	To ensure that the planning process takes full account of local flood risk.
O5	To adopt a collaborative approach to manage flood risk in Westminster with partners, businesses and residents.

5.1 Objective 1: Better understand and explain the level of local flood risk affecting Westminster

Understanding the causes and mechanisms of local flood risk is essential to enable efficient and effective management of the risk. Surface water flood risk in Westminster is often from multiple sources, typically heavy rainfall and the performance of the drainage infrastructure. This is complicated by the localised variability in the topography of the urban landscape, such as walls as access routes to property basements. Therefore understanding flood risk solely from high level strategic work (such as the surface water flood maps) may not accurately portray a site's true risk from flooding. The Council's concurrent Strategic Flood Risk Assessment (SFRA) 2017 sets out the level of flood risk in more detail.

Gaining a better understanding of risk in the study area will be an ongoing process, with flood risks expected to increase due to climate change, greater understanding will enable the council to better mitigate against potential future problems and advise on the appropriateness of new development.

5.2 Objective 2: To take a sustainable, holistic approach to flood risk management in Westminster

Flooding is a natural process and stopping it altogether is impossible. However, it is possible to reduce the frequency of flooding and to lessen its impacts on Westminster's population.

Understanding, identifying and quantifying flood risk is the first step to manage and reduce the likelihood and impacts of flooding. Where possible business case opportunities for flood risk management schemes will be developed and implemented to reduce flood risk. These will be prioritised to ensure that the most beneficial measures are implemented first. This is especially important where budgetary constraints mean that not all viable measures can be implemented.

In developing measures to tackle local flood risk, it is important to involve all relevant partners, both risk management authorities and others, including members of the public. Another important aspect of local flood risk management is actions that are taken when flooding is happening. Ensuring an efficient response from the relevant authorities and providing information to the public can significantly reduce the impact of flooding and reduce the recovery period.

5.3 Objective 3: Promote preparedness and resilience to local flood risk

It is recognised that local flood risk management is most successful when the community are included in decision making and feel ownership of the issues and solutions. Community engagement also helps to mitigate the impacts of flooding as people at risk are more aware and are more likely to plan for any issues that arise. The council is committed to improving the public's awareness of flooding and consulting them on local flood risk management issues.

5.4 Objective 4: To ensure that the planning process takes full account of local flood risk

The council is committed to working with developers to produce places to live where flood risk is minimal and there is a positive impact on the wider area, one of the key methods for implementing this is through planning policy.

Following changes to statutory consultees for planning applications that were implemented in April 2015, the Town and Country Planning (Development Management Procedure Order 2015 – Schedule 4 - Consultations before the grant of permission) made LLFA statutory consultees for major development planning applications with surface water drainage. Assessment of surface water drainage provision for all other types of development (not considered to be major development) is the responsibility of local planning authorities, in both cases this is the council. The SFRA document is designed to assist with this role as it sets out the best modelling of flood risk available.

5.5 Objective 5: To adopt a collaborative approach to manage flood risk in Westminster

Working in partnership both internally and externally with the stakeholders and partners identified in Section 3 will be critical to managing local flood risk appropriately. To ensure that this occurs effectively the council has developed a partnership working arrangement involving the local authority's key officers and representatives from other risk management organisations, principally the

Environment Agency, Thames Water and neighbouring LLFAs. These arrangements enable sharing of information and knowledge between organisations to ensure the efficient use of resources for flood risk management.

5.6 Measures

To enable the objectives of this strategy to be delivered, this section sets out a range of measures that will be undertaken by the council. These include a range of measures that will be undertaken in combination with our partners. These are set out for each objective in the action plan in Appendix A, with specific actions that will be undertaken by the council and our partners to deliver them.

6 Funding

This Local Flood Risk Management Strategy has set out a range of measures to achieve its objectives. Delivery against the objective through implementation of these measures relies on sufficient funding being available. This may be through existing revenue funding or project based support for capital schemes.

The following sections set out the various potential sources of funding that may be available to enable the delivery of this Strategy. THE COUNCIL has already been successful in obtaining funding for the development of flood risk management schemes in Westminster from various sources including Local Levy and Flood and Coastal Erosion Risk Management Grant in Aid.

6.1 FCERM Grant in Aid

Defra has the national policy responsibility for Flood and Coastal Erosion Risk Management (FCERM) and provides funding through Grant in Aid (GiA) to the Environment Agency, who then administers grants for capital projects; Local Authorities are one partner able to request such grants.

A contribution to flood risk management schemes from the FCERM GiA funding will be provided whenever there is a **positive ratio of benefit to cost**. However, a positive ratio does not necessitate full funding and the formula determines the amount of Central Government funds based on the calculated ratio.

Funding levels for each scheme are linked to the number and types of households protected, the damages prevented, environmental benefits, amenity improvements, agricultural productivity and economic benefits. The payment rates for household protection will in particular vary depending on the index of multiple deprivation; with more deprived households receiving higher payment rates. This ensures that schemes identified within poorer areas are more likely to receive full funding from Central Government.

The benefit of this approach is that more schemes will be eligible for some national funding including minor schemes and those not solely related to fluvial and/or coastal flooding. However, it can be more difficult to obtain 100% funding from national sources and therefore cost saving measures and other sources of funding are likely to be required to fill the gap.

6.2 Local levy

Local Levy funding is an additional locally-raised source of income, gathered by way of a levy on Local Authorities and collected via the council tax. The levy is used to support (with the approval of the Regional Flood and Coastal Committee) flood risk management projects that are not considered to be national priorities and hence do not attract national funding through FCERM GiA. Alternatively, local levy funding can be applied to FCERM GiA projects, at the discretion of the Regional Flood and Coastal Committee (RFCC), to meet the partnership funding requirements. Each

RFCC annually sets the level of local authority funding that local authorities will contribute in the following year.

Westminster is covered by the Thames RFCC. The RFCCs collect local levy funds from Local Authorities, which are used to contribute towards locally important flood risk management schemes across their areas of responsibility. To obtain these funds it is important to engage with the RFCC early in the allocation process once possible schemes have been identified.

6.3 Section 106 agreements

This is a contribution from developers, linked to specific developments and the infrastructure required to make them acceptable in planning terms. Its use can be very specific to the issue being addressed and is negotiated separately for each development. It can be used to pay for flood defences that specific developments need in order to be safe and so acceptable in planning terms.

Where possible the council will seek to use Section 106 planning obligation agreements to obtain funding to deliver flood risk management schemes that are required to facilitate new development.

6.4 Community Infrastructure Levy

This is a locally agreed sum levied upon developers and large sums could potentially be raised over time. It is flexible in its approach as local authorities can adjust spending plans to meet priorities. Local authorities are required to use this funding for infrastructure needed to support the development. It can be used to construct new flood alleviation schemes, increase the capacity of existing infrastructure or repair failing existing assets including flood defences.

6.5 Local Authority Funding

At present local authority funding is used solely to deliver essential maintenance of existing flood risk management and drainage assets across Westminster. No additional funding is available for capital flood risk management schemes.

6.6 Private Funding Sources

Landowners and other relevant agencies in some circumstances may be willing to contribute funds to flood risk management where they can see a direct benefit to reducing their flood risk or improving their drainage.

7 Next Steps

7.1 Strategy updates

This is the council's current vision for local flood risk management but this needs to be adaptable to changes in modelling and local situations which may impact on that vision e.g. due to a flood event which highlights a new risk, a new opportunity for managing risk becomes available or the legislative framework changes which would require an update of the strategy and action plan. The revisions will occur on a minimum 5 yearly cycle.

7.2 Action Plan Review

The implementation of the LFRMS will be reported in the Annual Monitoring Report produced by the council. General progress on reducing flood risk in the borough will also have direct governance through the Greener City Action Plan, currently under the portfolio of Cabinet Member for Environment, Sports and Communities. The GCAP is also subject to an annual review with stakeholders and the Policy and Scrutiny Committee.

7.3 SEA - Assessment of the wider environmental objectives

The LFRMS objectives are considered to be only beneficial for the environment due to the likelihood of reduced flood risk to the natural and built environment. Additional benefits are likely in terms of biodiversity and amenity improvements, as well as for health and wellbeing (any overland flooding from the combined sewers has a foul component). Any physical improvements to improve drainage, through SUDS or other blue and green infrastructure including green roofs and walls will have knock on positive environmental benefit.

In addition, the implementation of the strategy will help achieve better water quality as well as flood risk management objectives. Given that the strategy will not impact on any designated European Designated Sites (there are none in Westminster) it is concluded that a Habitat assessment was not required.

Appendix A: Westminster LFRMS Action Plan

**Westminster Local Flood Risk Management Strategy
Action Plan**

Aim		Timescale	Potential Funding Source	Partners
Measure(s)	Action(s)			
Objective 1 - To better understand and explain the level of local flood risk affecting Westminster				
1A Investigate locally significant incidents of flooding identifying sources and remedial actions with partners	<ul style="list-style-type: none"> ■ Undertake flood investigations in line with Flood Investigation procedures. ■ Publish the results of flood investigations on the Westminster City Council website. ■ Incorporate all locally significant and other flood risk incidents into a GIS database. ■ Work with other borough's affected in the event of flooding. 	Ongoing Ongoing Ongoing	Defra THE COUNCIL EA	EA TW
1B Review and update the Preliminary Flood Risk Assessment for Westminster	<ul style="list-style-type: none"> ■ Complete review of the Westminster PFRA to meet the requirements of the Flood Risk Regulations. 	2017 and every six years thereafter	THE COUNCIL	EA
1C Develop and continue to maintain a register of flood risk management assets	<ul style="list-style-type: none"> ■ As part of the ongoing service review of the highway drainage asset management contract, review the highway asset register information and assess the need for enhancements in data collection to inform the LLFA asset register. ■ Review asset information collected for the River Thames tidal flood wall and how this is included in the LLFA asset register. 	Ongoing Ongoing	Defra THE COUNCIL	
1D Share knowledge and information on local flood risk with the residents of Westminster	<ul style="list-style-type: none"> ■ Develop the relevant sections of the Westminster City Council website to signpost to the relevant agencies that provide clear advice and guidance on flood risk and associated issues. 	Ongoing	THE COUNCIL	
1E Ensure latest information is used in assessing local flood risk.	<ul style="list-style-type: none"> ■ Adopt the combined surface water – sewer modelling undertaken for the Westminster 	Complete	THE COUNCIL	EA

Abbreviations: WCC – Westminster City Council, EA – Environment Agency, TW – Thames Water

**Westminster Local Flood Risk Management Strategy
Action Plan**

	Aim	Timescale	Potential Funding Source	Partners
Measure(s)	Action(s)			
	<p>Initial Assessments as the locally agreed surface water flood risk information (a SFRA term).</p> <ul style="list-style-type: none"> ■ Review and update the Westminster Strategic Flood Risk Assessment as required by changes to policy and the understanding of flood risk. ■ Use the outcomes of the SFRA and LFRMS to inform development of City Plan, Neighbourhood Plans, CMC drainage and asset maintenance plans, and contingency plans for business continuity and emergency protocols. 	<p>Ongoing</p> <p>Ongoing</p>		

**Westminster Local Flood Risk Management Strategy
Action Plan**

Aim		Timescale	Potential Funding Source	Partners
Measure(s)	Action(s)			
Objective 2 - To take a sustainable, holistic approach to flood risk management in Westminster, proportionately managing the likelihood of flooding versus the risk of harm to people, the economy and the environment (natural, built and historic)				
2A To reduce the impacts of flooding by targeting and prioritising maintenance at high risk locations and assets.	<ul style="list-style-type: none"> ■ Review the highway drainage asset management approach to use a flood risk led approach to the prioritisation of maintenance and inspections. 	Ongoing	Defra EA The Council	
2B Develop flood risk management schemes led by THE COUNCIL, seeking to make best use of available funding	<ul style="list-style-type: none"> ■ Continue to progress studies to develop capital flood risk management schemes that were identified by the Westminster Initial Flood Risk Appraisals (2015). 	Ongoing	Defra EA The Council	EA
2C Where third parties or stakeholders suggest schemes, work with them to develop flood risk management schemes led by third parties and stakeholders.	<ul style="list-style-type: none"> ■ Work with Thames Water to promote schemes for retrofit of Sustainable Drainage Systems to reduce runoff to the combined sewer system. ■ Work with the Environment Agency to implement the recommendations for Westminster from the TE 2100 Plan 	Ongoing Ongoing	Defra EA The Council TW Landowners	TW
2D Work to ensure ongoing management of existing flood risk and drainage assets.	<ul style="list-style-type: none"> ■ As part of the ongoing service review of the highway drainage asset management contract, review the approach to highway drainage asset management to promote efficiencies and a risk based approach ■ work with private landowners to ensure that private drainage assets are appropriately maintained to minimise the risk of flooding from surface water'. ■ 	Ongoing	Defra The Council T	
2E: To ensure environmentally sustainable solutions will be fully	<ul style="list-style-type: none"> ■ Explore the potential for use of environmentally sustainable solutions in all 	Ongoing	Defra EA	EA

Abbreviations: WCC – Westminster City Council, EA – Environment Agency, TW – Thames Water

**Westminster Local Flood Risk Management Strategy
Action Plan**

Aim		Timescale	Potential Funding Source	Partners
Measure(s)	Action(s)			
considered in Westminster City Council led flood alleviation schemes.	THE COUNCIL authority led flood risk management schemes.		The Council TW	

Abbreviations: WCC – Westminster City Council, EA – Environment Agency, TW – Thames Water

**Westminster Local Flood Risk Management Strategy
Action Plan**

Aim		Timescale	Potential Funding Source	Partners
Measure(s)	Action(s)			
Objective 3 - To ensure that the planning process takes full account of local flood risk				
3A Ensure the planning process complies with flood risk policy and communicates this to developers and applicants	<ul style="list-style-type: none"> ■ Ensure the revision of the City Plan takes full account of our flood risk policy. ■ Ensure flood risk and SuDS are properly considered during the planning application process. ■ Provide statutory consultee response on surface water drainage for major planning applications. ■ Signpost to the GLA's developer guidance on the use of SuDS in Westminster to be available on the website. ■ To review and update the council Basements Supplementary Planning Document as needed. 	Ongoing Ongoing Ongoing	The Council	
3B Promote the use of Sustainable Drainage Systems in new development	<ul style="list-style-type: none"> ■ Undertake the LLFA's statutory consultee role on new major developments. ■ Signpost to GLA developer guidance on the use of SuDS in Westminster to be available on the website. ■ Report back to Defra annually on SUDS activity. 	Ongoing Ongoing	LAs	

**Westminster Local Flood Risk Management Strategy
Action Plan**

Aim		Timescale	Potential Funding Source	Partners
Measure(s)	Action(s)			
Objective 4 - Promote preparedness and resilience to local flood risk				
4A Work with partners to minimise the recovery time for residents and businesses from flooding events	<ul style="list-style-type: none"> ■ Develop recovery contingency plans for public protection as part of the Emergency Plan in case the local area is impacted by flooding (including business and economic recovery). 	Ongoing	The Council	
4B Work with partners to improve communications and advice given during flooding events.	<ul style="list-style-type: none"> ■ Make appropriate use of social media to give real-time advice during flood events. ■ Make use of alerts and news updates in the council's websites to give advice during flood events. ■ Consider use of proactive community engagement as well as reactive post flooding where possible. 	Ongoing Ongoing	The Council	EA, TW

**Westminster Local Flood Risk Management Strategy
Action Plan**

Aim		Timescale	Potential Funding Source	Partners
Measure(s)	Action(s)			
Objective 5 - To adopt a collaborative approach to manage flood risk in Westminster with partners, businesses and residents				
5A Engage in regional networks for sharing of knowledge and best practice.	<ul style="list-style-type: none"> ■ Learning best practice and sharing experiences through the Central London North Flood Risk Partnership Group and LoDEG 	Ongoing	The Council	EA, TW, Other LLFAs
5B Improve the mechanisms of sharing of data and information between partners.	<ul style="list-style-type: none"> ■ Develop strategy for flood risk data and information sharing for officers, partners, stakeholders and the public 	Ongoing	The Council	

Appendix B – Number of recorded sewer flooding incidences. Report compiled by Thames Water 19th October 2017.

**These figures may differ slightly from earlier reported figures in previous reports – for example where a flood was reported, and then investigated and found not to be a sewer flooding issue; and then it would be removed from the database. In addition, new reports will be added to the figures.*

Postcode	At least 2 internal incidents in last 10 years	At least 1 internal incident in last 10 years	At least 1 internal incidents in last 20 years	At least 2 external incidents in last 10 years	At least 1 external incident in last 10 years	At least 1 external incidents in last 20 years
W9	1	10	8	0	0	0
W2	0	2	44	0	0	1
W1	1	8	442	0	2	0
SW1	11	2	738	1	1	1
NW1	1	4	76	0	0	0
NW6	0	0	0	0	1	0
NW8	0	2	0	0	0	0
WC2	0	0	4	0	0	0
SW7	0	0	0	0	0	0
SW3	0	0	50	0	0	0
Total	14	28	1,362	1	4	2

Appendix C

Westminster City – Flood Investigation Policy

Westminster City County (WCC) holds the role of Lead Local Flood Authority (LLFA) to oversee local flood risk within Westminster. This role was created in response to the 2007 floods and was one of a number of recommendations of The Pitt Review.

The Flood and Water Management Act 2010 (FWMA) is the key piece of legislation for local flood risk management in England and Wales. The Act updated existing legislation, implemented the recommendations presented in the Pitt Review, and outlined the role that Local Authorities have in managing flood risk in their respective regions. The City Council, as the LLFA for its area, has a duty to investigate flooding incidents that it becomes aware of, to the extent that it considers necessary or appropriate as stated in the FWMA.

Section 19 of the Flood and Water Management Act 2010 outlines that:

- (1) On becoming aware of a flood in its area, a Lead Local Flood Authority must, to the extent that it considers it necessary or appropriate, investigate:
 - (a) which risk management authorities have relevant flood risk management functions, and,
 - (b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.
- (2) Where an authority carries out an investigation under subsection (1) it must:
 - (a) publish the results of its investigation, and,
 - (b) notify any relevant risk management authorities.

The need to investigate a particular flood is determined on a case-by-case basis considering a number of factors. Due to limited resources that local authorities must work within, there is a need for prioritisation of where and when to investigate to ensure that the best use is made of our available time and resources. Our approach to prioritisation is outlined in Box 1 and it is similar to the approach taken by our neighbouring authorities.

Box 1 – Westminster City Council Flood Investigation Prioritisation

Through careful consideration and consultation with fellow LLFAs, WCC has developed the following thresholds for prioritisation of flooding events and as such, the order in which we will investigate.

1. Flooding that posed a threat to the safety of the public or may directly result in serious injury or death.
2. Five or more properties internally flooded.
3. One or more piece of critical infrastructure affected that impact on the wider area.
4. Flooding that places vulnerable individuals or vulnerable communities at risk e.g. hospitals, care and nursing homes, schools, secure units, etc.
5. Additionally, where one or more residential property has flooded internally from the same source on five or more occasions within the last five years.

The Flood Risk Management (FRM) team may investigate flooding outside these categories, but only when all outstanding issues with a higher priority have been considered. These investigations will be prioritised based on the same six criteria listed above. Flooding on public land outside of the above categories will be addressed before flooding to residential gardens and on private land. Although inconvenient and possibly distressing to the individual, flooding to private land that does not affect any buildings is a lower priority that will be dealt with on an advisory basis only.

Smaller scale flooding affecting the highway or coming from the highway will continue to be investigated primarily by WCC Highways.

These guidelines set numerical thresholds. However, in recognition of the fact that all floods will be different, a certain amount of discretion will be required in order to implement this policy effectively.

It is not our intention that no support will be provided to residents whose flooding does not meet these levels of prioritisation. Where time permits we may be able to attend the site, but the expectation is that this advice will be provided on the telephone.

We would advise that residents continue to monitor the situation and if possible keep photographs and detailed records of any future flooding incidents that may occur. If the frequency or severity of the flooding increases to the point where it then falls under one of the high priority categories, the FRM team will then already have detailed evidence related to the flooding when an investigation commences.

An example of our standard questionnaire for collecting information from property owners following a flood event is included in Annex 1. This sets out what information is useful to record to allow us to fully investigate a flooding incident.

Annex 2 sets out the standard structure of a WCC FRM Section 19 flood investigation report in Westminster. This outlines what we expect would be included in a typical report produced by the FRM team following the conclusion of an investigation into flooding at a particular location.

Annex 1 – Flood Investigation Questionnaire

Investigations under the Flood and Water Management Act (2010)

Westminster City Council's Flood Risk Management Team has been informed of flooding in your area, and as part of our duties under the Flood and Water Management Act (2010), we are carrying out further investigation into the events.

This questionnaire will inform our understanding of how flooding has affected residents and businesses in the area, and where possible, actions that can be taken by all parties to reduce the future chance and / or impact of flooding. We would appreciate if you would take some time to complete this questionnaire as fully as possible so that our decisions are informed by as much data as possible. If you have photographs, please provide copies and the team will endeavour to return these. If necessary, please use additional sheets.

Results may be shared as appropriate with other professional partners such as the Environment Agency or Thames Water so that the Council can work in partnership to address flooding issues. Information will not be published following the investigation at a level that will allow individual properties or persons to be identified.

Thank you for your time.

Date:

Name:

Property address and contact details:

Type of property: (residential / business / both / other - please state)

Number of years that you have lived in or worked at the property:

Do any elderly/ disabled / vulnerable residents live in the property? (please provide details)

Has your property been affected by flooding in the last 20 years?

Did the flood water enter your home?

What was affected and how often? (note dates of flooding)

Internal			External		
Rooms affected	Maximum depth of water	Frequency / dates	Areas affected	Maximum depth of water	Frequency / dates
Main living area			Back garden		
Kitchen			Front garden / driveway		
Porch / internal garage			Outbuilding / external garage		
Under floor only			Road		
Basement			Other		

What impact did the flooding have?

Internal		External	
No visible damage		Minimal effect	
Damage that is repairable		Significant damage	
Loss of carpets, fixtures and fittings		Infrastructure	
Property uninhabitable		Disruption to services	
Damage to stock		Loss of access in and out	
Loss of business			

What was the cost of damage and loss?

How often does flooding occur?

What do you think is the source of the flooding?

River	
Overland runoff	
Overflowing drains	
Overflowing sewers and / or septic tanks	
Groundwater	
Not sure	
Other (please specify)	

Are you aware of any other flooding in your area?

Were you at home when the flooding took place?

What action have you taken in response to flooding or the potential for flooding?

Monitored forecasts (specify)	
Contacted someone (who and what action was taken?)	
Sandbagging	
Other flood protection products (specify)	
Moved possessions	
Moved car	
Warned others	
Evacuated	
Other actions (specify)	

If you received a warning or information from someone else, who gave you this and how did you receive it?

What do you think would be helpful in future?

**Do you have any further comments?
(please continue on additional pages if required)**

Signed:

Date:

Please return to Flood Risk Management,- Highways Team –
highways@westminster.gov.uk or Highways Team, City Hall, 64 Victoria Street, London
SW1E 6QP. If you have any queries about completing this form, please phone 0207 641
6000

Annex 2 – Flood Investigation Report Structure

1 Introduction

1.1 Lead Local Flood Authority Duty to Investigate

1.2 Site Location

1.3 Flooding Incident and Emergency Response

1.4 Watercourses and Drainage Systems

2 Flooding History

2.1 Previous Flooding Events

3 Data Collection and Analysis

3.1 Data Collection

3.2 Professional Partner Investigations

3.3 Flooding Mechanisms

3.4 Flooding Impacts

4 Rights and Responsibilities

5 Conclusions and Recommendations

Appendix D - Relevant Legislation and Policy

Legislation

Civil Contingencies Act 2004

The Civil Contingencies Act details the framework for civil protection in the UK and sets out the actions required in a flood event. In order to provide protection in the event of a flood the Civil Contingencies Act is arranged in two sections: Part 1: local arrangements for civil protection; and Part 2: emergency powers.

THE COUNCIL has a number of responsibilities under Part 1:

- Undertaking risk assessments.
- Developing Emergency Plans.
- Developing Business Community Plans.
- Arranging to make information available to the public about civil protection matters and maintain arrangements to warn, inform and advise the public in the event of an emergency.
- Share information with other local responders to enable greater co-ordination.
- Co-operate with other local responders to enhance greater co-ordination and efficiency.
- Provide advice and assistance to businesses and voluntary organisations about business continuity management.

Flood Risk Regulations (2009)

The Flood Risk Regulations 2009 came in to force on 10th December 2009, and transposed the EU Floods Directive into UK law. The key provisions of the Regulations are the preparation of the following.

- Preliminary Flood Risk Assessments (PFRA) – this involves collecting information on past and future floods from surface water, groundwater and ordinary watercourses, and identifying where significant numbers of people are at risk (these are termed Indicative Flood Risk Areas).
- Flood Hazard and Flood Risk Maps – Where areas have been identified within the PFRA as being an indicative flood risk area hazard, and risk maps are required to be produced.
- Flood Risk Management Plans – The final stage is for the production of a Flood Risk Management Plan for the indicative Flood Risk Areas by 22nd December 2015.

The Flood Risk Regulations gave responsibility for the production of these to:

- The Environment Agency for Main Rivers and reservoirs; and
- Lead local flood authorities for all other forms of flooding (excluding sewer flooding which is not caused by rainfall).

Highways Act 1980

The Highways Act provides powers to THE COUNCIL as the Highway Authority for the creation, improvement and maintenance of roads and for acquisition of land. Under the Act THE COUNCIL, as the Highway Authority, are able to enter into Section 38 and Section 278 agreements with developers, allowing the adoption of new roads (Section 38) and the provision of off-site highway works in conjunction with a development (Section 278). The Act also provides legislation on navigable rivers and watercourses, with regards to construction bridges over and tunnels under water bodies and diverting watercourses. Section 100 of the Act gives Highways Authorities powers to undertake drainage works off the highway. Section 163 of the Act gives Highways Authorities powers of enforcement against water entering the highway from neighbouring land.

The Environmental Damage (Prevention and Remediation) (England) Regulations (2015)

This provides guidance for imminent threats of 'environmental damage' or actual 'environmental damage', related to surface water and groundwater. Guidance is provided to ensure appropriate mitigation measures such as easements when working near waters. In addition, it recommends remediation measures, should there be significant effects to cause a change in surface water and groundwater.

The Environmental Permitting (England and Wales) Regulations 2010

The Environmental Permitting (England and Wales) Regulations 2010 replaced the Water Resources Act 1991 as the key legislation for water pollution in the UK. Under the Environmental Permitting Regulations it is an offence to cause or knowingly permit a water discharge activity, including the discharge of polluting materials to freshwater, coastal waters, relevant territorial waters or groundwater, unless complying with an exemption or an environmental permit. An environmental permit is obtained from the EA. The EA sets conditions which may control volumes and concentrations of particular substances or impose broader controls on the nature of the effluent, taking into account any relevant water quality standards from EC Directives.

The Environmental Permitting Regulations (2016)

The intended effects of this legislation were to make schemes risk based so that the regulators are able to concentrate on high risk applications, and to make applications for flood consents easier and quicker for businesses whilst ensuring that neither flood risk management nor environmental protection is compromised. It amends the Environmental Permitting (England and Wales) Regulations 2010 to provide for the regulation of "flood risk activities" within the Environmental Permitting framework, replacing the "flood defence consent scheme".

The Groundwater (England and Wales) Regulations (2009)

These regulations transpose certain elements of the Water Framework Directive (WFD), as they relate to groundwater and Article 6 of the 2006 Groundwater Daughter Directive (2006/118/EC). The regulations are an environmental protection measure, which provides enhanced protection for groundwater by preventing the

input of 'hazardous' substances into groundwater and limiting the input of 'non-hazardous' pollutants into groundwater.

The Land Drainage Act 1991

The Land Drainage Act details the duties and powers to manage land drainage for a number of bodies and groups, including local authorities, the Environment Agency, Internal Drainage Boards and riparian owners. The Flood and Water Management Act updates a number of elements of this legislation. The key powers and duties provided to the council by the Land Drainage Act are as follows:

- A general duty to the environment when exercising powers.
- Powers to maintain, improve and build new drainage related works.
- Consenting and enforcement powers for ordinary watercourses.
- Powers to create byelaws.
- General Powers of entry onto land for water level management so that statutory authorities can exercise flood risk management for the common good.

The Localism Act (2011)

The Localism Act introduces a number of proposals to provide new freedoms and flexibilities for local government. With regards to flood risk management the Localism Act requires Lead Local Flood Authorities (LLFAs) to establish processes to enable overview and scrutiny committees to review and scrutinise risk management authorities in their area. Risk management authorities have a duty to comply with a request made by an overview and scrutiny committee for information or a response to a report in relation to its flood or coastal erosion risk management functions.

The Localism Act introduces the 'duty to cooperate', which requires all risk management authorities to work together. It is important these organisations work together across administrative boundaries when working in relation to flood and coastal erosion risk management.

The Strategic Environmental Assessment (SEA) Directive 2001

This legislation aims to increase the consideration of environmental issues during decision making related to strategic documents. It aims to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.

It sets out the requirement for preparation of an environmental report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated.

The Water Act (2014)

This legislation covers four main areas: making water supplies more resilient to natural hazards such as droughts and floods, creation of a national water supply

network to make it easier for water companies to buy and sell water from each other, ensuring access to affordable flood insurance from 2015, via a new industry backed levy, and increasing competition in the water industry, by allowing all businesses, charities and public sector customers in England to switch their water and sewage supplier. The aims of this Act are set out as far as 2050.

The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017)

This replaces the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (S.I. 2003/3242) which have been amended several times, including 2016. The Regulations outline the duties of regulators in relation to environmental permitting, abstraction and impoundment of water. Specifically, Regulation 3 enforces the duty on the Secretary of State, Welsh Ministers, the Environment Agency (the EA) and Natural Resources Wales (NRW) to act in compliance with the Water Framework Directive (WFD), Groundwater Directive (GWD) and Environmental Quality Standards Directive (EQSD) when deciding whether to grant, vary or cancel permits and licenses affecting water quality, and to coordinate their actions relating to these Directives.

Water Framework Directive 2000

Introduced in December 2000 and transposed into UK law in 2003, this piece of EC water legislation is designed to improve and integrate the way waterbodies are managed throughout Europe. European Member States must aim for inland and coastal waters to be at 'good' chemical and ecological status by 2015.

The Environment Agency is the coordinating authority for the Water Framework Directive in England. In order to address the requirements of the Directive, the Environment Agency has produced river basin management plans, which develop new ways of protecting and improving the water environment.

Policy

National Flood and Coastal Erosion Risk Management Strategy for England (NFCERMS) (2011)

A requirement of the Flood and Water Management Act 2010 was for the Environment Agency to produce a strategy for flood and coastal erosion risk management in England. The strategy was published in 2011 and is available from their website⁴.

The national strategy aims to ensure that flood risk is managed in a co-ordinated way within catchments and that this balances the needs of communities, the economy and the environment. The strategy encourages more effective risk management through enabling people, communities, business, infrastructure operators and the public sector to work together towards the following objectives.

⁴ <https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england>

- Understanding the risk of flooding and coastal erosion, and working together to develop long term plans to manage these risks and ensuring other plans take account of them.
- Avoiding inappropriate development in areas of flood and coastal erosion risk, and ensuring development does not increase these risks.
- Building, maintaining and improving flood and coastal erosion risk management infrastructure and systems to reduce the likelihood of harm to people and damage to the economy, environment and society.
- Increasing public awareness of the risk that remains and engaging with people at risk to make their property more resilient.
- Improving the detection, forecasting and issuing of flood warnings, planning for and co-ordinating a rapid response to flood emergencies, and promoting faster recovery from flooding.

Local flood risk management strategies must be consistent with the national strategy and must therefore be in accordance with the following six guiding principles of the national strategy.

- Community focus and partnership working.
- A catchment 'cell' approach.
- Sustainability.
- Proportionate, risk-based approach.
- Multiple benefits.
- Beneficiaries should be allowed and encouraged to invest in local risk management.

The London Plan 2016

The current London Plan was adopted in March 2016. It provides an overall strategic plan for the Mayor of London, 32 London boroughs and the City of London Corporation. The plan sets out an integrated economic, environmental, transport and social framework for any development in London over the next 20 – 25 years.

Policies 5.12 and 5.13 are related to improving water quality, flood mitigation and reducing flood risk through sustainable urban drainage systems.

Policy 5.12 (Flood Risk Management) states that:

- The Mayor will work with all relevant agencies, including the Environment Agency, to address current and future flood issues and minimise risks in a sustainable and cost effective way;
- Development proposals must comply with the flood risk assessment and management requirements set out in the NPPF and the associated technical guidance on flood risk over the lifetime of the development and have regard to measures proposed in Thames Estuary 2100 and Catchment Flood Management Plans;

- Developments which are required to pass the Exception Test set out in the NPPF and the Technical Guidance will need to address flood resilient design and emergency planning by demonstrating that:
 - The development will remain safe and operational under flood conditions;
 - A strategy of either safe evacuation and / or safely remaining in the building is followed under flood conditions;
 - Key services including electricity, water etc. will continue to be provided under flood conditions; and,
 - Buildings are designed for quick recovery following a flood.
- Development adjacent to flood defences will be required to protect the integrity of existing flood defences and wherever possible should aim to be set back from the banks of watercourses and those defences to allow their management, maintenance and upgrading to be undertaken in a sustainable and cost effective way; and,
- In line with the NPPF and PPG, boroughs should, when preparing Local Development Frameworks', utilise SFRA's to identify areas where particular flood risk issues exist and develop actions and policy approaches aimed at reducing these risks, particularly through redevelopment of sites at risk of flooding and identifying specific opportunities for flood risk management measures.

Policy 5.13 (Sustainable Drainage) states that:

- Development should utilise SuDS unless there are practical reasons for not doing so, and should aim to achieve greenfield runoff rates and ensure that surface water runoff is managed as close to the source as possible in line with the following drainage hierarchy:
 - Store rainwater for later use;
 - Use infiltration techniques, such as porous surfaces in non-clay areas;
 - Attenuate rainwater in ponds or open water features for gradual release;
 - Attenuate rainwater by storing in tanks or sealed water features for gradual release;
 - Discharge rainwater direct to a watercourse;
 - Discharge rainwater to a surface water sewer/ drain; or,
 - Discharge rainwater to a combined sewer.
- Drainage should be designed and implemented in ways that deliver other policy objectives of this Plan, including water use efficiency and quality, biodiversity, amenity and recreation; and,
- Within LDFs boroughs should, in line with the Flood and Water Management Act, utilise Surface Water Management Plans to identify areas where there are particular surface water management issues and develop actions and policy approaches aimed at reducing these risks.

The London Plan promotes the use of green roofs which in turn will provide multiple benefits to London amenity, biodiversity and water quality.

Sustainable design and construction supplementary planning guidance, London Plan 2011 (April 2014)

This document explains that, for greenfield sites, the expectation is for developments to restrict run-off to the greenfield rate. There is also an aspiration that for all development sites, especially those in areas with a history of sewer flooding, to limit the peak rate of surface water runoff to the greenfield rate, as far as is practicable. However it is accepted that higher discharge rates might be needed and the guidance states that at least 50% attenuation is the minimum expectation from development proposals. An appropriate minimum discharge rate is identified as 5 litres per second per outfall.

Thames Estuary 2100 2012

The Thames Estuary 2100 project (TE2100) sets out the long term strategy to manage the risk of flooding attributable to the River Thames for central London. The TE2100 approach will make use of adaptive strategies to ensure Central London has a commensurate level of flood protection up until 2100, and will pro-actively manage the impacts of Climate Change. Therefore it is considered that the impacts of climate change will be mitigated as part of the TE2100 strategy.

Thames River Basin Management Plan (RBMP) 2015

These plans have been prepared under the Water Framework Directive, which requires all countries throughout the European Union to manage the water environment to consistent standards. River Basin Management Plans assess the pressures facing the basin and set out potential actions to address them. The Plans are produced in a continuous process of planning and delivery. The Water Framework Directive introduces a formal series of six year cycles for River Basin Management Plans. The first cycle ended in 2015 and the current RBMP is for the second cycle.

Westminster is located in the Thames River Basin District and its' RBMP identifies the key issues for management of the water environment.

Catchment Flood Management Plans (CFMP)

CFMPs provide an overview of flood risk across a river catchment; they consider all types of flooding and consider the impacts of climate change. Key policies and actions at the catchment scale are provided in order to assist in the management of flood risk. CFMPs have been produced by the Environment Agency and are to be used as a tool that informs the management of flood risk on a river catchment basis.

The strategic policy for flood risk management in Westminster is outlined in the Thames CFMP (2009). The CFMP aims to identify flood risk management policies for the catchments and sets out the preferred plan for sustainable flood risk management over the next 50 to 100 years.

Westminster sits within the Lower Thames sub-area for which the strategic policy of the CFMP is Policy option 5: Areas of moderate to high flood risk where we can generally take further action to reduce flood risk. We recognise the challenge of this policy and that we will not be able to reduce the risks everywhere.

London Sustainable Drainage Action Plan 2016

The London Sustainable Drainage Action Plan was published by the Greater London Authority in December 2016. The main focus of the action plan is on the 'retrofitting of sustainable drainage to existing buildings, land infrastructure', subsequently managing rainwater as a valuable resource as opposed to a waste product. The action plan includes 40 actions to be undertaken within the next 5 years. Actions include:

- Providing strategic guidance on sustainable drainage requirements for major development locations;
- Providing guidance and good examples of sustainable drainage applicable to all sectors (education, housing, retail etc.); and,
- Identifying opportunities and funding for sustainable drainage retrofit at the same time as planned maintenance, repair and improvement works in all sectors (education, housing, retail etc.).

City of Westminster Preliminary Flood Risk Assessment 2011

The City of Westminster Preliminary Flood Risk Assessment (PFRA) was produced to satisfy the requirements of the Flood Risk Regulations 2009 and the EU Floods Directive. The document is prepared at a strategic level identifying, collating and assessing information on flood risk, and identifying areas where additional investigation may be necessary. The PFRA is currently being reviewed and the outcome of this review is expected in 2018.

Westminster City Plan 2017

This is the overall planning policy document for Westminster and is currently under revision and will be published by October 2017. More information can be found on the council's website for City Plan.

City of Westminster Strategic Flood Risk Assessment 2010

The City of Westminster Strategic Flood Risk Assessment (SFRA) was produced in 2010 to provide an evidence base for informing strategic policies for flooding in Westminster's City Plan. It gives an overview of the various sources of flood risk in Westminster. An updated version of the SFRA is currently being developed to support the recent update to the Westminster City Plan and incorporate recent improvements in the understanding of flood risk in Westminster. In particular this will include updates to our understanding of flood risk from the River Thames and from extreme rainfall. The proposed SFRA will be under consultation in late summer 2017.



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