

**City of London Corporation**  
**Draft Local Flood Risk Management**  
**Strategy**

**2014 - 2020**

**March 2014**



This document is available for public consultation from XXX to XXX

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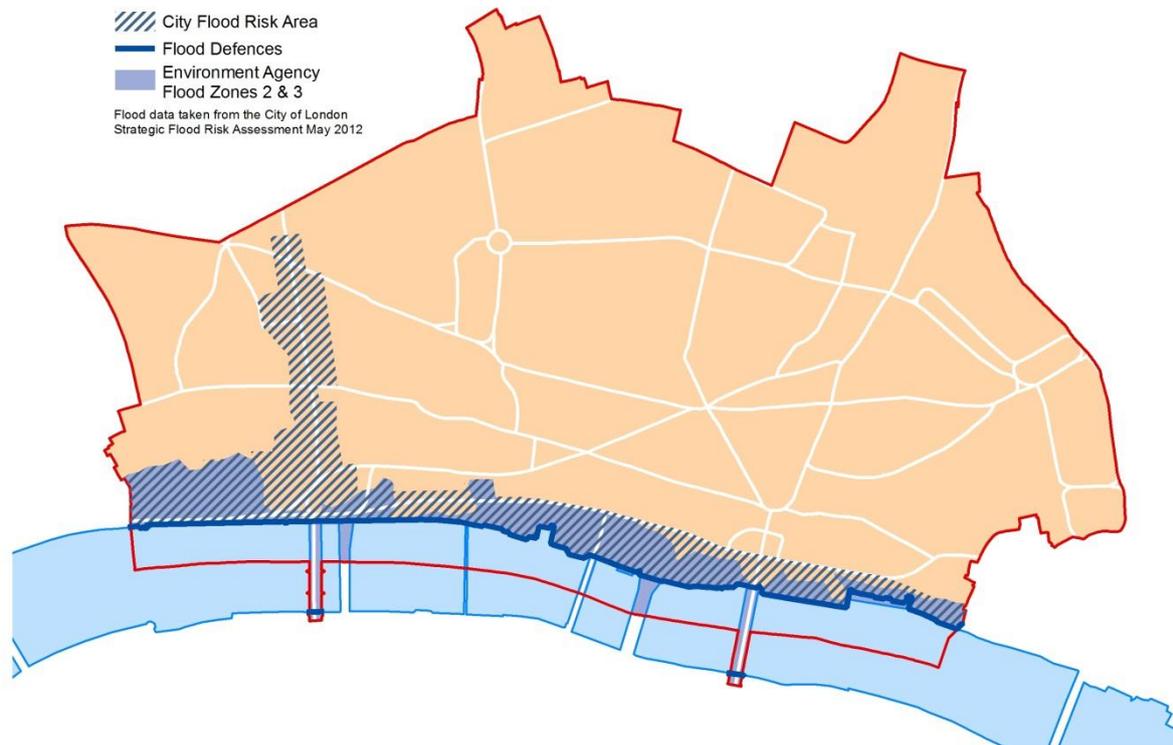
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# 1 Introduction

The City is at relatively low risk of flooding with specific areas at some risk from river flooding and surface water/sewer flooding (Fig 1). However the consequences of flooding in these restricted parts of the City could be very high in terms of disruption to business, inconvenience to occupiers and reputational damage.



**Figure 1: Flood Risk in the City of London**

The City's flood risks must be considered strategically since flood risks are associated with river catchments which extend well beyond the City's boundaries. Changing weather patterns as a result of climate change will also influence the City's future probability of flooding with more intense rainfall events creating conditions where flash flooding and overloading of the sewer network could become more frequent. Sea level rise will increase the risk of flooding from the tidal Thames in future decades. As a consequence past experience of flooding is not necessarily an accurate predictor of future flood risk.

The City is protected from River flooding by the Thames Barrier and by local flood defences along the riverside. The Thames Estuary 2011 Plan (TE2100 plan) identifies the wider actions which are needed to protect London from future flooding, some of which will need to be implemented within the City. Surface water/sewer flooding is a risk along Farringdon Street and the Thames riverside as a result of rainwater catchments as far afield as Hammersmith to the west and Hampstead to the north of the City. It is impossible to completely eliminate the possibility of flooding therefore an important element of flood preparedness is the

implementation of measures to provide resistance, preventing flood waters entering properties and flood resilience enabling rapid recovery in the event of flooding. Emergency planning provides the assurance that in the event of flooding procedures are in place to respond effectively.

This strategy identifies the approach the City Corporation is taking to the flood risks that affect the City, the actions that are underway or planned to reduce these risks and the processes by which this strategy will be kept up to date.

The Flood and Water Management Act 2010 assigns various responsibilities to Lead Local Flood Authorities including the requirement to develop, maintain apply and monitor a strategy for local flood risk management in its area. The City Corporation, as unitary authority for the Square Mile is the Lead Local Flood Authority for the City.

This strategy covers flood risk affecting the City's geographic area; it does not include flood risks on City owned or managed land beyond the City's boundaries.

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## 2 Flood Risk Management Strategy requirements

The Flood and Water Management Act 2010 specifies the Lead Local Flood Authority's duties with regard to Local Flood Risk Management Strategies and outlines the elements that must be included in a Flood Risk Management Strategy. Table 1 shows these requirements and where each one is covered in the City of London Local Flood Risk Management Strategy.

**Table 1: Flood and Water Management Act 2010 section 9 (4) Strategy Requirements**

The Flood and Water Management Act 2010 section 9 (4) requires that the strategy must specify:	Where it is covered in this strategy
(a) the risk management authorities in the authority's area,	Appendix 2
(b) the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area,	Appendix 2
(c) the objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009),	Chapter 4
(d) the measures proposed to achieve those objectives,	Chapter 4 and Chapter 5
(e) how and when the measures are expected to be implemented,	Chapter 5
(f) the costs and benefits of those measures, and how they are to be paid for,	Chapter 5
(g) the assessment of local flood risk for the purpose of the strategy,	Chapter 3
(h) how and when the strategy is to be reviewed, and	Chapter 6
(i) how the strategy contributes to the achievement of wider environmental objectives.	Chapter 7

### 3 Assessment of local flood risks

Signpost to the Flood and Water Management Act 2010 Section 9 (4) requirements

This section deals with

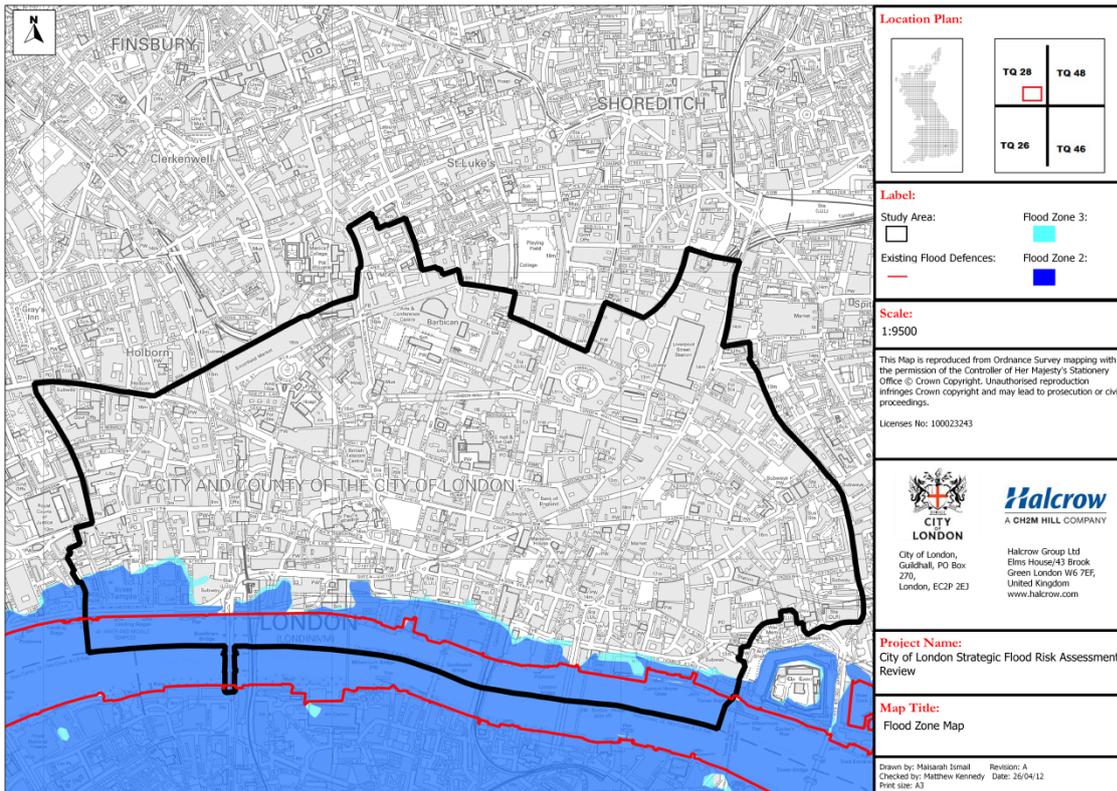
(4)(g) the assessment of local flood risk for the purpose of the strategy

#### 3.1 Flood risk modelling

Historically the City has not experienced significant flooding since 1928 when an area around Blackfriars was subject to flooding. The exact cause of this flooding is not known but it is likely to have been as a result of localised breach or overtopping of the flood defence wall or overloading of the sewer system following inundation elsewhere in London. Due to the City's economic importance large scale flood defences have provided protection in the intervening years. However climate change is affecting weather patterns resulting in greater risk of flooding, and the paving over of areas which previously absorbed rainwater run-off has resulted in altered flood risk compared with previous decades. In order to predict the future risk of flooding computer modelling has been carried out by the Environment Agency with respect to river and tidal flooding and by Halcrow on behalf of the City Corporation for ground water, surface water and sewer flooding. The City of London Strategic Flood Risk Assessment provides details of this modelling and is the primary source of evidence of the future City flooding risks. It should be noted that modelling provides the best prediction of how flooding may affect the City but monitoring and investigation will improve the accuracy of this data.

#### 3.2 River and tidal flood risk

The City of London 2012 Strategic Flood Risk Assessment (SFRA) shows that limited areas of the City are at risk from river flooding in the absence of any flood defences. This shows the situation should the river defences be overtopped or breached. The risk is confined to the riverside south of Thames Street and the Temples area (Fig 2). In reality the City is protected from river flooding by local flood defences along the riverside and by the Thames Barrier which protects the wider tidal Thames from flooding. Future flood risk from the Thames has been analysed through the Thames Estuary 2100 project which proposes various actions to reduce future risk, taking account of the impacts of climate change including sea level rise. Estuary wide actions promote the approach of making space for flood waters in flood plains along the estuary as opposed to flood defence raising. However in central London the opportunities for absorbing tidal flood waters into the landscape are limited therefore local actions in the City include the need to raise the flood defence walls by up to 1 metre by 2065.



**Figure 2 Areas at risk of river flooding**

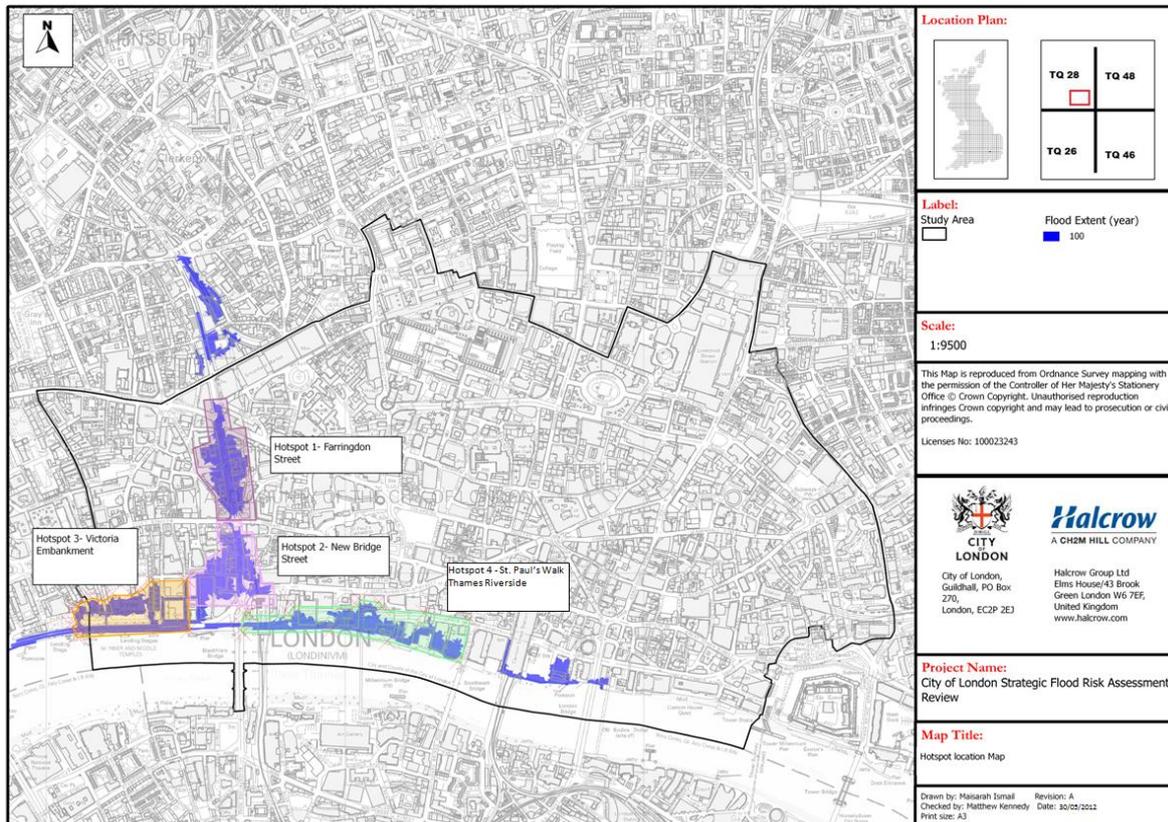
### 3.3 Surface water and sewer flood risk

The risk of flooding from surface water and sewer overflow is also confined to restricted areas of the City including the former Fleet Valley at Farringdon Street and the Thames Riverside (fig 3). This flooding is caused by overloading of the combined drainage and sewer network resulting in overflows from manholes in these areas. The use of Sustainable Drainage Systems in buildings and landscaping assists in reducing the rate at which surface water enters the sewer network thus reducing surface water flood risk.

#### Example of local actions to reduce surface water flood risk

The City's Open Spaces Department supports this corporate strategy by making sure paving in the City's gardens drains to natural ground, for example by using soak ways, rather than to the piped City drainage system. Trees and other planting, the use of green roofs and green walls are also assisting in flood risk reduction, where appropriate.

Given the density of the buildings and development in the City, building rainwater harvesting is encouraged through the planning process. An example is the proposed harvesting of rainwater as part of the redevelopment of 10 Trinity Square to irrigate Seething Lane Garden

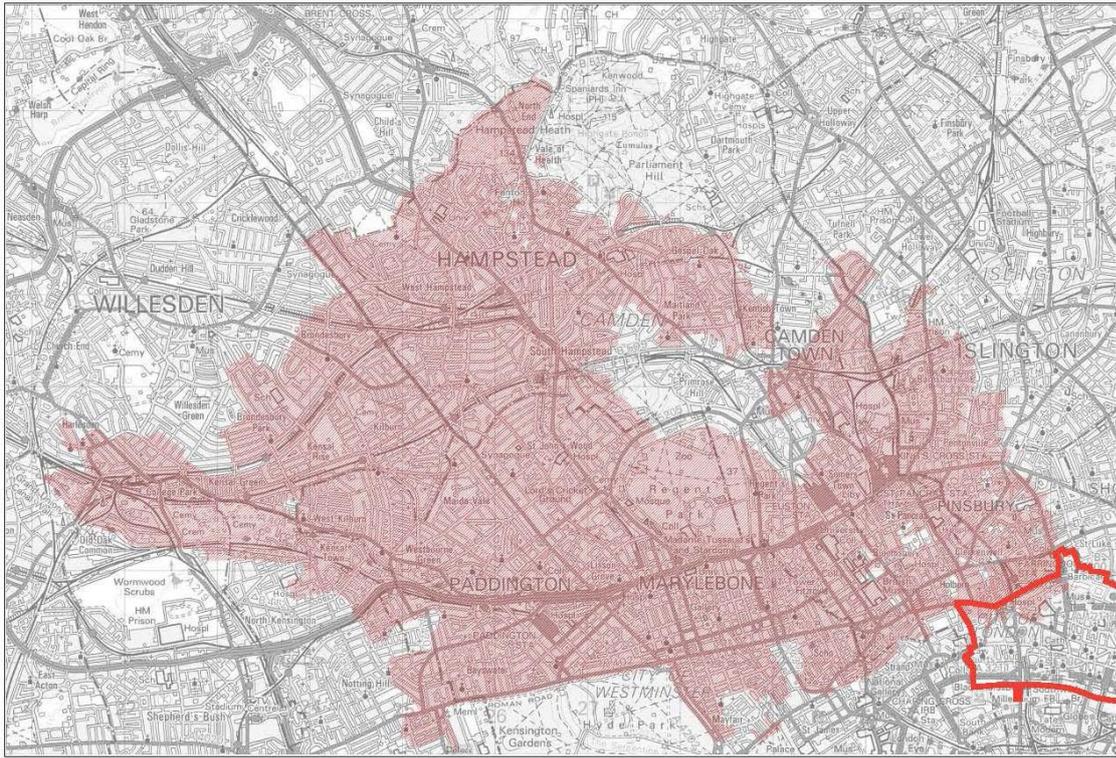


**Figure 3 Surface water and sewer flooding zones**

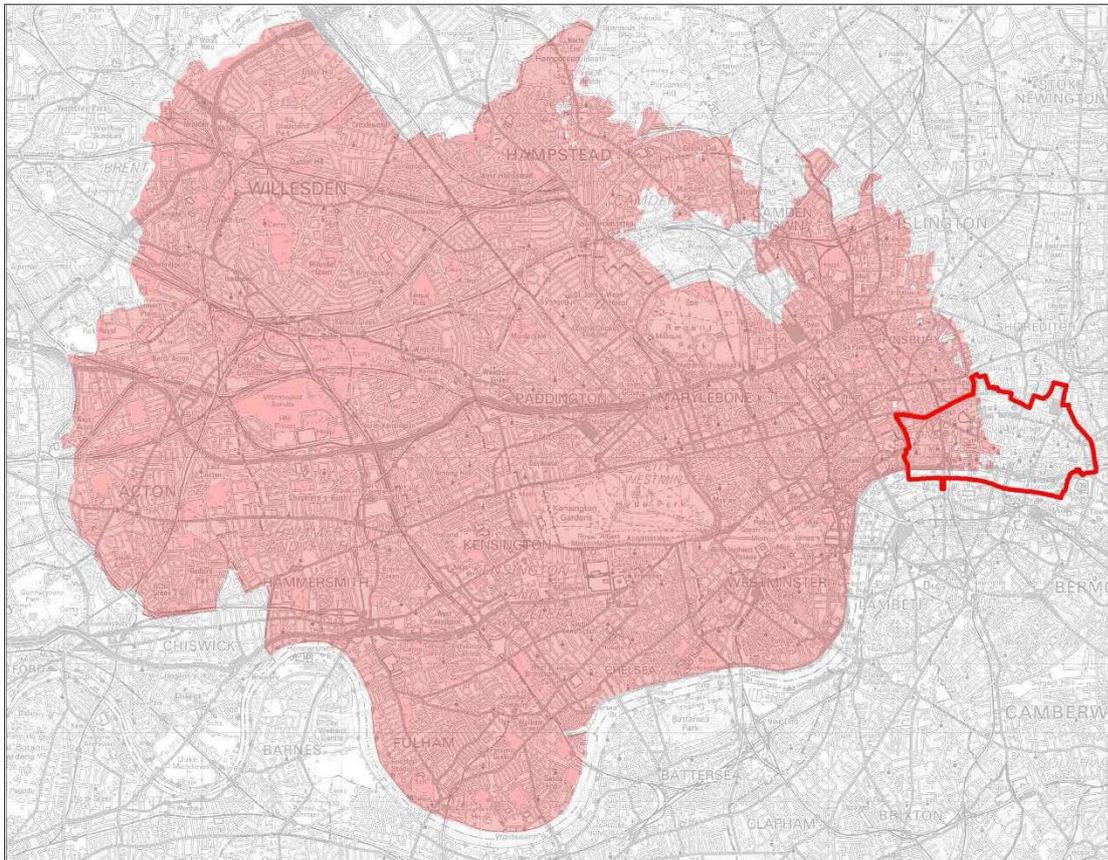
The sewers that serve this area have wide catchments extending throughout Camden to the north (Fig 4) and as far as Hammersmith and Fulham to the west (Fig 5); therefore local action within the City of London to reduce the risk is unlikely to be effective. The actions to alleviate flood risk in these areas extend across a wide area and include installation of Sustainable Drainage Systems (SuDS) across the drainage catchment and maintenance and improvement of the Thames Estuary wide flood defences. Measures to alleviate flood risk will also have other benefits for water resource management through rainwater harvesting and reuse; and for water quality through reducing the level of rainwater entering the drainage network thus reducing the potential for sewer discharges.

Example of a wider action which reduces flood risk in the City.

The surface water catchment areas for the City's flood risk hotspots extend to the edge of Hampstead Heath (Figs 4 & 5). The City Corporation is planning works to ensure that the pond dams on Hampstead Heath do not fail or cause flooding in the local area. Any such protection from flood risk in the Hampstead Heath area provides consequential benefits in reducing the risk of sewer overflows elsewhere in this catchment area, including the flood risk hotspots in the City.



**Figure 4: Map showing the catchment area for flood risk in Farringdon Street**



**Figure 5: Map showing the catchment area for flood risk in the Paul's Walk area**

### 3.4 Ground water flood risk

The City is protected from ground water flooding by the GARDIT programme which maintains groundwater levels in the deep chalk aquifer at between -30 and -50 m AOD. The City may also be vulnerable to groundwater flooding from the shallow aquifer which comprises sand and gravel with high porosity and permeability. The areas of the City which are most at risk from groundwater flooding from this shallow aquifer are shown in Fig 6: Areas with increased potential for elevated groundwater. Complex interactions between rainfall infiltration, basement barriers and the predominance of impermeable surfaces in the City, makes this type of flood risk difficult to predict, however flooding from this source is not thought to be likely in the short to medium term. Longer term impacts of climate change on ground water flood risk are less certain.

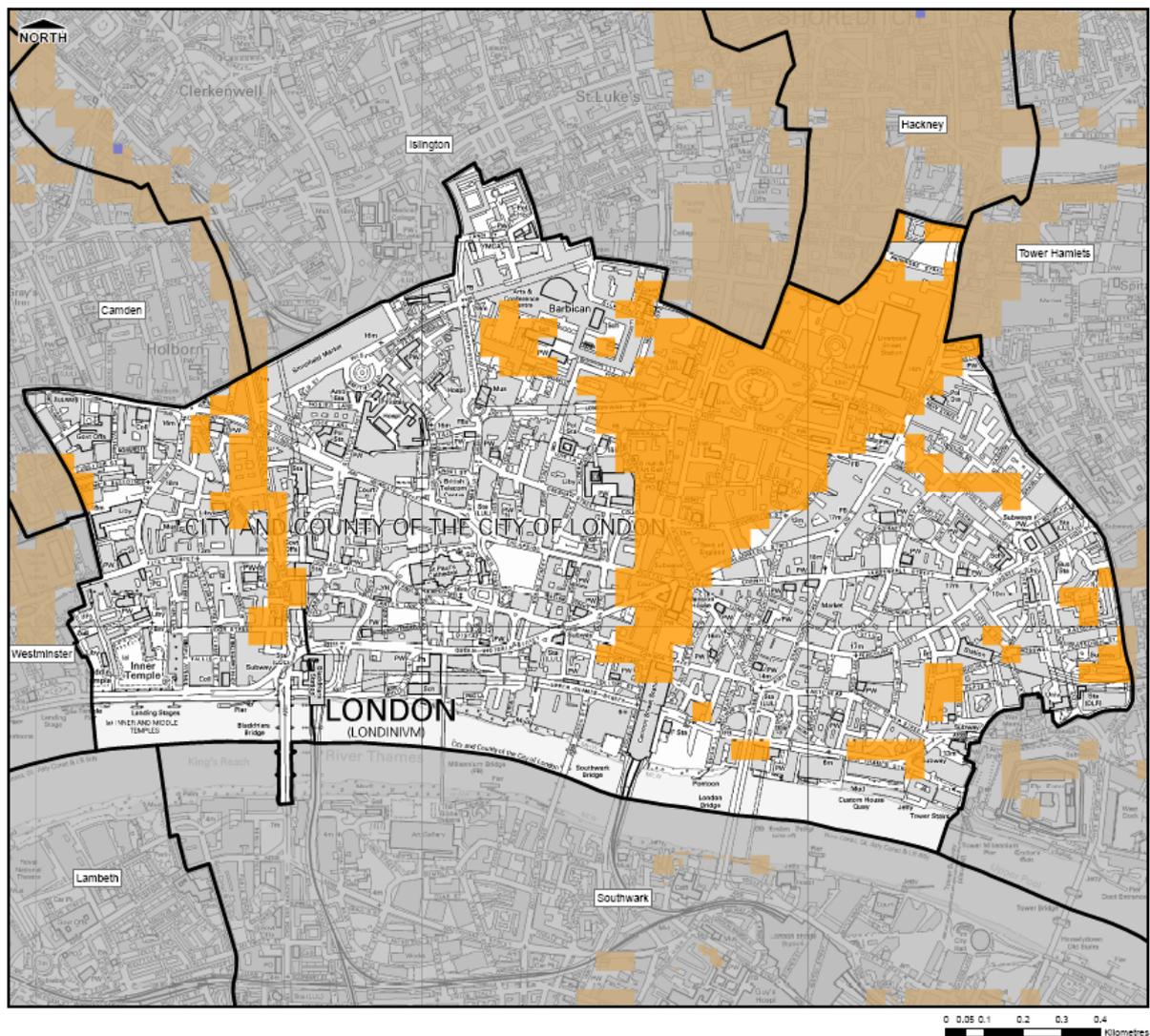


Figure 6: Areas with increased potential for elevated groundwater

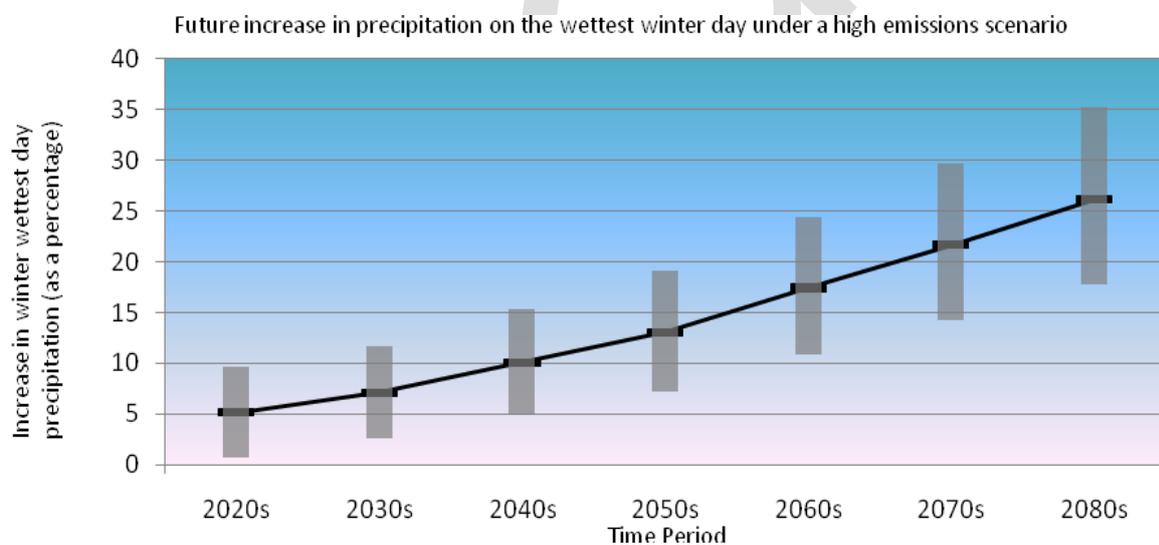
### 3.5 Climate change and flood risk

Our climate is changing and is likely to continue to change for many decades to come. The City of London Climate Change Adaptation Strategy (2010) identifies the expected changes that London will face, which include an increasing magnitude and frequency of intense rainfall events.

Flooding is a natural process and the speed of inundation and duration varies greatly. With climate change, however, the frequency, velocity, depth, patterns and severity of flooding are forecast to increase causing flash flooding, and heavier average winter precipitation that will put us at greater risk of flooding.

The City of London Climate Change Adaptation Strategy (2010) is based on the UK Climate Projections 2009 (UKCP09). These scenarios are generated with probabilistic data. No climate model can give a single definite answer to what the future will look like, however, under the high emissions scenario (which given the failure of COP 19 to deliver any meaningful agreement look the most likely) peak rainfall is likely to increase significantly.

In the figure below, the black line shows the central estimate (50<sup>th</sup> percentile) of the increase in precipitation on the wettest winter day for the high emissions scenario. The wide grey bars show the likely range of change (33<sup>rd</sup> to 66<sup>th</sup> percentiles). The error bars show the 10<sup>th</sup> and 90<sup>th</sup> percentile events (future increase in precipitation on the wettest winter day is very unlikely to be outside this range).



**Figure 7: Future rainfall as a result of climate change**

It is clear that unless action is taken, flood risks in the City of London will increase. Climate change is increasing the magnitude and frequency of intense rainfall events that cause flash flooding. According to the London Local Climate Impacts Profile (LCLIP) published by the Greater London Authority (GLA) heavy rain and flash flooding were the most frequently occurring weather incidents reported in the media, with cases of river flooding also being reported. Existing problems have also been identified within the City. For example, the existing drainage system at the

Guildhall Art Gallery cannot cope with intense rainfall at times, and this has led to some flooding of its basement, damage and associated cost.

### **3.6 Strategic Flood Risk Assessment**

The City of London Strategic Flood Risk Assessment (SFRA) (2012) provides the results of the latest flood risk modeling and mapping for the City. Neighbouring boroughs' SFRAs and Local Flood Risk Management Strategies provide further evidence of the risks elsewhere in London which may affect the City.

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## 4 Objectives for Managing Flood Risk in the City

Signpost to the Flood and Water Management Act 2010 Section 9 (4) requirements

This section deals with

(c) the objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009),

The following objectives for managing local flood risk aim to reduce the risk and impact of flooding on the City:

- To provide up to date information regarding the level of flood risk within the City taking account of emerging climate change impacts
- To reduce the vulnerability and cost to City businesses, residents and visitors of flood risk
- To respond effectively in the event of flooding providing emergency assistance to those in need
- To assist in recovery enabling the City residents and businesses to resume normal activities promptly
- To engage with other flood risk management authorities taking action to reduce flood risk through partnership working within and beyond the City's boundaries

#### **4.1 Objective 1: Flood Risk Information**

To provide up to date information regarding the level of flood risk within the City taking account of emerging climate change impacts

##### **City of London SFRA 2012**

In 2007 the City Corporation published its first Strategic Flood Risk Assessment which was updated in 2012. The City of London Strategic Flood Risk Assessment (SFRA) 2012 provides information on the flood risks the City faces from fluvial and tidal, surface water, sewer overflows and groundwater. The SFRA 2012 brings together evidence from the City of London SFRA 2007, Drain London Surface Water Management Plan and Preliminary Flood Risk Assessment. New modelling has been undertaken, taking account of the drainage and sewer network thereby providing an up to date assessment of the potential risks from surface water and sewer overflows.

##### **Flood Maps for Surface Water (FMfSW)**

The Environment Agency (EA) has a duty to publish flood risk and flood hazard mapping for the whole of London which has been identified as a Flood Risk Area under the Flood Risk Regulations 2009. The City Corporation has commissioned more detailed modelling than the EA for the City and this data has been supplied for incorporation into the Flood Map for Surface Water (FMfSW) thus providing the most up to date information on flood risk for the City. The City Corporation will engage with the EA to ensure that future reviews of the FMfSW continue to include the most up to date mapping and modelling, including any future predicted impacts of climate change.

##### **What we will do:**

- We will review the City of London SFRA at least every 5 years or more frequently if evidence suggests that this is necessary. This frequency of review will enable the impacts of climate change to be taken into account as evidence emerges.
- We will keep under review the SFRA's and flood risk modelling that is carried out for neighbouring boroughs through the Central London North Flood Risk Partnership
- Where feasible, we will provide the most up to date mapping and modelling to the EA for incorporation in future reviews of the FMfSW

## 4.2 Objective 2: Reduced vulnerability and cost of flooding

To reduce the vulnerability and cost to City businesses, residents and visitors of flood risk

### 4.2.1 Planning

New development provides an opportunity to review existing flood risk potential for each site and ensure that future use of the site reduces the vulnerability of occupants to flooding and provides flood protection for a wider area where possible. The NPPF technical guidance identifies which land uses are suitable for sites that are at risk of flooding. The City Corporation applies this guidance in order to avoid locating vulnerable uses, such as basement dwellings or essential infrastructure, in areas that are at risk of flooding.

The City Corporation encourages the use of green roofs and green walls as they reduce or delay the amount of water discharged into the drainage system (along with rainwater attenuation tanks and other methods). We encourage developers of new developments to install green roofs and green walls and to retrofit them in refurbishments. Case studies of properties with green roofs within the City are available on the City of London website to promote their use (see references).

The City of London Climate Change Adaptation Strategy, which is available to the public on the City of London website, identifies the priority risks associated with climate change and proposes adaptation measures. These are designed to ensure the City's infrastructure and services cope under a changing climate. The report identifies specific risks and opportunities associated with managing flood risk. The Thames Estuary 2100 plan recommends that flood defence raising will be required to take account of sea level rise by 2065. Development that is being planned now may still be in place beyond 2065 and should be designed to factor in these higher flood defences which otherwise could obscure views of the river.

#### What we will do:

- Apply the National Planning Policy Framework (NPPF) and technical guidance on flood risk, developing and implementing flood risk policy in the Local Plan which accords with the Sequential and Exceptions Tests.
- Implement planning policy to avoid the development of vulnerable uses in flood risk areas
- Require the use of green roofs and green walls and other urban drainage techniques.
- Highlight the need for future raising of flood defences along the riverside to developers of property in this area
- Use pre-application meetings to promote flood resistance and resilience measures to property owners considering refurbishment or redevelopment in the City Flood Risk Area.

#### **4.2.2 Flood resistance and resilience**

The City Corporation has established a corporate-wide officer Flood Risk Steering Group, enabling joint and integrated working across Departments. This integrated approach ensures that new developments within the City are flood resistant and resilient, and that existing properties including heritage assets improve their resilience to flooding without damage to their design or heritage value.

Flood resistance is the process of preventing flood waters from entering buildings and spaces. The City's buildings and spaces differ from those in other parts of London because of the predominance of office buildings

Flood resilience is the process of designing buildings and spaces so that if flooding occurs it creates minimal damage and enables rapid recovery.

The City Corporation have used Drain London funding to create a fixed term research post of Flood Resistance and Resilience Officer to work with City businesses, residents and different departments within the City of London Corporation to reduce the vulnerability and raise awareness of surface water flooding in the City. There are several stages to this flood resistance and resilience programme which will take place over the coming year:

- the development of evidence-based responses to reduce risk;
- the identification and co-operation of key stakeholders;
- the development of a planning advice note on flood resistance and resilience to be factored into future planning permissions;
- the creation of case studies and development of recovery/resilience advice; and
- the identification of secondary benefits for biodiversity and urban greening of flood resistance and resilience measures
- the development of online resources available on the City of London website and a conference/seminar for flood risk authorities, building owners and occupiers to attend.

All of these stages will improve the overall understanding of flooding in the City and assist in recovery enabling the normal activities to be resumed promptly.

#### **What we will do**

- Promote flood resistance and resilience measures to property owners in the City Flood Risk Area
- Work to ensure all City Corporation infrastructure is resistant and resilient to flood risk, such as the Waste Transfer Station at Walbrook Wharf

### 4.2.3 Flood Insurance

Property insurance claims for flood damage across the UK have increased significantly over recent years and are set to increase further due to the impacts of climate change. Since 2000 flood insurers have been providing cover under a "Statement of Principles" agreement with the government which ensures that flood insurance is available to householders and small and medium sized enterprises (SMEs). Large commercial properties are not covered by the Statement of Principles and therefore need to arrange for flood risk insurance at market rates. The Statement of Principles expired in June 2013.

The Government's preferred option for ensuring that flood insurance is available to householders in the future is the proposed "Flood RE" scheme. Flood RE would provide a reinsurance fund, through a levy on the insurance industry, to provide insurance cover for residential properties which would otherwise be uneconomic to insure due to flood risk. Flood RE would provide fixed price flood insurance to be reviewed annually. Parliamentary approval through the Water Bill will put in place the legislation for this scheme to be implemented. Final implementation is likely to be in summer 2015. In the meantime the insurance industry has voluntarily agreed to continue providing cover under the Statement of Principles. The Flood RE scheme is intended to be a transitional scheme which would gradually evolve over the next 25 years at which time a free market for all flood risk insurance would take over.

There are very few residential properties in the City which are at risk of flooding; consequently the Flood RE scheme will have little impact in the City. Commercial premises will not be covered by Flood RE therefore if flood risk increases as a result of climate change, commercial properties within the City flood risk area may be affected by market pressures for insurance cover. This could particularly affect SMEs.

The City Corporation regularly reviews its approach to issues which present a potential risk to the City. Flood risk is one of the issues on the City Corporation's Strategic Risk Register and is reviewed in the light of emerging information such as climate change projections. Monitoring of the implementation of this LFRMS will inform the periodic reviews of risk.

#### What we will do

- Continue to monitor the progress of the Flood RE proposals and assess their impact on the City
- Continue to assess flood risk for the City Corporation's strategic risk register in the light of emerging information.

### 4.2.4 SuDS approvals

The City of London Corporation as the Lead Local Flood Authority for the City of London has a duty to develop a Sustainable Drainage Approval Body (SAB) to approve all non-exempt building proposals. This approval will be required before construction can commence and will run in parallel with planning approval for any application placed before it. The approvals should be in accordance with The National Standards for Sustainable Drainage.

The SAB was scheduled to be operational from 1 April 2014 but has now been delayed as the Government is refining the proposed procedures and related National Standards.

#### **What we will do**

- Continue to develop the necessary SAB processes within the City Corporation to fulfil this obligation within the timeframe laid down by Government

#### **4.2.5 Asset register**

The Corporation has an obligation under the Flood and Water Management Act 2010 to maintain a register of all drainage assets. Given the nature and size of the City there are limited features that could be classified as drainage assets. Those identified are the highway gullies and the river defences including those buildings that act as a defence against river flooding.

#### **What we will do**

- The City Corporation has implemented a dynamic Highway Management System (HyMS). This will include information on assets which have an impact on the LFRMS. Public access to this register will be made available through the City of London web site.
- Update the condition and state of repair of the flood risk assets on HyMS incorporating Environment Agency data on river flood defence walls annually.

#### **4.2.6 Flood investigation**

The City Corporation has an obligation under the Flood and Water Management Act to carry out investigation of reported flooding incidents. Flooding incidents are generally reported through the Contact Centre who will pass the report to the Drainage Section of the Highways & Cleansing Division. An officer will then investigate the incident and record the information. Where there are multiple properties affected by flooding from a single source the officer will record the information and produce a report.

#### **What we will do**

- Continue to maintain the register of flooding incidents
- Produce reports for instances of multiple property flooding from a single source

#### **4.2.7 Warning and Informing**

The City Corporation's Security and Contingency Planning team is able to assist City businesses with the development and exercising of their business continuity and emergency plans. Further information about accessing this support can be found on the City Corporation's website:

<http://www.cityoflondon.gov.uk/business/support-promotion-and-advice/business-continuity-advisory-centre/Pages/default.aspx>

The City Corporation is a Category 1 responder under the Civil Contingencies Act and is responsible for warning and informing the public. Public information provision will be undertaken in accordance with the Emergency Preparedness<sup>1</sup> and “Expectations and Indicators of Good Practice Set for Category 1 and 2 Responders<sup>2</sup>”.

Live flood warning is available through the Environment Agency for river and groundwater flooding and research is currently progressing to enable rapid forecasting of urban flooding from manholes and other sewerage nodes. In the event of an emergency, the City Corporation will work together with other agencies including the emergency services and neighbouring Local Authorities to respond as set out within the Multi Agency Flood Plan and the City's Emergency Management Plan.

Consideration of the needs of all the City's communities has been taken into account in preparation of the Multi Agency Flood Plan and the City's Emergency Management Plan. The City will adopt an inclusive approach to warning and informing paying particular attention to those who may be more vulnerable during flooding events.

#### **What we will do**

- Continue to support the City's businesses and residents by warning and informing them of flood risks and supporting business continuity and emergency plans
- Encourage businesses and communities that are at risk of flooding to use the Environment Agency's flood warning service for river and groundwater flooding and any future flood warning system for surface water / sewer flooding.

#### **4.2.8 Site Specific Flood Risk Management Plans**

The Flood Risk Regulations 2009 (regulation 26) requires that LLFAS prepare a flood risk management plan in relation to each relevant flood risk area. Virtually the whole of London has been identified as a flood risk area under these regulations and this will be addressed strategically by the Environment Agency. The areas at specific risk in the City are Farringdon Street, Paul's Walk and Victoria Embankment. The City Corporation will prepare specific flood risk management plans for these areas which will feed into the Environment Agency's strategic Flood Risk Management Plan for London.

#### **What we will do**

- Prepare and implement site specific flood risk management plans for Farringdon Street, Paul's Walk and Victoria Embankment

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<sup>1</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/61030/Chapter-7-Communicating-with-the-Public\\_18042012.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61030/Chapter-7-Communicating-with-the-Public_18042012.pdf)

<sup>2</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/252341/Expectation\\_and\\_Indicators\\_of\\_Good\\_Practice\\_Set\\_for\\_category\\_1\\_2\\_Responders.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/252341/Expectation_and_Indicators_of_Good_Practice_Set_for_category_1_2_Responders.pdf)

### 4.3 Objective 3: Emergency response to flooding

To respond effectively in the event of flooding providing emergency assistance to those in need

The City Corporation has Emergency Response plans in place. These plans include the Multi Agency Flood Plan, the Emergency Management Manual and Rest Centre Plans for those evacuated from their homes.

- The **Multi Agency Flood Plan** covers the requirement for a multi-agency response to a flood incident in the City of London.
- The **Emergency Management Manual** is a plan used by the City Corporation to respond to major incidents within the City.
- The City Corporation also has a **Rest Centre Plan** which details how the Local Authority could care for those evacuated from their homes due to an incident. The City Corporation has plans for Rest Centres in more than one location within the City.

Local Authorities can be contacted 24/7 to initiate a response capability.

The contact number for the City Corporation is (daytime hours) are 020 7332 3417/1969/3584 and 3914.

Out of hours the City Corporation can be reached on 020 7606 3030.

#### What we will do:

- Ensure that emergency arrangements and plans are in place to respond to major incidents

#### 4.4 Objective 4: Recovery from flooding

To assist in recovery enabling the City residents and businesses to resume normal activities promptly

The City Corporation intends to reduce the impact of flooding in the City and to create a model of best practice for dealing with flood risks for owners of commercial property and critical infrastructure.

The City Corporation has local plans and London has regional plans in place to assist businesses and residents with the return to normality.

During the latter stages of a major flooding incident (the recovery period and return to normality) the City Corporation may be able to provide services and staff to assist with the following resources drawn from day to day operations such as;

- Technical and Engineering Advice
- Building control
- Highways services
- Public health and environmental issues
- Provision of reception centres
- Re-housing and accommodation needs
- Transport
- Psychosocial support
- Help lines
- Welfare and financial needs

Depending on the severity of the flooding, the City Corporation may decide to establish a Community Assistance Centre to undertake a detailed Community Impact Assessment, to provide advice and support to affected people and to support the recovery of the community in a local setting.

The City Corporation may also decide to establish a Business Information Centre (BIC), to undertake a Business Impact Assessment, to provide advice and support to affected businesses and to support the recovery of the City's business community.

Where multiple properties are affected by a single source of flooding, the City Corporation will investigate the causes and impact of flooding and prepare a report outlining any actions to reduce the risk of reoccurrence.

#### **What we will do:**

- Ensure that recovery arrangements and plans are in place to deal with flood recovery.

## **4.5 Objective 5: Partnership working**

To engage with other flood risk management authorities taking action to reduce flood risk through partnership working within and beyond the City's boundaries

Flooding does not respect local authority boundaries therefore it is essential that Lead Local Flood Authorities work in partnership across local authority boundaries and with a range of agencies to build up a comprehensive picture of the flood risks and actions to reduce that risk.

The Flood and Water Management Act (2010) gives local authorities the lead in managing local flood risk and has designated the City Corporation as the Lead Local Flood Authority (LLFA) for the City of London. This role requires partnership with all relevant bodies to help manage flood risk in the area.

The 'duty to cooperate' is a statutory requirement in the Localism Act 2011, which amends the Planning and Compulsory Purchase Act 2004. It places a legal duty on local planning authorities, county councils in England and public bodies to engage constructively, actively and on an on-going basis to maximise the effectiveness of Local and Marine Plan preparation relating to strategic cross boundary matters.

### **4.5.1 Drain London**

In order to fulfil these roles the City Corporation works in partnership with a wide range of other organisations including the Environment Agency, Thames Water, the emergency services, Transport for London (TfL) and multiple utility infrastructure providers, such as UK Power Networks and BT. Partnership working with other London boroughs has been established through membership of the Drain London Forum. This partnership group was established by the Greater London Authority (GLA) to bring together the GLA, the London boroughs and the City of London, the Environment Agency, Thames Water, Transport for London and London Councils to address surface water flooding issues. The Drain London Forum assists boroughs with their responsibilities for managing flood risk by sharing good practice, knowledge and expertise.

### **4.5.2 Environment Agency**

Partnership working with the Environment Agency (EA) covers a number of different aspects including assistance in fulfilling the requirements of the Flood Risk Regulations 2009. Through this partnership the City Corporation completed and published a Preliminary Flood Risk Assessment, funded through Drain London in December 2011. In December 2013 the Environment Agency published comprehensive flood mapping covering all sources of flooding. The City Corporation provided additional modelling for the Environment Agency's published maps to ensure that the most accurate and consistent picture of flood risk is presented. Future collaboration with the EA will include preparation of Flood Risk Management Plans for areas at risk of flooding. These plans will be published by December 2015.

The Environment Agency is also the lead organisation co-ordinating the Thames Estuary 2100 Project. The Thames Estuary 2100 plan (TE 2100 plan) identifies mitigation that will reduce the City's vulnerability to river flood risk from the River Thames and its tidal influences. Local actions include raising the flood defences along the riverside by up to 1 metre by 2065. Further protection will result from wider actions such as

allowing sacrificial water storage in flood plain areas elsewhere in the Thames Estuary during periods of heavy rainfall.

The Environment Agency (EA) co-ordinates the funding of flood mitigation projects through the Flood and Coastal erosion Risk Management Grant-in-Aid (FCRM GiA). The costs of each scheme are balanced against the value of the benefits that the scheme would bring in order to allocate funding in the most cost effective manner. Assessment of a series of possible actions to alleviate flood risk in Farringdon Street and Paul's Walk on the Thames Riverside found that major engineering projects would be very expensive and difficult to deliver, would not offer cost effective solutions and concluded that flood resistance and resilience measures in the immediate area provides the most cost effective option for protecting businesses from flooding. EA do not normally allocate Grant-in-Aid funding for resistance and resilience measures but co-operation will continue to explore possible EA funding to reduce flood risk in the City.

#### **4.5.3 Port of London Authority**

The Port of London Authority works to ensure navigational safety along the tidal Thames, promote use of the river and safeguard its unique marine environment. It works in partnership with people looking to use the river whether for trade, travel, recreation or pleasure. The City Corporation will work in partnership with the Port of London Authority to ensure that flood risk is taken into account in consideration of development associated with the River Thames.

#### **4.5.4 Neighbouring boroughs**

More detailed flood risk planning is carried out with the members of the Central London North Partnership Group which comprises the boroughs that form the catchment areas that affects the City's flood risk: Islington, Camden, Westminster, Kensington & Chelsea and Hammersmith & Fulham. Liaison with Tower Hamlets and Newham, which are the receiving LLFAs for the City's surface water drainage and sewers, is also essential.

The City Corporation commissioned research into possible mitigation measures which could reduce the risk of surface water and sewer flooding. Initial assessments carried out according to the Environment Agency's requirements for funding identified that local mitigation projects would be ineffective in preventing flooding. Projects would need to cover the wider catchment which covers much of Camden to the north and extends into Westminster, Kensington and Chelsea and Hammersmith and Fulham to the west. Alleviation of flooding in the City's flood risk hotspots would require extensive retrofitting of Sustainable Drainage Systems (SuDS) in these areas. The cost of such widespread intervention would far outweigh the benefits and therefore would not be eligible for Environment Agency funding.

The City will continue to pursue the incorporation of SuDS into new and existing buildings in these catchment areas. Neighbouring boroughs, the GLA, Thames Water and the Environment Agency will be key partners in progressing this action. Section 13 of the Flood and Water Management Act 2010 imposes a duty on risk management authorities to co-operate with other relevant authorities in the exercise of their flood risk management functions.

In relation to individual developments in a neighbouring borough, where the relevant SuDS approval body believes a road in the City will be affected it has a duty consult the City, in the City's role as highways authority.

#### **4.5.5 Utility and transport providers**

Thames Water is an important partner in the implementation of flood mitigation and resistance measures. Thames Water has a remit through the utilities regulator OFWAT to reduce the number of properties affected by sewer flooding. OFWAT impose strict criteria and will only fund projects where there is a history of internal sewer flooding of premises during 1 in 10 year rainfall events. Although not strictly a flood risk mitigation project the proposed Thames Tideway Tunnel Project will intercept combined sewer outflow pipes and prevent them from discharging sewage into the Thames during heavy rain storms. In parallel with this Thames Water is promoting the use of Sustainable Drainage (SuDS) to reduce the rate and quantity of surface water run-off into London's combined sewerage network.

Other utility and transport providers will need to be kept up to date with the flood risks affecting their networks. Flood risk strategies provide an opportunity for engagement with these organisations

#### **4.5.6 Technical bodies**

London Drainage Engineering Group (LoDEG), Association of Thames Drainage Agencies (ATDA) and Construction Industry Research and Information Association (CIRIA) provide technical support and training related to flood risk and SuDS.

#### **4.5.7 Emergency Services**

In the event of an emergency, the City will work together with other agencies including the emergency services and neighbouring Local Authorities to respond as set out within the Multi Agency Flood Plan and the City's Emergency Management Plan.

#### **What we will do:**

- Work through Drain London to contribute to a coherent London wide approach to flood risk
- Work with the Central London North Flood Risk Partnership Group to ensure that appropriate policies are included in our partner's Flood Risk Strategies and Local Plans
- Work with the Environment Agency to implement the City's actions from the TE 2100 Plan and the requirements of the Flood Risk Regulations
- Continue to discuss possible funding of local projects with the Environment Agency
- Engage with and make representations to Thames Water and OFWAT to progress widespread retrofitting of SuDS into existing properties through the Thames Water draft five year plan consultation process

- Work with utility providers to build resistance and resilience to flood risk ensuring prompt recovery following a flood incident
- Work with technical bodies to provide technical guidance and training to increase awareness of flood risk and mitigation.
- Work with emergency services to provide effective response to flooding incidents.

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## 5 Actions to reduce flood risk in the City

Signpost to the Flood and Water Management Act 2010 Section 9 (4) requirements

This section deals with

- (d) the measures proposed to achieve the objectives,
- (e) how and when the measures are expected to be implemented,
- (f) the costs and benefits of those measures, and how they are to be paid for,

### 5.1 Measures to achieve objectives

The measures to be implemented to achieve the objectives will consist of a combination of local actions through the spatial planning and development management functions, SuDS approvals, flood investigation and promotion of business and continuity awareness, complemented by wider actions in partnership with other flood risk management bodies.

### 5.2 Site Specific Flood Risk Management Plans

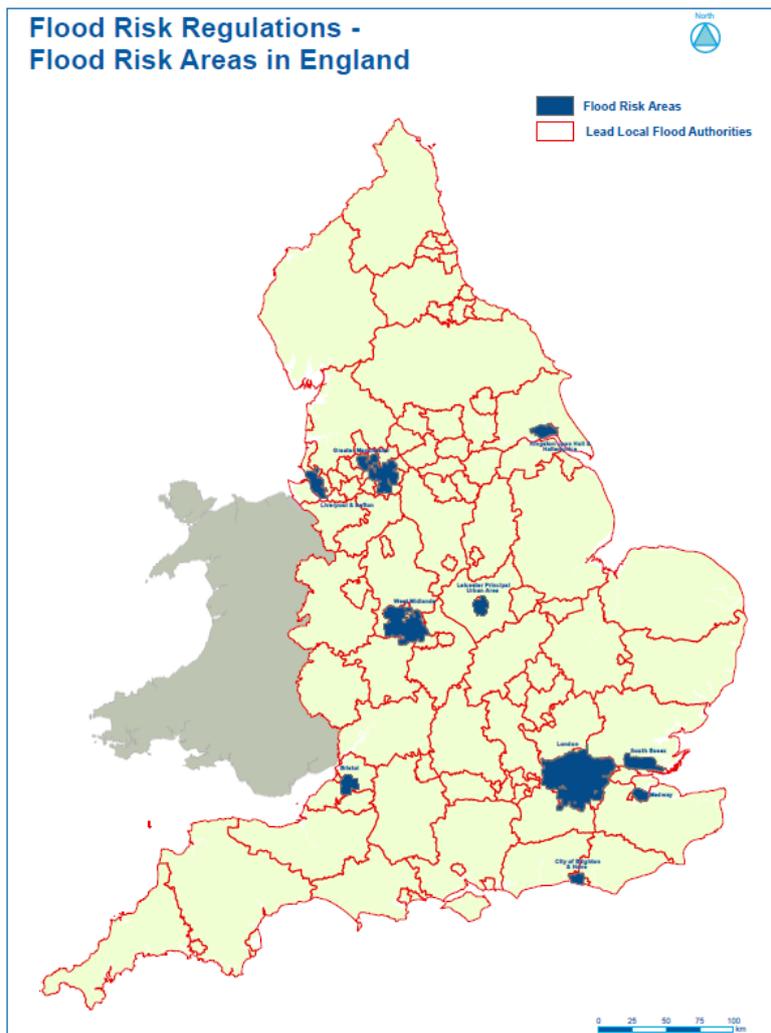
The Flood Risk Regulations 2009 require that Lead Local Flood Authorities prepare flood risk management plans for identified Flood Risk Areas by December 2015. These Flood Risk Areas are defined at a wide scale such that virtually the whole of London is defined as a Flood Risk Area. It is the Environment Agency's intention to co-ordinate the preparation of these Flood Risk Management Plans to meet the regulations. Flood Risk Strategies and any site specific flood risk management plans prepared by LLFAs will feed into the Environment Agency's Plan for the whole of London.

The City Corporation intends to prepare Flood Risk Management Plans for these three areas by December 2015.

Farringdon Street & New Bridge Street

Paul's Walk

Victoria Embankment



**Figure 8 Flood Risk Areas – England**

### **5.3 Funding & Resources**

Funding and resources to implement this strategy will come from a number of different sources.

- As LLFA the **City Corporation** is responsible for co-ordination and co-operation with other risk management authorities to address flood risk in the City and in this role will use existing resources to fulfil many of the actions identified in the action plan.
- In addition to this, **grant funding** may be available from sources such as the Drain London fund which is managed by the GLA and the flood and coastal erosion risk management Grant in Aid (FCRM GiA) which is administered by the Environment Agency on behalf of Defra.
- **Thames Water** is responsible for the upgrading of sewerage infrastructure to prevent sewer flooding and to take account of future climate predictions.
- Utility companies and **property owners** are responsible for site specific flood risk alleviation, resistance and resilience of their premises

- City **developers** are responsible for ensuring that flood risks are addressed in building design and associated landscaping.

Resourcing considerations will need to include direct project funding, staff resources, expert consultancy requirements and training needs to implement the Flood Risk Action Plan.

#### 5.4 Flood Risk Action Plan

Action	Who	When	Resources	Funding
Objective 1: Up to date information on flood risk				
We will review the City of London SFRA at least every 5 years or more frequently if evidence suggests that this is necessary. This frequency of review will enable the impacts of climate change to be taken into account as evidence emerges.	Built Environment-Planning	2017	City Corporation Consultancy expertise	City Fund revenue budget
We will keep under review the SFRAs and flood risk modelling that is carried out for neighbouring boroughs through the Central London North Flood Risk Partnership Group	Built Environment Planning Drainage	Annually	City Corporation Neighbouring LLFAs	City Fund revenue budget
We will provide the most up to date mapping and modelling to the EA for incorporation in future reviews of the FMfSW	Built Environment Planning	2013 to be reviewed by 2019	City Corporation Consultancy expertise	City Fund revenue budget
Objective 2: To reduce vulnerability and cost of flood risk				
Apply the National Planning Policy Framework (NPPF) and technical guidance	Built Environment Planning	On-going	City Corporation Developers	City Fund revenue budget

on flood risk, developing and implementing flood risk policy in the Local Plan which accords with the Sequential and Exceptions Tests.			Environment Agency	
Implement planning policy to avoid the development of vulnerable uses in flood risk areas	Built Environment Planning	On-going	City Corporation Developers Environment Agency	City Fund revenue budget
Require the use of green roofs and green walls and other urban drainage techniques in new development and encourage in existing buildings to improve flood resilience	Built Environment Planning  Town Clerks	On-going	City Corporation Developers	City Fund revenue budget
Highlight the need for future raising of flood defences along the riverside to developers of property in this area	Built Environment Planning	2013- 2065	City Corporation Environment Agency	City Fund revenue budget
Use pre-application meetings to promote flood resistance and resilience measures to property owners considering refurbishment or redevelopment in the City Flood Risk Area.	Built Environment Planning	On-going	City Corporation	City Fund – revenue budget
Promote flood resistance and resilience measures to property owners	Town Clerks	2013-14	City Corporation Drain London	Drain London Funding Local services support grant - Defra
Work to ensure all City Corporation	Town Clerks	On-going	City	City Fund revenue

infrastructure is resistant and resilient to flood risk, such as the Waste Transfer Station at Walbrook Wharf	Built Environment Highways & Cleansing  City Surveyors		Corporation	budget  Capital budget for resilience improvements
Continue to monitor the progress of the Flood RE proposals and assess their impact on the City	Town Clerks  Built Environment	2013-2025	City Corporation	City Fund revenue budget
Continue to assess flood risk for the City's risk register	Built Environment	Annually	City Corporation	City Fund revenue budget
Continue to develop the necessary SAB processes within the City Corporation to fulfil this obligation within the timeframe laid down by Government	Built Environment	2014	City Corporation  Additional staff and training required	City Fund revenue budget  SAB application fees
The Corporation is committed to developing a dynamic Highway Management System (HyMS). It is proposed to include information of these assets within HyMS and create a link to this section of the strategy.	Built Environment Highways & Cleansing	On-going	City Corporation  Environment Agency	City Fund revenue budget
Monitor the condition and state of repair of gullies and structures and update the information as necessary	Built Environment Highways & Cleansing	On-going	City Corporation  Environment Agency	City Fund revenue budget
Continue to maintain the register of flooding incidents	Built Environment Highways & Cleansing	On-going	City Corporation	City Fund revenue budget

Produce reports for instances of multiple property flooding from a single source	Built Environment Highways & Cleansing	On-going	City Corporation	City Fund revenue budget
Continue to support the City's businesses and residents by warning and informing them of flood risks and supporting business continuity and emergency plans	Town Clerks  Security and Contingency Planning	On-going	City Corporation	City Fund revenue budget
Prepare and implement site specific flood risk management plans for Farringdon Street, Paul's Walk and Victoria Embankment	Town Clerks  Built Environment  Security & Contingency Planning	2014/15	City Corporation, Neighbouring boroughs, Thames Water, Environment Agency, GLA	City Fund revenue budget  Potential grant funding
Objective 3: Emergency response to flooding				
Ensure that emergency arrangements and plans are in place to respond to major incidents	Security and Contingency Planning	On-going	City Corporation, Emergency Services, Environment Agency, City businesses and residents	City Fund revenue budget  Other organisations' funds
Objective 4: Recovery following flooding				
Ensure that recovery arrangements and plans are in place to deal with flood recovery.	Security and Contingency Planning	On-going	City Corporation, Emergency Services, Environment Agency, building owners	City Fund revenue budget  Other organisations' funds
Objective 5: Engagement with other flood risk				

management authorities				
Work through Drain London to contribute to a coherent London wide approach to flood risk	Built Environment  Planning & Drainage	On-going	City Corporation, GLA	City Fund revenue budget  Other organisations' funds
Work with the Central London North Flood Risk Partnership Group to ensure that appropriate policies are included in our partner's Flood Risk Strategies and Local Plans	Built Environment Planning & Drainage	On-going	City Corporation  North London Central Partnership Group	City Fund revenue budget  Other organisations' funds
Work with the Environment Agency to implement the City's actions from the TE 2100 Plan and the requirements of the Flood Risk Regulations	Town Clerks	Short term 2010 to 2035  Medium term 2035 to 2050  Long term 2050 to 2100	City Corporation  Environment Agency	City Fund revenue budget  Other organisations' funds
Continue to discuss possible funding of local projects with the Environment Agency	Built Environment	Short term 2010 to 2015	City Corporation  Environment Agency	City Fund revenue budget  Environment Agency funds
Work with Thames Water and OFWAT to progress widespread retrofitting of SuDS into existing properties through the Thames Water draft twenty five year plan consultation process	Built Environment	Consultation on plan for 2015 to 2040	City Corporation  Thames Water	City Fund revenue budget  Thames Water funding
Work with utility providers to build	Town Clerks	On-going	City Corporation,	City Fund revenue

resistance and resilience to flood risk ensuring prompt recovery following a flood incident	Built Environment		Utility Providers, Building owners	budget Utility providers funding
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## 6 Strategy review

Signpost to the Flood and Water Management Act 2010 Section 9 (4) requirements

This section deals with:

(h) how and when the strategy is to be reviewed,

### 6.1 Public Consultation

The draft Local Flood Risk Management Strategy will be subject to public consultation in line with the requirements of the City Corporation's Statement of Community Involvement.

### 6.2 Approval process

The draft Local Flood Risk Management Strategy has been considered and approved by the Planning & Transportation Committee for public consultation.

### 6.3 Governance and monitoring

Implementation of the Strategy will be overseen by the officer Flood Risk Steering Group. The Flood Risk Steering Group is chaired by the Director of the Built Environment and includes representatives from Built Environment, City Surveyors, Contingency Planning, and Town Clerks.

### 6.4 Review

The Strategy will be reviewed by the Planning & Transportation Committee every five years alongside the City of London's Strategic Flood Risk Assessment.

## 7 Wider sustainability objectives

Signpost to the Flood and Water Management Act 2010 Section 9 (4) requirements

This section deals with

(i) how the strategy contributes to the achievement of wider environmental objectives

### 7.1 Strategic Environmental Assessment

The City of London draft Local Flood Risk Management Strategy has been subject to Strategic Environmental Assessment (SEA) which evaluates the impact that the strategy will have on wider sustainability objectives. Strategic Environmental Assessment (SEA) is the process by which strategic plans and programmes are assessed to ensure that they take account of social, environmental and economic objectives for the area, fulfilling the requirements of the Strategic Environmental Assessment (2001/EC/42) (SEA Directive). SEA was used during the preparation of the strategy to evaluate options for achieving the flood risk objectives against a series of wider sustainability objectives.

The sustainability objectives relevant to the Flood Risk Management Strategy were determined at the SEA scoping stage which included consultation with the Environment Agency, English Heritage, Natural England, GLA and flood risk partnership group members.

The sustainability objectives relevant to the Local Flood Risk Management Strategy are as follows:

1. To protect the health, wellbeing and safety of workers, residents and visitors
2. To protect property and essential infrastructure
3. To protect the historic environment, archaeological heritage and landscape
4. To protect and enhance biodiversity
5. To protect water quality and resources
6. To adapt to the impacts of climate change
7. To minimise adverse impacts on the economy

The impact of the flood risk strategy options was assessed against these wider sustainability objectives taking account of the positive, negative and neutral impacts, and the geographic scale and timescale of the impact (short, medium or long term). Comments are included to highlight the significant effects of the preferred options in terms of direct or indirect effects, whether effects are permanent or temporary and whether there are likely to be cumulative effects.

The conclusions of the SEA are reported in the Strategic Environmental Assessment Report and are summarised below:

**SEA Objective 1: To protect the health, wellbeing and safety of workers, residents and visitors.**

Assessment of options against each of the Flood Risk Strategy objectives indicates that a positive proactive approach will bring benefits in relation to the protection of the health, wellbeing and safety of workers, residents and visitors. The greatest danger to health is from sewer flooding which is influenced by actions in a wide catchment area beyond the City. Therefore partnership working particularly on SuDS implementation in neighbouring boroughs is a key activity to protect the health wellbeing and safety of workers, residents and visitors.

**SEA Objective 2: To protect property and essential infrastructure**

A proactive approach, making sure that flood risk information is up to date and local measures are implemented to enhance resistance and resilience to flooding, will provide the best opportunities for protection of property and essential infrastructure. The SEA identifies that the adoption of a co-ordinated approach to flood investigation, flood risk asset management and emergency planning are important elements for property protection.

**SEA Objective 3: To protect the historic environment and archaeological heritage**

The SEA assessment identifies that the most effective actions to protect historic assets against flood risk include promotion of resistance and resilience measures warning and informing and the preparation of co-ordinated management plans and emergency and contingency plans for areas that are at risk of flooding. A lack of partnership working beyond the city's boundaries could present greater risks to historic assets by increasing the risk of surface water flooding exacerbated by actions in neighbouring boroughs.

**SEA Objective 4: To protect and enhance biodiversity**

The register of flood risk assets where maintenance and state of repair are recorded in one place presents opportunities for the protection and enhancement of biodiversity particularly associated with the river defence flood walls which provide important habitats along the river Thames area of metropolitan importance for nature conservation. Partnership working is identified as important in protection and enhancement of biodiversity since it will enable input from organisations with varied expertise, for example the Environment Agency and the Port of London Authority, in ensuring that flood risk management plans take account of biodiversity.

**SEA Objective 5: To protect water quality and resources**

The development of an effective SuDS approvals process will be important in protecting water quality and resources through the impact of SuDS in reducing rainwater run-off and preventing sewer overflows and also in conserving water by collecting it for landscape watering etc. The preparation of co-ordinated plans for flood risk areas and flood recovery will also assist in avoiding water pollution and making the best use of water resources.

**SEA Objective 6: Climate Change Adaptation**

The uncertainties related to climate change make it essential that review of the City of London Strategic Flood Risk Assessment is carried out at regular intervals in order to identify where climate change is having an impact on flood risks. Similarly partnership working is important to gain knowledge of how climate change is affecting the sewer flooding catchment areas and how sea level rise is affecting the flood risk from the Thames.

### **SEA Objective 7: Minimise impacts on the economy**

The provision of accurate flood risk information and the preparation of co-ordinated flood risk management and recovery plans will be the most useful aspects in minimising impacts on the economy. Warning and informing will also form a crucial activity in making sure that businesses in the flood risk areas are aware of the risks and make appropriate contingency plans.

### **Overall conclusion**

The SEA has considered a "Do Nothing" approach against a series of proposed actions related to flood risk. The "Do Nothing" option results in poorer outcomes against each of the SEA objectives. Therefore a positive approach to flood risk management is recommended.

# Appendix 1 Legislative context

## Pitt review

Flood risk planning has assumed a high profile due to the extreme flooding events of summer 2007 and the subsequent Pitt Review 'Learning Lessons from the 2007 Floods' which was published in Dec 2008. The recommendations of this report, along with legislative changes, require that local authorities assume a new role in co-ordination of measures to minimise flood risk in their areas. More recent flooding in 2012 has placed greater emphasis on flood risk planning as the frequency of extreme weather events increases.

**The Flood Risk Regulations 2009** came into force on 10th Dec 2009. These regulations transpose EC Directive 2007/60/EC assessment and management of flood risks and impose new duties on the Environment Agency and local authorities, including the City as a lead local flood authority to:

- Prepare a preliminary flood risk assessment by June 2011, for publication by the Environment Agency in December 2011, showing the probability of flooding and consequences for human health, the environment, cultural heritage and economic activity
- Prepare flood risk maps and flood hazard maps by June 2013, for publication by the Environment Agency in December 2013
- Prepare a flood risk management plan for areas which are at significant risk of flooding by June 2015, for publication by the environment Agency in December 2015

**Flood and Water Management Act 2010** – received Royal Assent on 8<sup>th</sup> April 2010. It gives local authorities new responsibilities as lead local flood authorities (LLFA):

**Part 1** of the act requires all lead local flood authorities in England to:

- Develop, maintain, apply, and monitor the application of, a strategy for local flood risk from surface run off, groundwater and ordinary watercourses, in their area. The strategy must at least set out who the risk management authorities are in the area and their relevant functions, the authority's objectives for managing flood risk, as well as proposed measures to deliver the objectives, and timescales for implementation of the measures; how those measures are to be paid for as well as their costs and benefits, how and when the strategy will be reviewed, and how the strategy contributes to the achievement of wider environmental objectives. The lead local flood authority must consult affected risk management authorities and the public about its strategy and provide guidance on the application of the strategy.
- Investigate flooding incidents in its area and report on its findings.

- Establish and maintain a register of structures or features which may significantly affect flood risk in their area including information regarding ownership and state of repair.
- Contribute to sustainable development in the discharge of its flood risk duties.
- Assume the power to designate features with respect to flood risk and subsequently to act as responsible authority for such features.

**Part 2** of the act gives local authorities new duties as “approving bodies” with regard to drainage including:

- Approving rainwater drainage systems before commencement of any construction works which have drainage implications
- Adopting and maintaining approved systems which affect more than one property
- Approval of surface water drainage systems prior to connection to public sewers. (Automatic right of connection to public sewers is removed by this Act).

**Part 3** of the act provides legislative powers for:

- Consolidation of legislation relating to flood risk including Water Industry Act 1991, the Water Resources Act 1991, the Land Drainage Act 1991, the Reservoirs Act 1975, the Highways Act 1980 (so far as relevant to water), the Environment Act 1995 (so far as relevant to water), the Public Health Act 1936 (so far as relevant to water) and the Coast Protection Act 1949.
- Provision of funding by Parliament to pay for expenditure under the Act

As Lead Local Flood Authority, the City Corporation is responsible for preparing and implementing a Flood Risk Management Strategy for the City. The Requirements of the Flood and Water Management Act with respect to this Flood Risk Management Strategy are set out in fig 1

Fig 1: Requirements of the Flood and Water Management Act 2010

#### Section 9 Local flood risk management strategies: England

(1) 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 (a “local flood risk management strategy”).

(2) In subsection (1) “local flood risk” means flood risk from—

- surface runoff,
- groundwater, and
- ordinary watercourses.

(3) In subsection (2)(c) the reference to an ordinary watercourse includes a reference to a lake, pond or other area of water which flows into an ordinary watercourse.

(4) The strategy must specify—

- (a) the risk management authorities in the authority's area,
  - (b) the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area,
  - (c) the objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009),
  - (d) the measures proposed to achieve those objectives,
  - (e) how and when the measures are expected to be implemented,
  - (f) the costs and benefits of those measures, and how they are to be paid for,
  - (g) the assessment of local flood risk for the purpose of the strategy,
  - (h) how and when the strategy is to be reviewed, and
  - (i) how the strategy contributes to the achievement of wider environmental objectives.
- (5) The strategy must be consistent with the national flood and coastal erosion risk management strategy for England under section 7.
- (6) A lead local flood authority must consult the following about its local flood risk management strategy—
- (a) risk management authorities that may be affected by the strategy (including risk management authorities in Wales), and
  - (b) the public.
- (7) A lead local flood authority must publish a summary of its local flood risk management strategy (including guidance about the availability of relevant information).
- (8) A lead local flood authority may issue guidance about the application of the local flood risk management strategy in its area.
- (9) A lead local flood authority must have regard to any guidance issued by the Secretary of State about—
- (a) the local flood risk management strategy, and
  - (b) guidance under subsection (8).

This strategy will be subject to Strategic Environmental Assessment (SEA) as required by the SEA Directive and will be reviewed by other stakeholders during a period of public consultation prior to adoption.

### **Civil Contingencies Act 2004**

Local Authorities have 7 duties under the Civil Contingencies Act 2004

- To operate with other local responders to enhance coordination and efficiency;
- Ensure information is shared with local responders to enhance coordination:
- Carry out risk assessments
- Have emergency plans in place
- Have business continuity management arrangements in place
- Have arrangements in place to warn and inform the public in the event of an Emergency

- Provide advice and assistance to businesses and voluntary organisations regarding business continuity management

## Planning Guidance

– The National Planning Policy Framework (NPPF) was introduced in 2012 and provides Government guidance on Planning. The Core Planning principles include the following requirements

- support the transition to a low carbon future in a changing climate, taking full account of **flood risk** and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy)
- promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions (such as for wildlife, recreation, **flood risk mitigation**, carbon storage, or food production)

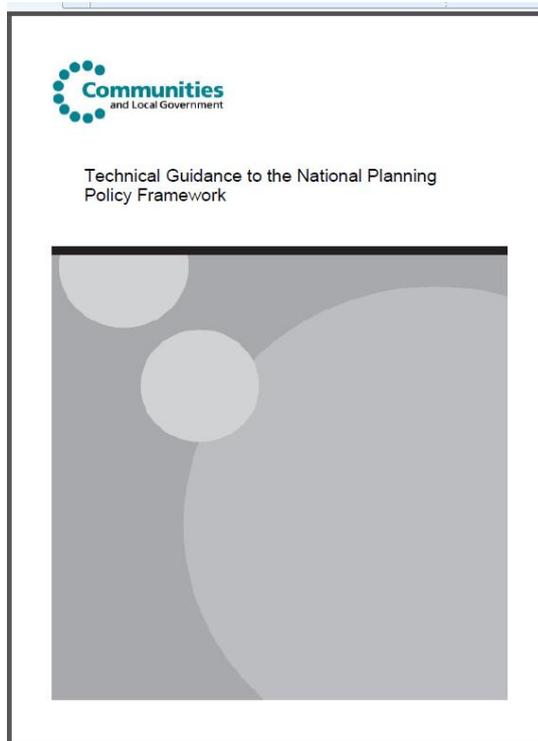
Section 10 of the NPPF states that “Local planning authorities should adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change and water supply and demand considerations.

### National Planning Policy Framework requirements for development

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. Local Plans should be supported by Strategic Flood Risk Assessment and develop policies to manage flood risk from all sources, taking account of advice from the Environment Agency and other relevant flood risk management bodies, such as lead local flood authorities and internal drainage boards. Local Plans should apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account of the impacts of climate change, by:

- applying the Sequential Test;
- if necessary, applying the Exception Test;
- safeguarding land from development that is required for current and future flood management;
- using opportunities offered by new development to reduce the causes and impacts of flooding; and
- where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to facilitate the relocation of development, including housing, to more sustainable locations.

The NPPF is supported by technical guidance which provides details of how the flood risk elements of the NPPF should be applied.



### **Other City of London strategies and plans**

The City Corporation has adopted a number of plans and strategies which are relevant to this Flood Risk Management Strategy and these have been taken into account in its preparation:

- **Sustainable Community Strategy**

The City Together is a non-executive partnership that brings together the key public, private and voluntary sector providers in the City with representatives from the City's resident, business, worker and faith communities.

The City Together's role is to generate and pursue a collectively agreed long term vision with strategic objectives for the City, designed to promote the economic, social and environmental wellbeing of the City of London. The City Together also aims to promote and encourage more effective partnership working and is responsible for developing the City's Sustainable Community Strategy called 'The City Together Strategy: The Heart of a World Class City'. Through The City Together, our diverse communities and partners can work together to support the continued success of the City in a way that meets the needs of our residents, businesses, workers and visitors.

- **Climate change adaptation strategy**

The City of London's Climate Change Adaptation Strategy (2010 update) uses the latest UK Climate Projections, UKCP09 and builds on the impacts previously identified in the London Climate Change Partnership's publication, 'London's Warming' 1.

The climate change risks for the City are summarised below:

- Hotter, drier summers,
- Milder, wetter winters,
- More frequent extreme high temperatures,
- More frequent heavy downpours of rain,
- Significant decreases in soil moisture content in summer,
- Sea level rise and increases in storm surge height,
- Possible higher wind speeds.

The City of London's Climate Change Adaptation Strategy, aims to identify the priority risks associated with climate change and proposes adaptation measures which are designed to ensure that the City's infrastructure and services cope under a changing climate.

- **Core Strategy/Local Plan**

The City's adopted Core Strategy sets out the future vision and key policies for planning the City of London. This will be replaced in 2014 by a new planning strategy for the City of London called the Local Plan. The Plan sets out the vision for shaping the Square Mile in the future and contains the policies by which planning decisions will be made.

The Core Strategy and emerging Local plan set out the City's approach to flood risk associated with new development requiring flood risk assessments for any development sites located in the City Flood Risk Area.

The Local Plan is accompanied by a Policies Map (in two parts) that shows where its policies operate.

- **Multi Agency Flood Plan**

The Multi Agency Flood Plan outlines the various responsibilities of different organisation with regard to emergency and contingency planning for flood risk.

## Appendix 2 Flood Risk Powers and Responsibilities

Signpost to the Flood and Water Management Act 2010 Section 9 (4) requirements

a) The risk management authorities in the authority's area and

b) The flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area,

### Risk Management Authorities and other interested parties

The Flood and Water Management Act 2010 recognises the following authorities as risk management authorities:

- Lead Local Flood Authorities (LLFA)
- The Environment Agency
- Water companies
- Highways authorities
- Internal Drainage Boards (not relevant to the City)
- District and borough councils

These risk management authorities have a duty to co-operate with each other in the exercise of their duties and the power to take on flood risk functions from other authorities by mutual agreement.

The relevant risk management authorities for the City are the City Corporation as LLFA for the square mile, the Environment Agency which exercises a national and regional role in co-ordinating flood risk management, Thames Water as the water company and sewerage undertaker for the City, and Transport for London as the Highways Agency for parts of the City.

A number of other authorities, although not defined as risk management authorities, have a role to play in the management of flood risk in the City. These include the Greater London Authority (GLA) which manages the Drain London project, improving information on flood risk for London; Network Rail which manages mainline stations feeding the City; the Emergency Services and first responders in tackling flooding incidents; the Marine Management Organisation and the Port of London Authority; and neighbouring boroughs as LLFAs for their areas since they also influence the City's flood risk management.

### Risk management functions in the City

Authority	Function	Responsibilities
City Corporation	Lead Local Flood Authority	Strategic role in overseeing the management of local flood risk i.e. flood risk from surface water runoff, groundwater and ordinary watercourses. This includes responsibility for <ul style="list-style-type: none"> <li>• Preparing a Local Flood Risk Management Strategy</li> <li>• Investigation of flooding incidents and</li> </ul>

		<p>preparation of flood incident reports</p> <ul style="list-style-type: none"> <li>• Maintaining register of assets that impact on flood risk and registering appropriate assets</li> <li>• Implementing SuDS Approval Body (SAB)</li> </ul>
City Corporation	Planning Authority	Ensuring that development does not increase vulnerability to flood risk for new and existing properties
City Corporation	Category 1 responder under the Civil Contingencies Act	Ensuring that systems and processes are in place to provide emergency response to flooding
City Corporation	Highway Authority	Duty to maintain the highway including responsibility for drain and gully maintenance on non-strategic roads in the City
Environment Agency	Strategic Role	National strategic responsibility for overseeing flood risk actions with regard to the Flood Risk Regulations 2009 and Flood & Water Management Act 2010
Environment Agency	Operational role	<p>Responsible for overseeing maintenance of flood defences including Thames Barrier</p> <p>Management of flooding from reservoirs, main rivers and the sea</p> <p>Advisory Emergency Planning role in assessment of Multi Agency Flood Plans</p> <p>Advisory Planning role in assessment of flood risk associated with planning policy and development</p>
Thames Water	Sewerage undertaker	<p>Responsible for provision and maintenance of the sewer network</p> <p>Upgrade of sewer network to facilitate increased drainage capacity requirements</p> <p>Responsible for implementation of Thames Tideway Tunnel to prevent sewer outflows into the Thames</p>
Transport for London	Transport infrastructure provider	Responsible for provision and maintenance of strategic road network and London Underground and bus networks ensuring their resilience to flood

		risk
Network Rail	Transport infrastructure provider	Responsible for provision and maintenance of railway network serving mainline stations in the City and their resilience to flood risk
Greater London Authority	Drain London	Facilitation of co-ordinated working on flood risk across London including provision of guidance and information
Neighbouring boroughs	LLFA s for their areas	Strategic role in overseeing the management of local flood risk in their areas and liaison with other LLFAs affected.
Businesses and Residents	Property owners	Responsible for flood resistance and resilience and emergency and contingency planning associated with properties
Utility companies	Utility providers	Responsible for provision and maintenance of utility infrastructure – electricity , gas telecommunications etc. and ensuring its resilience to flood risk

## Glossary

**City Flood Risk Areas** – Areas of the City that are at risk of river or surface water flooding as defined in the City of London Local Plan

**Drain London** – Multi agency partnership co-ordinated by the Greater London Authority to provide pan London information and advice on flood risk

**Flood Zones** – Environment Agency defined zones with varying probabilities of river flooding

- Flood Zone 1- Low probability of flooding - less than 1 in 1,000 annual probability of river or sea flooding (<0.1%)
- Flood Zone 2 – Medium probability of flooding - between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%)
- Flood Zone 3 - High probability of flooding - a 1 in 100 or greater annual probability of river flooding (>1%)

**FMfSW – Flood Map for Surface Water** – National scale maps published by the Environment Agency showing surface water flood risk.

**LLFA - Lead Local Flood Authority** – The local authority with the statutory responsibility for flood risk management in its local area. The City Corporation is the LLFA for the City of London geographic area.

**LFRMS – Local Flood Risk Management Strategy** – Strategy for managing flood risk at a local level as required by the Flood and Water Management Act 2010

**Multi Agency Flood Plan** – Emergency Plan for responding to flooding

**NPPF – National Planning Policy Framework** – The government's statement of planning guidance to local planning authorities, issued by the Department of Communities and Local Government in March 2012. The City Corporation must take account of it in preparing and implementing its planning policies.

**Preliminary Flood Risk Assessment** – preliminary assessment of the risk of flooding as required by the Flood Risk Regulations 2009

**Risk Management Authorities** – authorities defined in the Flood and Water Management Act as having flood risk responsibilities

**Sequential Test and Exceptions Test** – Tests to be applied to proposals for new development in order to avoid allowing vulnerable uses in areas that are prone to flooding. Details of these tests can be found in the Technical Guidance to the National Planning Policy Framework March 2012

**SEA – Strategic Environmental Assessment** – assessment of the likely environmental, social and economic assessment of the implementation of plans and programmes as required by the EU Strategic Environmental Assessment Directive

**SFRA – Strategic Flood Risk Assessment** – comprehensive assessment of the risks of flooding from all sources

**Surface Water Management Plan** – plan for the management of surface water to reduce risk of flooding from this source.

**TE2100 – Thames Estuary 2100 Plan** – Environment Agency's plan for addressing flood management in the Thames Estuary up to 2100

## References

Other City of London strategies eg air quality

[http://www.cityoflondon.gov.uk/NR/rdonlyres/0115B849-EA52-417D-8ED3-CBCC52B20E1C/0/HS\\_EH\\_CityofLondonAirQualityStrategy2011to2015.pdf](http://www.cityoflondon.gov.uk/NR/rdonlyres/0115B849-EA52-417D-8ED3-CBCC52B20E1C/0/HS_EH_CityofLondonAirQualityStrategy2011to2015.pdf)

City of London Climate Change Adaptation Strategy (2010)

[http://www.cityoflondon.gov.uk/services/environment-and-planning/sustainability/Documents/pdfs/SUS\\_AdaptationStrategyfinal\\_2010update.pdf](http://www.cityoflondon.gov.uk/services/environment-and-planning/sustainability/Documents/pdfs/SUS_AdaptationStrategyfinal_2010update.pdf)

City of London Green Roof Case Studies

<http://www.cityoflondon.gov.uk/services/environment-and-planning/planning/heritage-and-design/Documents/Green-roof-case-studies-28Nov11.pdf>

Essex County Council Flood Risk Management Strategy

[http://www.essex.gov.uk/Publications/Documents/Local\\_Flood\\_Risk\\_Management\\_strategy.pdf](http://www.essex.gov.uk/Publications/Documents/Local_Flood_Risk_Management_strategy.pdf)

Camden Flood Risk Management Strategy

<http://www.camden.gov.uk/ccm/content/environment/green/climate-change/camdens-role-as-a-lead-local-flood-authority.en>

LGA guidance on Flood Risk Management Strategies

[http://www.local.gov.uk/local-flood-risk-management/-/journal\\_content/56/10180/3618366/ARTICLE](http://www.local.gov.uk/local-flood-risk-management/-/journal_content/56/10180/3618366/ARTICLE)

Planning Acts

<http://www.planningportal.gov.uk/planning/planningpolicyandlegislation/currentlegislation/acts>

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