Hackney

London Borough of Hackney

Local Flood Risk Management Strategy

February 2016

Forward

This is the first Local Flood Risk Management Strategy produced by the London Borough of Hackney and is a fundamental document in setting out how the Borough, working with its partners and stakeholders, will deal with flood risk.

The Strategy considers how various activities can assist in managing flood risk, including better planning policy to ensure new development does not increase flood risk for its neighbours, the efficient management of surrounding landscape to reduce flooding at source and to ensure that emergency responses are targeted where flood risk is greatest. However the activities identified in this Strategy can only contribute to the management of flood risk. It would not be realistic, even if we were not experiencing a period of austerity, to protect all property and infrastructure from flood risk. Instead efforts need to be made by all involved, organisations and householders alike, to reduce flood risk in practical ways not only by reducing the probability of flooding but also its impact , making sure that properties can cope in the event of a serious flood.

It is recognised that, in the past, the different organisations involved in risk management have not always worked together effectively enough in tackling the difficult problems that flood risk often creates. It is vital that organisations work better not just with each other but crucially with the public. This is why the strategy details the roles and responsibilities of all major stakeholders, including households and community groups, so that there is better clarity and understanding about when different stakeholders should be involved.

This Strategy focuses on ‘local flood risk’, defined as flooding caused by surface runoff and groundwater in the borough. However it is not the source of flooding but the effects that matter to those affected and we are keen to make sure that all forms are managed together and tackled according to level of risk rather than by what caused it or who shouts loudest. The Strategy therefore sets out how we will work collaboratively with other key stakeholders to input into the management of all sources of flood risk and ensure that investment decisions are made according to levels of risk.

Assessing levels of risk from flooding is a difficult task. With greater development and increasingly uncertain weather patterns, houses that have never been flooded in living memory may be at risk. We recognise householders may have concerns about using modelling software to determine areas of flood risk or are likely to be at risk of flooding in the future, but they are crucial to ensuring that limited resources are used most effectively to reduce the impact and probability of properties being flooded, and to target resources to areas at the highest risk.

This strategy is our statement of intent as to what needs to be done to tackle flooding in Hackney. We hope it will help you become better informed of everyone’s responsibilities, how to find out your flood risk and what we can do to help you become safer.

Cllr Feryal Demirci
Cabinet Member for Neighbourhoods and Sustainability

Hackney

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Flooding can occur at anytime and anywhere with potentially devastating consequences. Historic events including the 1947 flooding along the River Lee and more recent events such as the September 2014 flooding from a localised storm demonstrate that the London Borough of Hackney is susceptible to flooding. Flooding frequency and severity is expected to increase as the effects of climate change are realised.

The Flood and Water Management Act 2010 and the Flood Risk Regulations 2009 have placed new duties on local authorities. As a Lead Local Flood Authority (LLFA), the London Borough of Hackney has a responsibility for leading the co-ordination of local flood risk management within the London Borough of Hackney, referred to here after as Hackney. This includes ensuring that flood risks from local sources, including surface water runoff, groundwater and ordinary watercourses and their interactions, are identified and managed. Hackney have the duty, under Section 9 of the Flood and Water Management Act 2010 (FRMA), to put in place a Local Flood Risk Management Strategy (LFRMS) to manage all sources of flood risks consistent with a risk management approach.

This Local Flood Risk Management Strategy (the Local Strategy) sets out:

- A summary of Local Flood Risk
- The roles and responsibilities of flood risk management partners
- The Hackney Council position as a Lead Local Flood Authority
- Objectives and measures for managing flood risk
- Possible funding sources and implementation approaches

There are six key objectives within the Local Strategy. These have been developed in consultation with key stakeholders. The objectives reflect how Hackney will manage flood risk across the borough. Each objective has associated delivery measures with an estimated timeline for implementation against which progress can be measured.

Hackney Local Flood Risk Management Objectives

1) **Adapt and continuously improve knowledge and understanding of the local flood risk to prioritise use of resources**
2) **Establish and maintain long term partnerships within Hackney Council, other organisations and communities to establish common understanding of roles, responsibilities and expectations**
3) **Make sustainable policy and planning decisions that are informed by flooding and related environmental issues**
4) **Maintain, and improve where necessary, local flood risk management infrastructure, the natural environment and related systems to reduce risk in targeted areas**
5) **Communicate with at risk communities and businesses to collectively understand local risk, share up to date information and work together to manage risk**
6) **Ensure emergency plans are regularly updated with flood risk information and are exercised with all relevant parties to provide a co-ordinated preparation, response and recovery**

The Local Strategy also outlines the various funding options available to Hackney for flood risk management. It highlights the need for a partnership approach and contributions in delivering local flood schemes. Although flooding cannot be prevented entirely, the impact of flooding can be reduced. Through the implementation of this Strategy it is intended that the effects of flooding can be minimised and managed in a co-ordinated way.

1. Introduction

Section Overview

The purpose of this section is to answer the following questions:

- What is a Local Flood Risk Management Strategy?
- Where can I find specific information within this document?
- What are the legislative drivers for this Strategy?
- What other document are related to the Strategy?

1.1 What is a Local Flood Risk Management Strategy?

The Flood and Water Management Act 2010 (FWMA) places a responsibility upon Local Authorities, as Lead Local Flood Authorities (LLFAs), to develop, maintain, apply and monitor a strategy for local flood risk management (a 'Local Strategy').

The Local Strategy forms the framework within which communities have a greater say in local risk management decisions. In combination with the National Strategy, the Local Strategies encourage more effective risk management by enabling people, communities, business and the public sector to work together to:

- Ensure a clear understanding of the risks of flooding and erosion, nationally and locally, so that investment in risk management can be prioritised more effectively;
- Set out clear and consistent plans for risk management so that communities and businesses can make informed decisions about the management of the residual risk;
- Encourage innovative management of flood and coastal erosion risks, taking account of the needs of communities and the environment;
- Form links between the local flood risk management strategy and local spatial planning;
- Ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond properly to flood warnings; and
- Help communities to recover more quickly and effectively after incidents.

It will do this by acting as the evidence base for the decisions and actions required for managing flood risk. The minimum requirements for a Local Strategy are summarised below:

- Identify Risk Management Authorities in the Local Authority's area;
- Describe the flood and coastal erosion risk management functions that may be exercised by those Authorities in relation to the area;
- Set objectives for managing local flood risk;
- Describe the measures proposed to achieve those objectives;
- Define how and when the measures are expected to be implemented;

- Estimate the costs and benefits of those measures, and how they are to be paid for;
- Complete an assessment of local flood risk for the purpose of the Strategy;
- State how and when the strategy is to be reviewed; and
- Show how the strategy contributes to the achievement of wider environmental objectives.

1.2 Purpose of the Strategy

The Strategy is an important new tool to help understand and manage flood risk within Hackney. The management of flood risk in Hackney will be marked by better knowledge of the risks in the region, better co-operation between organisations involved in flood risk management and better communication with the public about those risks and what can be done. One of the key purposes of this Strategy is to highlight the steps that are to be taken to ensure the above points are established and are operational.

It should be noted that the London Borough of Hackney, as a Lead Local Flood Authority, is only responsible for management of ***Local Flood Risk***. ***Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding and groundwater flooding***. This area of responsibility is defined by the Flood and Water Management Act. Therefore, this Local Flood Risk Management Strategy only addresses Local Flood Risk and the interactions it might have with other sources of flood risk. More households are at risk from this form of flooding than any other but until now there has been little co-ordinated work to address these forms of risk.

1.3 Structure of the Local Strategy

Table 1.1 below summarises the structure of the Strategy and the key questions that are answered by each section.

Table 1.1 Structure of the Local Strategy

Section No.	Title	Key Questions
1	Introduction	What is a Local Flood Risk Management Strategy? Where can I find specific information within this document? What are the legislative drivers for this Strategy? What other document are related to the Strategy?
2	Local Flood Risk	What is 'local flood risk'? What flooding has happened in the past? What flooding could happen in the future? How do all the sources of flooding interact? Where are the highest risk areas? Who is most at risk? How are non-local sources of flood risk managed?

Section No.	Title	Key Questions
3	Roles & Responsibilities	Who is responsible for managing flood risk? What are the responsibilities of each of these organisations? Who do I contact about flooding?
4	Objectives and Measures	What are the National Objectives for management of flood risk? What are the Local Objectives for management of flood risk? What measures will be used to deliver the Local Objectives? Who will be responsible for implementing the measures? How will the measures be funded?
5	Funding and Implementation	Who will fund the measures? How will the measures be implemented?
6	Review and Update	How often will the Local Strategy be reviewed? Who is responsible for update of the Strategy? How can I contribute to the Local Strategy? What happens after the consultation process?
7	References	Details of reference documents used to inform the Local Strategy
Appendices	Various	Supporting documents for the Local Strategy – including a glossary of terms and relevant figures

1.4 Community Engagement and Consultation

This Strategy will undergo a period of public consultation, offering the opportunity for the general public and risk management stakeholders to provide feedback. Following the public consultation, the Strategy will be updated in line with comments received.

1.5 Legislative Context

1.5.1 Flood and Water Management Act (2010)

The Flood and Water Management Act (2010) places new responsibilities on Local Authorities to manage and lead on local flooding issues. The Act requires Local Authorities to deliver new duties and responsibilities with regard to managing flood risk, including:

- Taking an active role leading flood risk management as Lead Local Flood Authorities (LLFAs);
- Cooperating with other relevant authorities to manage local flood risk;
- Duty to investigate flood incidents and report upon them;

- Maintain an 'Asset Register' of infrastructure / assets that have a significant influence on local flood risk;
- Designate 'features' that have a significant influence on local flood risk;
- Regulation of works on 'ordinary watercourses';
- Development and implementation of Local Flood Risk Management Strategies (LFRMS); and
- Acting as a Statutory consultee in the planning process for matters relating to surface water management *(as of April 2015, this function replaced the previously defined Sustainable Drainage Systems Approval Body as originally defined in Schedule 3 of the FWMA).*

This Strategy is one of the new requirements of the Flood and Water Management Act. The FWMA reinforces the need to manage flooding holistically and in a sustainable manner. This has grown from the key principles within Making Space for Water (Defra, 2005) and was further reinforced by the summer 2007 floods and the Pitt Review (Cabinet Office, 2008). It implements several key recommendations of Sir Michael Pitt's Review of the summer 2007 floods.

1.5.2 FLOOD RISK REGULATIONS (2009)

The Flood Risk Regulations (FRR) (2009) are the transposition of the European Union Flood Directive into English and Welsh law. The Regulations require three main types of assessment / plan to be produced:

a) Preliminary Flood Risk Assessments (PFRA) completed by all LLFAs and the Environment Agency by 22 December 2011. Flood Risk Areas, at potentially significant risk of flooding, were also identified. Maps and management plans were developed on the basis of these flood risk areas.

b) Flood Hazard Maps and Flood Risk Maps. The Environment Agency, on behalf of LLFAs produced Hazard and Risk Maps for all sources of flooding by 22 December 2013. These maps are publicly available on their website.

c) Flood Risk Management Plans. The Environment Agency and LLFA were required to produce Flood Risk Management Plans for 'Flood Risk Areas' by 22 December 2015. The Environment Agency has produced the Flood Risk Management Plan for the London area, including the local document specific to Hackney, although publication has been postponed pending a review into the Autumn/Winter 2015 floods.

Chapter 6 of the Preliminary Flood Risk Assessment (PFRA) shows that Hackney is located within an indicative 'Flood Risk Area' as identified by the Environment Agency. Since publication of the PFRA, the Environment Agency has confirmed that all of greater London is classified as a Flood Risk Area. It should be noted that only (a) above is compulsory for all LLFAs. Where an LLFA, such as Hackney, is located within a nationally defined 'Flood Risk Area', then (b) and (c) above are also required.

1.5.3 National Planning Policy Framework (NPPF) March 2012

The National Planning Policy Framework was issued in March 2012 and outlines the national policy on development and flood risk assessment. The Framework 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 is supported by the National Planning Policy Guidance (March 2014). The Flood Risk and Coastal Change section of the guidance advises on how planning can take account of the risks associated with flooding and coastal change in plan-making and the application process.

1.5.4 National Strategy for Flood and Coastal Erosion Risk Management

The Flood and Water Management Act 2010 requires the Environment Agency to develop, maintain, apply and monitor a strategy for flood and coastal erosion risk management in England. The National Strategy[1] states that Government will work with individuals, communities and organisations to reduce the threat of flooding and coastal erosion by:

- Understanding the risks of flooding and coastal erosion, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them;
- Avoiding inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks;
- Building, maintaining and improving flood and coastal erosion 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; and
- Improving the detection, forecasting and issue of warnings of flooding, planning for and co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding.

The Flood and Water Management Act states that Local Strategies must be consistent with the National Strategy. Section 4 identifies how the Local Strategy supports and is consistent with the National Strategy.

1.5.5 Other Relevant Legislation

Flood Risk Management is affected by a range of guidance and legislation. Some of these include:

[1] Defra, Environment Agency (2011) The National Flood and Coastal Erosion Risk Management Strategy for England https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228898/9780108510366.pdf

- Climate Change Act (2008);
- Conservation of Habitats and Species Regulations (2010);
- Civil Contingencies Act (2004);
- Strategic Environmental Assessment (SEA) Directive (2001/42/EC);
- Land Drainage Act (1991);
- Water Framework Directive (2007);
- Wildlife and Countryside Act (1981);
- Countryside and Rights of Way Act (2000); and
- Public Health Act (1936)

1.6 Related Documents

A number of related documents have been prepared which provide details on the assessment and management of flood risk within Hackney. It is intended that the Strategy is an over-arching document, drawing together existing flood risk plans and assessments into a single document that outlines how Hackney will manage local flood risk going forwards.

As part of the assessment of flood risk, the Strategy draws on technical information and historic records of flooding presented in the Surface Water Management Plan (SWMP), Strategic Flood Risk Assessment (SFRA) and Preliminary Flood Risk Assessment (PFRA). The Strategy also draws from wider environmental plans covering Thames catchment including the Thames River Basin District Management Plan and Thames Catchment Flood Management Plan to ensure a coordinated approach to flood risk management across London. The figure below shows the key related documents and associated legislation.

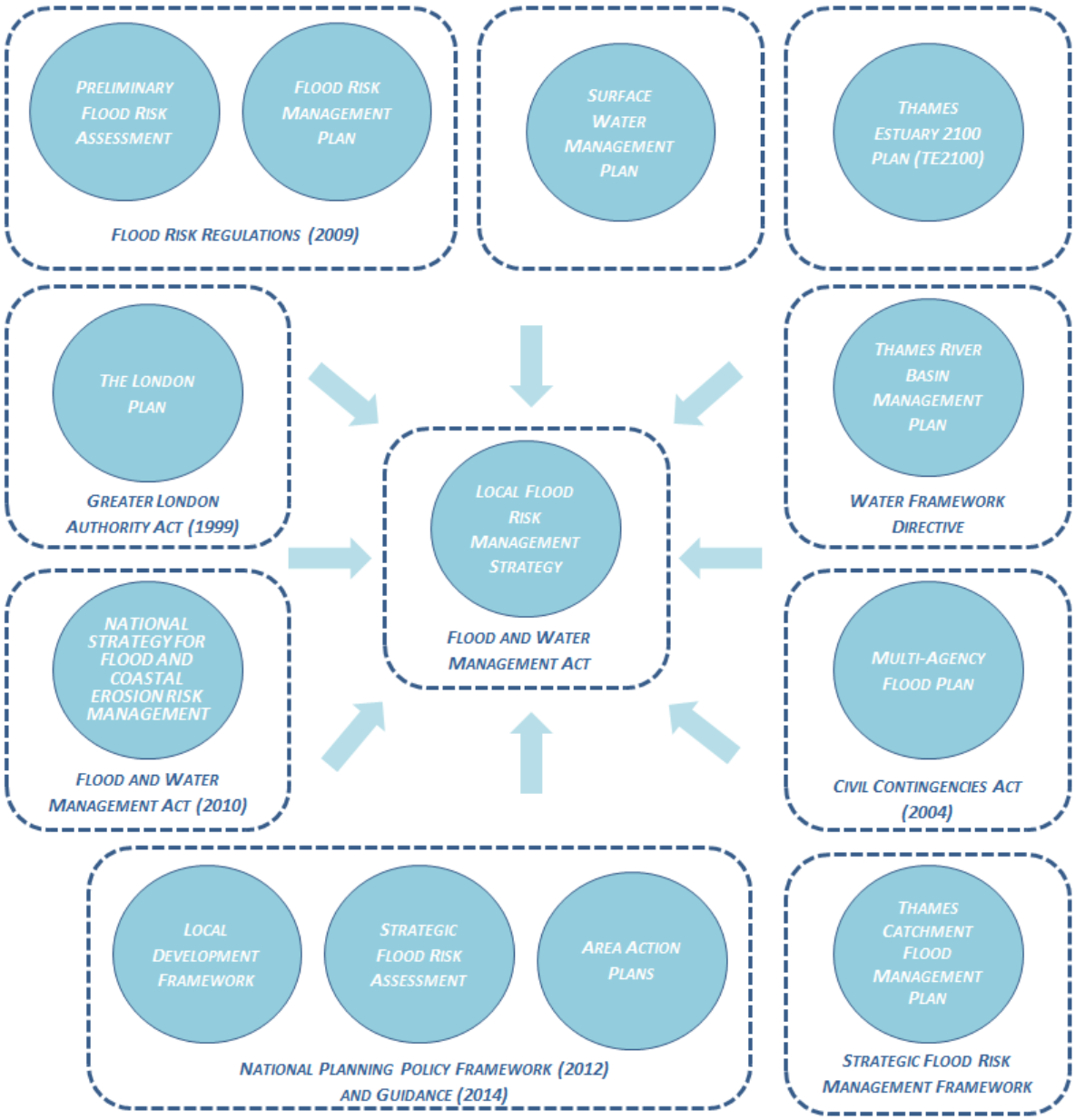

Figure 1.1 Legislative Drivers and Supporting Documents for the Strategy

A summary of the supporting documents which are specific to Hackney is provided below and links to all the supporting documents including those on and regional and national scale are provided in the following sections.

1.6.1 Strategic Flood Risk Assessment 2010 (SFRA)

A Level 2 SFRA was produced for Hackney in 2010. The SFRA forms an essential part of the pre-production / evidence gathering stage of the Local Development Framework (LDF) and in preparing their Local Development Documents (LDDs). The Level 2 SFRA builds on the findings of the North London Level 1 SFRA and provides more detailed information regarding the fluvial flood risk associated with the River Lee system along the eastern part of Hackney. The SFRA was prepared under the guidance of the now superseded Planning Policy Statement 25 (PPS 25). PPS25 was superseded by the National Planning Policy Framework in 2012. The SFRA provides a useful overview of the flood risk from all sources across Hackney, guidance on development control and requirements for site specific Flood Risk Assessments (FRAs).

1.6.2 Surface Water Management Plan 2012 (SWMP)

A SWMP was produced for Hackney in 2011. The SWMP is a framework to help understand the causes of surface water flooding and agree a preferred strategy for the management of surface water flood risk. SWMP studies are undertaken in partnership with key local stakeholders who are responsible for surface water management and drainage within the study areas. Within Hackney, key stakeholders include the Environment Agency, The Greater London Authority, London Councils, Thames Water Utilities Ltd, Transport for London and London Underground, Network Rail and British Waterways. The partners work together to understand the causes and effects of surface water flooding and agree the most cost effective way of managing surface water flood risk for the long term.

1.6.3 Preliminary flood Risk Assessment 2011 (PFRA)

The PFRA produced for Hackney in 2011 is a key document informing the preparation of future Local Flood Risk Management Strategies as required by the Flood and Water Management Act 2010. Future flood risk within Hackney was assessed by looking at the borough as a whole and assessing potential risk areas based on a variety of local flooding sources. The document is a requirement of the Flood Risk Regulations 2009, which stipulate a 6 yearly cyclical review process. A revised PFRA will be launched in 2017.

1.6.4 HACKNEY CORE STRATEGY

The Core Strategy, adopted in November 2010, is the primary and strategic Development Plan Document for the Borough, it guides the content of the other Local Development Documents (including Area Action Plans and Supplementary Planning Documents). It sets out the spatial planning framework for Hackney to deliver the Sustainable Community Strategy priorities and outcomes (between 2010 and 2025) and sets strategic locations for delivering this vision. The Core Strategy has taken account of national and regional issues, Hackney Council's corporate aims and objectives, as well as the strategies of organisations where there are implications for the development and use of land.

1.6.5 AREA ACTION PLANS

An Area Action Plan (AAP) is a Development Plan Document (DPD) that provides specific planning policy and guidance for an area where significant regeneration or investment needs to be managed. AAPs address the specific challenges of an area and to specify the required land uses in particular locations and identify key strategic interventions. AAPs have a strong focus on delivery and implementation, and form a statutory component of the Local Development Framework (LDF). The Council has four Area Action Plans (AAPs):

- Dalston Area Action Plan
- Hackney Central Area Action Plan
- Hackney Wick Area Action Plan
- Manor House Area Action Plan

The two town centres of Hackney Central and Dalston provide potential for growth in housing, leisure and retailing. Hackney Wick, given its location within and adjacent to the Olympic Park, can provide for a range of employment and recreation opportunities. Manor House has the potential for change and improvement to support the regeneration of the Woodberry Down Estate.

2. Local Flood Risk

Section Overview

The purpose of this section is to answer the following questions:

- What is 'local flood risk'?
- What flooding has happened in the past?
- What flooding could happen in the future?
- How do all the sources of flooding interact?
- Where are the highest risk areas? Who is most at risk?
- How are non-local sources of flood risk managed?

2.1 What is Flood Risk?

Flood risk is a combination of the probability and potential consequences of flooding from all sources including from the rivers and the sea, directly from rainfall on the ground surface, rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals, lakes and other artificial sources.

Risk may be assessed in quantitative, financial terms to help prioritise and direct funding. Analysis of risk can also help with applications for additional external funding. However, the consequences of flooding can be difficult to value, particularly the social impacts of displacement, loss and fear of repeat events. All available information and past experiences have been considered in developing local objectives for managing future flood risk in Hackney.

2.2 Sources of Flooding – Local Flood Risk

There are several sources of flooding within Hackney which are summarised in the table below. The **local flood risk** sources that are addressed by this strategy document are Surface Water flooding, flooding from Ordinary Watercourses and Groundwater flooding. Figure 1 in Appendix B shows the predicted extent of flooding from Surface Water and Ordinary Watercourses within Hackney. Figure 2 in Appendix B shows the areas of Hackney that have an increased likelihood of experiencing Groundwater flooding. The non-local sources of flooding are the responsibility of the stated Risk Management Authorities (RMAs). Further information on the roles and responsibilities of RMAs for flood risk is provided in Section 3.

The various sources of flooding interact with each other and can create complex flooding mechanisms in certain areas. This can make it difficult to determine the overall sole responsibility for flooding in a specific area and it is often concluded that flooding is caused by multiple sources. While the Local Strategy is focussed on reducing the consequences of the three 'local' sources of flooding described in Table 3, it also facilitates partnership working to manage risk with other organisations where multiple sources of flooding have occurred historically or are predicted to occur in the future.

Table 2.1 Sources of Flooding

Flood Source and Mechanism	Responsibility					
	Hackney Council	Environment Agency	Thames Water Utilities Ltd	Transport for London	Property Owners	Riparian Owners
Surface Water - Runoff as a result of high intensity rainfall when water is ponding or flowing over the ground surface before it enters the underground drainage network or a watercourse. *This includes flooding of local roads that Hackney Council is responsible for maintaining.*	●				●	
Ordinary Watercourse - Flooding which occurs as a result of the capacity of the ordinary watercourse being exceeded resulting in out of bank flow (water coming back out of rivers and streams).	●					●
Groundwater - Occurs when the water level within the groundwater aquifer rises to the surface	●					
Main Rivers - Occurs when a designated 'Main River' cannot cope with the volume water draining into it from the surrounding land and it spills onto the surrounding area.		●				●
Coastal - Occurs when a high astronomical tide and / or storm (tidal surge) exceeds the level of coastal land or coastal flood defences. Inland flooding can also be caused by 'tide locking' of rivers or estuaries.		●				
Reservoirs – Occurs when a reservoir / canal embankment or control fails and releases a large volume of retained water into the downstream area. Responsibility is dependent on the size and ownership of the reservoir.	●	●	●			●
Sewer - Flooding which occurs when the capacity of the underground drainage system is exceeded, resulting in flooding inside and outside of buildings.			●			
Burst pipes or water mains – Occurs when water supply or drainage infrastructure fails			●			
Highways Flooding – A combination of sewer and surface water flooding located on major roads managed by TfL				●		

2.3 Historic Flooding

2.3.1 Main River Flooding

The River Lee and the River Lee Navigation through Hackney is defined as 'main river'. In March 1947 the River Lee experienced considerable flooding which extended into Hackney Marsh and along the north eastern borough boundary. The flooding was triggered by rapid snow melt in the upper rural catchment which generated an extremely high rate of run-off. A map of watercourses within the London Borough of Hackney is provided in Figure 4 in Appendix B.

As a result of the 1947 floods a number of channel alterations and defence measures have been implemented. The River Lee Flood Relief channel was constructed in the 1970s. There has been no major flooding from main rivers in this region since 1947. However, the flood relief channel almost reached capacity in 1987, 1993, 2000 and 2013, which highlights that the flood risk posed to Hackney is a reality.

2.3.2 Ordinary Watercourse Flooding

An ordinary watercourse can be defined as a watercourse that does not form part of a main river. Flooding from ordinary watercourses occurs as a result of the capacity of the watercourse being exceeded resulting in out of bank flow (water coming back out of rivers and streams). There are no ordinary watercourses within the Hackney area and, consequently, there have been no historical records of flooding from ordinary watercourses.

2.3.3 Surface Water Flooding

Details of four surface water flood incidents occurring between 1999 and 2009 were provided by the London Borough of Hackney for the PFRA. The flood incidents were recorded in the low lying areas of Brownswood Road, Cazenove Road, Stamford Hill, Mare Street, Otteway Court and Dunsmure Road.

Wick Road is located within a depression and is prone to surface water flooding. Transport for London (TfL) records of reported flooding incidents were provided for the North London SFRA and included six surface water flooding incidents around Wick Road, Hackney.

A recent (September 2014) localised rain and hail storm caused surface water flooding in several locations in Hackney including: Wick Road between Cassland Road and the A12 East Cross Route, Kenworthy Road together with various locations in Dalston and Stoke Newington. A report of this incident has been published, as required by section 19 of the Flood and Water Management Act 2010.

2.3.4 Groundwater Flooding

A groundwater flood event results from a rise in groundwater level sufficient for the water table to intersect the ground surface. Groundwater floods tend to be long in duration developing over weeks or months. Groundwater flooding incidents within Hackney have been reported in: Upper Clapton (Kyverdale Road, Osbaldeton Road), Shoreditch (Curtain Road, Union Walk), Finsbury Park (Wilberforce Road, Green Lanes) and Homerton (Elsdale Street).

2.3.5 Sewer Flooding

Flooding from foul and combined sewers occurs when rainfall exceeds the capacity of networks or when there is an infrastructure failure. In Hackney the sewer network is a largely combined foul and surface water system.

Thames Water provides postcode linked records of sewer flooding (known as the DG5 register) and have provided data for the ten year period between 1997 and 2007 for the Level 1 SFRA. During this period 44 sewer flooding incidents were reported within the Stamford Hill area, north Hackney, and three incidents in Shoreditch, south Hackney. This indicates that the Stamford Hill area, south of the Seven Sisters Road, is a hotspot for sewer flooding. Hackney Council provided more recent (2009 to 2010) property level records for the SWMP. This dataset shows 29 records of flooding from sewers which are spread out across Hackney and not concentrated in a specific area.

Localised sewer floods have and will continue to occur in many areas of Hackney under severe weather conditions and climate change is likely to make them more frequent and more severe. The aim of this Strategy is to reduce the risks where possible and have emergency plans in place to deal with the exceptionally severe events.

2.4 Potential Future Risk of Flooding

2.4.1 Local Future Flood Risk - Surface Water

Additional analysis of the potential impacts of future surface water flooding was completed for this Strategy. The direct rainfall modelling undertaken for Drain London (the London Borough of Hackney SWMP) was used as the primary dataset to determine the significance of flooding from surface water and ordinary watercourses. The SWMP provided model outputs for several return periods.

The analysis uses modelling outputs from the SWMP and provides additional information at the borough and ward level. Figure 5 in Appendix B shows the ward boundaries, potential impact areas and future surface water flood risk extents. The results of the analysis are presented in Table 2.2. Colour coding for impact and overall priority for further investigation are described in Section 2.6. The purpose of this analysis is to provide a consistent basis for making prioritisation decisions on future flood mitigation investigations and possible works.

Table 2.2 Future Potential Surface Water Flood Impacts and Further Work Priority

Ward Name	Human Health			Economic Activity			Environment		Significant Historic Local Flooding Experienced	Historic Flooding from Local Sources	Overall Investigation Priority
	Residential Properties (No.)	Critical Services (No.)	Critical Service Type	Non-Residential Properties (No.)	Road (km) A&M roads	Rail (km)	Heritage Features (No.)	Details			
Predicted Depth of flooding (200yr SWMP results)	**>0.3m**	**>0.3m**	**>0.3m**	**>0.3m**	**>0.3m**	**>0.3m**	**>0.3m**	**>0.3m**			
Brownswood	32	1	1 Electricity sub-station	5			0		YES	2 incidents (Other, GW) / 12 SW flood incidents associated with blocked gullies (2010 - 2012) /	**Medium**
Cazenove	109			9	0.0314	0.3447	1	1 Grade II LD - GROVE HOUSE	YES	3 incidents (Sewer, 2GW) / 34 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Clissold	438	1	1 Electricity sub-station	9			8	7 Grade II LD - PARK CRESCENT (6 unknown) / CLISSOLD PARK	NO	1 incident (Sewer) / 22 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Dalston	221			4		0.0074	2	2 Grade II LD - ST BARTHOLOMEW'S VICARAGE (1 unknown)	YES	6 incidents (Sewer)	**Low**
De Beauvoir	159			7			3	3 Grade II LD	NO	26 SW flood incidents associated with blocked gullies (2010 - 2012)	**Low**
Hackney Central	267			23	0.2017	0.2331	1	1 Grade II LD	YES	2 incidents (Sewer) / 50 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Hackney Downs	268	1	1 primary school	5	0.0323	0.9832	0		YES	1 incident (Sewer) / 45 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Hackney Wick	117	2	1 primary school / 1 Electricity sub-station	14	0.9115	0.1678	0		YES	2 incidents (Sewer) / 23 SW flood incidents associated with blocked gullies (2010 - 2012) / Significant main river flooding (historically)	**High**
Haggerston	61			12	0.0025	0.0276	2	2 Grade II LD	YES	2 incidents (Sewer, GW) / 88 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Homerton	61			5	0.0440	0.0907	0		NO	3 incidents (Sewer, GW) / 28 SW flood incidents associated with blocked gullies (2010 - 2012)	**Low**
Hoxton East and Shoreditch	42	1	1 Electricity sub-station	71	0.9171	0.0619	6	6 Grade II LD - POST OPPOSITE EAST ENTRANCE OF NEW INN BROADWAY, GUNPOST AT NORTH CORNER OF FRENCH PLACE-BY RAILWAY, 2 POSTS AT WEST END OF NORTH PART, POST TO EAST OF CORNER OF RIVINGTON PLACE, 2 POSTS AT EITHER SIDE OF ENTRANCE TO KING JOHN'S COURT (1 unknown)	YES	3 incidents (Sewer, GW) / 8 SW flood incidents associated with blocked gullies (2010 - 2012)	**High**

Ward Name	Human Health			Economic Activity			Environment		Significant Historic Local Flooding Experienced	Historic Flooding from Local Sources	Overall Investigation Priority
	Residential Properties (No.)	Critical Services (No.)	Critical Service Type	Non-Residential Properties (No.)	Road (km) A&M roads	Rail (km)	Heritage Features (No.)	Details			
Hoxton West	467	1	1 training facility	8	0.0177	0.0571	1	1 Grade II LD	YES	2 incidents (Sewer) / 36 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
King's Park	67	3	2 Electricity sub-station / 1 water distributio n	9			0		NO	2 incidents (Sewer) / 17 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Lea Bridge	185	2	1 Nursing home / 1 Electricity sub-station	17	0.0386	0.1432	0		YES	3 incidents (Sewer) / 63 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
London Fields	139			2		0.0352	3	3 Grade II LD	YES	3 incidents (Sewer) / 38 SW flood incidents associated with blocked gullies (2010 - 2012)	**Low**
Shacklewell	159	3	2 Electricity sub-station / 1 chimney	8		0.0100	0		YES	1 incident (Sewer) / 58 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Springfield	16			3	0.0064	0.2910	1	SPRINGFIELD PARK	YES	3 incidents (Sewer) / 22 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Stamford Hill West	104			1		0.8390	0		YES	2 incidents (Sewer) / 34 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Stoke Newington	209	1	1 primary school	16		0.0019	3	2 Grade II LD / ABNEY PARK CEMETERY	YES	6 incidents (Sewer) / 30 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Victoria	142	1	1 Electricity sub-station	4	0.0249		0		NO	2 incidents (Sewer) / 20 SW flood incidents associated with blocked gullies (2010 - 2012)	**Medium**
Woodberry Down	120			1	0.0065	0.0360	0		YES	1 incidents (GW) / 59 SW flood incidents associated with blocked gullies (2010 - 2012)	**Low**
Total:	**3,383**	**17**		**233**	**2.2346**	**3.3298**	**31**				

2.4.2 Local Future Flood Risk - Groundwater

As part of the Drain London project a groundwater flooding analysis was undertaken to provide a consistent data source across London for groundwater flooding. The analysis produced the Increased Potential Elevated Groundwater (iPEG) maps. The iPEG mapping assists in identifying areas which have an increased potential to experience groundwater flooding. The iPEG map shows those areas within the borough where there is an increased potential for groundwater to rise sufficiently to interact with the ground surface or be within 2 m of the ground surface.

The four data sources listed below have been utilised to produce the Increased Potential for Elevated Groundwater (iPEG) map:

- British Geological Survey (BGS) Groundwater Flood Susceptibility Map;
- Jacobs Groundwater Emergence Maps (GEMs);
- Jeremy Benn Associates (JBA) Groundwater Flood Map; and
- Environment Agency/Jacobs Thames Estuary 2100 (TE2100) groundwater hazard maps.

The iPEG mapping shows an increased potential for ground water to rise most noticeably in the south west of the borough in Shoreditch, refer to Figure 2 in Appendix B. This area overlies a large deposit of Hackney Gravel. Gravel and silt deposits are more permeable than the underlying clay layer and flooding can occur when the groundwater rises through the permeable layer and meets the impermeable layer, resulting in flooding at the surface. There are historical records of flooding in Hackney which are within the area shown to have an increased potential for ground water flooding. Refer to the SWMP further details of the assessment.

The Environment Agency dataset ‘Areas Susceptible to Groundwater Flooding’ (AStGwF) is a strategic scale map showing groundwater flood areas on a 1km square grid. It provides an indicative assessment of areas where there may be a risk of flooding. The iPEG map should be used in the first instance to assess groundwater flooding as it is a higher resolution dataset.

2.4.3 Local Flooding Interactions

Whilst the primary focus of this Strategy is local flooding (from surface water, ground water and ordinary watercourses), flooding can arise from a combination of different sources. Where the source can be clearly identified, the responsible organisation will be the main point of contact. However, it is often not easy to determine the source or where multiple sources are involved. In these cases the LLFA will take the lead and work with partners to investigate the issue in a manner appropriate to the level of risk.

The investigation approach taken must be proportional to the frequency and consequence of the flooding. This strategy defines a threshold at which an investigation should occur – this is directly linked to the definition of ‘locally significant consequences’ provided in Section 2.6. Further details on the threshold for investigation are provided in the next section.

2.5 Threshold for Investigation

It should be recognised that the LLFA has limited funds and resources to complete flood investigations. To accommodate this, a threshold for triggering investigations is

set by this Strategy. To ensure consistency, the threshold for investigation is defined as:

*A flood incident caused by **local flood risk sources** or a **combination of sources** where the main source is unclear that exceeds the definition of Locally Significant Harmful Consequences in Table 2.3 (Section 2.6)*

The flood incident reporting process will have provision within it for the collection of information to enable the significance to be assessed and the responsible organisation for flooding to be identified. Where the flooding satisfies the criteria for carrying out a full investigation and it has not been possible to clearly establish the source, this would need to be done as part of the full investigation.

Hackney Council, as the Lead Local Flood Authority, has a responsibility for the investigation. This will involve an assessment of the problem and the identification of who is responsible for remediation work. It is important to note that the purpose of the investigation is to identify responsible parties – not to identify or undertake mitigation works.

The investigation should take account of all elements of information such as stakeholders' historic records, hydraulic model outputs and information obtained from members of the public at the time of the flooding incident. Local communities, landowners and the public will be crucial to helping us increase our knowledge and understanding of localised flooding.

In all cases all parties will work together to present workable solutions to the flooding issue. Hackney Council will aim to investigate and publically report on significant flood incidents within minimum three months of their occurrence. This investigation will include the identification of all responsible parties for mitigation.

2.6 Prioritisation of Risk Areas

It is not feasible to look in detail at every potential flooding location straight away. The resources to manage flood risk are finite and it is therefore necessary to identify locations where the focus of effort will derive the maximum benefit in terms of overall flood risk reduction in Hackney.

The work done for the Preliminary Flood Risk Assessment considered the future flood risk from local sources and concluded that the number of properties and businesses at risk for a future flood event is estimated to have 'significant harmful consequences' at a local scale. The tables below contain preliminary thresholds for classifying the impact / consequence of flooding and the associated level of priority for further investigation work (as defined in Section 2.5) in line with the measures defined in Section 4 (Objectives and Measures).

National guidance issued by Defra (2010) sets thresholds for defining areas where the flood is significant. No guidance has been issued for defining 'locally significant harmful consequences' and it is up to each LLFA to set its own definition. It has been suggested by the Environment Agency that the local thresholds should be an order of magnitude below the significance criteria for determining Flood Risk Areas. The national threshold was set at 200 persons, 20 businesses or 1 critical service per one km grid square flooded to a depth of 300mm during a 1 in 200 year rainfall event.

Table 2.3 Locally Significant Harmful Consequences (Preliminary)

Impact	Parameter	Threshold	Justification
Human Health	Number of People	20 persons/8.46 properties (assuming 2.36 people per property)	One order of magnitude less than national threshold
	Critical Services	1 service	Disruption to critical services can have a significant impact
Economic Activity	Non Residential Properties	10 non-residential properties	Significant impact to local businesses
	Roads and Rail	20m of road flooding to 50cm deep (A Road and motorway) or 50m of rail (any type) impacted	Disruption to key transport links has a significant impact on economic activity
Environment	Internationally or nationally designated site	1 or more sites potentially impacted	Potential impacts need to be identified and reviewed on a case-by-case basis (some habitats may benefit from seasonal flooding)
	Number of nationally / internationally important heritage features	4 or more features potentially impacted	Potential impacts need to be identified and reviewed on a case-by-case basis (some features may not be detrimentally impacted by flooding)

The table below presents a matrix for determining overall priority for further work based on the parameters in the table above. Each parameter (No. of Residential Properties, Critical Service etc.) has a threshold which is presented in Table 2.3. According to that threshold it is decided whether each parameter is of low, medium or high priority for each ward.

According to Table 2.4 each parameter is then assigned a score of 1, 3 or 5 according to the priority classification (Low, Medium, and High respectively). The overall total score for all the parameters in each ward is the one used to populate the Overall Investigation Priority – the last column of Table 2.2 (earlier in this document) - according to the Overall priority ranges which are presented below:

- **High = 19+**
- **Medium = 8 to 18**
- **Low = 0 to 7**

An example of the priority classification and the scoring system can be found in the Appendix C.

Table 2.4 Parameter Priority Scoring and Classification (Preliminary)

Parameter	Priority Classification and Score		
	More than zero but less than Threshold	Equals or Exceeds Threshold	Significant Historic Flooding Experienced
Number of People	Low (1)	Medium (3)	**High (5)**
Critical Services	Low (1)	**High (5)**	**High (5)**
Non Residential Properties	Low (1)	Medium (3)	**High (5)**
Roads and Rail	Low (1)	Medium (3)	Medium (3)
Internationally or Nationally Designated Site	Low (1)	**High (5)**	**High (5)**
Number of Nationally or Internationally Important Heritage Features	Low (1)	**High (5)**	**High (5)**

2.7 Management of Other Sources of Flooding

2.7.1 Main River

Figure 3 in Appendix B shows the Environment Agency Flood Map for Planning. The Flood Map for Planning shows the extents of Flood Zone 2 and 3 along with the Areas Benefitting from Flood Defences. The mapped Flood Zones are defined as follows:

- **Flood Zone 2 -** Medium Probability - Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding
- **Flood Zone 3** - High Probability - Land having a 1 in 100 or greater annual probability of river flooding

Catchment Flood Management Plans (CFMPs)

As noted earlier in this section, flooding caused by Main Rivers is the responsibility of the Environment Agency. The Environment Agency has produced Catchment Flood Management Plans (CFMPs) which provide an overview of the Main River flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years. CFMPs consider all types of inland flooding, from rivers, ground water, surface water and tidal flooding, but not flooding directly from the sea. They also take into account the likely impacts of climate change and how areas could be developed to meet our present day needs without compromising the ability of future generations to meet their own needs[2].

Thames CFMP

As part of the Thames CFMP a policy appraisal was carried out. Six standard policies for managing flood risk within the Thames catchments were considered. Hackney is within the Lower Lee Policy Unit and the following policy applies, *"Areas of moderate to high flood risk where we can generally take further action to reduce flood risk"*.

This policy will tend to be applied to those areas where the case for further action to reduce flood risk is most compelling, for example where there are many people at high risk, or where changes in the environment have already increased risk. Taking further action to reduce risk will require additional appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options. The proposed actions to implement the preferred policy are the following:

- To deliver actions recommended in Flood Risk Management Strategies for Lower Lee once they are approved;
- To encourage partners to develop policies, strategies and initiatives - in the short-term - to increase the resistance and resilience of all new development at risk of flooding. Land that might be needed to manage flood risk in the future will need to be protected. Working with partners to identify opportunities for this and recreate river corridors in urban areas will be essential.

[2] Definition of CFMPs from Environment Agency website https://www.gov.uk/government/collections/catchment-flood-management-plans

- In the long-term, land and property owners will need to adapt the urban environment to be more flood resilient. This includes the refurbishment of existing buildings to increase resilience and resistance to flooding.
- To promote the management of flood consequences. Working with partners will improve public awareness and local emergency planning (i.e. identifying infrastructure at risk and producing community flood plans.

2.7.2 TIDAL

London and the Thames estuary communities benefit from a robust and well organised system of tidal flood risk management but increasing pressures, including climate change, mean that flood risk is increasing. The primary risk of flooding to the Thames estuary communities is from the sea and the potential impacts of a tidal flood could be far more catastrophic than those from rivers or surface drains. The TE2100 Plan seeks to manage the tidal flood risk. It raises awareness and improves the knowledge of tidal flooding for people living and working in the floodplain, as well as those building new homes and businesses and those involved in insurance and conveyancing of properties.

The findings of the TE2100 project show that the Thames estuary has the best coastal flooding defence in the UK. These findings provide well founded reassurance to the communities throughout Thames Gateway and estuary, showing tidal flooding is not a barrier to sustainable economic development.

2.7.3 SEWERS

Water and sewerage companies are responsible for making appropriate arrangements for the drainage of foul water, the treatment of waste, surface water sewers and combined sewers. Thames Water Utilities Ltd have this responsibility in the Hackney area. They have primary responsibility for floods from water and sewerage systems, which can include sewer flooding, burst pipes or water mains or floods caused by system failures.

Flooding of sewer systems can occur for a number of different reasons. This includes lack of capacity in the network or blockage. The impact of sewer flooding is usually confined to relatively small areas. Flood incidents can be rapid and unpredictable when flooding is associated with blockage or failure of the sewer network. A flood from a sewer can pose a risk to health particularly from a combined sewer.

A key distinction between the responsibility for surface water and sewer flooding between Thames Water Utilities Ltd and London Borough of Hackney is that Thames Water Utilities Ltd have an agreed level of service with their industry regulator, Ofwat for sewerage capacity. The agreed level of service states that *"Increased demands on the sewerage system should not put properties at risk of flooding from storm events with a return period less than 1 in 20 years".* If flooding occurs during an event that exceeds this defined level of service, then it is classified as surface water flooding. Thames Water Utilities Ltd is responsible for internal and external property flooding caused by sewer systems operating under their normal design conditions.

Causes of flooding may include blockage or other operational problems with the sewer network. When flooding occurs during these conditions, Thames Water Utilities Ltd is required to maintain a register of locations that incur damage from the flooding and prioritise funding for works to alleviate the problem. Funding priorities are defined using a five year cycle called Asset Management Plans (AMP). The AMP is the

programme of work agreed with the Regulator (Ofwat). Thames Water Utilities Ltd are in the AMP5 period (2010 – 2015) and are currently consulting on their 2015-2020 plan which will set out how Thames Water Utilities Ltd will provide water and sewerage services and the required investments during that period.

2.7.4 Artificial Sources – Reservoirs and Canals

There are three artificial watercourses within Hackney: the Regents Canal (owned and managed by the Canals & River Trust), River Lee Navigation channel (part of the main river network) and the New River (owned and managed by Thames Water).

The Regents Canal formed the London Branch of the Grand Union Canal when constructed in 1820. The canal connects Paddington and the Docklands at Limehouse basin, passing through the London Borough of Hackney between Dalston and Shoreditch. The canal is stated as posing a low flood risk to the surrounding area in the London Borough of Hackney Level 2 SFRA.

The River Lee runs from Hertford Castle Weir to the River Thames at Bow Creek. The Lee Navigation is a canalised river incorporating the River Lee. Navigation took place in the first millennium. Work on improving the river's navigability is recorded as early as the fourteenth century and in 1425 there was an Act of Parliament to provide for further improvements.

The New River is a water supply aqueduct originally constructed in 1613. Over time, the course of the aqueduct has been altered and capacity increased in line with demand. The water level is regulated by a number of sluice gates. Stretches of the New River channel have been raised above the surrounding ground levels. Failure of the defences along these raised stretches could have significant consequences to properties in the vicinity.

The Environment Agency's reservoir inundation mapping shows the maximum flood extent from large reservoirs (which hold over 25,000 cubic metres of water) in the unlikely event of a breach. Stoke Newington East Reservoir (owned by Thames Water Ltd) and Stoke Newington West Reservoir (owned by the London Borough of Hackney) are located in the northwest of the borough. The sudden failure of a dam could potentially have catastrophic consequences, due to a surge in water being released into the catchment. The enforcement of the Reservoirs Act is the responsibility of the Environment Agency. However, the maintenance and regular inspection of the reservoirs is the responsibility of the owners.

There is a cluster of reservoirs in the adjacent London Borough of Waltham Forest. Through the enforcement of regular inspection and maintenance, the risk of flooding as a result of reservoir failure is considered low. There are also a number of smaller lakes and water bodies including those in Clissold Park, Clapton Common and Springfield Park. The residual risk of flooding from these water bodies is unknown.

3. Roles and Responsibilities

Section Overview

The purpose of this section is to answer the following questions:

- Who is responsible for managing flood risk?
- What are the responsibilities of each of these organisations?
- Who do I contact about flooding?

3.1 Organisations Responsible for Managing Flood Fisk

3.1.1 Risk Management Authorities (RMA)

A Risk Management Authority (RMA) is defined in the Flood and Water Management Act as one of the following:

- The Environment Agency (EA);
- A lead local flood authority (the London Borough of Hackney);
- A District Council for an area for which there is no unitary authority;
- An Internal Drainage Board;
- A Water Company (TWUL); and
- A Highway Authority

3.1.2 London Borough of Hackney (Lead Local Flood Authority)

Under the Flood and Water Management Act the London Borough of Hackney, as the Lead Local Flood Authority, is the lead organisation responsible for managing local flood risk. The responsibilities of a Lead Local Flood Authority are:

- Development, maintenance, application and monitoring of a strategy for local flood risk management (this document). This will be guided by the national strategy;
- Strategic leadership of local flood risk management authorities;
- Powers to request information from any person in connection with the authority's flood risk management functions and a duty to co-operate with other flood risk authorities;
- A duty to investigate and publish reports on flood incidents in Hackney (where appropriate and necessary) to identify which authorities have relevant flood risk management functions and what they have done or intend to do;
- A duty to maintain a register of structures or features that have a significant effect on flood risk;
- Power to do works to manage flood risk from surface water runoff or groundwater;
- Power to designate structures and features that effect flood risk;

- Act as a Statutory Consultee on planning applications with regard to surface water management issues;
- Decision making responsibility for whether third party works on ordinary watercourses by third parties, that may affect water flow, can take place; and
- A duty to contribute towards the achievement of sustainable development in the exercise of flood risk management functions and to have regard to any Ministerial guidance on this topic

3.2 Roles and Responsibilities for Managing Flood Fisk

The tables below detail the roles and responsibilities of the various organisations and other stakeholders involved with management of flood risk within Hackney.

Table 3.1 Hackney Risk Management Authorities

Organisation	Role	Responsibilities	Additional Info
Environment Agency	Operational responsibility for flooding from main rivers, the sea & coastal erosion (the Environment Agency takes a risk based approach to flood risk management)	Responsibility for managing flooding from main rivers and regulating third party works on main rivers	
		Enforcement Authority for the Reservoir Act	There are two large reservoirs located within the LB of Hackney, Stoke Newington East and West. The reservoirs are located in the northwest of the borough.
		Responsibility for managing coastal flooding	
	Oversight responsibilities in relation to all flood and coastal erosion risk management England	Strategic overview for all forms of flooding	
		Monitoring and reporting on flood and coastal erosion risk management	
		Review of the assessments, plans and maps produced by the London Borough of Hackney as Lead Local Flood Authority to meet the Flood Risk Regulations	
		Supporting collaboration, knowledge-building and sharing of good practice.	
		Providing grants to local risk management authorities to support the implementation of their powers	
		Issuing levies to lead local flood authorities to support the implementation of coastal erosion and flood defence schemes	
		Communication of flood risk warnings to the public, the media and to partner organisations	
		Supporting communities to be flood resilient through sharing best practice and provision of information	
		Advising on the planning process	
		Statutory consultee for some development proposed in Flood Zones 2 and 3, or within 20m of the top of the bank of a main river	

Organisation	Role	Responsibilities	Additional Info
London Borough of Hackney	Lead Local Flood Authority	Responsibility for managing local flood risk - flooding from ordinary watercourses, surface runoff and groundwater	
		A requirement to produce off site reservoir plans	This should include reservoirs outside of Hackney - such as those within the London Borough of Waltham Forest impact Hackney.
		Duty to comply with the national strategy & prepare LFRMS	This document
		Investigations of flooding where appropriate and publishing reports	An initial appraisal will be carried out in any circumstance where inundation of the following types of property has occurred, residential, business property, key infrastructure (as detailed in the strategy). The results of the investigation must be published through the flood risk implementation plan on the London Borough of Hackney website.
		Regulation & consenting works on ordinary watercourses	The council is now responsible for the consenting of works to ordinary watercourses and has powers to enforce un-consented and non-compliant works. This includes any works (including temporary) that affect flow within the channel of any ordinary watercourse (such as in channel structures or diversion of watercourses)
		Produce an Asset Register and designate structures or features that, in the opinion of the authority are likely to have a significant effect on flood risk	

Organisation	Role	Responsibilities	Additional Info
		Powers to carry out practical works to manage flood risk from surface water and groundwater.	
	Highways Authority	Management of the majority of roads across Hackney and their associated drainage	
		Regular inspection & maintenance to ensure highway drainage systems are clear and blockages cleared where reasonably practicable	
		Adoption of SuDS serving highways	
		Powers to undertake works to prevent the highway from flooding and to divert or carry out works to a watercourse as necessary	
		Assistance to transport people to a place of safety and restore traffic flow during an event	
	Statutory Consultee for surface water management	Provide comment and input to the planning process with regard to surface water management	
		Optional adoption and ongoing maintenance of SuDS systems	This responsibility is no longer compulsory
	Planning Authority	Preparation of the local development plan, supported by an appropriate assessment of flood risk (in accordance with NPPF) and determining planning applications	
		Ensure new development applications are supported by appropriate drainage proposals	
	Emergency Planning	Emergency Planning – category one responder under the civil contingencies act and the role is set out in the Multi Agency Flood Plan	
		Develop Emergency Plans and Business Continuity Plans; Provide advice and assistance to businesses and voluntary organisations regarding business continuity management	
		Develop arrangements for Civil Preparedness information available for public use, and maintain a system for warning, informing and advising the public in the event of an emergency	
		Share information and co-operate with other responders	

Organisation	Role	Responsibilities	Additional Info
Thames Water Utilities Ltd	Drainage of foul water, treatment of waste, surface water sewers and combined sewers. Provision of water.	Primary responsibility for floods from water & sewerage systems (sewer flooding, burst pipes or water mains, floods caused by system failures)	
		TWU as reservoir owners have responsibilities under the Reservoirs Act to produce on site plans	
		Duty to have regards to relevant local strategy and act consistently with the national strategy	
		Duty to cooperate with other authorities, including sharing data	
		Maintain a register of properties at risk of flooding due to a hydraulic overload in the sewerage network (DG5 register) and undertake improvements to alleviate sewer flooding problems on the DG5 register	
		Adoption of private sewers. Adoption of sewers offered for adoption by developer.	
		Statutory consultee to the LLFO when the system is proposed to communicate with the public sewer.	
Transport for London	Highways Authority	Responsible for the effectual drainage of surface water from adopted roads along red routes	
		Responsible for ensuring that drains, including kerbs, road gullies and ditches and the pipe network which connect to the sewers, are maintained	

Table 3.2 Other Stakeholders

Organisation	Responsibilities
Property owners & residents	It is the responsibility of householders and businesses to look after their own property and protect it from flooding. There will be many occasions when flooding occurs despite all parties meeting their responsibilities. Therefore, it is important that householders whose homes are at risk of flooding take steps to ensure that their house is protected.
Riparian Owners	Householders or businesses whose property is adjacent to or over a river, stream or ditch are likely to be riparian owners with responsibilities. Riparian owners have a right to protect their property from flooding and erosion but in most cases will need to discuss the method of doing this with Environment Agency (main rivers) or Hackney (ordinary watercourses). They are responsible for maintaining the bed and banks of the watercourse and ensuring there is no obstruction, diversion or pollution to the flow of the watercourse. The London Borough of Hackney has permissive powers to carry out flood defence works for ordinary watercourses at their discretion, in a similar manner to those powers used by the Environment Agency for Main Rivers. The Environment Agency provides advice to riparian owners in a leaflet entitled '*Living on the Edge*'. Further information is also available in https://www.gov.uk/flood-defence-consent-england-wales.
Utility and Infrastructure Providers	Utility and infrastructure providers such as Network Rail, energy companies and telecommunication companies have a role to play in flood risk management as their assets can be an important consideration in planning for flooding. They should share information on relevant assets (e.g. culverts) with flood risk management authorities and consider flood risk management issues when planning for the future development and maintenance of their infrastructure to provide that their assets and systems are resilient to flood and coastal risks and that the required level of service can be maintained in the event of a flood.
Local Flood Groups	Setting up a community based flood action group can be a very effective way of bringing residents and businesses together to discuss flood risk issues and identify actions that can be taken collectively to minimise the impacts of flooding. Such groups can liaise with risk management authorities on behalf of the community, and enable joint working. The National Flood Forum provides advice about the formation of a local flood risk group.
Emergency Services	Responding to flooding incidents (alongside other emergencies). Responsibility to assist with planning for flooding incidents.

4. Objectives and Measures

Section Overview

The purpose of this section is to answer the following questions:

- What are the National Objectives for management of flood risk?
- What are the Local Objectives for management of flood risk?
- What measures will be used to deliver the Local Objectives?
- Who will be responsible for implementing the measures?
- How will the measures be funded?

4.1 National Objectives

One of the statutory requirements of a LFRMS is that it is consistent with the National Strategy for Flood and Coastal Erosion Risk Management (FCERM). The overall aim of the National Strategy is to **ensure the risk of flooding and coastal erosion is properly managed by using the full range of options in a co-ordinated way**.

The National Strategy outlines six high level guiding principles; these have been used to develop the six local objectives listed below for Hackney. The Local objectives are supported by a series of more detailed measures which outline more specifically how the London Borough of Hackney will implement the objectives of the strategy. The Six **Guiding Principles** from the National Strategy are detailed in the following sections.

4.1.1 Community focus and partnership working

Risk management authorities need to engage with communities to help them understand the risks, and encourage them to have direct involvement in decision-making and risk management actions. Working in partnership to develop and implement local strategies will enable better sharing of information and expertise, and the identification of efficiencies in managing risk.

4.1.2 A catchment and coastal "cell" based approach

In understanding and managing risk, it is essential to consider the impacts on other parts of the catchment or coast. Activities must seek to avoid passing risk on to others within the catchment or along the coast without prior agreement. In developing local strategies LLFAs should ensure that neighbouring LLFAs within catchments are involved in partnerships and decision making. Strategic plans such as Catchment Flood Management Plans (CFMPs) and Shoreline Management Plans (SMPs) should be used to help set strategic priorities for local strategies. Regional Flood and Coastal Committees will have an important role in this approach.

4.1.3 Sustainability

LLFAs should aim to support communities by managing risks in ways that take account of all impacts of flooding (for instance on people, properties, cultural heritage, infrastructure and the local economy) and the whole-life costs of investment in risk management. Where possible, opportunities should be taken to enhance the environment and work with natural processes. Risk management measures should also be forward looking, taking account of potential risks that may arise in the future and being adaptable to climate change.

4.1.4 *Proportionate risk based approaches*

It is not technically, economically or environmentally feasible to prevent all flooding and coastal erosion altogether. A risk-based management approach targets resources to those areas where they have greatest effect. All aspects of risk management, including the preparation and implementation of local strategies, should be carried out in a proportionate way that reflects the size and complexity of risk. The assessment of risk should identify where the highest risks are and therefore the priorities for taking action. The Local Strategy provides an opportunity to agree a local framework for risk based decisions and interventions with local communities and stakeholders.

4.1.5 *Multiple Benefits*

As well as reducing the risks to people and property, FCERM can bring significant economic, environmental and social benefits. In developing and implementing local strategies, LLFAs should help deliver broader benefits by working with natural processes where possible and seeking to provide environmental benefit, including those required by the Habitats, Birds and Water Framework Directive. Measures such as the use of SuDS to manage risk should be considered wherever possible as they can also deliver benefits for amenity, recreation, pollution reduction and water quality. Further benefits can be realised in relation to regeneration, growth and emergency planning.

4.1.6 *Beneficiaries should be allowed and encouraged to invest in local risk management*

The benefits achieved when flood and coastal erosion risks are managed can be both localised and private, through the protection of specific individuals, communities and businesses. In developing local strategies, LLFAs should consider opportunities to seek alternative sources of funding for managing local flood risk rather than relying solely on Government funds. However, LLFAs should consider the balance they wish to achieve in relation to major coastal and fluvial schemes, where the scale of local contributions required to make up partial national funding may be much more significant than that usually needed for surface water management schemes.

4.2 Local Objectives

A key aim of the Local Flood Risk Management Strategy is to establish a series of local objectives that can be taken forward to deliver effective risk management through local measures and actions. The following local objectives have been developed based on the guiding principles of the national strategy, and are specific to Hackney. The following sections detail the Local Flood Risk Management objectives for Hackney. Along with the measures that will be used to achieve them.

4.2.1 *London Borough of Hackney Local Objectives*

1) **Adapt and continuously improve knowledge and understanding of the local flood risk to prioritise use of resources**
2) **Establish and maintain long term partnerships within Hackney Council, other organisations and communities to establish common understanding of roles, responsibilities and expectations**
3) **Make sustainable policy and planning decisions that are informed by flooding and related environmental issues**

4) **Maintain, and improve where necessary, local flood risk management infrastructure, the natural environment and related systems to reduce risk in targeted areas**

5) **Communicate with at risk communities and businesses to collectively understand local risk, share up to date information and work together to manage risk**

6) **Ensure emergency plans are regularly updated with flood risk information and are exercised with all relevant parties to provide a co-ordinated preparation, response and recovery**

It should be noted that London Borough of Hackney, as a Lead Local Flood Authority, is only responsible for management of Local Flood Risk. Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding and groundwater flooding. This area of responsibility is defined by the Flood and Water Management Act. Therefore, the local objectives and actions only address Local Flood Risk and the interactions it might have with other forms of flood risk.

4.3 How the Objectives will be Achieved

The Strategy identifies the measures that the London Borough of Hackney will adopt to achieve the local objectives. Measures are activities that will be undertaken to manage risk and achieve the stated objectives. Wherever possible measures which achieve multiple benefits, such as water quality, biodiversity and amenity benefits will be promoted. Both structural and non-structural measures will be considered. Structural measures may include physical options to manage flood risk such as de-culverting of rivers and drainage improvements. Non-structural measures may include activities such as improved communication, spatial planning, emergency planning and improved flood awareness.

4.4 When the Measures Will be Implemented

Table 4.1 sets out proposed timescales for delivery of the measures, suggested lead responsibility for their delivery and potential sources of funding. The timing of the measures is recommended for the short (0 – 3 years), medium (3 – 10 years) and longer term with a view to managing the effects of climate change.

The Strategy is a ‘live’ document and is subject to revision over the plan period as circumstances and available funding streams dictate. The Council’s Corporate Plan to 2018 ‘Hackney; a place for Everyone’; for example, commits to investing in our streets but also acknowledges the severe financial restraints that the Council have been operating under since the first Comprehensive Spending Review (CSR) with over £130 million saved since 2010. Any further unforeseen reductions to these funding streams will adversely impact on the Council’s ability to deliver proposed flood risk management improvements over the plan period and necessitate revision of the existing Strategy.

Despite the extremely challenging fiscal climate for local authorities, there is a national governmental recognition that Lead Local Flood Authorities and other Risk Management Authorities must mitigate flood risk. This is crucial to delivering regeneration and housing and employment growth in London. As constraints on our Capital funding grow tighter, we will continue develop our partnership working with our RMAs to deliver improvements within the borough.

4.5 Local Objectives and Measures

The table below details the local objectives and associated measures that will be progressed by Hackney, in partnership with other Risk Management Authorities and key stakeholders to manage local flooding issues across Hackney.

Table 4.1 Local Objectives

No	Local Objectives	Measures	Timescale for Implementation			Key Partners	Potential Funding	Comment
			Short	Medium	Long			
1	Adapt and continuously improve knowledge and understanding of the local flood risk to prioritise use of resources	Update and utilise existing flood studies to inform the understanding of all sources of flood risk across the borough and how climate change will affect this in the future.	X	X	X	Thames Water (TW)/ Environment Agency (EA)/ Transport for London (TfL)	Local Revenue FCRM GiA Local Levy	
		Undertake flood investigation reports under Section 19 of the Flood and Water Management Act 2010, engaging with stakeholders and Risk Management Authorities.	X	X	X	TW/EA/TfL	Local Revenue	Statutory duty under the Flood and Water Management Act (2010). Investigation threshold is defined in Section 2.5.
		Pursue opportunities for undertaking further detailed investigation into local sources of flooding within high risk areas of the borough, working with stakeholders and Risk Management Authorities.		X	X	TW/EA/TfL	Local Revenue FCRM GiA Local Levy	
		Continue to record and review drainage and other asset performance and its effect on the management of flood risk	X	X	X	TW	Local Revenue	Statutory duty under the Flood and Water Management Act (2010)
		Encourage residents, business owners and stakeholders to report incidents of flooding to the Council to contribute to the on-going assessment of flood risk across the borough.	X	X	X	TW/TfL	Local Revenue	

No	Local Objectives	Measures	Timescale for Implementation			Key Partners	Potential Funding	Comment
			Short	Medium	Long			
2	Establish and maintain long term partnerships within Hackney Council, other organisations and communities to establish common understanding of roles, responsibilities and expectations	Provide information on flooding and guidance on managing their flood risk through local communication channels such as the Council website, social media and other methods that can be targeted at affected communities and vulnerable people	X	X	X	N/A	Local Revenue	
		Pursue opportunities to provide information on flooding and mitigation through public events, working with local groups where possible.	X	X	X	EA/TW/ Community Groups	Local Revenue	
		Encourage residents and businesses to register to receive flood warnings, alerts and associated weather warnings for flooding	X	X	X	EA	Local Revenue	
		Clarify roles and responsibilities of all risk management authorities and key stakeholders involved in dealing with flood risk	X			EA/TW	Local Revenue	
		Identify and monitor funding sources, internal and external, available for local flood risk management activities.	X	X	X	EA/TW	Refer Section 5.1	
		Undertake a review of the resources available within the Council for flood risk management.	X			All Hackney Council Depts.	Local Revenue	
		Maintain positive relations and explore partnership working opportunities with residents, businesses and RMAs	X	X	X	TW/EA/TfL	Local Revenue	

No	Local Objectives	Measures	Timescale for Implementation			Key Partners	Potential Funding	Comment
			Short	Medium	Long			
3	Make sustainable policy and planning decisions that are informed by flooding and related environmental issues	Ensure that local planning policy sets out the minimum requirements for flood risk mitigation measures within development, including areas at risk of local sources of flooding.	X	X	X	Hackney Council LPA Function	Local Revenue	
		Develop a strategy for delivering a statutory consultee role with regard to management of surface water on planning applications	X			Hackney Council LPA Function	Local Revenue/ Defra Extra Burden	New Burdens Assessment which will establish the payment required to ensure that LLFAs have sufficient financial resources to meet the expectations of a statutory consultee.
		Proactively enforce the use of SuDS through planning requirements within the National Policy, Local Plan and Core Strategy, aiming for the incorporation of SuDS as an integral part of development.	X	X	X	Hackney Council LPA Function	Local Revenue/ Planning Application Fees	
		Develop and implement a planning process for identifying and 'designating' significant structures or features that have a ‘significant influence on local flood risk’	X			Hackney Council LPA Function	Local Revenue	Statutory duty under the Flood and Water Management Act (2010)
4	Maintain, and improve where necessary, local flood risk management infrastructure, the natural environment and related systems	Seek opportunities to work with Council departments and partners to deliver local flood risk management benefits, identifying opportunities to maximise resources and funding available.	X	X	X	TW/EA/TfL	Local Revenue FCRM GiA Local Levy	
		Continue to seek opportunities for collaborative working, sharing of best practices and cross boundary management of flooding.	X	X	X	TW/EA/TfL	Local Revenue	

No	Local Objectives	Measures	Timescale for Implementation			Key Partners	Potential Funding	Comment
			Short	Medium	Long			
	to reduce risk in targeted areas	Establish a local definition of 'significant influence on local flood risk'	X			EA	Local Revenue	
		Develop or update and maintain a register and record of Flood Risk Assets.	X	X	X	TW/EA/TfL	Local Revenue	Statutory duty under the Flood and Water Management Act (2010). Flood risk assets in England and Wales, both Environment Agency and third party, comprise approximately 40,500 structures, 11,600km of defences, 33,600km of maintained channel and 42,300km of natural main river channel[3] with a total value of about £35[4] billion.
5	Communicate with at risk communities and businesses to collectively understand local risk, share up to date information and work together to manage risk	Develop effective methods for communicating through a variety of media and sharing flood risk information with at risk communities	X	X	X	EA/TW	Local Revenue	
		Work with at risk businesses and community groups to develop risk management and continuity plans that enhance the natural environment and are proportional to the local risks	X	X	X	Local Comm-unities	Local Revenue	
		Work with EA, emergency responders and relevant charities to deliver workshops / road shows and other initiatives	X	X	X	Category 1 and 2[5] Responders/ Flood related charity organisations	Local Revenue	

[3] Figures based on NFCDD at March 2010 as published in the Assets Fact Sheet

[4] Operational Assets Valuation, WS Atkins, Sep 2010 - £35bn includes EA asset valued at £24bn and third party assets valued at £11bn figures dated April 2010

[5] Category 1 and 2 Responders are set out in Hackney's Multi-Agency Flood Plan

No	Local Objectives	Measures	Timescale for Implementation			Key Partners	Potential Funding	Comment
			Short	Medium	Long			
6	Ensure emergency plans are regularly updated with flood risk information and are exercised with all relevant parties to provide a co-ordinated preparation, response and recovery	Utilise best available flood information and flood risk mapping from all sources to inform flood response.	X			Cat 1 and 2 Responders	Local Revenue	
		Develop a strategy in collaboration with the communities at risk to ensure the necessary response is in place upon receipt of a severe weather or flood alert.	X			Cat 1 and 2 Responders	Local Revenue	
		Continue to update the Multi-Agency Flood Plan with information of local flood sources.	X	X	X	Cat 1 and 2 Responders	Local Revenue	
		Develop an understanding of the preparation and response activities of other Risk Management Authorities to flooding.	X			Cat 1 and 2 Responders	Local Revenue	
		Identify areas that would benefit from a forecasting or warnings systems and determine feasibility	X			EA/TW/TfL	Local Revenue FCRM GiA Local Levy	
		Undertake post incident reviews to identify and implement lessons learned into future operational practices	X	X	X	Cat 1 and 2 Responders	Local Revenue	

5. Funding and Implementation

Section Overview

The purpose of this section is to answer the following questions:

- Who will fund the measures?
- How will the measures be implemented?

5.1 FUNDING

A key part of a LFRMS is to provide details on how proposed actions could be funded. This chapter outlines the funding mechanisms that are available to the Hackney Council.

It is likely that funding will need to be sought from a variety of sources in order to deliver projects as central government funding will be limited each year and may only provide a contribution towards the costs of planned schemes. Additional local funding may be required to facilitate projects going ahead. Current sources of funding are described in the following sections:

As the Council faces another few years of economic uncertainty and substantial funding cuts, the need for a clear strategy to set a framework within which the borough can operate becomes increasingly important. We will continue to work with our partner Risk Management Authorities, residents and other stakeholders to ensure that we are better able to influence the flood risk management policy and investment agenda in future, and to take advantage of new and innovative funding opportunities as they emerge.

5.1.1 NATIONAL FUNDING

- **Flood and Coastal Risk Management Grant in Aid (FCRM GiA):** The 2007 Pitt Review recommended that a new funding scheme should be implemented to allow community and third party groups to invest in flood risk management. The new funding mechanism is now active and grants money based on what will be delivered by the project. This payment is made from the main pot of annual funding which is called 'Flood and Coastal Risk Management Grant in Aid'. The key benefits considered in the payment are the reduced flood risk to householder property, infrastructure, to vulnerable communities, environmental benefits and agriculture. For the first time grants for surface water management and property level protection will be considered alongside other schemes.
- **Local Levy:** Local levies are paid by upper tier authorities for additional flood risk management schemes that would not otherwise proceed. The funds can be used to support projects relating to any source of flooding, as well as coastal erosion. Local levy can top up Flood Defence Grant in Aid funding (FDGiA).
- **Revenue funding for Lead Local Flood Authorities:** The government is making additional funds available to councils in the short term to fulfil their new roles and responsibilities under the FWMA. Once allocated, the grants are able to be managed by the London Borough of Hackney according to its needs and priorities. The amount allocated is based on the level of risk in LLFA.

5.1.2 *Local Funding and Additional Funding Sources*

- **Council Tax & Business rate supplements:** Local authorities may choose to invest in flood risk management from income generated through council tax levies and precepts. This approach has been successfully used in the past to promote flood risk management schemes although may require approval through referendum. London Borough of Hackney is responsible for setting council tax and managing spend. Business rate supplements could be levied in a similar manner.
- **The Community Infrastructure Levy:** The Community Infrastructure Levy (CIL) is an important new funding source. It is intended to ensure that developers contribute to the cost of the infrastructure necessary to offset the impact of the development. Local planning authorities, which levy the charge, are required to focus CIL revenues on the provision of new infrastructure. It is not intended to remedy existing infrastructure deficiencies.
- **Developer based contribution:** Section 106 Agreements provide a means of securing developer contributions towards schemes that are necessary for a development to be acceptable in planning terms and directly relates to the development. London Borough of Hackney is responsible for negotiating, collecting and managing funding secured through this route. Section 106 contributions must be directly linked to the specific development and therefore there is limited opportunity for reallocation of funds.
- **New Homes Bonus:** The New Homes Bonus provides funding for local authorities. It matches funds the additional Council Tax raised for new homes and empty properties brought back into use, with an additional amount for affordable homes, for the following six years. The New Homes Bonus could potentially be used to fund local flood risk mitigation measures.
- **DG5 contribution:** Thames Water Utilities Ltd maintains a database of properties at risk of flooding from incapacity of the public sewer network. . Often the areas that are highlighted as having surface water problems appear on the DG5 database. There is an opportunity for London Borough of Hackney and Thames Water Utilities Ltd to work together to deliver effective flood risk management collaboratively. Some schemes may attract part funding from Thames Water Utilities Ltd; this would be decided as specific schemes come forward.
- **Local fundraising / private contributions:** In addition to the above contributions from the local communities and businesses that benefit from schemes may be an important source of funding for local schemes

5.2 Implementation

A cost / benefit appraisal is usually completed for proposed flood risk management schemes (physical works and non-tangible community initiatives) to help ensure the measures are proportionate to the level of risk presented and in some cases to help prioritise schemes and secure funding. It is recognised that specification of costs and benefits of measures is a requirement of a Local Strategy. However, it must also be acknowledged that in order to complete this process that detailed information on the specific costs and benefits of a measure is required. At this stage of Local Strategy development, this type of information is not available in all areas to undertake a meaningful analysis.

Many of the proposed objectives relate to improving understanding of flood risk to better prepare for floods, manage the consequences of flooding and to prioritise future investment. The identified measures to implement these objectives generally relate to

the London Borough of Hackney and its partners approach their responsibilities for flood risk management in their everyday work. Until further investigations are completed and there is greater certainty on funding it is considered inappropriate to identify specific physical works investments or community initiatives and therefore the need for cost / benefit appraisal of proposals is not applicable at this time.

Future iterations of the LFRMS may include proposed measures which involve the implementation of structural or non-structural measures to reduce the consequences of flooding. A cost / benefit appraisal of these measures will then be completed as appropriate, in accordance with the guidance in place at the time. The appraisal will consider the whole life benefits of the measures (both tangible and intangible), the associated implementation costs and ongoing maintenance costs.

6. Review and Update

Section Overview

The purpose of this section is to answer the following questions:

- How often will the Strategy be reviewed?
- Who is responsible for update of the Strategy?
- How can I contribute to the Strategy?
- What happens after the consultation process?

6.1 Strategy Review

6.1.1 Frequency

The Local Strategy should be reviewed and updated every six years as a minimum. It is logical to align the review cycle with the requirements of the Flood Risk Regulations (2009). The Regulations require another Preliminary Flood Risk Assessment (PFRA) to be completed in 2017. The PFRA process will highlight any new flood risk information and this can then be used to update the Local Strategy in 2018.

In addition, there may be circumstances which should trigger a review and/or an update of the Strategy in the interim. Examples of other triggers for review include:

- Occurrence of a significant flood event;
- Additional data or modelling becoming available, which may alter the understanding of flood risk;
- Outcome of investment decisions by partners influences available funding; and
- Development or other topographic changes which may affect flood risk.

It is in the interest of the London Borough of Hackney and the community they represent that the Strategy remains current and up-to-date.

6.1.2 Responsibility

Review and update of the Strategy is the responsibility of the London Borough of Hackney as a Lead Local Flood Authority. Other local risk management authorities are required to support the review and update process by supply of relevant data to inform the Strategy.

6.2 Consultation

6.2.1 Current Position and Future Work

This document will be circulated for consultation to the London Borough of Hackney Council, key Stakeholders, and the general public. Feedback received from the consultation process will be reviewed by the authors and incorporated, where appropriate, into the Strategy to ensure it reflects the needs of the community.

7. References

Defra (2005), Making space for water

Defra / Environment Agency (2011), Understanding the risks, empowering communities, building resilience, the national flood and coastal erosion risk management strategy for England.

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

Department for Communities and Local Government (2014) Planning Policy Guidance (PPG)

Environment Agency (2009), Thames Catchment Flood Management Plan (CFMP)

Environment Agency (2012), Thames Estuary 2100 Plan (TE2100 Plan)

Environment Agency (2014), Living on the Edge

London Borough of Hackney (2010), Core Strategy

London Borough of Hackney (2010), Core Strategy: Area Action Plan

London Borough of Hackney (2010), Level 2 Strategic Flood Risk Assessment (SFRA)

London Borough of Hackney (2011), Preliminary Flood Risk Assessment (PFRA)

London Borough of Hackney (2013), Surface Water Management Plan (SWMP)

National Archives (2009) Flood Risk Regulations

National Archives (2010) Flood and Water Management Act

North London (2008), Strategic Flood Risk Assessment (SFRA)

Appendix A - Glossary

Term	Definition
AEP	Annual Exceedance Probability
Aquifer	A source of groundwater comprising water bearing rock, sand or gravel capable of yielding significant quantities of water.
AMP	Asset Management Plan, see below
Asset Management Plan	A plan for managing water and sewerage company (WaSC) infrastructure and other assets in order to deliver an agreed standard of service.
AStSWF	Areas Susceptible to Surface Water Flooding. A national data set held by the Environment Agency and based on high level modelling which shows areas potentially at risk of surface water flooding.
Catchment Flood Management Plan (CFMP)	A high-level planning strategy through which the Environment Agency works with their key decision makers within a river catchment to identify and agree policies to secure the long-term sustainable management of flood risk.
CFMP	Catchment Flood Management Plan, see entry above
CIRIA	Construction Industry Research and Information Association
Civil Contingencies Act	This UK Parliamentary Act delivers a single framework for civil protection in the UK. As part of the Act, Local Resilience Forums have a duty to put into place emergency plans for a range of circumstances including flooding.
CLG	Government Department for Communities and Local Government
Climate Change	Long term variations in global temperature and weather patterns caused by natural and human actions.
Culvert	A channel or pipe that carries water below the level of the ground.
Defra	Government Department for Environment, Food and Rural Affairs
DEM	Digital Elevation Model: a topographic model consisting of terrain elevations for ground positions at regularly spaced horizontal intervals. DEM is often used as a global term to describe DSMs (Digital Surface Model) and DTMs (Digital Terrain Models).
DG5 Register	A water-company held register of properties which have experienced sewer flooding due to hydraulic overload, or properties which are 'at risk' of sewer flooding more frequently than once in 20 years.
DSM	Digital Surface Model: a topographic model of the bare earth/underlying terrain of the earth's surface including objects such as vegetation and buildings.
DTM	Digital Terrain Model: a topographic model of the bare earth/underlying terrain of the earth's surface excluding objects such as vegetation and buildings. DTMs are usually derived from DSMs.
EA	Environment Agency: Government Agency reporting to Defra charged with protecting the Environment and managing flood risk in England and Wales.
Indicative Flood Risk Areas	Areas determined by the Environment Agency as potentially having a significant flood risk, based on guidance published by Defra and WAG (Welsh Assembly Government) and the use of certain national datasets. These indicative areas are intended to provide a starting point for the determination of Flood Risk Areas by LLFAs.
National FCERM Strategy	National Flood and Coastal Erosion Risk Management Strategy. Prepared by the Environment Agency in partnership with WAG. The strategy is required under the Flood and Water Management Act 2010 and will describe what needs to be done by all involved in flood and coastal risk management to reduce the risk of flooding and coastal erosion, and to manage its consequences.

Term	Definition
FMfSW	Flood Map for Surface Water. A national data set held by the Environment Agency showing areas where surface water would be expected to flow or pond, as a result of two different chances of rainfall event, the 1 in 30yr and 1 in 200yr events.
Flood defence	Infrastructure used to protect an area against floods such as floodwalls and embankments; they are designed to a specific standard of protection (design standard).
Flood Risk Area	See entry under Indicative Flood Risk Areas.
Flood Risk Regulations (FRR 2009)	Transposition of the EU Floods Directive into English and Welsh law. The EU Floods Directive is a piece of European Community (EC) legislation to specifically address flood risk by prescribing a common framework for its measurement and management.
Flood and Water Management Act (FWMA 2010)	An Act of Parliament which forms part of the UK Government's response to Sir Michael Pitt's Report on the Summer 2007 floods, the aim of which is to clarify the legislative framework for managing surface water flood risk in England and Wales. The Act was passed in 2010 and is currently being enacted in stages.
Fluvial Flooding	Flooding resulting from water levels exceeding the bank level of a watercourse (river or stream). In this report the term Fluvial Flooding generally refers to flooding from Main Rivers (see later definition).
FRR	Flood Risk Regulations, see above.
IUD	Integrated Urban Drainage, a concept which aims to integrate different methods and techniques, including sustainable drainage, to effectively manage surface water within the urban environment.
LDP	Local Development Plan containing the local planning policies which guide development over the next 15 years
Local Strategy	A local strategy required by the FWMA 2010 that 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.
Lead Local Flood Authority	Local Authority responsible for taking the lead on local flood risk management. The duties of LLFAs are set out in the Flood and Water Management Act 2010.
LiDAR	Light Detection and Ranging, a technique to measure ground and building levels remotely from the air, LiDAR data is used to develop DTMs and DEMs (see definitions above).
LLFA	Lead Local Flood Authority, see above.
Local Resilience Forum	A multi-agency forum, bringing together all the organisations that have a duty to cooperate under the Civil Contingencies Act, and those involved in responding to emergencies. They prepare emergency plans in a co-ordinated manner and respond in an emergency. Roles and Responsibilities are defined under the Civil Contingencies Act.

Term	Definition
LPA	Local Planning Authority. The local authority or Council that is empowered by law to exercise planning functions for a particular area. This is typically the local borough or district Council.
LRF	Local Resilience Forum, see above.
Main River	Main rivers are a statutory type of watercourse in England and Wales and are usually larger streams and rivers, but may also include some smaller watercourses. A main river is defined as a watercourse marked as such on a main river map, and can include any structure or appliance for controlling or regulating the flow of water in, into or out of a main river. The Environment Agency's powers to carry out flood defence works apply to main rivers only.
NRD	National Receptor Dataset – a collection of risk receptors produced by the Environment Agency. A receptor could include essential infrastructure such as power infrastructure and vulnerable property such as schools and health clinics.
Ordinary Watercourse	All watercourses that are not designated Main River, and which are the responsibility of Local Authorities or, where they exist, IDBs are termed Ordinary Watercourses.
Partner	A person or organisation with responsibility for the decision or actions that need to be taken.
PFRA	Preliminary Flood Risk Assessment, see below.
Pitt Review	Comprehensive independent review of the 2007 summer floods by Sir Michael Pitt, which provided recommendations to improve flood risk management in England and Wales.
Pluvial Flooding	Flooding from water flowing over the surface of the ground; often occurs when the soil is saturated and natural drainage channels or artificial drainage systems have insufficient capacity to cope with additional flow.
Preliminary Flood Risk Assessment	Assessment required by the EU Floods Directive which summarises flood risk in a geographical area. Led by Local Authorities.
Resilience Measures	Measures designed to reduce the impact of water that enters property and businesses; could include measures such as raising electrical appliances.
Resistance Measures	Measures designed to keep flood water out of properties and businesses; could include flood guards for example.
Risk	In flood risk management, risk is defined as a product of the probability or likelihood of a flood occurring, combined with the consequence of the flood.
Risk Management Authority	Defined by the Flood and Water Management Act as “the Environment Agency, a lead local flood authority, a district council for an area for which there is no unitary authority, an internal drainage board, a water company, and a highway authority”.
RMA	Risk Management Authority, see above.
Sewer flooding	Flooding caused by a blockage or incapacity in a sewer.
Stakeholder	A person or organisation affected by the problem or solution, or interested in the problem or solution. They can be individuals or organisations, includes the public and communities.
SUDS	Sustainable Drainage Systems, see below.
Sustainable Drainage Systems	Methods of management practices and control structures that are designed to drain surface water in a more sustainable manner than some conventional techniques. Includes swales, wetland sand ponds.
Surface water	Rainwater (including snow and other precipitation) which is on the surface of the ground (whether or not it is moving), and has not entered a watercourse, drainage system or public sewer. Refer to Pluvial flooding.
SWMP	Surface Water Management Plan.
Tidal	Relating to the actions or processes caused by tides

Term	Definition
UKCIP	The UK Climate Impacts Programme. Established in 1997 to assist in the co-ordination of research into the impacts of climate change. UKCIP publishes climate change information on behalf of the UK Government and is largely funded by Defra.
WAG	Welsh Assembly Government
WaSC	Water and Sewerage Company.

Hackney

Appendix B – Figures

Appendix C – Example of Investigation Priority

	Ward Name	Human Health			Economic Activity			Environment		Significant Historic Local Flooding Experienced?	Historic Flooding from Local Sources	Overall Investigation Priority High = 19 + Medium = 8 to 18 Low = 0 to 7
		Res. Properties (No.)	Critical Services (No.)	Critical Service Type	Non-Residential Properties (No.)	Road (km) A&M roads	Rail (km)	Heritage Features (No.)	Details			
Actual number from the relevant Dataset	Hackney Wick	117	2	1 primary school 1 Electricity sub-station	14	0.9115	0.1678	0	-	YES	2 incidents (Sewer)/23 SW flood incidents associated with blocked gullies (2010 - 2012)/Significant main river flooding (historically)	**High**
Scoring number	Hackney Wick	5	5	1 primary school 1 Electricity sub-station	3	3	3	0	-	YES	2 incidents (Sewer)/23 SW flood incidents associated with blocked gullies (2010 - 2012)/Significant main river flooding (historically)	**19**

Hackney Wick Ward is classified as a High priority Ward according to the above table. The first row of this table represents the actual number of properties, critical services etc. The second row represents the scoring numbers that were assigned to each parameter according to Table 2.4. For example, Hackney Wick Ward has 117 Flooded Residential Properties according to the Surface Water Management Plan outputs. This number is above the threshold of 8.46 properties (see Table 2.3) so according to the second column of Table 2.4 it should be classified as Medium priority and receive a score of 3. However, since this Ward has experienced significant historical flooding it is classified as a High Priority Ward with a score of 5 according to the last column of the same table (see Table 2.4). Those scores were then summed up giving the overall Investigation Priority of the Ward (last column of the above table).