

London Borough of Wandsworth Local Flood Risk Management Strategy

March 2016



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FOREWORD

In response to the flood events during 2007, the Government commissioned Sir Michael Pitt to undertake a review. The outcome of this, *Learning Lessons from the 2007 Floods* outlined the need for changes in the way England is adapting to the increased risk of flooding and the role different organisations have to deliver this function.

The Flood Risk Regulations 2009 and the Flood and Water Management Act 2010, enacted by Government in response to the recommendations of The Pitt Review, gave unitary and county councils, as Lead Local Flood Authorities, new responsibilities for leading and co-ordinating the management of local flood risk; namely the flood risk arising from surface water, groundwater and smaller watercourses and ditches, known as ordinary watercourses. This includes a statutory duty to develop, maintain, apply and monitor a strategy for the management of local flood risk.

Wandsworth Council is the Lead Local Flood Authority for the London Borough of Wandsworth. This Local Flood Risk Management Strategy ('the Strategy') offers the first opportunity for us to formalise our longer term vision and flood risk management priorities to shape a Strategy that delivers the greatest benefit to the people, property and environment of Wandsworth.

Wandsworth has a history of surface water flooding with significant surface water flooding occurring on the 20th July 2007 impacting several areas across the Borough. Intense periods of rainfall caused flash floods and the capacity of the existing drainage system to be exceeded in several locations across the Borough, causing overland flow and ponding in low lying areas that impacted residents, businesses and transport infrastructure across the Borough.

Wandsworth is at risk of flooding from local sources of flooding, namely surface water and groundwater sources, and it is predicted that this will increase in the future; influenced by climate change and increasing pressures on development and housing need.

In December 2013 the Environment Agency published the national surface water flood mapping, the Flood Risk from Surface Water Map. This Strategy has identified that within the London Borough of Wandsworth;

- Up to 2,190 residential properties and 602 non-residential properties could be at high risk of surface water flooding (for a rainfall event with a 1 in 30 probability of occurring in any given year).
- Up to 6,703 residential properties and 1,333 non-residential properties could be at medium risk of surface water flooding (for a rainfall event with a 1 in 100 probability of occurrence in any given year).
- Up to 24,918 residential properties and 3,322 non-residential properties could be at low risk of surface water flooding (for a rainfall event with a 1 in 1000 probability of occurrence in any given year).

Since April 2011 we have been working closely with communities, businesses, and other risk management authorities, including our neighbouring boroughs, the Environment Agency and Thames Water, to improve our understanding of flood risk in Wandsworth and deliver measures that improve community resilience alongside nationally funded strategic schemes that deliver flood and environmental benefits to communities, businesses and infrastructure.

In developing this Strategy, we have consulted with communities, businesses, neighbouring boroughs and risk management authorities to develop a coordinated Strategy for local flood risk management across Wandsworth. We recognise that communities now play a much greater role in the flood risk management decision making process. The Strategy outlines the priorities for local flood risk management and provides a delivery plan to manage the risk over the next six years. We have given consideration to the roles and responsibilities of other risk management authorities in Wandsworth, including the Environment Agency which has responsibility for managing the risk arising from main rivers, including the River Thames, River Wandle and Beverley Brook, and Thames Water, which has responsibility for managing sewer flooding. Both these sources of flooding interact and influence surface water and groundwater flood risk within Wandsworth.

Our Strategy complements and supports the *National Strategy* published by the Environment Agency which outlines a National framework for flood and coastal risk management. The Environment Agency has a strategic overview role of all flood and coastal erosion risk management. In addition, the Local Strategy is aligned with the corporate priorities of Wandsworth's strategic plans. We have taken the guiding principles from these strategies into account when setting objectives for the management of local flood risk:

London Borough of Wandsworth Local Strategy Objectives

1. Further understand the risk of flooding across the London Borough of Wandsworth,
2. Encourage appropriately mitigated development across the London Borough of Wandsworth,
3. Seek to identify funding and resources available for flood risk management,
4. Proactively manage sources of local flooding to homes, critical infrastructure and transport networks by working in partnership with others,
5. Work with Risk Management Authorities to raise awareness of flood risk with communities, residents and businesses and how they can better protect themselves and their property, and
6. Use knowledge of flood risk to inform the emergency response to flooding within the London Borough of Wandsworth.

The Strategy is accompanied by an Action Plan setting out how we will deliver the objectives of the Strategy over the next six years and a Strategic Environmental Assessment (SEA) assessing the impacts of the Strategy on the environment.

Over the next six years we will continue to work with communities and businesses to help them understand the risks they face and what can be done to manage them. A range of individual, community and council-led actions and improved awareness will help manage both the likelihood and impact of flooding and consequently lead to social, economic and environmental benefits to Wandsworth's communities.

Longer term strategic development across Wandsworth will integrate consideration of flood risk and sustainable drainage into planning and development control systems. Inappropriate development which could increase flood risk will be avoided, as will inappropriate development in areas of significant flood risk.

The Local Flood Risk Management Strategy will be reviewed periodically and following a significant flood event to ensure that its content and emphasis remains relevant.

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1. INTRODUCTION

1.1 Flood Risk in South West London

- 1.1.1 In England, 5.2 million properties are at risk of flooding. Of these, 1.4 million are at risk from rivers or the sea, 2.8 million are at risk from surface water and 1 million are at risk from both¹. This risk was realised in many parts of the country during the summer floods of 2007, which resulted in 55,000 properties flooding, 7,000 rescues by emergency services, 13 deaths and an estimated £3billion of damages. The severity of this event generated changes in the way flooding should be managed by local and national organisations.
- 1.1.2 Across South West London there are risks of flooding from a range of sources, including surface water runoff and ponding, groundwater, sewer surcharging and flooding from main rivers and ordinary watercourses, and reservoirs. In some cases more than one of these sources of flooding can combine to cause a flood event.
- 1.1.3 Risks from tidal and river flooding associated with the River Thames, Beverley Brook, the River Wandle and the River Graveney are relatively well understood and have been managed for many years by the Environment Agency. However, flood risk from more local sources, including surface water runoff and ponding, groundwater and small ditches and land drains are less well understood; these are typically very localised events which are often difficult to predict, and with sparse historical records available to provide supporting evidence.
- 1.1.4 Parts of South West London have a particular susceptibility to surface water and sewer flooding due to the urbanised nature of the area and the complexity of the sewer system leading to a high potential for constrictions, blockages and failure. Over recent years, severe surface water flooding has been experienced across the area causing damage to property and disruption to businesses and services. Details of historic flood records are provided in [Section 2](#).
- 1.1.5 In December 2013 the Environment Agency published the Risk of Flooding from Surface Water dataset² which maps surface water flood risk across England and Wales. The Risk of Flooding from Surface Water mapping builds on modelling undertaken as part of the London Borough of Wandsworth SWMP. Borough-wide property counts undertaken to support this Strategy indicate that up to 24,918 residential properties and 3,322 non-residential properties could be at risk of surface water flooding across the Borough, with up to 2,190 residential and 602 non-residential properties at high risk, defined as having a 1 in 30 chance of surface water flooding occurring in any given year. Further details are provided in [Section 2](#).
- 1.1.6 Typically, reactive mitigation measures have been implemented in response to past flood events, usually with the construction of new drainage infrastructure. However, climate change and continued urbanisation are likely to increase flood risks in the future unless action is taken to mitigate or adapt to that risk.

1.2 Flood Risk Management in South West London

- 1.2.1 In response to the severe flooding across large parts of England and Wales in summer 2007, the Government commissioned Sir Michael Pitt to undertake a review of flood risk management. [The Pitt Review – Learning Lessons from the 2007 Floods](#)³ and subsequent

¹ Environment Agency (2009) Flooding in England: A National Assessment of Flood Risk <http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/geho0609bqds-e-e.pdf>

² Environment Agency (2014) Risk of Flooding from Surface Water <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=ufmfsw#x=357683&y=355134&scale=2>

³ Cabinet Office (2008) Sir Michael Pitt Report 'Learning lessons learned from the 2007 floods' <http://www.environment-agency.gov.uk/research/library/publications/33889.aspx>

progress reviews outlined the need for changes in the way the UK is adapting to the increased risk of flooding and the role different organisations have to deliver this function.

- 1.2.2 [The Flood and Water Management Act 2010](#)⁴ ('the Act') and the [Flood Risk Regulations 2009](#)⁵ ('the Regulations'), make provision for unitary authorities and county councils, including all London Boroughs, as Lead Local Flood Authorities (LLFAs). As an LLFA Wandsworth Council has a number of duties and responsibilities in relation to managing local flood risk, as required by the Act and the Regulations. Local flood risk is defined as the risk of flooding from surface water runoff, groundwater and small ditches and watercourses (collectively known as Ordinary Watercourses).
- 1.2.3 The Act also formalises the flood risk management roles and responsibilities for other organisations including the Environment Agency, water companies and highways authorities. The responsibility to lead and co-ordinate the management of flood risk from main rivers, the sea and other tidal sources (such as estuaries) remains that of the Environment Agency. Further details regarding responsibilities and functions in relation to their flood risk management in South West London is provided in [Section 3](#).
- 1.2.4 As LLFAs, each of the unitary authorities across South West London has a statutory duty to develop, maintain, apply and monitor a strategy for local flood risk management ('the Strategy').
- 1.2.5 The six LLFAs covering South West London, (namely, London Borough of Croydon, The Royal Borough of Kingston upon Thames, London Borough of Merton, London Borough of Sutton, London Borough of Richmond upon Thames and London Borough of Wandsworth), have chosen to partner together to commission the preparation of their Strategies in a coordinated manner. This partnership approach will encourage collaboration and enable flood risk across South West London to be managed more effectively and holistically. Further details on the South West London Strategic Flood Group are included in [Section 5](#).

1.3 The London Borough of Wandsworth Strategy

- 1.3.1 The purpose of the London Borough of Wandsworth Strategy is to set out the approach to managing flood risk from local sources (i.e. surface water, groundwater and ordinary watercourses) in both the short and longer term, with proposals for actions that will help to manage the risk in a way that delivers the greatest benefit to its residents, businesses and the environment.
- 1.3.2 The Strategy complements and supports the [National Strategy](#)⁶, published by the Environment Agency in 2011, which outlines a national framework for flood and coastal risk management, balancing the needs of communities, the economy and the environment.
- 1.3.3 This Strategy has been developed by Wandsworth Council in partnership with Risk Management Authorities, including the Environment Agency and Thames Water, local communities and neighbouring boroughs. Further details of Risk Management Authorities and other organisations with responsibilities for flood risk management are provided in [Section 3](#).
- 1.3.4 In delivering flood risk management, Wandsworth Council has the opportunity to deliver wider environmental objectives and requirements, as set out in European legislation including the [Water Framework Directive](#)⁷ (WFD). The WFD was transposed into UK national law through

⁴ HMSO (2010) The Flood and Water Management Act 2010 <http://www.legislation.gov.uk/ukpga/2010/29/contents>

⁵ HMSO (2009) The Flood Risk Regulations 2009 <http://www.legislation.gov.uk/uksi/2009/3042/made>

⁶ Defra, Environment Agency (2011) The National Flood and Coastal Erosion Risk Management Strategy for England <https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england>

⁷ European Union (2000) Water Framework Directive <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0060:EN:NOT>

The [Water Environment Regulations 2003](#)⁸ and states that Wandsworth Council should have regard to the River Basin Management Plans (RBMPs) when exercising its functions as a public body. The approach for addressing this, including the preparation of a Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment screening exercise, is outlined in [Section 6](#).

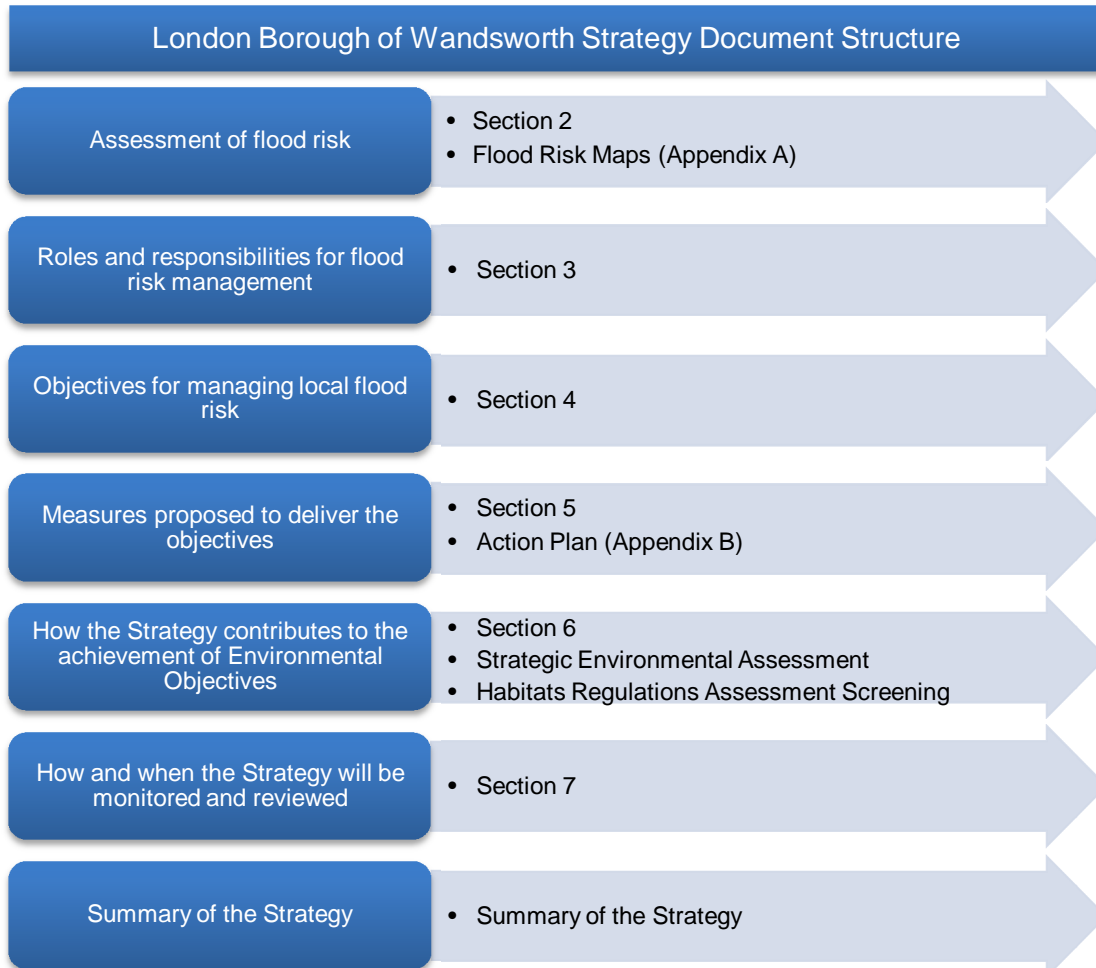


Figure 1-1 Structure of the London Borough of Wandsworth Strategy

1.4 Community Engagement and Consultation

1.4.1 A community engagement exercise was undertaken between December 2013 and March 2014 offering residents and businesses the opportunity to shape the development of the Strategy and future flood risk management priorities. Details of the outcomes from the community engagement activities are included in [Appendix C](#).

1.5 Supporting Plans and Documents

1.5.1 Over recent years, a number of documents have been prepared detailing the assessment and management of flood risk within Wandsworth (Figure 1-2). Each of these have built on

⁸ HMSO (2003) The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 <http://www.legislation.gov.uk/uksi/2003/3242/contents/made>

emerging evidence, assessments and modelling techniques to improve the knowledge of potential flood risk across the Borough.

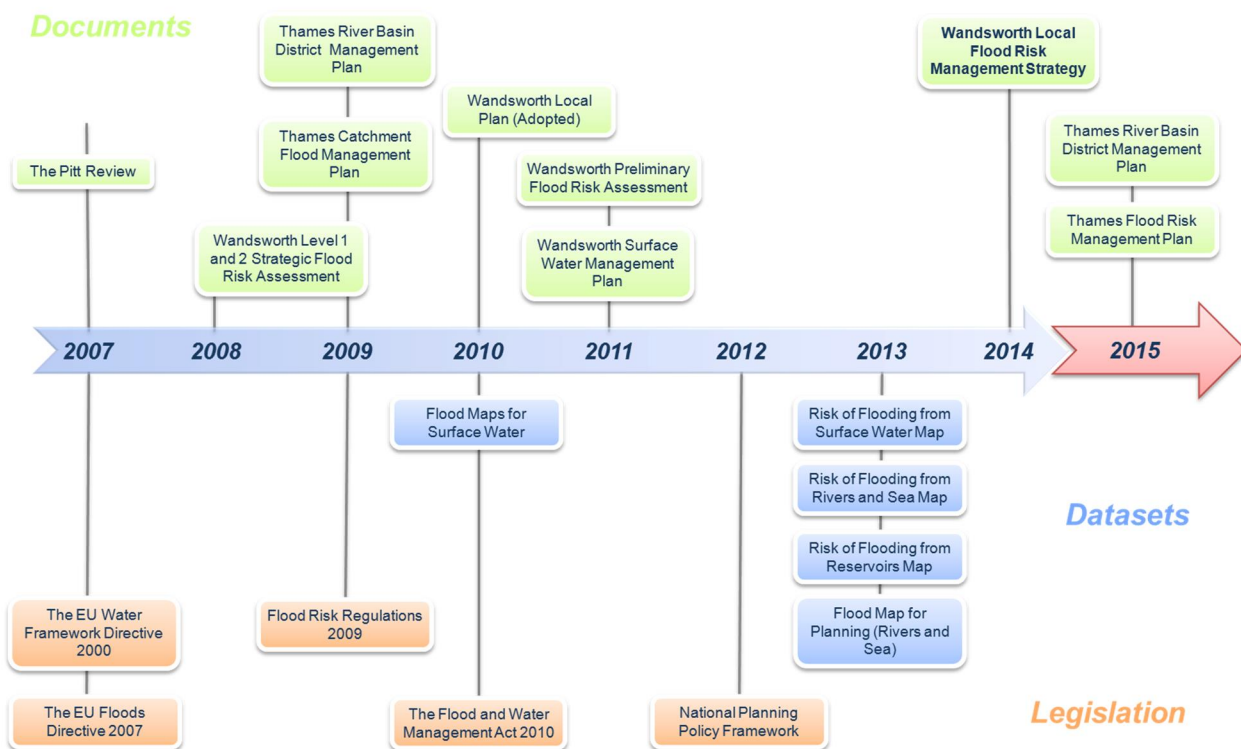


Figure 1-2 Timeline of supporting documents, datasets and legislation for the Strategy

- 1.5.2 The Strategy forms a key document in this suite of flood risk management plans, drawing together existing flood risk studies and plans into a single document that outlines how Wandsworth Council will manage local flood risk going forwards (Figure 1-3).
- 1.5.3 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](#)⁹ (SWMP), [Level 1 Strategic Flood Risk Assessment](#)¹⁰ (SFRA), [Level 2 SFRA](#)¹¹ and the [Preliminary Flood Risk Assessment \(PFRA\)](#)¹². These same documents and the partnerships forged between Risk Management Authorities during their preparation are also built upon and formalised as part of the Strategy.
- 1.5.4 The Strategy also draws from wider environmental plans covering Thames catchment including the [Thames River Basin District Management Plan](#)¹³ and the [Thames Catchment](#)

⁹ Capita Symonds URS for the London Borough of Wandsworth (2011) London Borough of Wandsworth Surface Water Management Plan http://www.wandsworth.gov.uk/downloads/download/1149/surface_water_management_plan

¹⁰ Scott Wilson (2008) London Boroughs of Wandsworth, Merton, Sutton and Croydon Level 1 Strategic Flood Risk Assessment. http://www.wandsworth.gov.uk/downloads/download/414/strategic_flood_risk_assessment

¹¹ Scott Wilson (2009) London Borough of Wandsworth Level 2 Strategic Flood Risk Assessment. http://www.wandsworth.gov.uk/download/downloads/id/1455/level_2_sfra-final_report

¹² Capita Symonds URS for the London Borough of Wandsworth (2011) London Borough of Wandsworth Preliminary Flood Risk Assessment http://www.wandsworth.gov.uk/downloads/file/5984/preliminary_flood_risk_assessment

¹³ Environment Agency (2009) Thames River Basin District Management Plan https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289937/qeth0910bswa-e-e.pdf

Flood Management Plan¹⁴ to ensure a coordinated approach to flood risk management across South West London.

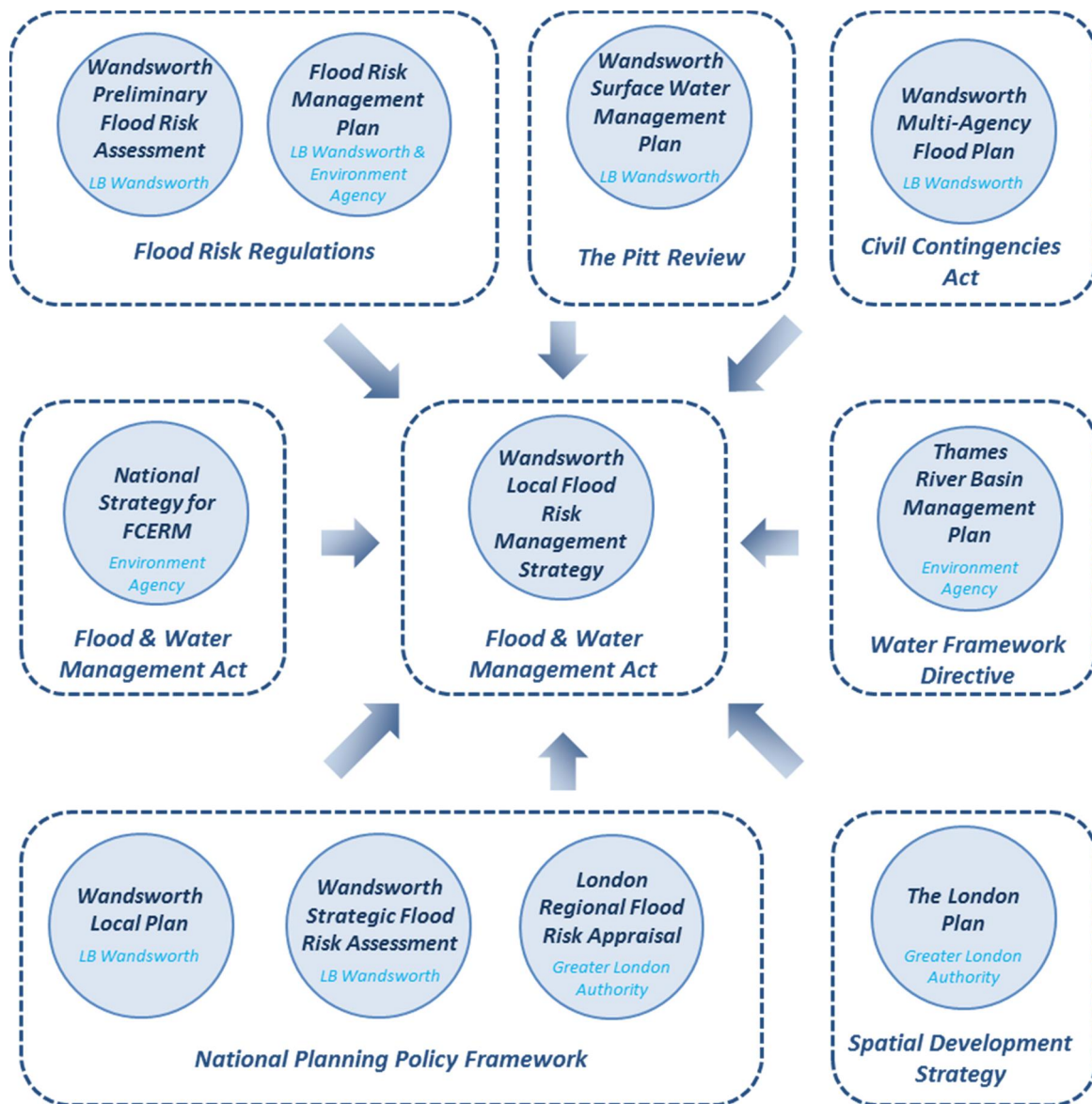


Figure 1-3 Legislative Drivers and Supporting Documents for the Strategy

Flood Risk Management Plan

- 1.5.5 As well as the duties under the Act to prepare the Strategy, Wandsworth Council has legal obligations under the EU Floods Directive¹⁵, which was transposed into UK Law through the Regulations.
- 1.5.6 As part of the Greater London Flood Risk Area, Wandsworth Council, as the LLFA for the London Borough of Wandsworth, is required to contribute to the preparation of a Flood Risk

¹⁴ Environment Agency (2009) Thames Catchment Flood Management Plan
<https://www.gov.uk/government/publications/thames-catchment-flood-management-plan>

¹⁵ European Union (2007) EU Floods Directive <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32007L0060:EN:NOT>

Management Plan for the Thames River Basin District outlining significant flood risk, receptors and consequences across their administrative area.

- 1.5.7 This Strategy has been prepared to meet the requirements the Regulations as well as the Act, and thereby avoid duplication of work.

2. FLOOD RISK IN THE LONDON BOROUGH OF WANDSWORTH

2.1 What is Flood Risk?

- 2.1.1 Flood risk is not just the likelihood of flooding occurring, but also the potential damage a flood could cause. Assessing risk in quantifiable, financial terms can help prioritise where available funding should be directed, as well as support applications for additional external funding.
- 2.1.2 However, it should also be borne in mind that the consequences of flooding can be far reaching and not always easy to value, particularly the social impacts of displacement, loss and fear of repeat events. Relevant available information and past experiences have been considered in developing the objectives for managing future flood risk.

What is Flood Risk?

Flood Risk is the likelihood of a particular flood happening (probability) e.g. ‘there is a 1 in 100 chance of flood in any given year in this location’, multiplied by the impact or consequence that will result if the flood occurs.



The evaluation of risk takes into account the severity of impacts from a flood event, which can be highly variable in terms of social, economic and environmental consequences. Consequences are often measured by the number of properties flooded and the level of economic damage. It will also be influenced by vulnerability (i.e. a basement flat or a key emergency service station is more vulnerable than a commercial warehouse)

There will only be a risk if there is a means (pathway) of connecting the source of the flood with the people, property and land that may be affected (receptors). Source, pathway and receptor must all be present for there to be a risk.





Figure 2-1 Definition of Flood Risk

2.2 Sources of Flood Risk

- 2.2.1 The London Borough of Wandsworth is at risk of flooding from both local sources of flooding and other sources, including the tidal River Thames, main rivers, sewers and artificial sources. The greatest risk from these often arises where different sources of risk combine to exacerbate flooding.
- 2.2.2 For each of the flooding sources a description of the source and mechanism of flooding has been provided and an assessment of the risk has been made drawing on historical records, outcomes from the community engagement (refer to [Appendix C](#)), as well as assessments detailed in existing technical studies addressing both current and future risk. [Appendix A](#)

provides a series of maps showing the historic records of flooding and flood risk, where information is available.

Surface Water

Table 2-1 Flooding from Local Sources Surface Water	
Description of Source	Surface water flooding usually occurs when high intensity rainfall generates runoff which flows over the surface of the ground and ponds in low-lying areas, before the runoff enters a watercourse or sewer. It can be exacerbated when the soil is saturated and natural drainage channels or artificial drainage systems have insufficient capacity to cope with the additional flow.
Supporting Documents	London Borough of Wandsworth SWMP London Borough of Wandsworth PFRA Environment Agency Risk of Flooding from Surface Water Map¹⁶
Historic Flooding	<p>The London Borough of Wandsworth has experienced a number of surface water flood events, the most notable of which was the 20th July 2007 where intense periods of rainfall caused flash floods and the capacity of the existing drainage system to be exceeded in several locations across the Borough. This caused overland flow and ponding in low-lying areas and impacted residents, businesses and the transport network across the Borough. The PFRA reports that Tooting Bec and Tooting Broadway underground stations were closed, and schools, public buildings, residential properties and the transport network all suffered damage.</p> <p>Specific episodes of surface water flooding are recorded in the following locations (Figure 1, Appendix A):</p> <ul style="list-style-type: none"> • Wandsworth Town (Armoury Way), □ Clapham Junction (Falcon Road), □ Battersea Park, □ Wandsworth Common (Northcote Road), and, □ Upper Tooting. <p>The online survey carried out to support this Strategy indicated that the greatest concern amongst the respondents was flooding from surface water runoff from roads and impermeable surfaces. The majority of respondents perceive historic surface water flooding events to be caused by heavy rainfall and blocked drains which lead to flooded roads and disruption to public transport.</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;"><i>Flooding in Wandsworth Town in July 2007 (Source: Wandsworth Borough Council)</i></p>
Future Flood Risk	<p>The PFRA and SWMP identify Balham, Summerstown, Wandsworth Town, Tooting Graveney, Putney and Southwest Battersea to be particularly susceptible to surface water flooding.</p> <p>The Environment Agency has undertaken national modelling of the risk of flooding from surface water and published the mapping outcomes on their website in December 2013. The Flood Risk from Surface Water map identifies the risk of surface water flooding at a strategic scale and bands flood risk as follows:</p> <ul style="list-style-type: none"> □ High Risk – at risk of flooding for a rainfall event with a 1 in 30 probability of occurrence in any given year, □ Medium Risk – at risk of flooding for a rainfall event with a 1 in 100 probability of occurrence in

¹⁶ Environment Agency Risk of Flooding from Surface Water Map: <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?lang=e&topic=ufmfsw&layer=default&scale=2&x=357683&y=355134#x=357683&y=355134&scale=2>
 Also known as the updated Flood Map for Surface Water (uFMfSW) dataset.

Table 2-1 Flooding from Local Sources Surface Water

any given year,

- **Low Risk** – at risk of flooding for a rainfall event with a 1 in 1000 probability of occurrence in any given year, and,
- **Very Low Risk** – at risk of flooding for a rainfall event with less than a 1 in 1000 probability of occurrence in any given year.

The Flood Risk from Surface Water Map improves on modelling and mapping undertaken as part of the Wandsworth SWMP in 2011. The mapping shows relatively good correlation with the surface water modelling presented in the SWMP, but shows surface water to be more constrained within roads and watercourses, which reflects the improved modelling approach. Based on available historic information, the dataset is considered to be more reflective of flood risk across Wandsworth and will be used as the surface water flood risk map for the Borough until such time as further updates or improved modelling of risk is undertaken.

An assessment of the risk to properties, critical infrastructure, transport, heritage and the environment has been undertaken for the Strategy using the Environment Agency’s National Receptor Database to provide an indication of the level of risk facing Wandsworth. This is presented in the table below and Figures 7 and 8 in [Appendix A](#).

Number of Properties at Risk from Surface Water Flooding <i>(based on Risk of Flooding from Surface Water mapping, Environment Agency, December 2013)</i>				
Type of Property		Risk		
		Low	Medium	High
Residential		24,918	6,703	2,190
Non Residential	Commercial & Industrial	2,855	1,161	548
	Emergency Services (Fire, Police & Ambulance)*	7	4	1
	Hospitals*	2	1	0
	Schools and Education Facilities*	123	52	17
	Surgery or Health Care*	67	22	7
	Residential Home*	3	1	0
	Sewage Treatment*	2	0	0
	Electricity Sub Station or Building*	162	52	16
	Other	101	40	13
Non Residential Total		3,322	1,333	602
Total		28,240	8,036	2,792

The areas at greatest risk within Wandsworth have been identified as Critical Drainage Areas (CDAs) or flooding hotspots. Thirteen CDAs have been identified across Wandsworth (see Figure 6 in [Appendix A](#) and overleaf).

The areas considered to be at greatest risk of surface water flooding are:

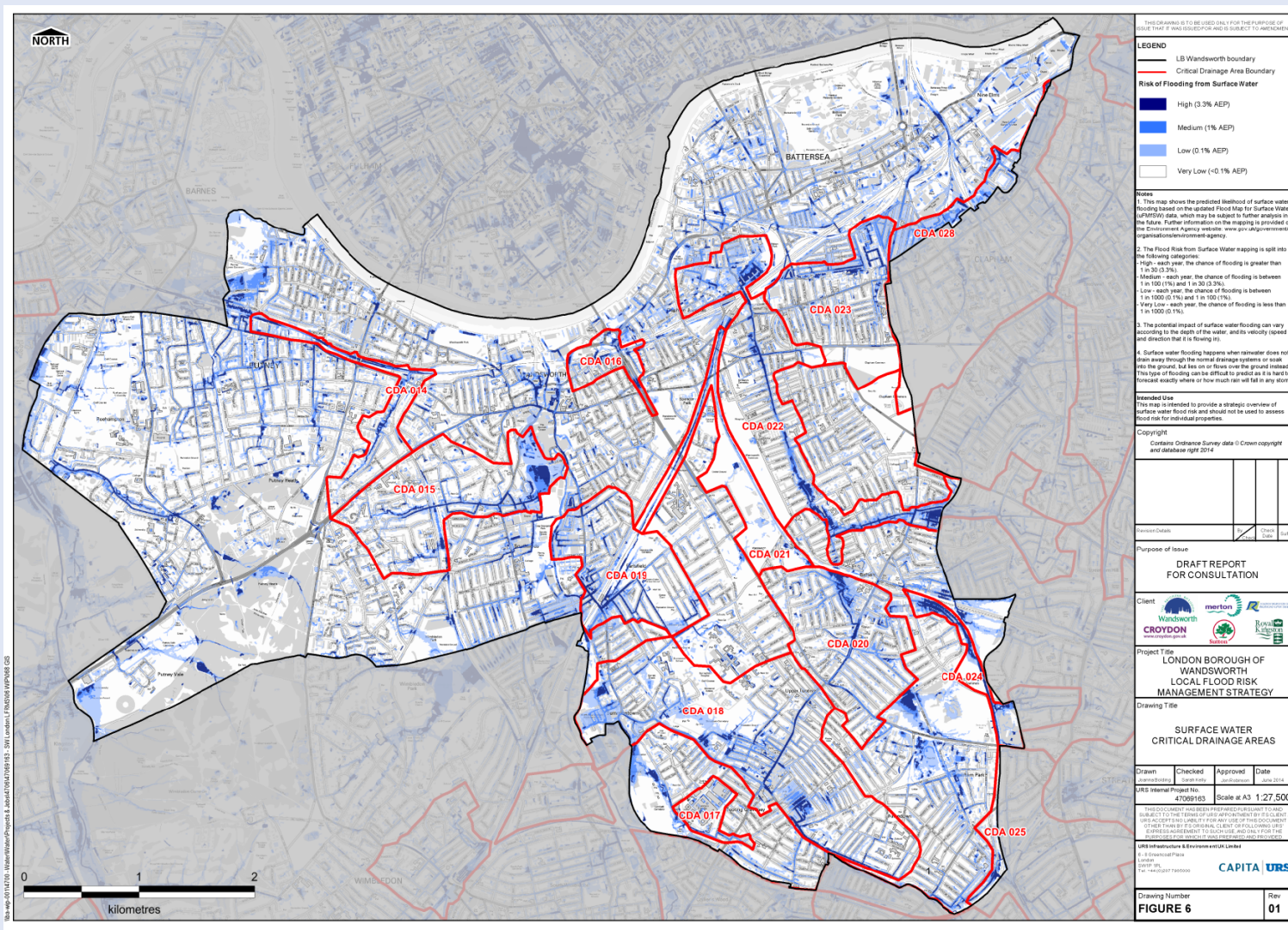
- Wandsworth Town,
- Summerstown (CDA 018),
- Earlsfield (CDA 019),
- South Balham (CDA 020),
- Clapham Junction (CDA 022),
- Lavender Hill (CDA 023), and
- Tooting Bec (CDA 024).

It should be noted that there are a number of other areas at risk of surface water flooding across the Borough and in several of these, where large volumes of development are planned (such as Nine Elms), regeneration presents opportunities for reducing flood risk.

Table 2-1 Flooding from Local Sources Surface Water

<p>Figures - Appendix A</p>	<p>Figure 1: Historic Flooding Figure 2: Flood Risk from Surface Water Figure 6: Surface Water Critical Drainage Areas Figure 7: Flood Risk from Surface Water: Critical Services & Transport Figure 8: Flood Risk from Surface Water: Environment & Heritage</p>
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Table 2 1 Flooding from Local Sources Surface Water

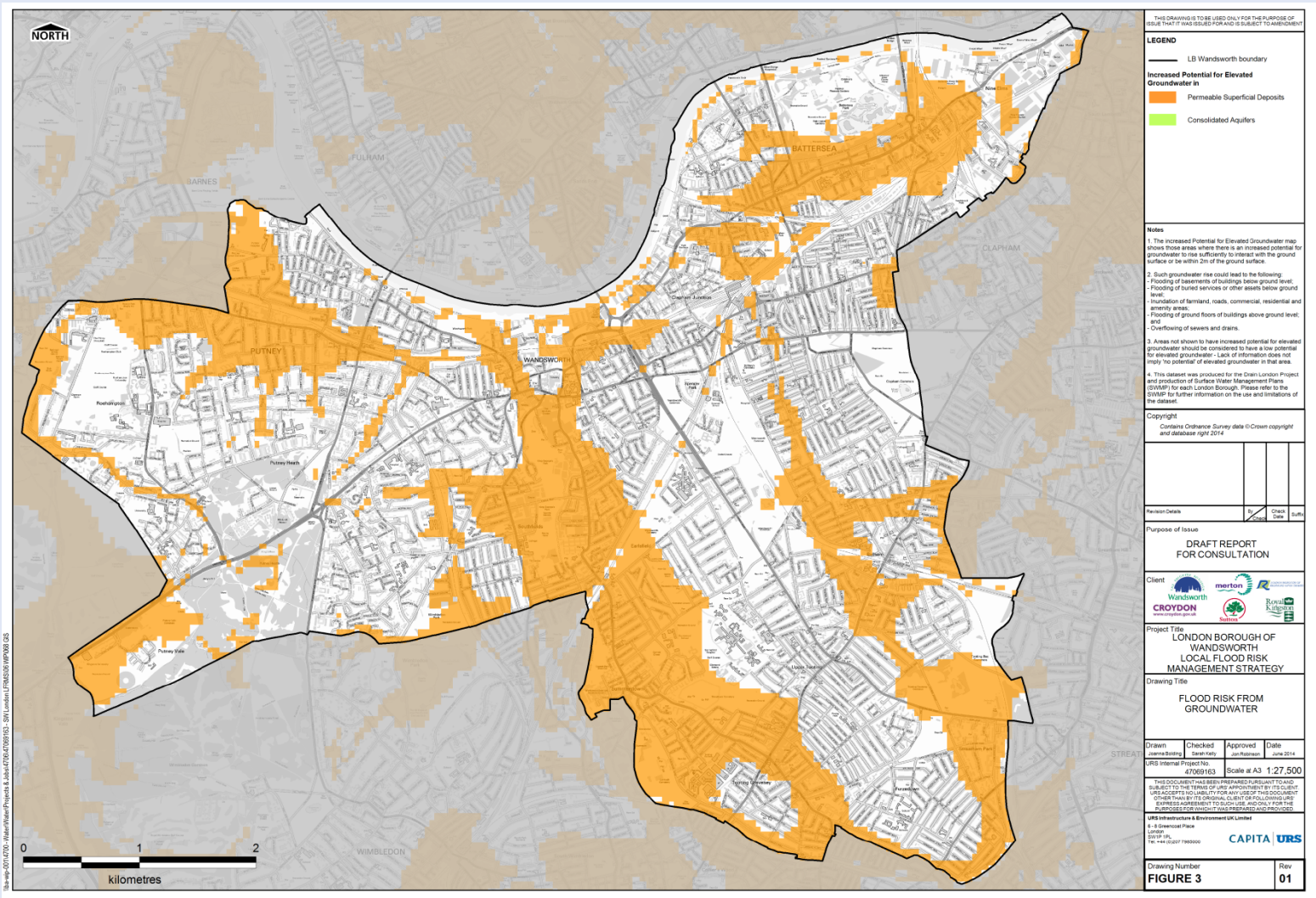


Flood Risk from Surface Water in the London Borough of Wandsworth and Critical Drainage Areas (CDAs)

Groundwater

Table 2-2 Flooding from Local Sources Groundwater	
Description of Source	Groundwater flooding occurs as a result of water rising up from the underlying aquifer or from water flowing from springs. This tends to occur after much longer periods of sustained high rainfall and can be sporadic in both location and time often lasting longer than flooding from rivers or surface water. High groundwater level conditions may not always lead to widespread groundwater flooding; however, they have the potential to exacerbate the risk of surface water flooding and flooding from rivers by reducing rainfall infiltration capacity, and increasing the risk of sewer flooding through groundwater interactions.
Supporting Documents	London Borough of Wandsworth SWMP London Borough of Wandsworth PFRA
Historic Flooding	<p>There have been 52 records of reported historic flooding from groundwater (Figure 1, Appendix A). Instances of groundwater flooding have been reported in a number of areas in Wandsworth, with the majority clustering in the areas of Putney, south east of Wandsworth Town, Balham, Battersea and Upper Tooting.</p> <p>From the online survey carried out to support this Strategy, 10% of respondents indicated that they thought the flooding they had experienced was caused by groundwater/springs.</p>
Future Flood Risk	<p>Groundwater flooding can be particularly difficult to predict due to the 'hidden' nature of the source of flooding and relatively longer period of build-up and emergence, often several days or weeks after heavy rainfall has fallen and river levels have receded.</p> <p>Existing efforts to predict groundwater flooding events are based on monitoring water levels in boreholes in areas known to be at risk. These systems can give notice (typically days or weeks ahead) of impending events. Groundwater models can be used to provide early warning systems that can alert authorities to possible groundwater flooding in advance allowing authorities can plan their response and possibly even to implement mitigating measures. However, the monitoring of boreholes and development of groundwater flood models can be costly, and are only normally undertaken in those areas of greatest risk.</p> <p>For the Wandsworth SWMP, an 'Increased Potential for Elevated Groundwater' dataset was derived British Geological Survey, Environment Agency and Defra groundwater flooding datasets (Figure 3, Appendix A and overleaf). The dataset identifies areas where there is increased potential for groundwater levels to rise within 2 m of ground surface following periods of higher than average recharge and is intended as a high-level risk assessment, rather than detailed modelling of groundwater flood risk across the Borough.</p> <p>Areas of increased potential for elevated groundwater in Wandsworth are associated with areas of permeable superficial deposits. The main areas of permeable superficial deposits include Putney, Wandsworth Town southwards to Summerstown, Balham to Tooting Bec and Battersea. Smaller areas of increased potential for elevated groundwater also exist throughout the Borough.</p> <p>A reasonable correlation exists between the recorded historic flood incidents and the areas mapped as having an increased potential for elevated groundwater. However, there are a number of discrepancies, and therefore groundwater flooding incidents may occur outside these areas.</p> <p>Basements and other below ground level installations are particularly vulnerable to groundwater flooding, although property and land above ground level can also be at risk.</p>
Figures - Appendix A	<p>Figure 1: Historic Flooding</p> <p>Figure 3: Flood Risk from Groundwater</p>

Table 2 2 Flooding from Local Sources Groundwater



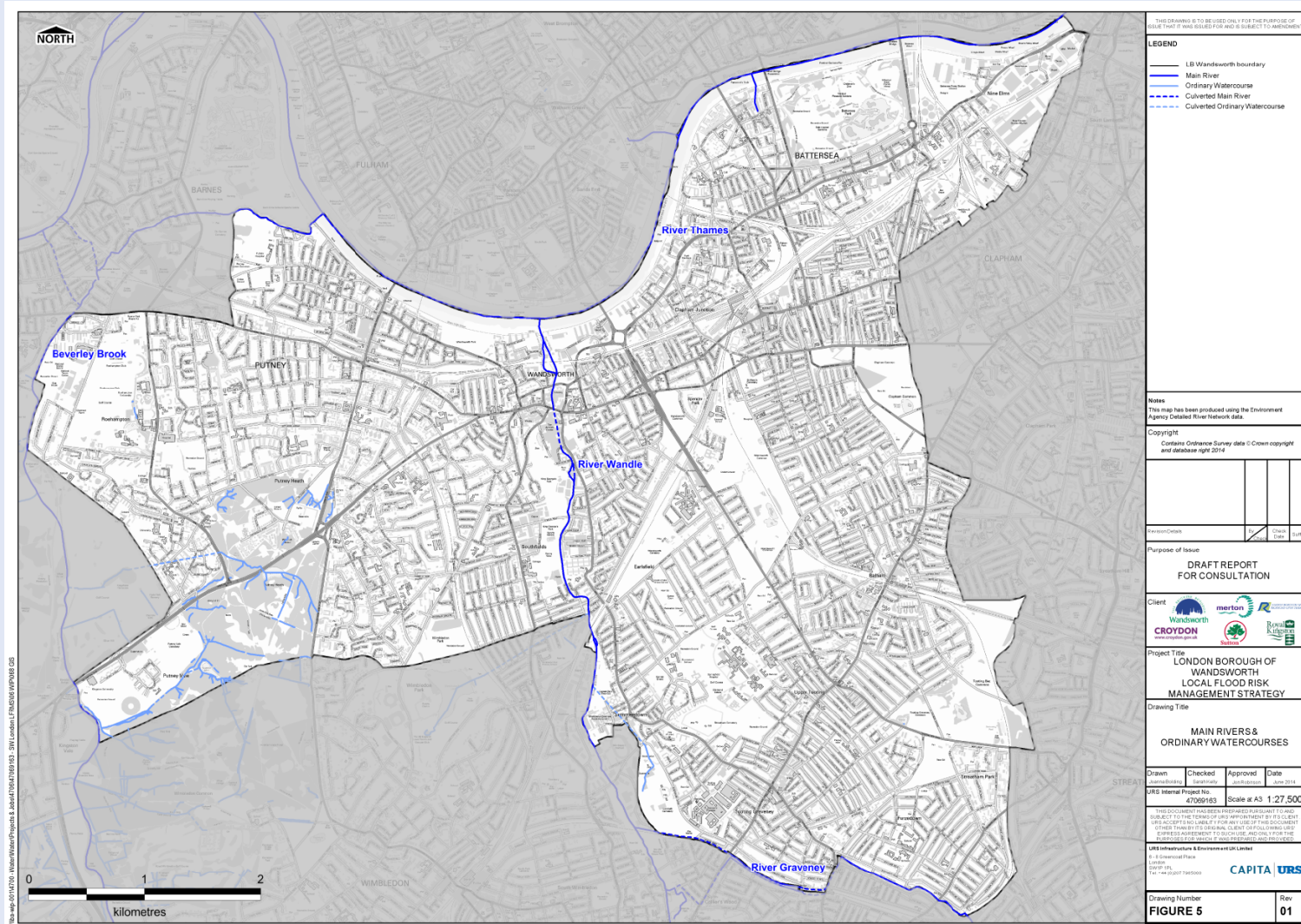
Flood Risk from Groundwater in the London Borough of Wandsworth

Ordinary Watercourses

Table 2-3 Flooding from Local Sources Ordinary Watercourses (incl. small ditches and land drains)	
Description of Source	<p>Ordinary watercourses include every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows, above ground or culverted, which is not designated as a main river (see Table 2-4- Flooding from Other Sources - Main Rivers).</p> <p>The responsibility for managing and maintaining ordinary watercourses fall to riparian owners who typically own land on either bank and therefore are deemed to own the land to the centre of the watercourse. Wandsworth Council, as the LLFA, have responsibility to manage the risk of flooding arising from the watercourses through engagement with riparian owners and enforcing maintenance responsibilities in accordance with the Land Drainage Act 1991¹⁷ (see Section 3.3 for further information).</p> <p>In total there is approximately 10.1km of ordinary watercourse in Wandsworth, of which approximately 1.9km is culverted. Figure 5 in Appendix A and overleaf shows the location of watercourses within Wandsworth.</p> <p>Ordinary watercourses within Wandsworth are mainly located within Putney Heath and Putney Vale, which are tributaries of the Beverley Brook. The watercourse in Lambeth Cemetery is culverted through Summerstown and discharges into the River Wandle. There is also a small watercourse at the Roehampton University.</p>
Supporting Documents	<p>London Borough of Wandsworth SWMP</p> <p>London Borough of Wandsworth PFRA</p>
Historic Flooding	<p>Appendix A Figure 1 shows records of historic flooding. There are no historic recorded incidents of ordinary watercourse flooding within Wandsworth. Often, where blocked ditches or streams have been reported as being the cause of flooding this has been reported as occurring with other sources, e.g. sewer or surface water runoff, and therefore will have been reported as multiple sources of flooding in the dataset.</p> <p>From the online survey carried out to support this Strategy, 8% of respondents indicated that they thought the flooding they had experienced was caused by blocked ditches or streams.</p>
Future Flood Risk	<p>No modelling of the flood risk from ordinary watercourses has been undertaken to date across Wandsworth. Therefore future flood risk is based on the potential risk that might arise based on knowledge of know flooding hotspots and potential mechanisms for flooding. Often ordinary watercourses in combination with other sources of flooding, such as surface water or main river flooding can combine to exacerbate flood risk. Therefore it is important to consider this source in combination with these, as shown in Figures 2 and 4 in Appendix A.</p> <p>Within Wandsworth, 1.9km of ordinary watercourse are culverted. Trash screens at the entrances to culverts and culverts themselves have the potential to become blocked by items such as plant debris and rubbish. Blockages can restrict the natural flow of water, increasing the chance of water flowing out of bank and causing local flooding due to the reduced conveyance potential of the associated watercourse. Therefore the risk of flooding from ordinary watercourses can be very localised and is dependent on adopting appropriate inspection and maintenance regimes to ensure this risk is minimised where possible. Within Wandsworth, the most significant risk from culverted ordinary watercourses is in Summerstown in the vicinity of Lambeth Cemetery. Lambeth Borough Council own and maintain the ordinary watercourses within Lambeth Cemetery.</p>
Figures - Appendix A	<p>Figure 1: Historic Flooding</p> <p>Figure 2: Flood Risk from Surface Water</p> <p>Figure 5: Main Rivers & Ordinary Watercourses</p>

¹⁷ HMSO (1991) The Land Drainage Act: <http://www.legislation.gov.uk/ukpga/1991/59/contents>. As amended by the Flood and Water Management Act 2010

Table 2 3 Flooding from Local Sources Ordinary Watercourses (incl. small ditches and land drains)



Ordinary Watercourses and Main Rivers in the London Borough of Wandsworth

Main Rivers

Table 2-4 Flooding from Other Sources Main Rivers	
Description of Source	<p>River flooding occurs when water levels rise as a result of high or intense rainfall which flows into them, resulting in watercourses overflowing or bursting their banks. A main river is defined by the Environment Agency on its Main River Map and is usually a larger river or stream. The following main rivers are present within Wandsworth, as shown in Figure 5 in Appendix A:</p> <ul style="list-style-type: none"> • River Wandle – the watercourse enters Wandsworth to the south, near Summerstown, and flows northwards through the centre of the Borough, and discharges into the River Thames. The river splits in two in the vicinity of Wandle Recreation Ground and Armoury Way, and is culverted in sections, including beneath the Southside Shopping Centre. There is approximately 1.5km of raised flood defences on the River Wandle, including both banks from Wandsworth High Street to the River Thames, which is part of the Thames Tidal Defence (TTD) system. □ River Graveney - a tributary of the River Wandle. The River Graveney defines the south eastern boundary of Wandsworth and joins the River Wandle to the south Wandsworth in the London Borough of Merton. It is culverted in several sections and splits in the vicinity of Tooting, where the northern boundary runs along the Wandsworth boundary before joining the River Wandle. □ Beverley Brook – the watercourse forms the western Wandsworth boundary along parts of its length running south to north through Putney Vale, to the west of Roehampton and Putney Lower Common before joining the River Thames. □ River Thames – the watercourse is tidally influenced along the edge of the Borough and the Borough is protected against river and tidal flooding through the TTD system which provides protection through a combination of raised defences, and the Thames Barrier. The risk of tidal flooding to the Borough is therefore a residual risk, in the event of a failure or overtopping of these flood defences.
Supporting Documents	<p>London Boroughs of Wandsworth, Merton, Sutton and Croydon Level 1 SFRA London Borough of Wandsworth Level 2 SFRA Thames Catchment Flood Management Plan Environment Agency Risk of Flooding from Rivers and the Sea Map¹⁸ Environment Agency Flood Map for Planning (Rivers and Sea)¹⁹ Thames Estuary 2100 Plan for the Tidal Thames²⁰</p>
Historic Flooding	<p>The Level 1 SFRA presents historic river flood extents from 1928, 1937 and 1968. Of these years, flooding from rivers only impacted Wandsworth in 1928. The flooding was limited to areas in Battersea, Nine Elms and Wandsworth that are adjacent to the River Thames. The Level 1 SFRA also identifies historical flooding of properties within Flood Zone 2 of the River Wandle at Summerstown.</p>
Future Flood Risk	<p>In December 2013, the Environment Agency published a new set of mapping called the Risk of Flooding from Rivers and the Sea, which shows the risk of flooding from rivers and the sea banded into High, Medium and Low Risk, in a consistent format with the Risk of Flooding from Surface Water and Reservoir Maps (see Table 2-1 and Table 2-6). Whilst this dataset is readily available to the public to understand their own flood risk, the Strategy uses the Flood Map for Planning (Rivers and Sea), also published by the Environment Agency, as the basis to determine future flood risk from rivers. The Flood Map for Planning (Rivers and Sea) defines Flood Zones and is used by Wandsworth Council, as the Local Planning Authority, to make planning decisions in line with national legislation.</p> <p>The National Planning Policy Framework (NPPF)²¹ defines Flood Zones associated with tidal and river flooding based upon the probability of flooding. The extent of land adjacent to main rivers within Flood Zone 2 (between a 1 in 100 and 1 in 1000 chance of flooding in any given year and Flood Zone 3 (greater</p>

¹⁸ Environment Agency Risk of Flooding From Rivers and Sea Map: <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?lang=e&topic=floodmap&layer=default&scale=2&x=357683&y=355134#x=357683&y=355134&scale=2>

¹⁹ Environment Agency Flood Map for Planning (Rivers and Sea): <http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=e&topic=floodmap>

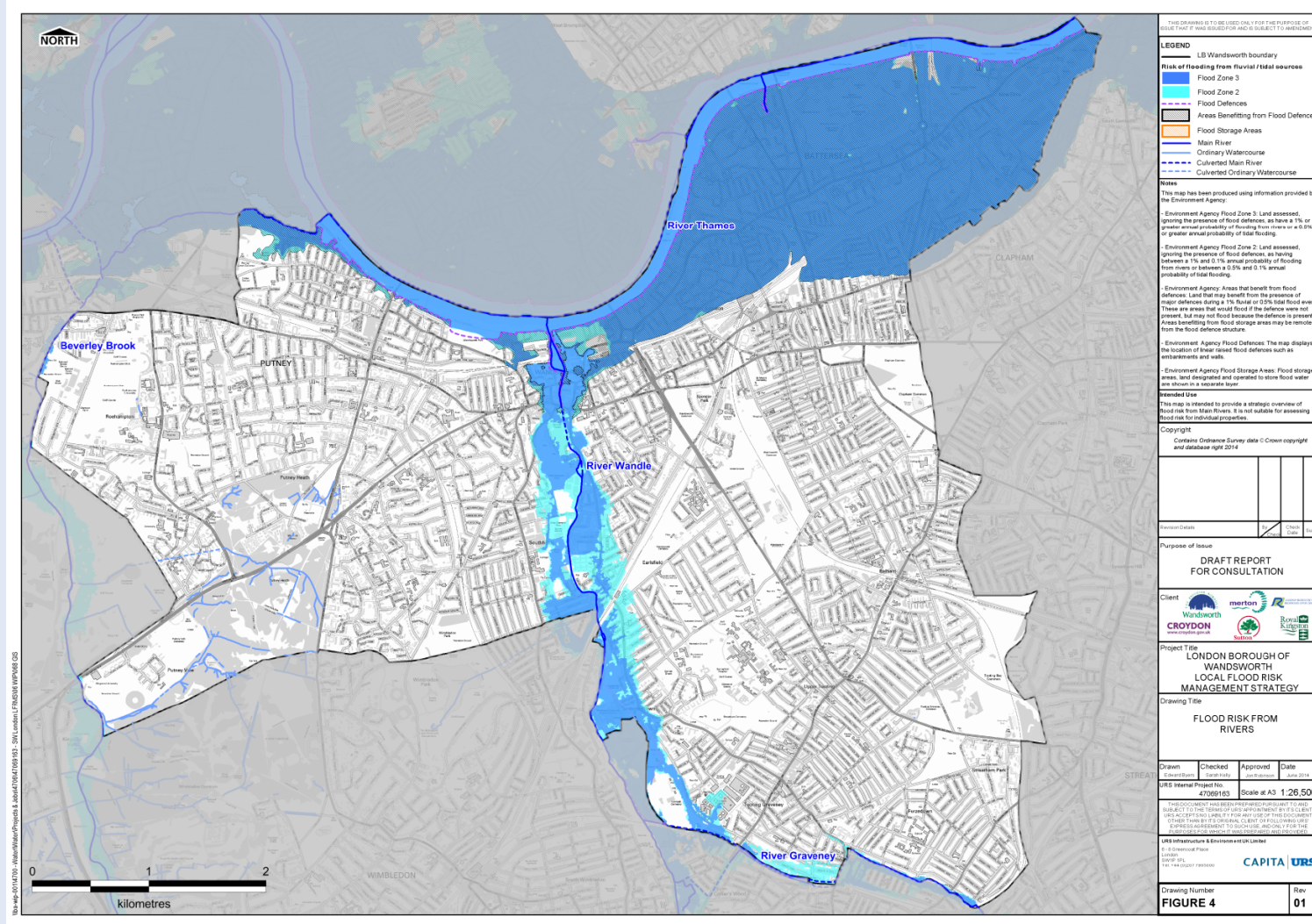
²⁰ Environment Agency (2012) The Thames Estuary 2100 Plan <http://www.environment-agency.gov.uk/homeandleisure/floods/125045.aspx>

²¹ Communities and Local Government (2012) National Planning Policy Framework https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

Table 2-4 Flooding from Other Sources Main Rivers	
	<p>than 1 in 100 chance of flooding in any given year) varies throughout the Borough, as shown in Figure 4 in Appendix A and overleaf.</p> <p>The figure shows that extensive areas in Wandsworth lie within Flood Zones 2 and 3 including:</p> <ul style="list-style-type: none"> · Wandsworth Town, King George's Park, Southfields, Earlsfield and Summerstown have areas in Flood Zone 2 and 3 of the River Wandle, □ Areas to the south of Tooting Graveney are in Flood Zone 2 of the River Graveney, and, □ A large area covering Battersea and Clapham Junction and smaller areas to the north of Wandsworth and Putney are in Flood Zone 3 of the River Thames, but these areas are protected by the TTD system. <p>According to the Environment Agency²², there are approximately 40,000 properties in areas at risk of river and tidal flooding in Wandsworth; around 26% of all properties in the Borough. The Environment Agency's National Flood Risk Assessment shows that around 92% of the properties are in areas where likelihood of flooding is low due to protection from defences from the Thames Tidal Defences.</p> <p>The Environment Agency offers a free flood warning service, which gives advance warning of flooding via telephone, mobile SMS text, e-mail or fax. As of March 2013, 5,063 properties in Wandsworth were registered to receive flood warnings²². This does not include all properties at risk, though other media, such as local radio, the Environment Agency and Wandsworth Council website also broadcast the warnings.</p> <p>The Environment Agency has produced the Thames Estuary 2100 (TE2100) Plan which sets out the strategic plan for managing tidal flood risk in the Thames estuary to the end of the century. The plan recommends the required flood risk management measures and when and where these will be needed, based on climate changes and sea level rises. The plan, which is adaptive, currently sets out recommended future flood defence levels for the tidal frontages in Wandsworth and will be an important factor in planning sustainable development in areas at risk of flooding in future years.</p>
<p>Figures - Appendix A</p>	<p>Figure 1: Historic Flooding Figure 4: Flood Risk from Rivers Figure 5: Main Rivers & Ordinary Watercourses</p>

²² Environment Agency (August 2013), Wandsworth London Borough Environmental Fact Sheet - compiled as an extension to the London State of the Environment Report

Table 2 4 Flooding from Other Sources Main Rivers



Flood Risk from Rivers in the London Borough of Wandsworth

Sewers

Table 2-5 Flooding from Other Sources Sewer	
Description of Source	<p>During heavy rainfall flooding from the sewer system may occur if the rainfall event exceeds the capacity of the sewer system / drainage system, the system becomes blocked by debris or sediment and/or the system surcharges due to high water levels in receiving watercourses. Sewer flooding generally results in localised short term flooding and is often difficult to disassociate from surface water runoff.</p> <p>Sewers are designed to cope with the vast majority of storms but occasionally rainfall can be so heavy that it overwhelms the system. When this happens, sewage can overflow from manholes and gullies and flood land, rivers and gardens. In the worst cases, sewage can even flood homes.</p> <p>Since the late 1970s, and with the publication of Sewers for Adoption²³ in 1980, sewer systems have typically been designed and constructed to accommodate a rainfall event with a 1 in 30 probability of occurrence in any given year or less. Therefore, rainfall events with a rainfall probability of greater than this would be expected to result in surcharging of some of the sewer system. While Thames Water is concerned about the frequency of extreme events, it is not economically viable to build sewers that could cope with every extreme. It is important to note that most of the sewer system in London was built prior to the 1970s, and in many cases has a capacity of far less than 1 in 30 year.</p> <p>The majority of the London Borough of Wandsworth is served by a combined sewer system and it is thought that many parts of the system are only designed to accommodate a rainfall event with a 1 in 15 probability of occurrence in any given year. In many locations, this has decreased due to urbanisation and cross-connection and, as such, it is likely that the sewers across the London Borough of Wandsworth will have varying standards of capacities, particularly in the north of the Borough.</p> <p>Within the Borough there is potential for sewer outfalls to rivers to become submerged during high water levels. When this happens, water is unable to escape into the river and flows back along the sewer. Once storage capacity within the sewer itself is exceeded, the water will overflow into streets and houses.</p>
Supporting Documents	<p>London Borough of Wandsworth SWMP</p> <p>London Borough of Wandsworth PFRA</p> <p>Thames Water Utilities website</p>
Historic Flooding	<p>As part of the SWMP, Thames Water provided information (through their DG5 register²⁴) on the total number of properties affected by and at risk of sewer flooding (both internally and externally) based on historic flooding over the previous 10 years. Thames Water focus their efforts on removing properties from the DG5 register and therefore this dataset may not accurately represent those properties currently at risk. The information presented within the SWMP highlights the wards of Balham, Thamesfield, and Latchmere as having experienced a greater number of sewer flooding incidents than the rest of the Borough.</p>
Future Flood Risk	<p>Climate change is anticipated to increase the potential risk from sewer flooding as summer storms become more intense and winter storms more prolonged. This combination is likely to increase the pressure on the existing efficiency of sewer systems, thereby reducing their design standard and leading to more frequent localised flooding incidents.</p> <p>Thames Water will monitor the risk of sewer flooding and put plans in place to manage this, as required, based on their business plan and priorities. The London Borough of Wandsworth will work with Thames Water to identify flooding hotspots and locations of known sewer capacity issues where risk could be exacerbated.</p> <p>Thames Water will prioritise investment for potential flood alleviation schemes depending on the severity and frequency of flooding, but this can only be identified where affected property owners report the incident to the water company.</p>
Figures - Appendix A	<p>Figure 1: Historic Flooding</p>

²³ The Sewers for Adoption guide was first issued in 1980 by WRc. Since then the document has become the standard for the design and construction of sewers to adoptable standards in England and Wales. It acts as a guide to assist developers in preparing their submission to a sewerage undertaker before they enter into an Adoption Agreement under Section 104 of the Water Industry Act 1991

²⁴ 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.

Artificial Sources

Table 2-6 Flooding from Other Sources Artificial Sources	
Description of Source	<p>Artificial sources include any water bodies not covered under other categories and typically include canals, lakes and reservoirs.</p> <p>Artificial sources located in Wandsworth include lakes and ponds in Battersea Park, Clapham Common, Wandsworth Common, Roehampton Golf Course, Tooting Bec Common and Tooting Graveney Common. Wandsworth is also impacted by artificial sources in neighbouring boroughs, namely Wimbledon Park Lake, located to the north east of the London Borough of Merton.</p>
Supporting Documents	<p>Environment Agency Flood Risk from Reservoirs Map²⁵ London Boroughs of Wandsworth, Merton, Sutton and Croydon Level 1 SFRA</p>
Historic Flooding	<p>There are no recorded incidents of flooding from artificial sources within Wandsworth.</p>
Future Flood Risk	<p>Reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers on a yearly basis. As the enforcement authority for the Reservoirs Act 1975 in England, the Environment Agency are responsible for ensuring that reservoirs are inspected regularly and essential safety work is carried out.</p> <p>In the unlikely event that a reservoir dam failed, a large volume of water would escape at once and flooding could happen with little or no warning. The Risk of Flooding from Reservoirs map, published by the Environment Agency, shows the area and depths of flooding and flow velocities that could occur if a large reservoir were to fail and release the water it holds. A large reservoir is one that holds over 25,000 cubic metres of water, equivalent to approximately 10 Olympic sized swimming pools. Since this is a worst case scenario, it's unlikely that any actual flood would be this large.</p> <p>Wandsworth is impacted by Wimbledon Park Lake, which is a designated reservoir located towards the north-east of London Borough of Merton. In the highly unlikely event of a failure of Wimbledon Park Lake, there is the potential for wide-scale flooding downstream into Wandsworth with high depths and velocities experienced, particularly in close proximity to the reservoir, during a worst-case scenario. Flood waters would flow north-east from the Reservoir into the River Wandle and into the London Borough of Wandsworth, and subsequently northwards towards the River Thames.</p> <p>The Environment Agency's Risk of Flooding from Reservoirs map shows the predicted extent, depths and velocities of flood water, should Wimbledon Park Lake fail.</p> <p>As the undertaker for Wimbledon Park Lake, Merton Council is required to ensure that inspections are carried out by a qualified (panel) engineer and that necessary safety work is completed as required to reduce the likelihood of any failure.</p> <p>In addition, there are artificial lakes located in King Georges Park and Roehampton University. These are however smaller in volume and therefore are not classified as reservoirs.</p>
Figures - Appendix A	<p>Figure 1: Historic Flooding</p>

²⁵ Environment Agency Risk of Flooding from Reservoirs Map: <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=reservoir#x=357683&y=355134&scale=2>

2.3 Impact of Climate Change

- 2.3.1 Current predictions of future rainfall indicate that increasing numbers of severe and extreme weather events are expected in the future. Intense storms are the main cause of surface water flooding, which would also increase in frequency. It is predicted that the frequency of heavy rainfall events could double by the 2080s according to the UK Climate Projections 2009²⁶. By the 2080s, it is predicted that there could be around three times as many days in winter with heavy rainfall (defined as more than 25mm in a day) and that the amount of rain in extreme storms (with a 1 in 5 annual chance or rarer) could increase locally by 40%. Consequently, the number of properties, business and critical infrastructure at risk will also increase.

Implications for Flood Risk

- 2.3.2 Climate changes can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability. Wetter winters and more of this rain falling in wet spells may increase river flooding in heavily urbanised catchments. More intense rainfall causes more surface runoff, increasing localised flooding and erosion. In turn, this may increase pressure on drains, sewers and water quality. Storm intensity in summer could increase even in drier summers, so it is essential to be prepared for the unexpected.
- 2.3.3 Rising sea or river levels may increase local flood risk inland or away from major rivers because of interactions with drains, sewers and smaller watercourses. There is a risk of flooding from groundwater-bearing chalk and limestone aquifers. Recharge of the aquifers may increase in wetter winters, or decrease in drier summers.
- 2.3.4 Where appropriate, local studies are needed to understand climate impacts in detail, including effects from other factors like land use. Sustainable development and drainage will help to adapt to climate change and manage the risk of damaging floods in future.

Adapting to Change

- 2.3.5 Past emission means some climate change is inevitable. It is essential to respond by planning ahead. Wandsworth Council will prepare by understanding the current and future vulnerability to flooding across the Borough, developing plans for increased resilience and building the capacity to adapt. Regular review and adherence to these plans is key to achieving long-term, sustainable benefits.
- 2.3.6 Although the broad climate change picture is clear, the Council will have to make local decisions against deeper uncertainty. Wandsworth Council will therefore consider a range of measures and retain flexibility to adapt. This approach, embodied within flood risk appraisal guidance, will help to ensure that the vulnerability of communities and businesses to flooding across the Borough is not increased.

Including allowances for Climate Change in Flood Risk Management

- 2.3.7 Existing flood risk studies, covering the London Borough of Wandsworth and the wider catchment, have assessed the impacts of climate change and flood risk and provide the evidence base for understanding how this may impact current and future communities and businesses. Further information on how the Strategy takes into account the impacts of climate change is outlined in [Section 5.4](#).

²⁶ United Kingdom Climate Projections 2009 <http://ukclimateprojections.defra.gov.uk/>

2.4 Summary

- 2.4.1 This Section has afforded a summary of past and future flood risk associated with local sources in Wandsworth which are the primary focus of the Strategy. A summary of the past and future risk associated with other sources of flooding has also been provided to ensure a comprehensive appreciation of flood risk across the Borough.
- 2.4.2 Runoff from roads or impermeable areas and flooding from road gullies and sewers were identified as the main sources of flooding perceived by respondents in the online survey. However a number of respondents to the survey also identified large rivers such as the River Wandle and groundwater as sources of flooding in their local area. This indicates that surface water flooding is of major concern for respondents within the Borough, though a number of other flood sources are perceived to impact the Borough.
- 2.4.3 The sources of flood risk that are of most significance within Wandsworth are considered to be surface water, groundwater, sewer and main rivers. This does not, however, indicate that the future flood risk from other sources is insignificant.

3. RESPONSIBILITIES FOR FLOOD RISK MANAGEMENT

3.1 Overview

3.1.1 Flood events are often a complex interaction of flood source(s), pathway(s) and receptor(s), the responsibility for managing which can often lie with a number of different organisations or individuals. As a result, a clear definition of responsibilities and effective communication across these organisations and individuals is vital if the risk to people, property and the environment is to be managed effectively.

3.1.2 The following organisations are designated Risk Management Authorities under the Act and have a number of legal responsibilities for managing flood risk in the London Borough of Wandsworth:

- . Wandsworth Council as the Lead Local Flood Authority,
- Environment Agency,
- Thames Water Utilities as the sewerage undertaker, and,
- Wandsworth Council and Transport for London as Highways Authorities,

3.1.3 All Risk Management Authorities have a duty to cooperate with the LLFA, and other Risk Management Authorities when exercising their flood risk management functions.

3.1.4 In addition, other legislation (such as the [Highways Act 1980](#)²⁷, [Land Drainage Act 1991](#)²⁸, [Water Resources Act 1991](#)²⁹, [Civil Contingencies Act 2004](#)³⁰) place duties and powers upon specific organisations and individuals of relevance to local flood risk management.

3.2 Responsibilities of Risk Management Authorities

London Borough of Wandsworth

...as the Lead Local Flood Authority

3.2.1 As the LLFA, Wandsworth Council has a number of duties and discretionary powers under the Act, the Regulations and Land Drainage Act 1991. Figure 3-1 presents the Council's duties and discretionary powers as the LLFA. LLFA's are a Statutory Consultee for Major Planning Applications with surface water. In considering planning applications, local planning authorities should consult the relevant Lead Local Flood Authority on the management of surface water; satisfy themselves that the proposed minimum standards of operation are appropriate and ensure through the use of planning conditions or planning obligations that there are clear arrangements in place for ongoing maintenance over the lifetime of the development. The [planning practice guidance](#) has been updated to reflect these changes and [non-statutory technical standards](#) for the design, maintenance and operation of sustainable drainage systems have been published on-line.

3.2.2 On 24 March 2015, the Government laid a [statutory instrument](#) making the Lead Local Flood Authority a statutory consultee by adding the consultation requirement to Schedule 4 of the Development Management Procedure Order. This came into effect on 15 April 2015.

²⁷ HSMO (1980) Highways Act <http://www.legislation.gov.uk/ukpga/1980/66/contents>

²⁸ HSMO (1991) Land Drainage Act <http://www.legislation.gov.uk/ukpga/1991/59/contents>

²⁹ HMSO (1991) Water Resources Act <http://www.legislation.gov.uk/ukpga/1991/57/contents>

³⁰ HSMO (2004) Civil Contingencies Act <http://www.legislation.gov.uk/ukpga/2004/36/contents>

...as a Highways Authority

- 3.2.3 The highway drainage system is integral in the management and behaviour of surface water during heavy rainfall events. As a Highways Authority, the [Highways Act 1980](#) requires that Wandsworth Council ensure that highways are drained of surface water and where necessary maintain all drainage systems.

...as an emergency responder

- 3.2.4 Wandsworth Council is a Category 1 Responder under the [Civil Contingencies Act 2004](#) and therefore has a responsibility, along with other organisations for developing emergency plans, contingency plans and business continuity plans to help reduce, control or ease the effects of an emergency. The complex and diverse nature of flooding and the consequences that arise, require a comprehensive and often sustained response from a wide range of organisations, and as such Wandsworth Council has prepared a Multi-Agency Flood Plan³¹ to allow all responding parties to work together on an agreed coordinated response to severe flooding.

...as a Local Planning Authority

- 3.2.5 As a Local Planning Authority Wandsworth Council has a responsibility to consider flood risk in their strategic land use planning and the development of their [Local Plan](#)³². Wandsworth Council is the 'decision maker' on flood risk for planning applications for development, taking into consideration technical advice from other Risk Management Authorities as statutory consultees.

- 3.2.6 [The National Planning Policy Framework](#)³³ (NPPF) and [supporting guidance](#)³⁴ require Local Planning Authorities to undertake a SFRA and to use their findings, and those of other studies, to inform strategic land use planning. This includes a requirement to steer development towards areas of lowest flood risk before considering development in areas more prone to flooding, through the application of the Sequential Test. The [London Boroughs of Wandsworth, Merton, Sutton and Croydon Level 1 SFRA](#) was produced in December 2008 and the [London Borough of Wandsworth Level 2 SFRA](#) produced in July 2009, both to support the Local Plan. When considering applications for development, site-specific flood risk assessments are a requirement of the NPPF. The London Borough of Wandsworth Level 2 SFRA outlines what a site-specific flood risk assessment should include.

...as an Asset Owner

- 3.2.7 Wandsworth Council is responsible for the maintenance of Council owned assets which have a role in flood risk management including drainage ditches, gullies, trash screens and culverts.

...as Regulator of Ordinary Watercourses

- 3.2.8 Wandsworth Council has the powers of ordinary watercourse consent under the [Land Drainage Act 1991](#). Any works (either temporary or permanent), that may alter or impact the flow or storage of water within an ordinary watercourse will require consent from the Council prior to any work being carried out. Wandsworth Council therefore have:

- The power to serve notice on riparian landowners along ordinary watercourses who need to carry out maintenance to reduce flooding.

³¹ London Borough of Wandsworth (2014) London Borough of Wandsworth Multi-Agency Flood Plan (Living draft)

³² See the Wandsworth Council website for the latest version of Local Plan:

http://www.wandsworth.gov.uk/info/1004/planning_policy/1366/local_plan

³³ Communities and Local Government (2012) National Planning Policy Framework

<http://www.communities.gov.uk/documents/planningandbuilding/pdf/2116950>

³⁴ Communities and Local Government (2014) Planning Practice Guidance: Flood Risk and Coastal Change:

<http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/>

- The power to serve notice on a person to abate a nuisance in relation to an ordinary watercourse where that nuisance is an obstruction erected, raised or altered or any culvert erected or altered without prior consent as required under Section 23 of the Land Drainage Act 1991.

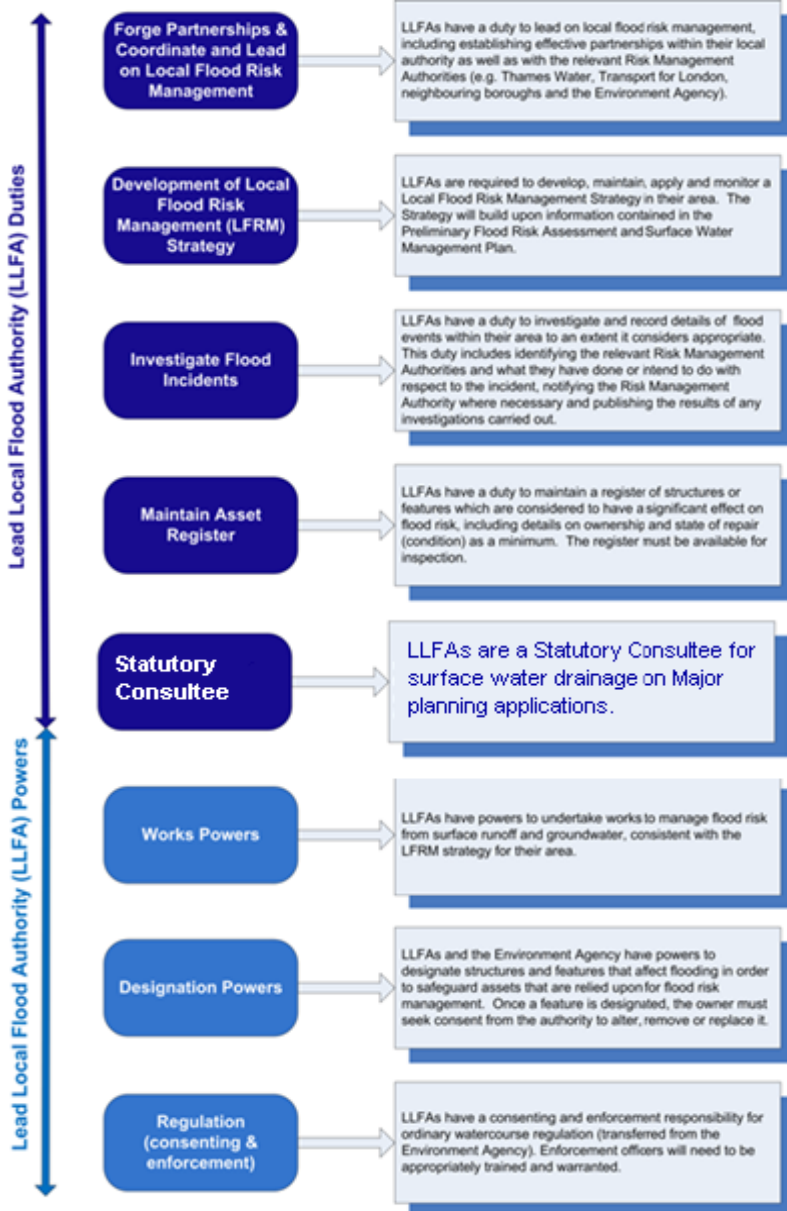


Figure 3-1 Duties and Discretionary Powers for London Borough of Wandsworth under the Act

Environment Agency

- 3.2.9 The Environment Agency is responsible for managing flooding from Main Rivers and the sea and has a responsibility to provide a strategic overview for all flooding sources and coastal erosion. The Environment Agency takes a risk based approach to flood risk management and has a number of roles and responsibilities including as a statutory consultee on flood risk throughout the planning process and regulation of third party works on main rivers.

Thames Water Utilities Ltd

- 3.2.10 Thames Water is responsible for surface water drainage from development via adopted sewers and for maintaining public sewers into which much of the highway drainage (both Wandsworth Council and Transport for London (TfL) owned) connects.
- 3.2.11 In October 2011 water and sewerage companies in England and Wales became responsible for private sewers which were previously the responsibility of property owners. However, not all private sewers were included; there are some cases where the property owners remain responsible for the sections of pipe between the property and the transferred private sewer. Further information is available via [Thames Water's website](#)³⁵.

Transport for London (TfL)

- 3.2.12 Under the Highways Act 1980, TfL have responsibilities for the effectual drainage of surface water from adopted roads along red routes insofar as ensuring that drains, including kerbs, road gullies and ditches and the pipe network which connect to the sewers, are maintained.

3.3 Role of Others in Flood Risk Management

- 3.3.1 Wandsworth Council recognise the vital role individuals, communities and businesses have in managing flood risk and the requirement for more information to be available to support these initiatives. The Strategy, aims to promote and encourage personal responsibility by raising awareness of flood risk, how this risk can be reduced and by supporting community-based actions.

Property Owners and Residents

- 3.3.2 It is the responsibility of householders and businesses to look after their property, including protecting it from flooding. It is important that householders, whose homes are at risk of flooding, take steps to ensure that their home is protected. Practical guidance can be found in the publication 'Prepare your property for flooding' available on the [Environment Agency website](#)³⁶.

Riparian Owners

- 3.3.3 Property or land owners who own land which is adjacent to a watercourse or land which has a watercourse running through it, are riparian owners and have certain legal responsibilities to maintain the watercourse. Where a watercourse marks the boundary between adjoining properties, it is normally presumed the riparian owner owns the land up to the centre line of the watercourse.

³⁵ Thames Water Utilities website <http://www.thameswater.co.uk/>

³⁶ Environment Agency website - 'Prepare your property for flooding' <https://www.gov.uk/prepare-for-a-flood>

3.3.4 Risk Management Authorities have powers and responsibilities to manage flood risk and work with others to improve river environments. This may often affect riparian owners, who must also adhere to certain responsibilities including;

- . To maintain the watercourse and to clear any obstructions (natural or otherwise) so the normal flow of water is not impeded,
- To maintain the banks and bed of the watercourse and any flood defences that exist on it,
- To accept the natural flow from their upstream neighbour and transfer it downstream without obstruction, pollution or diversion,
- To maintain any structures on their stretch of watercourse including culverts, weirs and mill gates, and
- To apply to Wandsworth Council for formal consent for any works in or adjacent to an ordinary watercourse, or to the Environment Agency for works within 8m of a main river.

3.3.5 Wandsworth Council 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. Further information for riparian owners on their responsibilities is available in the Environment Agency publication '[Living on the Edge](#)³⁷' and on the [Environment Agency website](#)³⁸.

Insurance Companies

3.3.6 Insurers do not have any statutory duties or responsibilities under the Act. However, the Flood Reinsurance Scheme under the [Water Act 2014](#)³⁹, known as 'Flood Re', is a not-for-profit scheme proposed by the Association of British Insurers (ABI) to safeguard the availability and affordability of flood insurance for properties at high risk. The scheme will cap the flood aspect of buildings insurance according to council tax band, and will be funded by an annual levy on all household premiums. Properties in Tax band H and properties built since 2009 are not covered by the scheme.

³⁷ Environment Agency (2012) 'Living on the Edge' <https://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities>

³⁸ Environment Agency website 'River Maintenance and Drainage Charges: Farmers and Landowners': <https://www.gov.uk/river-maintenance-and-drainage-charges-farmers-and-landowners>

³⁹ HMSO (2014) The Water Act 2014 <http://www.legislation.gov.uk/ukpga/2014/21/contents/enacted>

4. OBJECTIVES FOR MANAGING LOCAL FLOOD RISK

4.1 London Borough of Wandsworth Local Objectives

4.1.1 The aim of the Local Strategy is to work in partnership with local communities, and organisations responsible for managing flooding, in order to better understand and reduce local flood risk in Wandsworth where it is economically, technically, socially, and environmentally feasible to do so. To achieve this aim a number of key objectives have been identified.

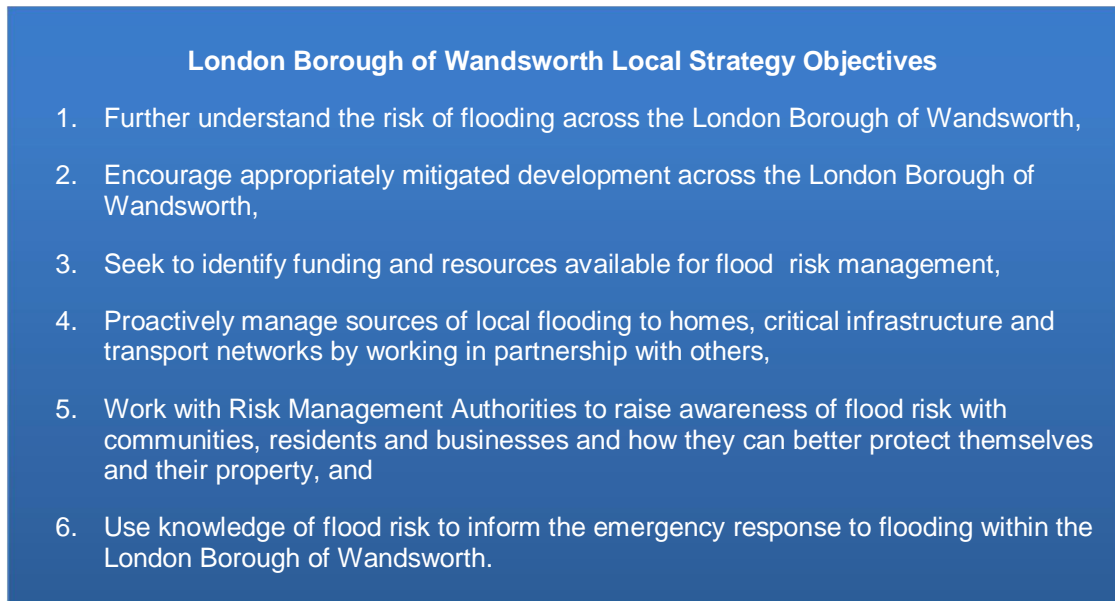


Figure 4-1 Local Flood Risk Management Objectives

4.2 Guiding Principles for Setting Objectives

4.2.1 The objectives for the London Borough of Wandsworth Strategy have been developed in line with the Environment Agency's [National Flood and Coastal Erosion Risk Management Strategy for England](#)⁴⁰, the outcomes from the public engagement exercise undertaken to inform to the Strategy and discussions with Wandsworth Council and Risk Management Authorities officers.

National Flood Risk Management Objectives

4.2.2 The Environment Agency's [National Strategy](#) sets out the following national objectives for flood risk management:

- **Understand the risks** – 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,
- **Prevent inappropriate development** – avoiding inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks,

⁴⁰ Defra, Environment Agency (2011) The National Flood and Coastal Erosion Risk Management Strategy for England <https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england>

- **Manage the likelihood of flooding** – 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,
- **Help people to manage their own risk** – increasing public awareness of the risk that remains and engaging with people at risk to encourage them to take action to manage the risks that they face and to make their property more resilient, and
- **Improve flood prediction, warning and post-flood recovery** – 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.

Guiding Principles for Local Flood Risk Management

4.2.3

The National Strategy's strategic aims and objectives are supported by six high-level principles, to guide decisions on risk management activities, and the process by which they are taken, at both a national and local level. Wandsworth Council has used these to guide the development of objectives and identification of measures to deliver local flood risk management within Wandsworth.

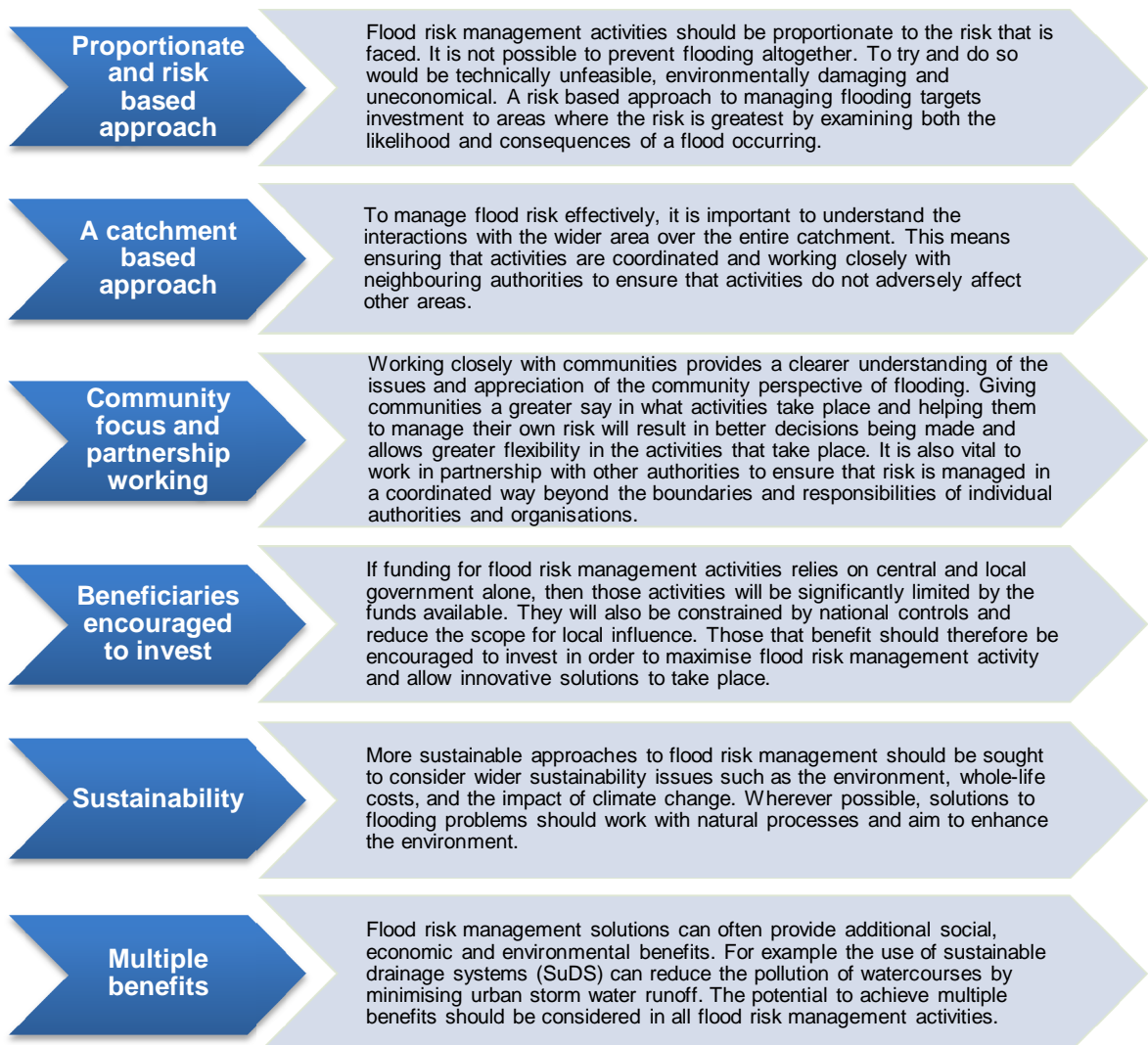


Figure 4-2 Guiding Principles for Local Flood Risk Management

Public Priorities for Local Flood Risk Management

4.2.4

The outcomes from the online survey undertaken to capture community objectives and priorities for flood risk management ([Appendix C](#)) were used to inform the development of the local objectives for local flood risk management. Priorities identified included:

- Protecting critical infrastructure and homes and keeping transport networks functioning,
- Improving communication to residents and business, in particular on areas at risk, responsible flood risk management organisations and work that is being undertaken by Wandsworth Council,
- More maintenance to reduce surface water flooding, e.g. clearing road gullies and watercourses and undertaking works where opportunities arise, and,
- Working with other risk management authorities to better manage flood risk across the Borough.

5. DELIVERY OF LOCAL FLOOD RISK MANAGEMENT

5.1 Overview

5.1.1 This section sets out how the local flood risk management objectives will be delivered over the next six years. A number of measures and actions have been identified to achieve this, and these are set out in the Action Plan that accompanies the Local Strategy as provided in [Appendix B](#). These will help to improve the understanding of flood risk across the Borough and inform the way flood risk is reduced and planned for, to increase resilience against the impacts of climate change.

5.1.2 In delivering flood risk management, there is the opportunity to deliver wider environmental objectives and requirements, as set out in European Legislation including the Water Framework Directive. A Strategic Environmental Assessment and a Habitats Regulations Assessment Screening exercise has been undertaken to inform the Strategy development; further details are provided in [Section 6](#).

5.1.3 Specifically this section outlines:

- . The delivery of local flood risk management in the London Borough of Wandsworth to date ([Section 5.2](#)),
- How Wandsworth Council will deliver their legislative duties under the Act ([Section 5.3](#)),
- How the London Borough of Wandsworth local flood risk management objectives will be delivered ([Section 5.4](#)),
- How local flood risk management measures will be prioritised ([Section 5.5](#)),
- How local flood risk management measures will be funded ([Section 5.6](#)), and,
- Step communities, residents and businesses can take to prepare for flooding ([Section 5.7](#)).

5.1.4 The [Wandsworth Council website](#)⁴¹ provides the latest information on flood risk management in Wandsworth.

5.2 Delivery of Local Flood Risk Management to Date

5.2.1 As the LLFA Wandsworth Council has already undertaken a number of activities to deliver duties under the Act and the Regulations and take a proactive approach to delivering local flood risk management in Wandsworth. Some of the key activities undertaken to date include:

- Production of a [Surface Water Management Plan](#),
- Production of a [Preliminary Flood Risk Assessment](#),
- Setting up and attending quarterly meetings of the South West London Strategic Flood Group (see [Section 5.3](#) for further information),
- Setting up of the Wandsworth Flood Risk Management Team (Internal Flood Group) to enable close working between council departments on flood risk management (see [Section 5.3](#) for further information),

⁴¹ Wandsworth Council website: http://www.wandsworth.gov.uk/info/200237/local_plan-evidence_base/505/flood_risk

- Applying for funding from the Environment Agency to undertake investigations into flooding risk, mechanisms and potential mitigation schemes in Critical Drainage Areas, including Clapham Junction (CDA 22) and Earlsfield (CDA 19),
- Improving understanding of local flood risk through collating historic and emerging information on local flood risk and mechanisms, working with neighbouring authorities and Risk Management Authorities, and attending capacity building workshops run by Defra and the Environment Agency,
- Setting up procedures and delivering legislative duties as required under the Act and the Regulations (see [Section 5.3](#)), and,
- Undertaking a joint commission, with the South West London Strategic Flood Group, to deliver the South West London Flood and Water Management Act 2010 Roadmap, identifying the required legislative duties, proposed delivery route for these and opportunities for joint working across South West London Boroughs.

5.3 Delivery of Legislative Duties

5.3.1 Under the Act, Wandsworth Council has a number of duties and powers relating to the management of local flood risk. The existing procedures in place and the proposed measures to deliver these are outlined below.

Forge Partnerships and Lead on Local Flood Risk Management

Internal Flood Group

5.3.2 Local flood risk management within Wandsworth Council is jointly led by the Planning Policy & Information and Operation Services teams, which head the Wandsworth Flood Risk Management Team. The Flood Risk Management Team meet every three months in order to discuss progress in fulfilling Wandsworth Council's duties as a LLFA, as well as any other issues relating to flood risk management within the Borough and South West London.

5.3.3 The Wandsworth Flood Risk Management Team comprises representatives from Parks, Emergency Planning, GIS and Development Management. In addition, the Flood Risk Management Team extends the invites to the meetings to Thames Water and the Environment Agency.

South West London Strategic Flood Group

5.3.4 The Strategic Flood Group was formed in 2011 and reports to the Thames Regional Flood and Coastal Committee. The Group comprises the six LLFAs covering South West London, namely, London Borough of Croydon, The Royal Borough of Kingston upon Thames, London Borough of Merton, London Borough of Sutton, London Borough of Richmond upon Thames and London Borough of Wandsworth, and the Environment Agency and Thames Water Utilities Ltd.

5.3.5 The Group meet quarterly to share best practice and understanding of flood risk across South West London, and, where possible, provide coordinated and collaborative management of flooding.

Regional Flood and Coastal Committee

- 5.3.6 The [Thames Regional Flood and Coastal Committee](#)⁴² was established in accordance with the Act and is composed of elected members appointed by each LLFA and independent members appointed by the Environment Agency with relevant experience in the Thames Region. The Committee has three primary functions:
- To ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments,
 - To promote efficient, targeted and risk-based investment in flood and coastal erosion risk management that optimises value for money and benefits for local communities, and
 - To provide a link between the Environment Agency, Wandsworth Council (LLFA), Risk Management Authorities, and other relevant bodies to create a mutual understanding of the flood and coastal erosion risks.
- 5.3.7 The South West London Strategic Flood Group is represented on the Thames RFCC by a Councillor from one of the six boroughs.

Investigate Flood Incidents

- 5.3.8 Under Section 19 of the Act, Wandsworth Council, has a duty to report and investigate flooding incidents that are considered to be 'significant'. Wandsworth Council must investigate which Risk Management Authorities have relevant flood risk management functions and whether they have carried out, or intend to carry out, those functions. Where an investigation is carried out, Wandsworth Council will subsequently publish the results, and notify the relevant Risk Management Authorities.
- 5.3.9 Wandsworth Council has developed a set of criteria in order to determine a 'significant' flood risk. This is based on the assessment of the consequences of flooding that are considered to be sufficiently serious. Where any of these criteria, as set out in Table 5-1, are met, an investigation will be undertaken.
- 5.3.10 The criteria are not limiting and the significance of each flood event will be assessed on a case-by-case basis.
- 5.3.11 A flood investigation procedure has been developed by Wandsworth Council to outline the necessary steps to be taken by the Flood Risk Officer upon becoming aware of a flooding incident. Initial information is recorded in order to determine whether any of the criteria set out in Table 5-1 has been met. Should this be the case, a formal flood investigation will be initiated. All flood incidents which are reported to Wandsworth Council will be recorded in Wandsworth Council's Flood Incident Database, regardless of whether the flood incident has been deemed to be significant.
- 5.3.12 Upon completion of a flood investigation, a Flood Investigation Report will be completed. A summary of the key findings will be published on the council [website](#).

⁴² Environment Agency Website: Thames Regional Flood and Coastal Committee <https://www.gov.uk/government/groups/thames-regional-flood-and-coastal-committee>

Table 5 1 London Borough of Wandsworth Flood Investigation Criteria	
Consequence	Criteria
Risk to loss of life	<ul style="list-style-type: none"> <input type="checkbox"/> In the event of a fatality that is thought to have resulted from a flooding event, or <input type="checkbox"/> If there is considered to be significant risk to life, injury or health implications as a result of a flood incident.
Risk to residential and commercial property	<ul style="list-style-type: none"> <input type="checkbox"/> If 1 or more residential or commercial properties flood internally as part of a single flood event, or <input type="checkbox"/> If 5 or more residential or commercial properties are flooded externally (within the curtilage of the property) as a result of a single event in the same location, and/or, <input type="checkbox"/> If 1 or more residential or commercial properties has flooded externally more than twice within a single year.
Risk to critical infrastructure property e.g. hospitals, schools, emergency services, electricity installations, water supply, sewage treatment etc.	<ul style="list-style-type: none"> <input type="checkbox"/> If 1 or more critical infrastructure facilities floods internally, or <input type="checkbox"/> If 1 or more critical infrastructure facilities were rendered inoperable due to impassable access, and/or <input type="checkbox"/> If 1 or more flooded critical installations resulted in loss or potential loss of service or causing flooding to other property. <input type="checkbox"/> Consideration will also be given to the impact of flooding on vulnerable people and whether the flooding incident has placed them at risk, or if the services provided to them are disrupted.
Risk to transport	<ul style="list-style-type: none"> <input type="checkbox"/> If any section of Major (Category 2, 3a or 3b)⁴³ highway or major rail link is impassable for one hour or more as a result of a flood event, and/or <input type="checkbox"/> If any section of Minor (Category 4a or 4b) highway or minor rail link is impassable due to flooding for two hours or more.
Risk to environmental or cultural sites e.g. parks, ponds, Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), cultural sites etc.	<ul style="list-style-type: none"> <input type="checkbox"/> The threat and impact posed by flooding to ecosystems and nationally and international protected habitats, species and cultural sites will be considered following a flooding incident but the requirement of an investigation into flooding impacting these sites will be dependent on local assessment and Officer determination.

Maintain an Asset Register

5.3.13 Wandsworth Council has compiled a register of ordinary watercourses, drainage ditches and other structures within the Borough that are considered to potentially affect flood risk within the Borough. For each flood risk asset, key information has been compiled where possible, for example; dimensions, current condition, ownership and maintenance responsibility.

⁴³ Highways categories are based on the Well-maintained Highways – Code of Practice for Highway Maintenance (July 2005) Where:

- Category 2 is a Strategic Route, generally a trunk with some principal 'A' roads between primary destinations;
- Category 3a is a Main Distributor, generally a Major Urban Network and Inter-Primary Links facilitating short-medium distance traffic;
- Category 3b is a Secondary Distributor, generally a classified road (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions;
- Category 4a is a Link Road, generally roads linking between the Main and secondary Distributor Network with frontage access and frequent junctions; and
- Category 4b is a Local Access Road, generally roads serving limited numbers of properties carrying only access traffic.

Powers to do Works and Designate Structures

- 5.3.14 Wandsworth Council has developed internal guidance documents relating to the powers to designate features and undertake works as provided by the Act and the Land Drainage Act 1991.
- 5.3.15 These guidance documents provide an overview of the conditions that need to be met in both circumstances in order to warrant further action. In addition, the document outlines the process required to proceed with any works or designations.
- 5.3.16 Any works or designations undertaken will be led by the Operational Services team with support from Planning & Policy Control.

Regulation of Ordinary Watercourses

- 5.3.17 Wandsworth Council has developed a database of ordinary watercourses and drainage ditches with the Borough. These have been included in the Council's Mapping System to allow for the features to be interrogated and automatically flagged against any development application.
- 5.3.18 Wandsworth Council has developed a procedure for assessing and consenting to works within ordinary watercourses. The duty for Regulation of Ordinary Watercourses sits within Operational Services and all applications must be submitted via the Planning Portal or sent directly to Operational Services.
- 5.3.19 A Flood Defence Consent application form and guidance document for works within or near to ordinary watercourses has been developed. Further information can be found on the Council [website](#).

5.4 Delivery of Local Flood Risk Management Objectives

Overview

- 5.4.1 Keeping people safe and protecting life is always the priority for flood management. Beyond this there are a number of measures that can be taken to manage the risk and impacts of flooding on local communities, businesses, infrastructure, heritage and the environment in line with the delivery of the Local Strategy objectives.
- 5.4.2 A number of measures have been considered as part of the public engagement process and through discussions with Wandsworth Council and Risk Management Authority officers in forming this Strategy to deliver the local flood risk management objectives in Wandsworth over future years.

Measures to Deliver the Local Flood Risk Objectives

- 5.4.3 Table 5-2 outlines the measures identified to deliver the local flood risk management objectives for the London Borough of Wandsworth and the flood risk management guiding principles that they achieve.

Table 5 2 London Borough of Wandsworth Local Flood Risk Management Objectives and Measures		
Objective	Measures proposed to deliver the objectives	Guiding Principles
1. Further understand the risk of flooding across the London Borough of Wandsworth	<ul style="list-style-type: none"> . Update and utilise existing flood studies to inform the understanding of flood risk across the Borough and how climate change will affect this in the future. <input type="checkbox"/> Undertake flood investigation reports under Section 19 of the Flood and Water Management Act 2010, engaging with the Risk Management Authorities. <input type="checkbox"/> Pursue opportunities for undertaking further detailed investigation into local sources of flooding within the Borough, working with stakeholders and Risk Management Authorities. <input type="checkbox"/> Continue on-going programme of investigations to understand flood risk. <input type="checkbox"/> Improve understanding of groundwater flood risk and flooding mechanisms across the Borough. <input type="checkbox"/> Improve understanding of combined flood risk, e.g. surface water and sewer or river. <input type="checkbox"/> Continue to maintain a central register of flooding incidents. <input type="checkbox"/> 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. 	<ul style="list-style-type: none"> <input type="checkbox"/> Proportionate & risk based approach
2. Encourage appropriately mitigated development across the London Borough of Wandsworth	<ul style="list-style-type: none"> <input type="checkbox"/> 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. <input type="checkbox"/> Proactively encourage the use of SuDS through planning requirements within the Local Plan and Core Strategy, aiming for the incorporation of SuDS as an integral part of development. 	<ul style="list-style-type: none"> <input type="checkbox"/> Sustainability <input type="checkbox"/> Multiple benefits
3. Seek to identify funding and resources available for flood risk management	<ul style="list-style-type: none"> <input type="checkbox"/> Identify and monitor funding sources, internal and external, available for local flood risk management activities. <input type="checkbox"/> Seek contributions from other to fund flood risk management activities. <input type="checkbox"/> Undertake a review of the resources available within the council for flood risk management. <input type="checkbox"/> Maintain positive relations and explore partnership working opportunities with residents, businesses and Risk Management Authorities to deliver flood risk management. 	<ul style="list-style-type: none"> <input type="checkbox"/> Beneficiaries encouraged to invest <input type="checkbox"/> Community focus and partnership working
4. Proactively manage sources of local flooding to homes, critical infrastructure and transport networks by working in partnership with others	<ul style="list-style-type: none"> <input type="checkbox"/> Continue to hold regular meetings of the Wandsworth Flood Risk Management Team to understand and manage local flood risk across the Borough. <input type="checkbox"/> Seek opportunities to work with council departments to deliver local flood risk management benefits, identifying opportunities to maximise resources and funding available. <input type="checkbox"/> Continue to support the South West London Flood Group and seek opportunities for collaborative working, sharing of best practices and cross boundary management of flooding. <input type="checkbox"/> Continue to update and maintain the register of Flood Risk Assets. <input type="checkbox"/> Identify potential schemes to manage flood risk taking a risk based approach. 	<ul style="list-style-type: none"> <input type="checkbox"/> Proportionate & risk based approach <input type="checkbox"/> Community focus & partnership working <input type="checkbox"/> Multiple benefits <input type="checkbox"/> Catchment based approach

Table 5 2 London Borough of Wandsworth Local Flood Risk Management Objectives and Measures

<p>5. <i>Work with Risk Management Authorities to raise awareness of flood risk with communities, residents and businesses and how they can better protect themselves and their property</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Provide information on flooding and guidance on managing their flood risk through local communication channels: Brightside magazine, the Council website, social media etc. <input type="checkbox"/> Pursue opportunities to provide information on flooding and mitigation through public events, working with local groups where possible. <input type="checkbox"/> Encourage residents and businesses to register with the Environment Agency to receive flood warnings and flood alerts for flooding from rivers. <input type="checkbox"/> Work with known community groups in the Borough to understand and improve local coordination and management of flooding. 	<ul style="list-style-type: none"> <input type="checkbox"/> Community focus & partnership working
<p>6. <i>Use knowledge of flood risk to inform the emergency response to flooding within the London Borough of Wandsworth</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Utilise historical flood information and surface water mapping to inform flood response. <input type="checkbox"/> Develop a strategy to ensure the necessary response is in place upon receipt of a flood alert. <input type="checkbox"/> Continue to update the Multi-Agency Flood Plan with information of local flood sources. <input type="checkbox"/> Understand and clarify, where required, the preparation and response of other Risk Management Authorities to flooding. 	<ul style="list-style-type: none"> <input type="checkbox"/> Proportionate & risk based approach <input type="checkbox"/> Community focus & partnership working

Short Term Actions

- 5.4.4 In the short term (the first 2 years of the Strategy), local flood risk management will focus on
- Communication and education,
 - Building flooding evidence and understanding,
 - Delivery of investigations and schemes in higher surface water risk areas where funding has been secured, i.e. for the CDAs in the areas of Clapham Junction (CDA 22) and Earlsfield (CDA 19),
 - Identifying funding streams for undertaking investigations and schemes in other high risk areas,
 - Identifying opportunities where regeneration in areas at risk of flooding, such as Nine Elms, can help to reduce flood risk,
 - Reviewing and updating the emergency response plan for Wandsworth in light of new flooding datasets and any lessons learnt from the winter 2013 / 2014 flooding event in South England,
 - Reviewing and updating flood risk information on the Wandsworth website, in line with the priorities identified through the Strategy survey,
 - Ensure existing planning policies and guidance on requirements are aligned with the NPPG and emerging guidance, and,
 - Utilising information on blocked gully locations from the Strategy survey to inform the Wandsworth Council gully maintenance programme.

Medium Term Actions

- 5.4.5 In the medium to longer term, as the flooding evidence and understanding increases across the Borough, additional projects and schemes will be identified, developed and progressed, where funding allows, to address local flood risk in those areas at greatest risk. The types of future schemes and mitigation for the different sources of flooding are likely to include those outlined in Table 5-3, though this list is not exhaustive.

Table 5 3 Example Measures for Managing Local Flood Risk

Flood Source	Example Measures
Surface Water	<ul style="list-style-type: none"> <input type="checkbox"/> Defined schemes or projects for specific areas of highest flood risk, which could include SuDS (particularly with new developments). Examples include; green roofs, soakaways, swales, permeable paving, rainwater harvesting and detention basins. <input type="checkbox"/> Communication and Education. <input type="checkbox"/> Planning control and policies, e.g. controlling paving of front gardens. <input type="checkbox"/> Individual actions, e.g. de-paving of front gardens. <input type="checkbox"/> Designing for exceedance approaches - using urban areas and infrastructure to help manage local flooding. Guidance is available in the CIRIA Surface Water Management Guidance (C738a)⁴⁴. <input type="checkbox"/> Property Level Protection & Resilience Measures – Guidance on Property Level Flood Resilience for Property Owners⁴⁵ is available, and further information is provided through independent organisations including the National Flood Forum and the Environment Agency. <input type="checkbox"/> Highways maintenance regimes.
Groundwater	<p>Groundwater is particularly difficult to mitigate and manage. Engineering solutions to mitigate groundwater flooding are limited because of the large volumes of water and spatial areas involved, and because it is not contained or channelled.</p> <p>Potential measures could include:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Controlling groundwater levels in the subsurface through pumping. <input type="checkbox"/> Controlling groundwater levels at the surface by channelling and diverting the flow of water at the surface away from sensitive downstream receptors and dealing with pinch point where water is forced through a narrow corridor, such as an existing culvert, to avoid water backing up. <input type="checkbox"/> Dealing with the consequences of groundwater flooding through: <ul style="list-style-type: none"> <input type="checkbox"/> Strategic level actions, such as establishing a Community Flood Action Group of household level protection, or, <input type="checkbox"/> Site specific (property owner) actions, such as sealing floors, lower parts of walls and opening and installing sump and pump systems. <p>Guidance on how property owners can help themselves to reduce the impact of flooding from groundwater⁴⁶ is available via the Environment Agency website.</p>
Ordinary Watercourses	<p>Poor maintenance of ordinary watercourses has the potential to increase the risk of flooding in the future. Due to an expected lack of funding for maintenance of ordinary watercourses in the future, prioritisation of ordinary watercourses within the Borough, along with gullies and other flood risk assets will be key to maximise the positive impact of flood risk management activities carried out by Wandsworth Council. As such, appropriate measures might be:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Work with landowners and riparian owners to ensure they are aware of their rights and responsibilities and fulfil those. <input type="checkbox"/> Management and maintenance of watercourses, e.g. keeping watercourses clear of debris and vegetation to ensure that the flow of water is not impeded. <input type="checkbox"/> Ensuring culverts and trash screens are not blocked through regular inspection, particularly when heavy rainfall is expected. <input type="checkbox"/> Undertaking works to: <ul style="list-style-type: none"> <input type="checkbox"/> increase the size of culverts, <input type="checkbox"/> develop additional storage for flood water, and <input type="checkbox"/> de-culvert watercourses, where feasible to do so.

⁴⁴ Digman, C., Ashley, R., Hargreaves, P. and Gill, E. (2014) Managing urban flooding from heavy rainfall – encouraging the uptake of designing for exceedance. Recommendations and summary. CIRIA, C738a. http://www.ciria.org/Resources/Free_publications/c738.aspx

⁴⁵ White, I., O'Hare, P., Lawson, N., Garvin, S., and Connelly, A (2013) Six Steps to Property Level Flood Resilience – Guidance for Property Owners. Manchester, UK. [http://www.bre.co.uk/filelibrary/pdf/projects/flooding/Property_owners_booklet_v2_web_\(2\).pdf](http://www.bre.co.uk/filelibrary/pdf/projects/flooding/Property_owners_booklet_v2_web_(2).pdf)

⁴⁶ Environment Agency (2011) Flooding from Groundwater, Practical advice to help you reduce the impact of flooding from groundwater https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297421/flho0911bugi-e-e.pdf

Planning for Climate Change

- 5.4.6 Wandsworth Council will seek to use the best available information and evidence on climate change to inform ongoing local flood risk management.
- 5.4.7 In taking forward local flood risk management measures Wandsworth Council will:
- Seek to understand how climate change might impact flood risk to communities and businesses,
 - Assess how climate change impacts on flood risk may affect the London Borough of Wandsworth objectives for managing flooding over the longer term,
 - Explore what options could be used to manage those impacts of climate change on flood risk, and
 - Raise awareness within communities and businesses on the causes and potential impacts of climate change and how they can reduce these by taking action now.

5.5 Prioritising Local Flood Risk Management Measures

- 5.5.1 It is not possible to prevent all flooding, and with limited resources and funding, flood risk management work will need to be prioritised. The approach must be proportionate and risk based and all authorities have to ensure that environmental consequences are taken into account.
- 5.5.2 Projects are likely to fall under three broad categories:
- Schemes with highest eligibility for national funding,
 - Local priorities with lower eligibility for national funding, and,
 - Ongoing programmes of work and maintenance schedules.
- 5.5.3 Each measure in this strategy has been split into a number of actions (as outlined in the Action Plan in [Appendix B](#)) and these have been prioritised as High, Moderate or Low based on current understanding of local flood risk and resources and funding available to address this across the Borough.
- 5.5.4 As understanding of flood risk improves specific mitigation schemes and activities will be developed to address flood risk in those areas at greatest risk. This will require a clear protocol in terms of identifying which actions or schemes should be taken forward given the limited local and national funding streams. In these cases the following will be important considerations:
- Risk** - the risk of doing nothing in terms of economic, social and environmental terms,
 - Consequence** - how many people or properties the measure or scheme could impact, e.g. an individual property, ward or the Borough as a whole, and
 - Deliverability** - including costs and technical deliverability, e.g. providing information on flood resilience measures via the council website would be cheaper and technically easier to implement than designing and implementing a large flood alleviation scheme.
- 5.5.5 Moving forward, to ensure funding and resources are targeted to those areas and actions of highest importance Wandsworth Council will prioritise local flood risk management activities based on the following, where:

- There is a historic and ongoing flood risk from local flooding sources (surface water, groundwater and smaller watercourses and ditches),
 - Funding is available,
 - There is an identified benefit to properties, communities, businesses and / or infrastructure,
 - Funding is made available by partners, where perhaps traditional funding sources are not available or cannot fully fund the cost of the measure,
 - The measure delivers benefit and mitigation to areas identified as being at risk through Wandsworth's Strategy, SWMP, SFRA or PFRA, and
 - Schemes deliver multiple benefits, including wider environmental benefits.

5.5.6 The prioritisation of schemes and actions will be reviewed annually based on available funding, resources and local priorities, and published on the Wandsworth Council website.

5.6 Funding for Local Flood Risk Management

5.6.1 Local flood risk management measures will require funding from a variety of sources, both internal and external to the Council. The primary funding sources to date have been through central government funding, however, there are significant pressures on these funding sources in the current economic climate, and in the future there will be greater emphasis on LLFAs to fund activities and schemes from their own or alternative local sources of funding. There are a number of routes through which central government funding may contribute towards flood risk management activities, as detailed in Figure 5-2 and summarised below.

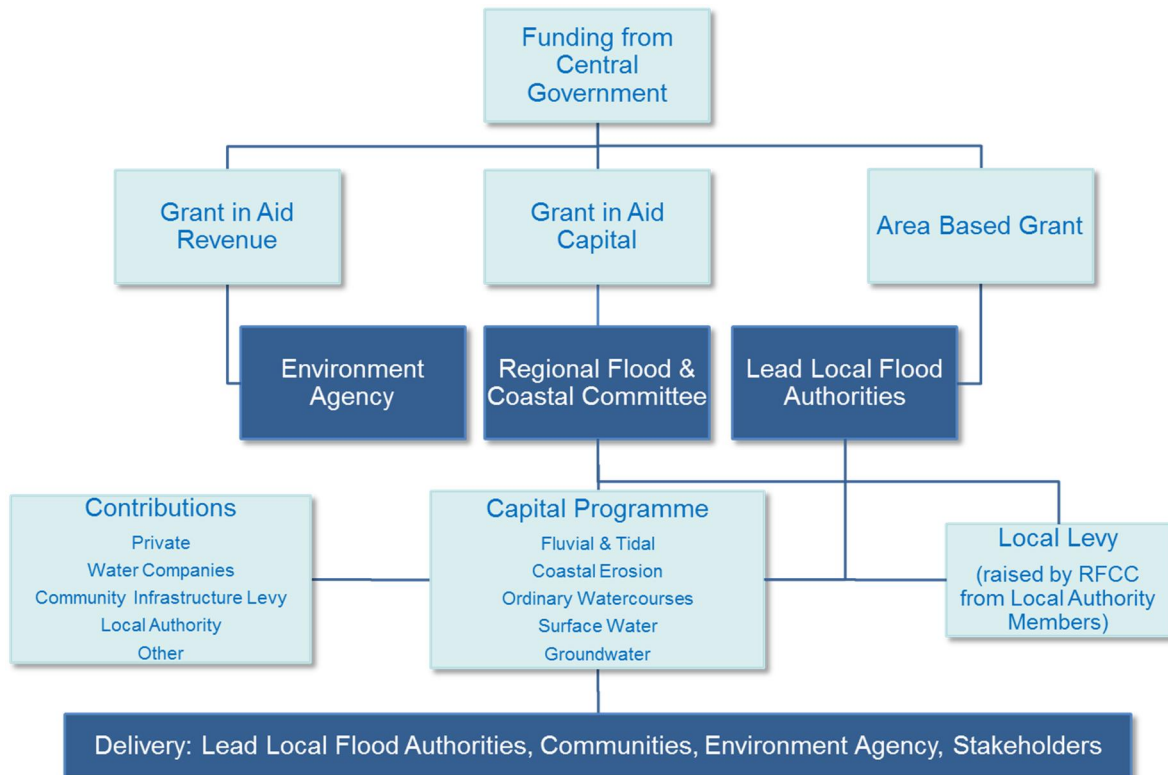


Figure 5-2 Summary of Lead Local Flood Authority Potential Funding Streams

Funding for LLFA Responsibilities

- 5.6.2 The Government has committed funding annually to support LLFAs in their 'new' flood management roles up to 2015. The funding is provided through 'Area Based Grants', which have been allocated by the Department for Environment and Rural Affairs (Defra) based on the individual flood risk each local authority faces. Beyond this period funding commitments are unclear and there are likely to be pressures on further funding given the significant challenges local government faces within the current spending review.

Funding for Flood Risk Management Studies and Schemes (Projects)

- 5.6.3 In the main, flood risk management projects are funded by a combination of the following funding streams, which give priority to the protection of residential properties:
- National funding – Flood and Coastal Erosion Risk Management Grant in Aid (FCRM GiA),
 - Regional funding – Local Levy, and
 - Local / other funding contributions.

Flood and Coastal Erosion Risk Management Grant in Aid (FCRM GiA)

- 5.6.4 Flood and Coastal Risk Management Grant in Aid (FCRM GiA) is the capital budget set aside by central government for flood defence projects across England. Following consultation during 2011, Defra introduced a new approach to the funding of flood risk management capital projects. This approach was termed the 'Flood and Coastal Resilience Partnership Funding' approach. The key benefits of the approach are:
- Communities, through their Regional Flood and Coastal Committees (RFCCs), can take decisions on which projects should progress, based on local willingness to contribute towards the benefits that would be delivered,
 - The programme of capital works will be prioritised based on the damage being prevented by the project, and,
 - A higher proportion of capital projects can be eligible for some government funding, subject to resources being available.

Local Levy

- 5.6.5 This funding is raised by way of a levy on local authorities within the boundary of each RFCC. The Local Levy is used to support, with the approval of the committee, flood risk management projects that are not considered to be national priorities and hence do not attract full national funding through the FCRM GiA.
- 5.6.6 The Local Levy allows locally important projects to go ahead to reduce the risk of flooding within each committee's area.

Other Sources of Funding

- 5.6.7 In order to maximise the benefits of the new approach to funding of flood risk management capital projects, Wandsworth Council will need to work closely with other organisations and bodies to attract alternative sources of funding. It is important to note that the likelihood of securing FCRM GiA or Local Levy can significantly increase when other sources of funding are secured.
- 5.6.8 In taking forward flood risk management activities Wandsworth Council will need to consider securing funding from alternative sources, including Central Government, other Risk

Management Authorities, stakeholders, private beneficiaries and contributions in kind. European and environmental grants may also be accessible where flood risk management schemes can deliver multiple benefits.

5.6.9 The survey undertaken to support this Strategy identified that there is strong support for joint-working or opportunistic initiatives e.g. building flood management measures during street improvement / maintenance work. This could open up more avenues of internal revenue than purely flood risk management, particularly where measures address existing core activities for the Council and result in overall resource and monetary efficiencies.

5.6.10 Table 5-4 highlights possible sources of funding that could contribute to the delivery of site specific and localised flood risk management projects or schemes.

Table 5 4 Possible sources of alternative funding for local flood risk management	
Funding Source	Description
Private Contributions	Voluntary contributions from private organisations / individuals who benefit from flood risk management projects. This could include local businesses & landlords.
Water Company Investment	Water companies are able to contribute to some types of flood risk management projects where it can be demonstrated that joint benefits can be obtained and/or there is increased resilience for their assets.
Community Infrastructure Levy (CIL) ⁴⁷	A locally set general charge which local planning authorities can choose to implement. Levied on developers, per square metre of certain types of development across an authority's area. Local communities set their own priorities on how the majority of this funding is allocated.
Developer Contributions through Section 106 Agreements	Planning obligations, or 'Section 106 Agreements' are a well-established mechanism for securing funding for agreed issues arising from a development proposal.
Other	There are a multitude of alternative funding sources available depending on the type of activity or scheme being proposed. For example, this could include delivery of Water Framework Directive (WFD) objectives, and will be dependent on the activity or scheme seeking funding.

5.6.11 It is clear from the above that funding to deliver capital projects will need to be sought from a variety of sources as government funding will be limited each year and is likely, in many cases, to be a contribution towards project costs rather than full funding. Timeframes for accessing funding sources will also strongly influence decisions to implement particular measures as well as the viability of certain options. Any projects are therefore likely to be developed through partnership working, with partners and organisation with relevant flood risk responsibilities or assets relating to the project engaged in the production of the scheme. Partnership working may also provide opportunities for reduction in costs through shared benefits.

5.6.12 Further information on the different funding sources is available in the Defra guidance document ['Partnership Funding and Collaborative Delivery of Local Flood Risk Management'](#)⁴⁸.

⁴⁷ Inside Government Website, Community Infrastructure Levy <https://www.gov.uk/government/policies/giving-communities-more-power-in-planning-local-development/supporting-pages/community-infrastructure-levy>

Maintenance Activities

- 5.6.13 In the current financial climate, there are significant pressures on the Council budget and funding for maintenance activities. Using the Strategy, historic flood evidence and communication with residents, Wandsworth Council will look to prioritise maintenance for those assets which have the greatest effect on local flood risk and in those areas most at risk to maximise effectiveness of limited funding. At the same time, Wandsworth Council will seek to maximise income from external sources, including asset owners and riparian owners, for flood risk management.

5.7 What can communities, residents and businesses do to prepare for flooding?

Protecting Properties from Flooding

- 5.7.1 The National Flood Forum provides advice for homeowners and businesses on how to protect their property from flooding. This includes Property Level Protection (PLP) which includes measures such as installing barriers or replacing carpets with waterproof tiling.
- 5.7.2 The [Environment Agency](#)⁴⁹, [Association of British Insurers \(ABI\)](#)⁵⁰ and [Flood Protection Association \(FPA\)](#)⁵¹ also provide information on how residents and businesses can prepare their property for flooding.

Get Insurance

- 5.7.3 Advice on how to obtain flood insurance is provided by the National Flood Forum. Where properties are difficult to insure, the British Insurance Brokers' Association can help find a broker that specialises in these properties. Defra provides [guidance on how to obtain suitable flood insurance in high risk areas](#)⁵².
- 5.7.4 Insurance companies often ask for an Insurance Related Request Letter if a property is at risk of flooding to decide if they will offer an insurance policy and how much it will cost. The letter can be obtained from the Environment Agency, free for individuals and £60 for businesses. PLP measures can help towards getting property insurance and reducing the premium or excess. Where measures have been installed, a [Flood Risk Report](#)⁵³ should be completed to inform insurers or buyers how the measures affect flood risk to the property.

⁴⁸ Halcrow Group Ltd for Defra (2012) Partnership funding and collaborative delivery of local flood risk management.

http://randd.defra.gov.uk/Document.aspx?Document=9958_FD2643_Partnershipfundingguide.pdf

⁴⁹ Environment Agency (2009) Prepare your property for flooding, A guide for householders and small businesses

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/292943/geho1009brdl-e-e.pdf

⁵⁰ Association of British Insurers website: <https://www.abi.org.uk/Insurance-and-savings/Topics-and-issues/Flooding/Preparing-for-a-flood>

⁵¹ The Flood Protection Association website: <http://thefpa.org.uk/flood-protection/>

⁵² Defra (2012) Obtaining flood insurance in high risk areas

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69578/pb13082-flood-insurance.pdf

⁵³ Environment Agency (2012) Flood Risk Report: <https://publications.environment-agency.gov.uk/ms/EbMpeA>

6. DELIVERY OF WIDER ENVIRONMENTAL OBJECTIVES

6.1 Overview

6.1.1 In delivering the Strategy there is the opportunity to contribute to the achievement of wider environmental objectives. In order to address this requirement a Strategic Environmental Assessment (SEA) of the Strategy has been undertaken in accordance with the European Union adopted [Directive 2001/42/EC](#)⁵⁴ on the assessment of the effects of certain plans and programmes on the environment (the 'SEA Directive'). Alongside this a Habitats Regulations Assessment (HRA) Screening has been undertaken to assess the impacts of implementing the Strategy policies and measures on European Designated Sites within 10km of the London Borough of Wandsworth.

6.1.2 Both the HRA and the SEA were developed alongside this Strategy and have been used to inform sustainable decision making throughout.

6.2 Strategic Environmental Assessment

6.2.1 SEA involves the systematic identification and evaluation of potential environmental impacts of specified plans and programmes before deciding which are adopted. Consideration should be made with regards to both the positive and negative impacts of options on wildlife and habitats, populations and health, soil, water, air, climate factors, landscape, cultural heritage and the inter-relationships between these receptors.

Approach

6.2.2 The first stage of the SEA was to produce a combined Scoping Report for all six South West London Local Flood Risk Management Strategies⁵⁵ to set out the framework for undertaking a SEA for the Strategies and the scope of the assessment. The next stage was to produce the SEA Environment Report⁵⁶ for the London Borough of Wandsworth that identifies the likely significant effects of the implementation of the Strategy on relevant environmental receptors. It also identifies how the Strategy can contribute to the achievement of wider environmental objectives, including Water Framework Directive (WFD) objectives.

SEA Outcomes

6.2.3 The key findings of the SEA process are set out in the Environment Report for the Strategy. This broadly outlines how the local flood risk management objectives and the identified measures might be expected to affect a number of different aspects of the environment (referred to as 'receptors'). The SEA demonstrates that the Strategy is predicted to have positive impacts on the environment in the short and long term (i.e. beyond the life of the Strategy), since the Strategy takes a proactive approach to reducing and managing local flood risk within the London Borough of Wandsworth. Each of the Strategy objectives successfully supports the range of environmental objectives identified within the SEA framework, achieving a positive outcome for each SEA objective.

6.2.4 The majority of Strategy objectives are likely to have indirect beneficial effects on the environment as they relate to improving knowledge and understanding and promote high level management of local flood risk rather than actual works or actions that could have an effect on the ground.

⁵⁴ European Union (2001) Strategic Environmental Assessment Directive
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0042:en:NOT>

⁵⁵ Capita URS for the South West London Flood Group (2014) South West London Local Flood Risk Management Strategy SEA - Scoping Report

⁵⁶ Capita URS for the London Borough of Wandsworth (2014) South West London Local Flood Risk Management Strategy SEA - Environment Report for the London Borough of Wandsworth

6.2.5 Overall, the Strategy objectives and measures are considered to be beneficial for the environment, due to the likely outcomes of improved local flood risk management and subsequently reduced local flood risk to the natural and built environment within the London Borough of Wandsworth.

6.2.6 Figure 7 and Figure 8 in [Appendix A](#) show the potential impact of local sources of flooding (surface water) on critical infrastructure and the environment and heritage sites, respectively, in the London Borough of Wandsworth.

6.3 Habitats Regulations Assessment

6.3.1 A HRA screening assessment (as required by Article 6 of the [EC Habitats Directive 1992 \(92/44/EEC\)](#)⁵⁷, and Regulation 48 of the [Conservation \(Natural Habitats &c\) Regulations 1994](#)⁵⁸) was undertaken as part of the Strategy development. This screening exercise assessed the potential impacts of implementing the Strategy objectives and measures on European Designated Sites (Special Areas of Conservation, Special Protection Areas and Ramsar sites) within 10km of the London Borough of Wandsworth.

HRA Outcomes

6.3.2 The key findings of the HRA Screening assessment are set out in the Habitats Regulations Assessment for the Strategy⁵⁹. It concluded that the Strategy has been screened out as having no likely effects on any European sites due to a lack of pathways linking them to local flood risk management in the London Borough of Wandsworth and therefore no further HRA is required.

6.3.3 Figure 8 in [Appendix A](#) shows the potential impact of local sources of flooding (surface water) on the environment in the London Borough of Wandsworth.

6.4 Water Framework Directive

6.4.1 The Strategy will complement work that is currently underway to comply with the requirements of the European [Water Framework Directive \(WFD\) \(2000/60/EC\)](#)⁶⁰. Although a formal WFD assessment (WFDa) is not a statutory requirement of the Strategy, WFD requirements have been considered as part of the SEA process, including where opportunities to improve WFD status exist.

6.4.2 The Environment Agency is responsible for preparing management plans for river basin districts in England and Wales in line with the requirements of the WFD. The plans outline the characteristics of the river basin district, identify the pressures that the local water environment faces, and specify the actions that will be taken to address any problems before 2015.

6.4.3 For the Thames River Basin District, the density of the population together with relatively low rainfall means that the water environment is stressed, with less water per person than many Mediterranean regions. This leads to over-extraction, and the high risk of pollution. Many of the rivers within the Thames river basin have been heavily modified as a consequence of development, flood risk management and for navigation. As a result only 23% of the assessed water bodies covered by the [Thames River Basin Management Plan](#)⁶¹ are regarded having an

⁵⁷ European Union (1994), The Habitats Directive, http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

⁵⁸ HMSO (1994), The Conservation (Natural Habitats &c) Regulations 1994, <http://www.legislation.gov.uk/uk/si/1994/2716/contents/made>

⁵⁹ Capita URS for the London Borough of Wandsworth (2014) South West London Local Flood Risk Management Strategy – Habitats Regulations Assessment Screening for the London Borough of Wandsworth

⁶⁰ European Union (2000) Water Framework Directive 2000/60/EC, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0060:EN:NOT>

⁶¹ Environment Agency (2009) Thames River Basin District River Basin Management Plan. <http://www.environment-agency.gov.uk/research/planning/125035.aspx>

ecological status of at least “good”. There are no water bodies in the Thames river basin that were considered to exhibit “high” ecological status.

- 6.4.4 Flood risk management activities are expected to have a significant impact on the ability of the UK to comply with the requirements of the WFD, as flood protection can involve substantial alteration to the natural properties of a river. The Thames River Basin Management Plan encourages the use of sustainable drainage systems as a means of reducing the physical impact of flood risk management works on the ecological status or potential of water bodies.

Outcomes

- 6.4.5 Within Wandsworth, the River Wandle and Beverley Brook have been assessed to have poor ecological status under the WFD, primarily due to poor biological diversity and high phosphate presence⁶¹. Both these waterbodies are defined as being ‘Heavily Modified’. The waterbodies must reach good ecological status by 2027.
- 6.4.6 The Strategy seeks to alleviate local flood risk by encouraging best practice for the maintenance of flood prevention and drainage assets, however this practice may sometimes have adverse effects on biodiversity, for example clearance of vegetation may lead to habitat loss along river corridors and deterioration in water quality. There may be opportunities for multi beneficial schemes which have positive effects on water quality and subsequently biodiversity from small-scale measures such as implementation of SuDS or changes in drainage. There may also be cumulative benefits to biodiversity and water quality through strategic management of local flood risk, as enabling natural flood patterns to continue or extend in some areas can improve wetland habitats.
- 6.4.7 Other plans and strategies provide mitigation to avoid impacts on designated sites, protected species and habitats as part of flood prevention measures. However, cumulative impacts may arise where a number of measures combine to alter hydrological systems or land use. For instance, many small changes to water levels may result in overall gains or losses in freshwater habitats or there may be cumulative effects on a particular species or type of habitat.
- 6.4.8 In assessing this Strategy for WFD compliance, the measures proposed are unlikely to have environmental effects and will not cause deterioration to water bodies. However, as projects and schemes are developed these may require site specific environmental assessment to identify any potential environmental effects (positive and negative).

7. STRATEGY DELIVERY, MONITORING & REVIEW

7.1 Delivery

7.1.1 An Action Plan has been developed that details the measures and actions that will be taken to deliver the Local Flood Risk Management Strategy ([Appendix B](#)). For each measure a number of actions have been identified and for each of these the proposed funding route, timescale for implementation, and delivery lead and partners have been identified.

7.2 Annual Monitoring

7.2.1 The Action Plan will be the key mechanism through which progress in meeting the Strategy will be monitored. Wandsworth Council propose to monitor progress against the Strategy Action Plan annually. This will involve assessing which actions have been delivered, and determining whether there has been any change to the prioritisation of actions. Findings from this monitoring process will be presented to the Wandsworth Flood Group and the South West London Strategic Flood Group.

7.2.2 Progress against the Strategy Action Plan will be reported to Elected Members through an Annual Monitoring Report submitted to the Strategic Planning and Transportation Overview and Scrutiny Committee.

7.3 Review

7.3.1 The Strategy has been developed to deliver a short to medium (6-year) improvement plan to establish a sound evidence and knowledge base upon which to develop a longer-term investment plan for local flood risk management activities in the London Borough of Wandsworth.

7.3.2 The Action Plan will be reviewed on an annual basis or following a significant flood event and updated, where applicable, to reflect current priorities, funding availability and timescales for delivery. Updates to the Action Plan will be discussed and agreed by the Wandsworth Flood Risk Management Team.

7.3.3 It is proposed that the Strategy will be formally reviewed in 2020, and thereafter every six years (as a minimum) to coincide with the requirement under the Regulations to revise the Flood Risk Management Plan.

7.3.4 However, the Strategy should be viewed as a dynamic strategy and may require review more regularly to recognise specific changes. Potential triggers for a review of the Strategy may include:

- . Occurrence of a significant and widespread surface water flood event,
- Significant changes to datasets or information which may alter the understanding of risk within the study area,
- Significant amendments to the legal responsibilities and/or roles and functions of Risk Management Authorities and/or other organisations,
- Annual Monitoring identifies that the Strategy is not achieving its objectives,
- Changes to relevant national and European legislation, or
- Change in funding availability which has a significant effect on the Strategy Action Plan.

GLOSSARY & ABBREVIATIONS

Term	Definition
The Act	The Flood and Water Management Act 2010: http://www.legislation.gov.uk/ukpga/2010/29/contents
Aquifer	A source of groundwater comprising water bearing rock, sand or gravel capable of yielding significant quantities of water.
Attenuation	In the context of this strategy – the storing of water to reduce peak discharge of water.
Catchment Flood Management Plan	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.
Category 1 Responders	As defined under Schedule 1 of the Civil Contingencies Act, Category 1 responders are “core responders” in the event of an emergency and include emergency services, local authorities, health bodies and Government agencies including the Environment Agency.
Civil Contingencies Act 2004	Aims to deliver a single framework for civil protection in the UK and sets out the actions that need to be taken in the event of a flood. The Civil Contingencies Act is separated into two substantive parts: local arrangements for civil protection (Part 1) and emergency powers (Part 2).
Climate Change	Long term variations in global temperature and weather patterns caused by natural and human actions.
Critical Drainage Area	A discrete geographic area (usually a hydrological catchment) where multiple and interlinked sources of flood risk (surface water, groundwater, sewer, main river and/or tidal) cause flooding during severe weather thereby affecting people, property or local infrastructure.
Culvert / culverted	A channel or pipe that carries water below the level of the ground.
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.
Flood Zone 1	Low Probability of Flooding. In accordance with the NPPF, land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year.
Flood Zone 2	Medium Probability of Flooding. In accordance with the NPPF, land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1-0.1%), or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5-0.1%) in any year.
Flood Zone 3a	High Probability of Flooding. In accordance with the NPPF, land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of sea flooding (>0.5%) in any year.
Flood Zone 3b	Functional Floodplain. In accordance with the NPPF, land where water has to flow or be stored in times of flood.
Environment Agency	Environment regulator for England and Wales. Risk Management Authority responsible for management of flood risk from main rivers, tidal and coastal sources of flooding and Reservoirs.
Flood Defence	Infrastructure used to protect an area against floods as floodwalls and embankments; they are designed to a specific standard of protection (design standard).
Floodplain	Area adjacent to river, coast or estuary that is naturally susceptible to flooding.
Flood Resilience	Resistance strategies aimed at flood protection.

Term	Definition
Flood Risk	The level of flood risk is the product of the frequency or likelihood of the flood events and their consequences (such as loss, damage, harm, distress and disruption).
Flood Risk Assessment	Considerations of the flood risks inherent in a project, leading to the development actions to control, mitigate or accept them.
Flood Storage	A temporary area that stores excess runoff or river flow often ponds or reservoirs.
Flood Resilience	Resistance strategies aimed at flood protection.
Flood Zone	The extent of how far flood waters are expected to reach.
Functional Floodplain	Land where water has to flow or be stored in times of flood.
Greenfield	Previously undeveloped land.
Groundwater	Water that is in the ground, this is usually referring to water in the saturated zone below the water table.
Highways Act 1980	Sets out the main duties (management and operation of the road network) of highways authorities in England and Wales. The Act contains powers to carry out functions / tasks on or within the highways such as improvements, drainage, acquiring land etc.
Hydraulic Modelling	A computerised model of a watercourse and floodplain to simulate water flows in rivers too estimate water levels and flood extents.
Infiltration	The penetration of water through the grounds surface.
Infrastructure	Physical structures that form the foundation for development.
Land Drainage Act 1991	Sets out the statutory roles and responsibilities of key organisations such as Internal Drainage Boards, local authorities, the Environment Agency and Riparian owners with jurisdiction over watercourses and land drainage infrastructure. Parts of the Act have been amended by the Flood and Water Management Act 2010.
Local Flood Risk	Defined in the Flood and Water Management Act 2010 as flooding from surface runoff, ordinary watercourses and groundwater.
Lead Local Flood Authority (LLFA)	The statutory body defined under the Flood Risk Regulations 2009 and Flood and Water Management Act 2010 responsible for the management of local flood risk, namely surface water runoff, groundwater and ordinary watercourses.
Local Planning Authority	Body that is responsible for controlling planning and development through the planning system.
Main River	Watercourse defined on a 'Main River Map' designated by DEFRA. The environment Agency has permissive powers to carry out flood defence works, maintenance and operational activities for main rivers only.
Mitigation Measure	An element of development design which may be used to manage flood risk or avoid an increase in flood risk elsewhere.
Multi-Agency Flood Plan (MAFP)	Plan outlining how responding parties under the Civil Contingencies Act and key voluntary response organisations will work together on an agreed coordinated response to severe flooding in the London Borough of Wandsworth.
National Strategy	National Flood and Coastal Erosion Risk Management (FCERM) Strategy for England, developed by the Environment Agency.

Term	Definition
National Planning Policy Framework (NPPF)	National Planning Policy Framework (NPPF) for England, published by the Development for Communities and Local Government. This sets the government's planning policies for England and how these are expected to be applied.
Ordinary Watercourse	A watercourse that does not form part of a main river. This includes "all rivers and streams and all ditches, drains, cuts, culverts, dikes, sluices (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows" according to the Land Drainage Act 1991.
Overland Flow	Flooding caused when intense rainfall exceeds the capacity of the drainage systems or when, during prolonged periods of wet weather, the soil is so saturated such that it cannot accept any more water.
The Regulations	The Flood Risk Regulations 2009: http://www.legislation.gov.uk/ukxi/2009/3042/made
Residual Flood Risk	The remaining flood risk after risk reduction measures have been taken into account.
Return Period	The average time period between rainfall or flood events with the same intensity and effect.
Riparian Owner	Anyone who owns land or property alongside a river or other watercourse. Responsibilities include maintaining river beds/banks and allowing flow of water to pass without obstruction.
Risk	The probability or likelihood of an event occurring.
River Catchment	The areas drained by a river.
River Flooding	Flooding by a river or a watercourse.
Sewer Flooding	Flooding caused by a blockage or overflowing in a sewer or urban drainage system.
Standard of Protection	The flood event return period above which significant damage and possible failure of the flood defences could occur.
Sustainability	To preserve /maintain a state or process for future generations.
Sustainable Drainage System (SuDS)	Methods of management practices and control structures that are designed to drain surface water in a more sustainable manner than some conventional techniques.
Sustainable Development	Development that meets the needs of the present without compromising the ability of future generations meeting their own needs.
Tidal	Relating to the actions or processes caused by tides.
Tributary	A body of water, flowing into a larger body of water, such as a smaller stream joining a larger stream.
1 in 30 year event	Event that on average will occur once every 30 years. Also expressed as an event, which has a 3.33% probability of occurring in any one year.
1 in 100 year event	Event that on average will occur once every 100 years. Also expressed as an event, which has a 1% probability of occurring in any one year.

APPENDIX A – FLOOD RISK MAPS

Figure 1 Historic Flooding

Figure 2 Flood Risk from Surface Water

Figure 3 Flood Risk from Groundwater

Figure 4 Flood Risk from Rivers

Figure 5 Main Rivers & Ordinary Watercourses

Figure 6 Surface Water Critical Drainage Areas

Figure 7 Flood Risk from Surface Water: Critical Services & Transport

Figure 8 Flood Risk from Surface Water: Environment & Heritage

APPENDIX B – ACTION PLAN

APPENDIX C – SUMMARY OF COMMUNITY ENGAGEMENT

Purpose, Methodology and Response

Purpose

Wandsworth Council wished to engage with the local community at an early stage in developing their Local Flood Risk Management Strategy to gather information on local flooding incidents, flood preparedness, perceptions of flooding and local priorities for local flood risk management. The information collated through this exercise has been used to provide an evidence base to inform the Local Flood Risk Management Strategy.

Engagement Approach

A survey was developed to gather views and evidence, which was available online between 17th December 2013 and 24th March 2014.

Questions included in the survey covered 5 broad areas:

- . Current understanding of flooding in London Borough of Wandsworth,
- Previous experiences of flooding,
- Communication of flood risk information,
- Priorities for flood risk management, and
- Funding for flood risk management.

To promote the survey, Wandsworth Council carried out the following activities:

- The background to the Strategy and purpose of the survey, along with a link to the online survey, was emailed to resident associations,
- Email sent to Ward Councillors.
- Twitter announcements,
- Article published in the Brightside Council magazine which is delivered to homes in the Borough,
- Dedicated page created on the council website,
- Banner ads on the council website, and,
- Email sent to Ward Councillors.

Response Rate

In total the council received 115 completed surveys in response to this engagement process.

General Caveats

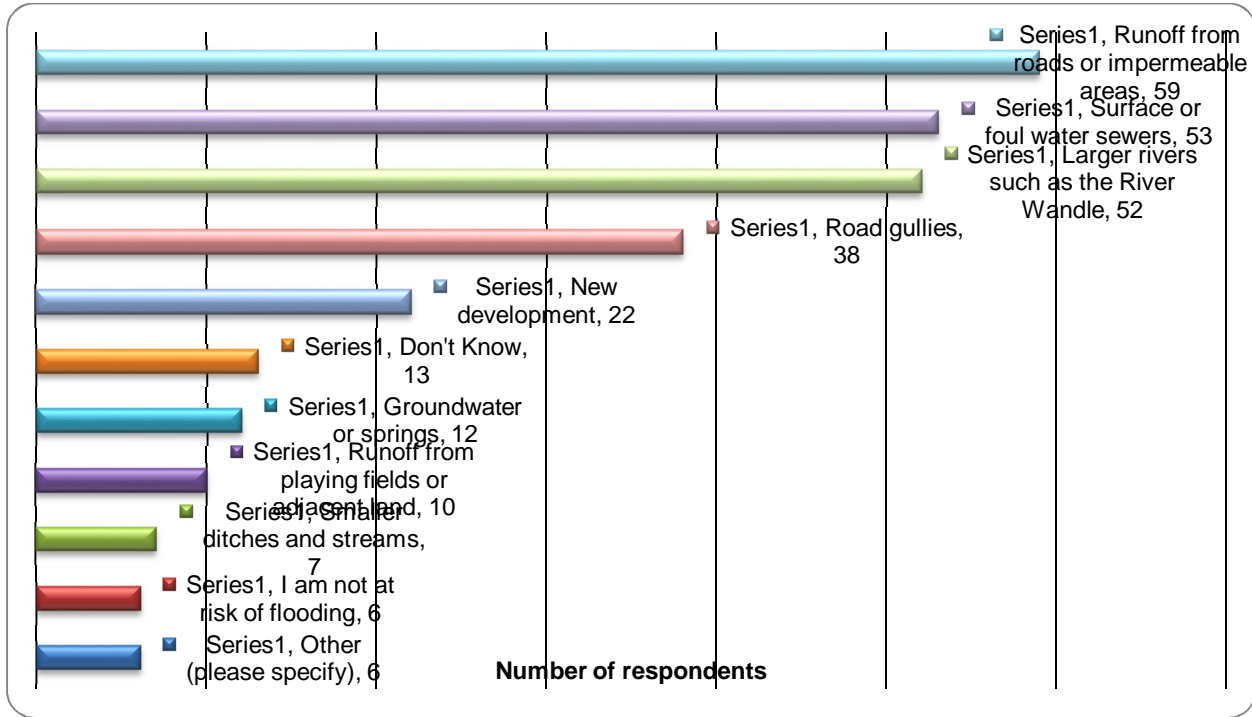
The results of this engagement are not statistically representative of the views of London Borough of Wandsworth residents due to the nature of the methodology used. The level of response, information gathered and views obtain provide a useful indicator of wider opinion and any important issues that will need to be considered.

Due to the software used and the different response options open to respondents, it was possible for people to submit more than one response. This has been monitored during the engagement period and analysis and it does not appear to have been abused or be a significant issue affecting the response.

Percentages used in this analysis have been rounded and may not add up to exactly 100%. For some survey questions, respondents could select more than one response which also means that percentages, if added together, can total more than 100%.

Current understanding of flood risk in Wandsworth

Respondents were asked to identify what they thought were the main sources of flooding in their local areas. Figure C-1 illustrates the perceived greatest sources of flooding in Wandsworth.



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Respondents who had experienced flooding were asked to indicate in what way they were affected by the flooding incident. The most commonly affected receptors were:

Most commonly affected receptors	No. of respondents	% of respondents
Local Roads	25	64%
Public Transport	10	26%
Property (Internally)	9	23%

Communication of flood risk information

A key outcome from the Strategy Survey was that respondents would like to receive more information on a number of topics, for example the existing local flood risk (75%), how this is being managed (70%), who is responsible for dealing with the different types of flooding (62%) and how property owners can help themselves prepare for a flooding incident (56%). Figure C-2 illustrates the key topics which respondents would like to receive greater information on.

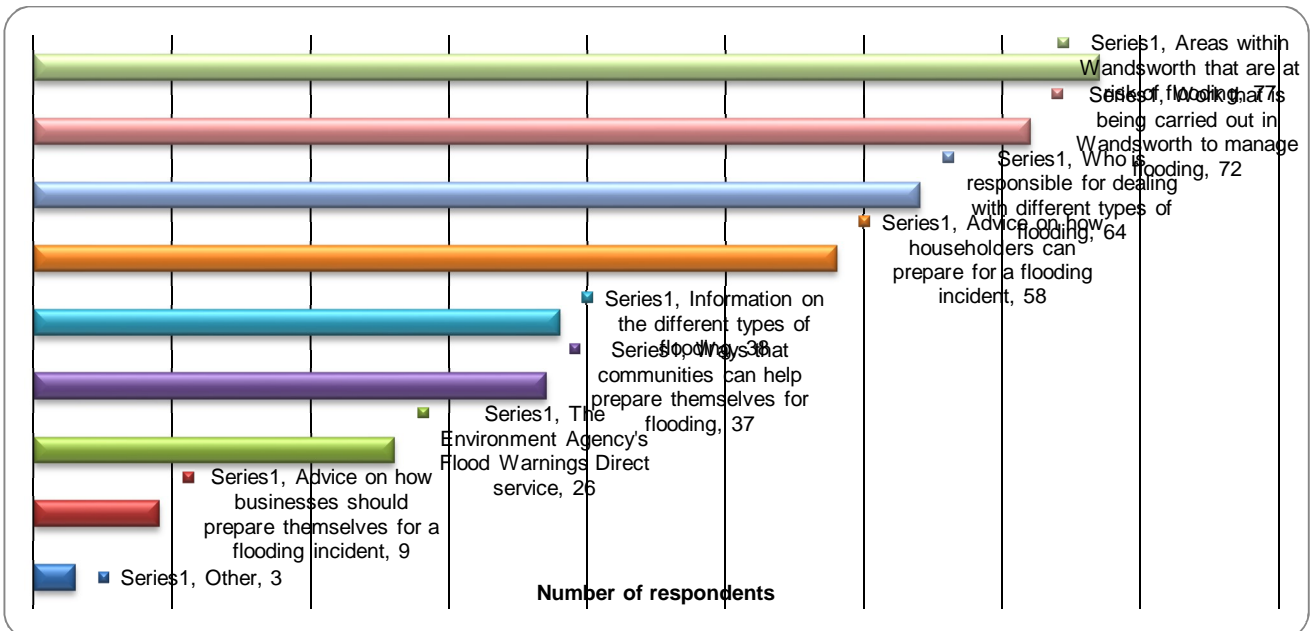


Figure C-2 Key topics on which respondents would like to receive further information

Respondents were asked to indicate how they would like to receive information about flood risk management in Wandsworth. The preferred methods of communication were;

Method	No. of respondents	% of respondents
Wandsworth Council Website	69	60%
E-newsletters	61	53%
Brightside Magazine	57	50%

Priorities for Flood Risk Management

Respondents were asked to indicate how concerned they were about different consequences of flooding, ranging from not at all concerned to very concerned. Figure C-3 illustrates that respondents are most concerned about maintenance of watercourses and/or flood prevention assets as well as the effect climate may be having on flood risk and emergency planning and response.

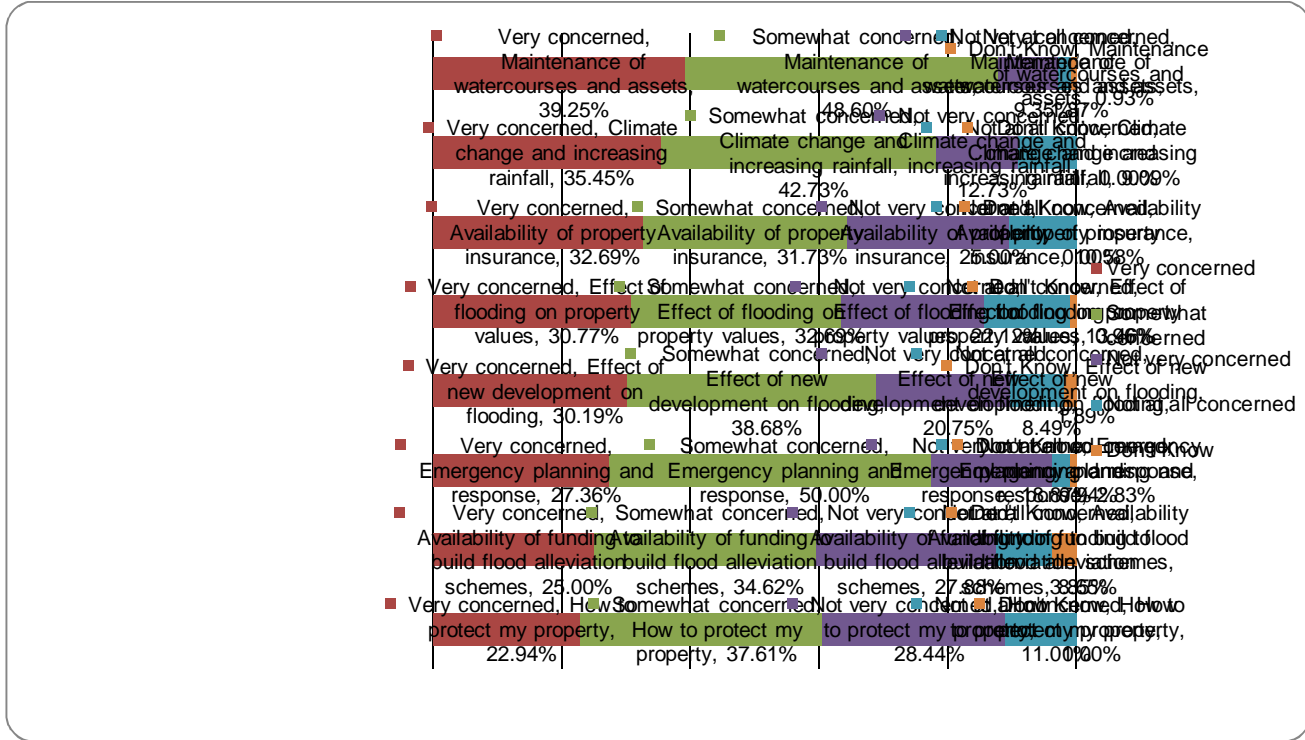


Figure C-3 Level of concern in relation to consequences of flooding

Keeping people safe and protecting life is always the priority for flood management. Beyond this respondents were asked to identify what the priority for flood risk management within the Borough should be. The top three flood risk management priorities for residents and businesses in Wandsworth were identified to be:

Priority	No. of respondents	% of respondents
Protecting critical infrastructure	94	82%
Protecting homes	92	80%
Keeping transport networks functioning	50	44%

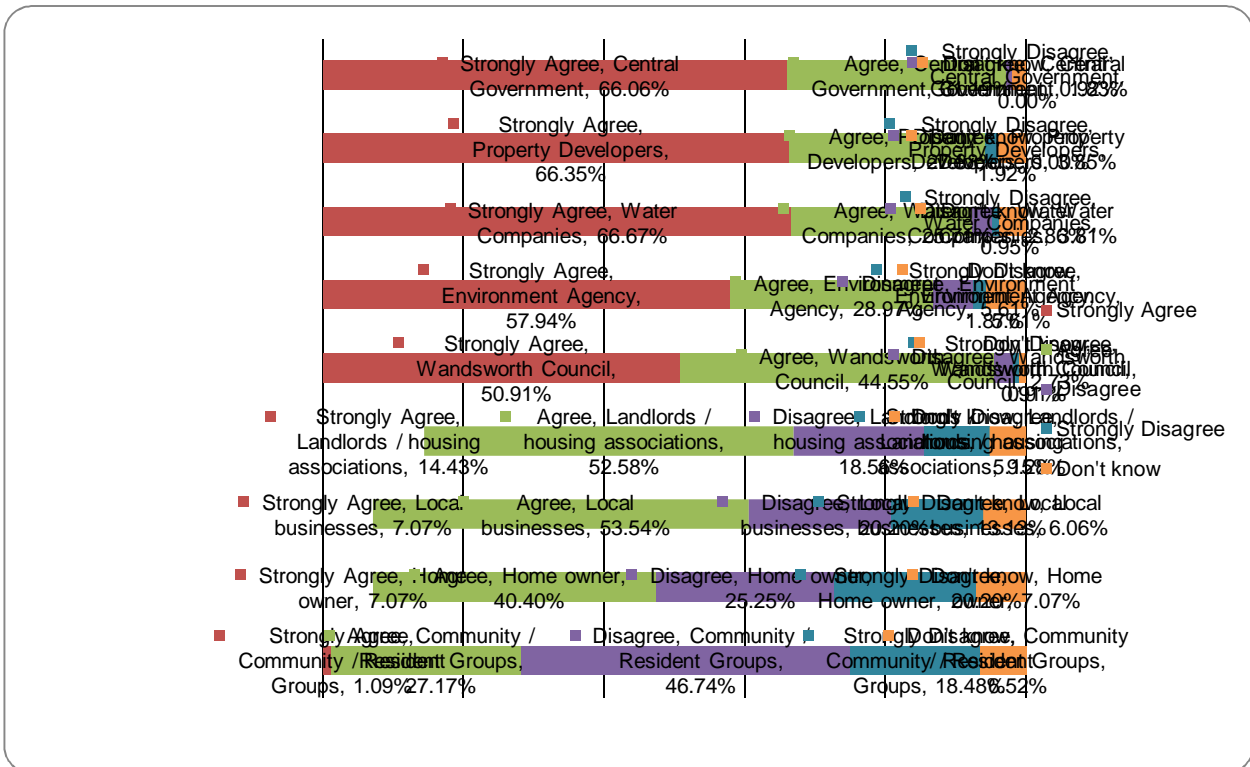
Having identified the priorities for flood risk management within Wandsworth, respondents were subsequently asked how they thought that flood risk management would be best achieved in Wandsworth. The following approaches were preferred by respondents:

Priority	No. of respondents	% of respondents
More maintenance to reduce surface water flooding e.g. clearing road gullies and watercourses	87	76%
Undertaking work where opportunities arise, e.g. building flood management measures during street improvement / maintenance work	83	73%
Working with planners to ensure new development does not make flooding worse	74	65%

Funding for Flood Risk Management

The Department for Environment, Flood and Rural Affairs (Defra) is the main source of funding for flood prevention measures. The funding available is normally divided across projects across the country on a cost / benefit basis. This means that where local businesses and communities are to benefit from flood prevention measures, the government asked for contributions from those who benefit, which can greatly improve the likelihood of a project receiving funding.

Respondents were asked to what extent they agreed or disagreed that different organisations should contribute financially to flood alleviation schemes. Figure C-4 indicates that respondents believe the greatest responsibility with regards to flood management funding lies with central and local government, as well as property developers, water companies and the Environment Agency.



C-4 Respondent support for funding source options

How has this feedback influenced the strategy?

- . The survey has identified that surface water runoff, from roads and blocked road gullies, sewer flooding and flooding from large rivers are the main sources of flood risk within Wandsworth. These can combine to exacerbate flood risk. Wandsworth Council will work to improve the understanding of the combined flood risk and work with Risk Management Authorities to share information and identify solutions to mitigate the risk, where funding is available.
- Respondents prioritised protecting critical infrastructure, protecting homes and keeping transport networks functioning for future flood risk management in Wandsworth. Measures to achieve this included more maintenance to reduce surface water flooding (clearing gullies and watercourses) and undertaking works as opportunities arise. These priorities and measures have been considered in the development of the Strategy.
- Respondents to the survey indicated that they would like to receive more information on the flood risk in their local area, what work is being undertaken and who is responsible for different types of flooding. The council website will be updated in line with the aforementioned and, where appropriate, articles in Brightside Magazine or e-newsletters will be produced.
- The council has taken on board respondent's concerns regarding road drainage and will utilise information on blocked gully locations from the Strategy survey to inform the Wandsworth Council gully maintenance programme.
- Respondents showed concern about the impact of local development, as well as the paving over of gardens on surface water runoff. An objective of the London Borough of Wandsworth Strategy is to encourage appropriately mitigated development across the London Borough of Wandsworth. The council will continue to hold regular meetings of the Wandsworth Flood Risk Management Team to understand and manage local flood risk across the Borough and will work with planners to ensure appropriate policies and measures are put in place to minimise the impact of flooding from new development.