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London Borough of Croydon
Local Flood Risk Management Strategy

Summary

2014 - 2020

CAPITA | URS

Introduction

In response to the severe flooding across large parts of England and Wales in summer 2007, the Government has recently enacted the Flood and Water Management Act 2010 giving local authorities new powers to manage local flood risk in a more co-ordinated way. As a Lead Local Flood Authority, Croydon Council's responsibilities relate to 'local' flood risk from surface water, groundwater and small rivers, streams and ditches.

Nationally, around 5.2 million properties are at risk of flooding; 1.4 million are at risk from rivers or the sea, 2.8 million at risk from surface water and 1 million are at risk from both (Environment Agency, 2009)

We have a legal requirement under the Flood and Water Management Act 2010 to develop, maintain, apply and monitor a Local Flood Risk Management Strategy ('Local Strategy') that:

- Provides an overview of flood risk management work being undertaken and planned throughout the borough,
- Explains how partners are working together to reduce flood risk, and,
- Clearly sets out which organisations are responsible for different types of flooding in the borough to ensure a common understanding of roles, responsibilities and priorities within the Borough.

Local flood risk is defined as…

"The risk of flooding from local sources including surface water, groundwater and Ordinary Watercourses (small ditches and watercourses)"

This Strategy outlines how we, Croydon Council, will manage flooding from local sources in our area, now and in the future.

The rise in extreme weather conditions, the presence of existing buildings in areas of flood risk, and limited public funding, means that we cannot prevent all flood incidents happening in the borough. However, through the strategy we can coordinate our services so that flood risk is reduced and the impact of any flood incidents is minimised. The strategy also provides us with an opportunity to work together with local residents, businesses and stakeholders to minimise risk and prepare for the effects of climate change.

This document is a summary of the London Borough of Croydon Local Strategy, setting out our plan for the management of local flood risk across the Borough during the period 2014 - 2020.

The full Local Flood Risk Management Strategy is available on the Council's website:
http://www.croydon.gov.uk/flooding

The development of the Strategy

The Strategy has been developed by Croydon Council in partnership with the Environment Agency and Thames Water, as well as local communities and neighbouring boroughs. It has been informed by local, regional and national policy, including the Environment Agency's National Strategy for flood and coastal risk management, to ensure a coordinated approach to flood risk management within Croydon.

A community engagement exercise was undertaken between January and March 2014. The outcomes from this have been used to shape the development of the Strategy and future flood risk management priorities.

The purpose of the Local Strategy

The aim of the 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 Croydon where it is economically, technically, socially, and environmentally feasible to do so.

To achieve this aim a number of key objectives have been identified:

1. Continue to build our evidence base on flood mechanisms, incidents and assets and improve how it is communicated internally and externally.
2. Maximise use of resources in targeted flood management.
3. Ensure evidence of historic floods and ongoing studies effectively feed into planning policy and decision-making.
4. Support sustainable growth and development by understanding the needs of all parties.

Firefighters attending Dale Road during flooding in February 2014

5. Work effectively with Risk Management Authorities in and around Croydon to jointly manage the risks.
6. Improve awareness of the causes of flooding with the general public and encourage proactive management
7. Take a more holistic view of asset management in Croydon, improving priorities and addressing source control more effectively.
8. Maximise opportunities to learn, improve and review flood management procedures based on lessons learnt.

Roles and Responsibilities

Several organisations have a role to play in minimising the risk and impact of flooding in the Borough. The Strategy clarifies the responsibilities of the different organisations involved in flood risk management in the Borough including how they work together and what you should expect of them.

Croydon Council

We have a number of roles and responsibilities relating to flood risk management in the London Borough of Croydon, including:

- **As the Lead Local Flood Authority and a Risk Management Authority** – we have legal duties and powers to investigate significant flooding events, maintain a register of significant flood risk assets and manage flood risk from ordinary watercourses,
- **As the Highways Authority** – ensuring that highways are drained of surface water and where necessary maintain all drainage systems,
- **Emergency Responder** - Along with other organisations, developing emergency plans and business continuity plans for use during an emergency, and,
- **Local Planning Authority** - To consider flood risk in the development of the Local Plan, to be the decision maker on flood risk for planning application for development and to undertake a Strategic Flood Risk Assessment to inform strategic land use planning, and,

- **Asset Owner** – as the asset owner for a number of flood risk assets, we have responsibility to manage and maintain these to ensure they operate as required and do not increase flood risk.

Risk Management Authorities

Risk Management Authorities, as defined by the Flood and Water Management Act (2010), include Croydon Council, other London Authorities, the Environment Agency, Thames Water (as the sewerage undertaker) and Transport for London.

The multi-agency South West London Strategic Flood Group has been established that includes representatives from each of the six boroughs, the Environment Agency and Thames Water. The Local Strategy has been developed through this Partnership Group to ensure that a joined up approach is adopted throughout South West London.

Other flood risk management organisations

There are a number of other relevant organisations that have a key role to play in managing flood risk in the borough. (e.g. Network Rail, Natural England). These organisations will be involved as required to support flood alleviation projects, or to provide information, support and input on a project-by-project basis.

Public and community groups

The public, community groups and businesses also have a role to play in the management of flood risk The Strategy highlights that people and properties in known flood risk areas should be prepared for flood incidents. Anyone who owns land adjoining a watercourse, known as a Riparian Owner, also has certain responsibilities to ensure the unobstructed flow of water.

Our aim is that the public and local community groups are aware of the flood risks they face, take action to reduce their vulnerability to flooding, and are actively involved in flood risk management. To achieve this vision, we will work in two ways:

- Raising awareness of local flood risk and encouraging local communities to take action, and,
- Targeting at risk communities as part of flood studies or development of a flood alleviation scheme.

Flood Risk in the London Borough of Croydon

The Council's responsibility, and the focus of this Local Strategy, is the management of 'local' flooding. By this we mean flooding from:

Surface water – this occurs when heavy rainfall cannot be absorbed into the ground or enter the drainage systems,

Ordinary watercourses – this occurs when smaller watercourses, such as streams, ditches, drains, cuts, dykes and sluices cannot hold the volume of water flowing through them and overflow their banks onto surrounding land, and,

The Norbury Brook is an ordinary watercourse at Heavers Meadow, Selhurst

Groundwater – this occurs when water levels in the ground rise above surface levels which is most likely to occur in areas underlain by permeable rocks, and is likely to occur after seasonal periods of prolonged rainfall.

However, the most severe flooding is often caused when different types of flooding combine. Whilst developing the Local Strategy we have considered the impact of river, sewer and other

forms of flooding which are the responsibility of other risk management authorities and we are working in partnership with the Environment Agency and local water and sewerage companies where there are combined sources of flooding.

Other sources of flooding include:

Rivers – this occurs when a watercourse cannot cope with the volume of water draining into it and overflows its banks onto surrounding land. Large ('Main') rivers in Croydon include the River Wandle, Norbury Brook, Caterham Bourne and the Chaffinch Brook

Sewer – this occurs when combined or surface water sewers are overwhelmed by a heavy rainfall event which exceeds the capacity of the sewer / drainage system, the system becomes blocked by debris or sediment, and/or the system surcharges due to high water levels in receiving watercourses. Flooding from the foul sewer can also occur through blockage, illegal connections or under capacity.,

Reservoirs – this occurs when reservoirs which hold large volumes of water above ground water, overtop i.e. cannot contain the amount of water flowing into them, or when part of the reservoir fails resulting in a fast release of water. Within Croydon, South Norwood Lake is designated as a Reservoir in addition to Russell Hill Reservoir, managed by Thames Water.

South Norwood Lake, Croydon

Historic Flooding

Historically, Croydon has been affected by flooding from surface water, rivers, groundwater and sewers. The most significant recent flooding event occurred in February and March 2014 when an unprecedented period of rainfall caused groundwater levels to rise leading to flood incidents around the Borough. The rising groundwater led to a significant flow in the Caterham Bourne, a watercourse which is largely dry for most of the time and an emergency situation was declared as multiple agencies worked to keep water out of homes along the A22 and surrounding roads in Kenley and Purley.

Surface water flooding at Purley Cross, July 2007

In the summer of 2007, extremely heavy rainfall fell in a short period of time causing widespread surface water flooding across the borough. This was felt most severely in Purley, where the Purley cross roundabout and areas of Brighton Road were completely submerged and numerous properties were flooded. Incidents of property, garden and road flooding were reported across the borough.

Croydon has records of surface water flooding dating back to the 1950s. Localised hotspots occur across the Borough, often in low lying areas when rainfall from steep surrounding areas flows down and overwhelms the road drainage such as Kenley Lane, Chipstead Valley Road and Marlpit Lane in Coulsdon. Major flooding from rivers is less common in Croydon. Although the Caterham Bourne is designated as a main river, the flooding in 2014 is predominantly attributed to groundwater although a number of factors contributed to the flooding as is frequently the case in Croydon.

Historic records indicate incidents of the Norbury Brook overtopping and culverts surcharging, with a sizeable event in 1968 and further recorded incidents through the 1970s and 1980s. Not all river flooding is caused by overtopping. High water levels in the rivers can block drainage outfalls causing the water to back up the road drainage. Numerous incidents are recorded in roads close to the Norbury Brook in Thornton Heath and Norbury and parts of South Norwood close to the Chaffinch Brook, although recorded evidence of the cause is only anecdotal.

Flood Risk

Croydon is at greatest risk of flooding from 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. Runoff from roads or impermeable areas and flooding from road gullies were identified as the main sources of flooding perceived by local communities. This does not, however, indicate that the future flood risk from other sources is insignificant.

Significant lengths of river within Croydon have been long culverted underground, which has lowered the risk of rivers overtopping. However the valley shapes where rivers once flowed still exist and frequently form hotspots of surface water flooding when heavy rainfall flows to the lowest points putting the drainage under extra pressure

Residential Properties at Risk of Surface Water Flooding in Croydon:

High Risk	3,714 Houses
Medium Risk	10,440 Houses
Low Risk	33,614 Houses

Based on Flood Map for Surface Water (Environment Agency, December 2013)

Risks from river flooding associated with the open sections of The Norbury Brook, River Wandle and Chaffinch Brook are relatively well understood and have been managed at a catchment level for many years by the Environment Agency. These risks are mapped and delineated into Flood Zones, which are available through the Environment Agency's website and are used to guide planning decisions. However, flood risk from local sources, 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.

Non Residential Properties at Risk of Surface Water Flooding in Croydon:

High Risk	578 Businesses 35 Education Facilities 15 Hospital / Surgery/ Care Home 3 Emergency Service Facilities
Medium Risk	1,272 Businesses 72 Education Facilities 36 Hospital / Surgery/ Care Home 6 Emergency Service Facilities
Low Risk	2,455 Businesses 134 Education Facilities 75 Hospital / Surgery/ Care Home 11 Emergency Service Facilities

Based on Flood Map for Surface Water (Environment Agency, December 2013)

Parts of Croydon 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.

The most recent information available from the Environment Agency shows that areas identified to be particularly susceptible to surface water flooding include Brighton Road, particularly around Purley Cross and up to south and Central Croydon, The A22/Godstone Road and areas around Old Lodge Lane, Kenley and Chipstead Valley Road in Coulsdon.

Flood risk from groundwater is less well understood within the Borough than that from surface water, rivers or sewers. Groundwater flooding can be particularly difficult to predict due to the 'hidden' nature of the source of flooding and relatively longer period as the water table rises and emerges, often several days or weeks after heavy rainfall has fallen and river levels have dropped. The Caterham Bourne is fed by high groundwater so the area along the A22/Godstone road is a known risk area. Analysis of Croydon's geology provides a high-level indication of risk being greatest in the chalky areas in the southern half of the Borough as well as areas of river terrace deposits associated with the River Wandle. Although detailed records are sparse, numerous incidents in the north of the borough support the presence of springs and perched groundwater, which can cause gardens and basements to flood.

No modelling of the flood risk from ordinary watercourses has been undertaken to date across Croydon. Therefore future flood risk is based on the potential risk that might arise using knowledge of known flooding hotspots and potential mechanisms for flooding. Within Croydon, significant lengths of ordinary watercourse are culverted underground, with trash screens often located on the upstream end of culverts. These can get blocked by plant debris or rubbish increasing localised risks of flooding. Better understanding is required of the location and risks from smaller watercourses and ditches in the borough. Known flooding issues exist relating to the Merstham Bourne in Coulsdon and the upstream end of the Norbury Brook through Heavers Meadow.

February 2014, Garden flooding from the Merstham Bourne, Coulsdon

Sewer flooding is recorded and mapped by Thames Water in Croydon. 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. Sewer flood risk is complex in Croydon. It can often be influenced by other sources of flooding such as groundwater or high river levels as suggested by anecdotal records around the Norbury Brook in Thornton Heath. A combined sewer system can be vulnerable to flood during very heavy rain, which can cause the system to overflow.

How will we deliver local flood risk management?

We have identified a number of measures and actions over future years to deliver the objectives of the Local Strategy. These will inform the way we reduce flood risk across the Borough and how we plan for resilience against the impacts of climate change.

The Strategy is accompanied by an Action Plan setting out how we will deliver the objectives of the Strategy over the next six years.

Croydon Local Flood Risk Management Strategy Objectives and Actions

Objective	Actions to achieve the objective
Continue to build our evidence base on flood mechanisms, incidents and assets and improve how it is communicated internally and externally.	• Improving in-house information management • Establish ways to keep the evidence base up to date and feeding into policy • Raise profile and understanding of groundwater as a flood risk
Maximise use of resources in targeted flood management.	• Training for existing staff on new areas of responsibility • Communication about targets and objectives between teams • Monitoring funding streams available for flood remediation measures • Use best current understanding and available funding to prioritise flood alleviation work • Review effectiveness of emergency procedures and ensure our capabilities are known throughout the council and our commissioned services
Ensure evidence of historic floods and ongoing studies effectively feed into planning policy and decision-making	• Maintain regular communication between highways and planning • Establish a borough-wide understanding of the future flood risk, including the likelihood of future flood events. • Focus on flooding hotspots / Critical Drainage Areas in collaboration with development plans by establishing the impact of planned growth.
Support sustainable growth and development by understanding the needs of all parties	• Establish the SuDS Approving Body • Create tools / guidance for developers to help them to easily consider the most appropriate types of drainage
Work effectively with Risk Management Authorities in and around Croydon to jointly manage the risks	• Meet with Network Rail / Thames Water / TfL to discuss areas where their infrastructure falls in Croydon's flood hotspots • Work with multi-agency partners to enhance local arrangements for flood planning and response. • Continue to meet regularly and work with the other five South West London Boroughs
Improve awareness of the causes of flooding with the general public and encourage proactive management	• Engaging with the public through various means of communication • Encourage residents to help themselves with small-scale initiatives • Targeting riparian owners and educating on responsibilities • Develop our capability to warn and to provide information and advice to the public with partner organisations
Take a more holistic view of asset management in Croydon, improving priorities and addressing source control more effectively.	• Seek to achieve multiple benefits in water management schemes • Seek out opportunities for de-culverting
Maximise opportunities to learn, improve and review flood management procedures based on lessons learnt	• Clarify flood recovery process • Establish Lessons Learnt review procedure

How will we prioritise flood risk management actions?

It is not possible to prevent all flooding, and with limited resources and funding it is not possible to carry out work in every area at risk of flooding. The approach must be proportionate and risk based and all authorities have to ensure that environmental consequences are taken into account.

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.

As our understanding of flood risk improves and evidence is forthcoming, specific mitigation schemes and activities will be developed to address flood risk in those areas at greatest risk.

How will flood risk management be funded?

In April 2012 the way that the Government funds flood risk management projects changed. Funding levels for each scheme now relate directly to the number of households protected, damage prevented and other benefits such as the environmental or business benefits that will be delivered. There is now also an extra emphasis on protecting households in deprived areas. We are developing our understanding of areas in Croydon that have the highest eligibility for national funding.

In the future we will need new ways of working to make sure we can successfully reduce the risk of flooding as well as finding new ways to pay for the improvements. Whilst it may be possible to fully pay for some projects using national sources of funding available such as the Flood and Coastal erosion Risk Management Grant in Aid (FCRM GiA), it is likely they will require a wider range of funding sources (including contributions from local communities and businesses as beneficiares).

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 Lead local Flood Authorities to fund activities and schemes from their own or alternative local sources of funding. The Strategy provides detail on the additional funding options that will be considered in the Borough. This includes seeking contributions from developers.

Funding will be focussed on the areas of the Borough most vulnerable to local flooding. However, any scheme can be put forward, regardless of the level of flood risk if enough money is available (including contributions from local communities) and the work meets the principles of the Strategy.

Delivery of wider environmental objectives

In delivering flood risk management, Croydon Council has the opportunity to deliver wider environmental objectives and requirements, as set out in European Legislation including the Water Framework Directive. A Strategic Environmental Assessment (SEA) and a Habitats Regulations Assessment Screening exercise has been undertaken to inform the Strategy development.

What happens next?

Although there is no formal deadline for the Strategy to be produced or updated, we believe that continued monitoring, review and development are essential to ensure that local flood risk management is responsive to changes. This is especially important in these early years when there are expected to be substantial changes in the planning system, new requirements for sustainable drainage, changes in funding and design of flood management schemes and improvements in our knowledge of flood risk across the Borough.

The draft Strategy will undergo a period of public consultation, offering the opportunity for residents, businesses and risk management stakeholders to provide feedback. Following the public consultation period, we will consider what you have told us and will use it to update the Local Strategy, where necessary. The Council will then adopt the Local Strategy and use it as the basis for local flood risk management in the future. The final Local Strategy will be available on our website in early 2015.

The Local Strategy will be reviewed periodically to ensure that its content and emphasis remains relevant.

For further information on the Local Strategy please contact us:

Website: www.croydon.gov.uk/flooding

Email: floodandwater@croydon.gov.uk

Post: Flood and Water management, Highways, London Borough of Croydon, Bernard Weatherill House, 8 Mint Walk, Croydon,CR0 1EA

Telephone: 0208 255 2864