

Croydon Resilience Forum

PREPARING FOR EMERGENCIES



Multi-Agency Flood Response Guidance **V3.0 October 2020**

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Critical Information

Introduction	This guidance has been developed to collate information regarding the roles and responsibilities of organisations that respond to flooding within the Croydon borough to improve multi agency response and co-ordination to flooding incidents. It aims to use existing plans and systems where possible and these have been duly signposted.
Who is the local coordination lead?	As the Lead Local Flood Authority, Croydon Council will lead the response, unless there is a risk to life, then primacy of the incident will be transferred to the Metropolitan Police Service.
Who notifies partners of a flood event?	Partners will be notified by the Environment Agency and Met Office when flooding is forecast or possible via an email from the Croydon Resilience Team. Actual flooding on the ground can be reported by any organisation or members of the public once it has happened.
Who activates these arrangements?	The decision on whether to invoke these arrangements is made through tripartite discussion between Croydon Council, the Metropolitan Police Service, and the London Fire Brigade.
What communication methods will be used to alert partners?	Environment Agency and Met Office will issue warnings and notifications to the Partnership through usual channels. Consideration of activation will take place through tripartite discussion and information cascaded to the Croydon Resilience Forum by the Croydon Resilience Team through Everbridge.
How to use this document quickly	<ul style="list-style-type: none"> • Go to page 7 for the Activation Procedure. • Go to page 10 for Triggers and Actions in response to a Flood Warning or Severe Flood Warning. • Go to page 22 to see Specific Considerations for a Flood Event. • Go to page 24 for guidance on Evacuation.
Out of scope of this document	This document does not include in-detail flood risks from foul sewage, burst water mains and private lakes but does highlight some of the capabilities that are in place to respond to such incidents if they were to occur.
Principles	<ul style="list-style-type: none"> • Every emergency is different, and it is important to be flexible to ensure the most appropriate and effective response. • Respect for the individual and their needs, and for the diversity of communities is key to ensuring the best possible care for affected people. • The response to any emergency is conducted in partnership. A multi-agency approach is crucial and sharing of information between partners is essential. • The arrangements in this document are complementary to the major incident procedures for London set out in the LESLP Major Incident Procedures Manual, the London Strategic Coordination Protocol, and the London Strategic Flood Response Framework.

Ownership and Version Control

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Superseded documents	<ul style="list-style-type: none"> Croydon Resilience Forum Multi-Agency Flood Response Plan, v2.0 December 2016 			
Key related documents	<ul style="list-style-type: none"> LESLP Major Incident Procedures Manual London Strategic Coordination Protocol London Strategic Flood Response Framework. 			
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Exercise / Training	Type	What was tested/ exercised?	Validation method	
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Exercise Watermark (4-11/03/2011)	-	-	-	
Croydon flooding (February/March 2014)	Full plan activation	N/A	S19 report; lessons learned document	
Sub Regional Resilience Forum (SRRF) Workshop (Autumn 2016)	Table top exercise	Multi-agency response and recovery to a flooding incident	Post exercise report	
Exercise Barrage (25/11/2016)	Table top BRF exercise	Multi-agency coordination to flooding incident	Post exercise report	
Exercise Lagoon (05/10/2020)	Virtual table top BRF exercise	Multi-agency coordination to flooding incident, with a focus on activation and initial actions.	Post exercise report	

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Acronyms

The acronyms below relate to this plan. For more, see the lexicon of UK civil protection terminology at <https://www.gov.uk/government/publications/emergency-responder-interoperability-lexicon>

BECC	Borough Emergency Control Centre
BRC	British Red Cross
BTP	British Transport Police
CDA	Critical Drainage Area <ul style="list-style-type: none"> 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 in one or more Local Flood Risk Zones during severe weather thereby affecting people, property or local infrastructure
CHS	Croydon Health Services NHS Trust
CRF	Croydon Resilience Forum
DRA	(Croydon Council) Duty Resilience Advisor
EA	Environment Agency
FCP	Forward Control Point
LA	Local Authority
LALO	Local Authority Liaison Officer
LAS	London Ambulance Service
LBC	London Borough of Croydon
LESLP	London Emergency Services Liaison Panel
LFB	London Fire Brigade
LFRMA	Lead Flood Risk Management Authority
LFRZ	Local Flood Risk Zone <ul style="list-style-type: none"> A discrete area of flooding that affects houses, businesses or infrastructure
LLFA	Lead Local Flood Authority
MPS	Metropolitan Police Service
OOHs	Out Of Hours
RT	(Croydon Council) Resilience Team
SLaM	South London and Maudsley NHS Foundation Trust

1 Introduction

Flood risk is not just the likelihood of flooding occurring, but also the potential damage a flood could cause. Croydon has a history of severe flooding. Most significantly, during January to March 2014, a major incident was declared when Purley and Kenley experienced significant flooding from the Caterham Bourne due to extremely high groundwater.

Croydon is at risk of flooding predominantly 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.

The Croydon is potentially vulnerable to flooding from four sources:

1. Surface water (pluvial) flooding
2. Groundwater flooding
3. Fluvial flooding from the following sources:
 - The River Bourne
 - The River Wandle
 - The River Ravensbourne
4. Reservoir inundation from the following sources:
 - Norwood Lake

This Multi-Agency Flood Response Guidance is required to address these risks by detailing the local multi-agency response to a flood incident impacting the Croydon. This document aims to work alongside existing emergency plans that belong to the individual organisations, described as Category 1 and 2 responders under the Civil Contingencies Act 2004 and members of the Croydon Resilience Forum. The generic arrangements as outlined can be used in all flooding scenarios described in this document. This document will not include emergency contact numbers which responding organisations already maintain.

1.1 Scope

- This MAFP includes a community-level assessment of flood risk, which includes risk from heavy rainfall, rivers, reservoirs and defences. It does not include in-detail flood risks from foul sewage, burst water mains and private lakes but does highlight some of the capabilities that are in place to respond to such incidents if they were to occur.
- The Guidance supports responding to any form of flooding until such time the source of the flooding has been confirmed and the relevant risk management authority notified.
- This document covers a borough-based response; however, floods will not have regard for political and administrative boundaries.
- This document does not replace dedicated plans owned by individual agencies.

1.2 Aim

To provide an overview of flood risk in London Borough of Croydon (“Croydon”) and provide a response framework to mitigate the impact of a flood event in Croydon.

1.2.1 Objectives

- To provide a holistic understanding of flood risk in the borough, including the potential impact to critical infrastructure;
 - Much of this information can be found in the accompanying document “*Flood Risk Information*”, which aims to provide supporting flood risk information to the Croydon Multi-Agency Flood Response Guidance.
- To describe relevant weather warning systems;
- To outline the key roles and responsibilities;
- To provide trigger points for increased monitoring and activation of this plan;
- To state the warning and informing capabilities to a flood event in Croydon;
- To prompt consideration of flood specific issues.

2 Activation

Within the **London Strategic Flood Response Framework**, four levels of response have been identified: horizon scanning; flood preparation, flood response, and strategic flood response. Escalation through these levels may not always be sequential. Locally, the multi-agency focus and action is on level 2: flood preparation, and level 3: flood response.

Figure 1 summarises the triggers and actions for response, and **Section 2.2** displays these levels of response with associated triggers and actions.

Overall responsibility for activating this document will lie with either the MPS or Croydon Council’s Chief Executive.

A major incident will be declared if the incident requires implementation of special arrangements by one or more of the emergency services and will generally include the involvement, either directly or indirectly, of large numbers of people. For example

- Rescue and transportation of a large number of casualties
- Large-scale combined resources of Police, LFB and LAS
- Mobilisation and organisation of the emergency services and support services

A large or complex incident may involve the activation of pan-London arrangements. The decision on whether to invoke the London Strategic Flood Response Framework will be made through a tripartite discussion between the raising agency, London Resilience Group and the Metropolitan Police Service.

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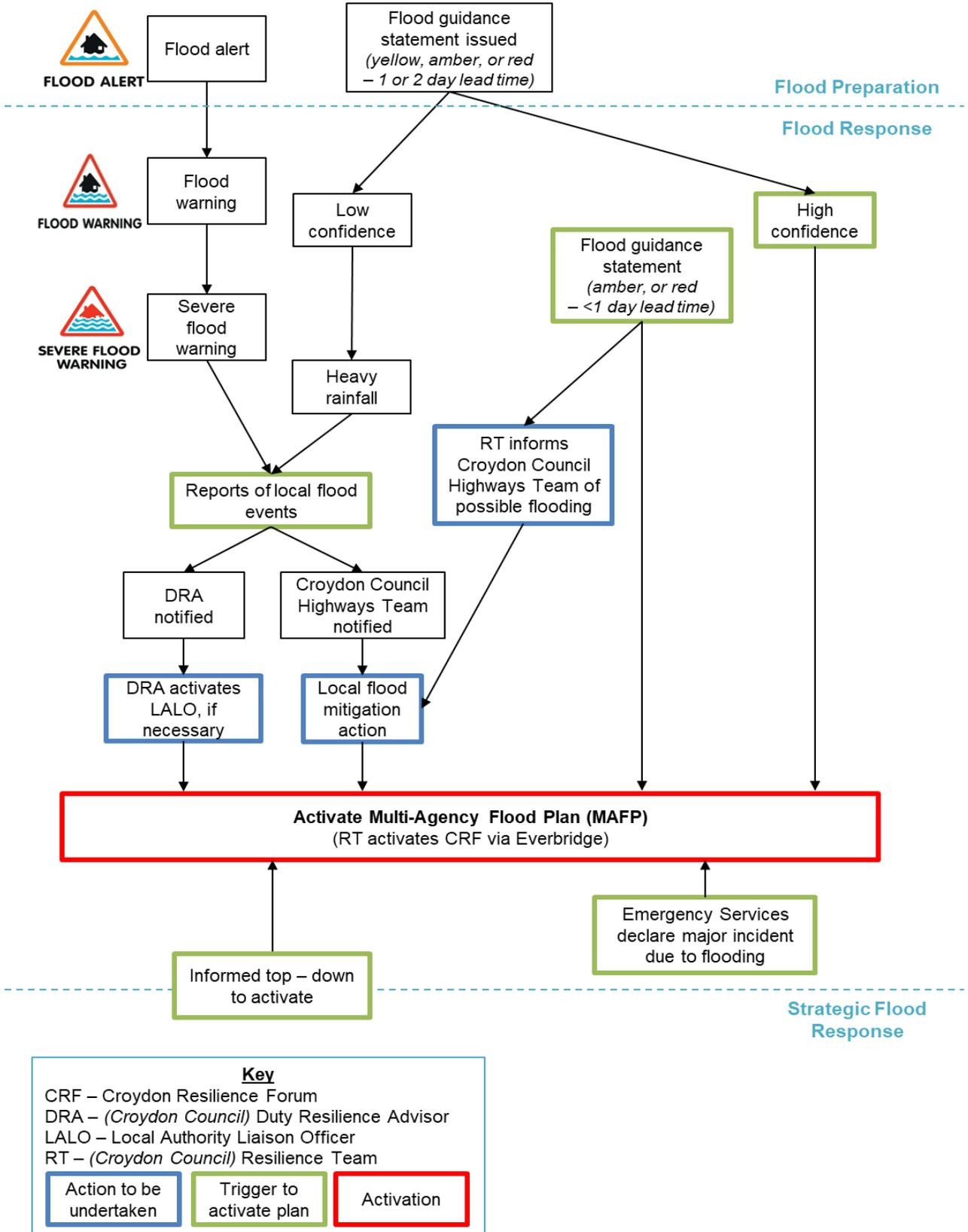


Figure 1 - Triggers and actions for response

2.1 Method to Activate Coordinating Groups

Croydon Council Resilience Team can use their emergency communication system, Everbridge, as a tool to activate required members of coordinating groups and other appropriate individuals to the flood incident requiring a coordinated multi-agency response.

Figure 2 displays a template message which will be sent via email and/or SMS to Everbridge-registered individuals, requiring a response from a choice of four options.

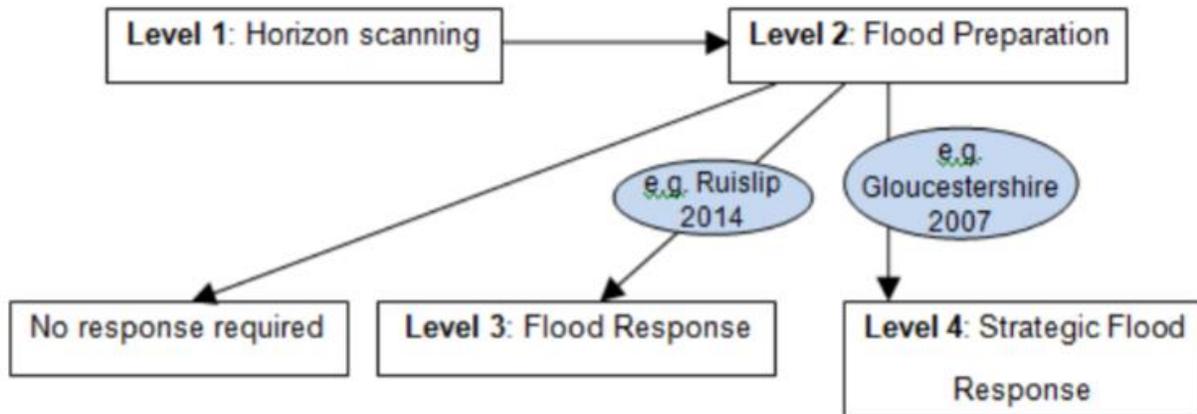
All organisations must reply with the relevant response as soon as possible after receiving the alert.

This information has been redacted.

Figure 2 - The template used to activate the BRF using Everbridge

2.2 Triggers for Activation and Levels of Response

The London Strategic Flood Response Framework identifies 4 levels of flood response, which this document is based off.



LEVEL 1: Horizon Scanning

There is no trigger to activate level 1. Ongoing risk assessment and horizon scanning is integrated into category 1 and 2 responder's normal arrangements and included in the London Common Operating Picture (COP) circulated to the Resilience Partnership.

Escalating From LEVEL 1 to LEVEL 2

There may be a period of inactivity between the preparation phase and the response phase. This could range from hours to days depending on the detail and confidence of the weather/flood forecasts. There will be occasions when the preparation phase (level 2) is activated but response phase (level 3) is not necessary. Activating the preparation phase ensures responders stay ahead of the incident, instead of trying to catch up during the response phase.

All organisations should inform Croydon Council Resilience Team (who will inform the LLACC, if open), and/or the Environment Agency of any flooding to property or infrastructure.

LEVEL 2: Flood Preparation

Triggers for LEVEL 2: Flood Preparation

- London is coloured yellow, amber or red on the Flood Guidance Statement (1 or 2 day lead time)
- The Met Office Advisor (Civil Contingencies) issues a specific update for London confirming the likelihood of disruption
- Environment Agency issues Flood Alerts for a location within Croydon
- Problems have been identified with a reservoir upstream or within Croydon which has not yet failed, with potential to impact on Croydon
- Problems have been identified with a flood defence with potential to impact on Croydon, which has not yet failed
- Credible reports in the media are focused on potential widespread flooding in London
- Disruption to utilities with possibility of a secondary consequence of flooding

WHEN ONE OR MORE OF THE TRIGGERS HAVE BEEN MET SEE ACTIONS BELOW

Actions to Consider for LEVEL 2: Flood Preparation

All organisations should:

- Report any observations of properties or infrastructure flooding to Croydon Council Resilience Team (who will inform the LLACC, if open), or Environment Agency.

All organisations should consider:

- Assess the severity and decide whether a Borough Strategic (Gold) - or Tactical (Silver) - Coordinating Group is needed to manage the strategic / tactical response.
- Manage staff to deal with a potential incident. This may involve placing staff on standby, assessing availability for the next 3-5 days and briefing key operatives internally.
- Prepare to implement operational response plans. This MAFP identifies most critical assets that may need protecting or assets that require inspection or regular monitoring.
- Check your organisation's control centre is fully prepared to be opened if necessary.
 - Croydon Council Resilience Team to consider whether the LLACC is likely to be required, and activate early in preparation if necessary.
- Prepare for potential media interest. Consider issuing proactive press releases providing advice to the public on how to prepare for flooding.
- Check your BCM plans to ensure your organisation's critical business activities can still be met, if flooding were to occur.
- Keep a watching brief on the situation and up-to-date with the latest flood forecasts.

LEVEL 3: Flood Response

Triggers for LEVEL 3: Flood Response

- London is coloured amber or red (medium or high likelihood) on the Flood Guidance Statement (less than 1 day lead time)
- The Environment Agency issues a Flood Warning or Severe Flood Warning for a river in Croydon
- Any organisation becomes aware of widespread disruption to transport or other infrastructure due to flooding from any source
- Any organisation receives reports of properties flooding internally
- A reservoir upstream or within Croydon is failing
- A flood defence structure has been breached or has failed with significant impact for Croydon
- Disruption to utilities which is causing secondary flooding impacts
- Instruction to escalate our response from the London Resilience Forum (usually in response to a pan London incident) – top down activation
- Credible reports in the media are reporting flooding in Croydon

WHEN ONE OR MORE OF THE TRIGGERS HAVE BEEN MET SEE ACTIONS BELOW

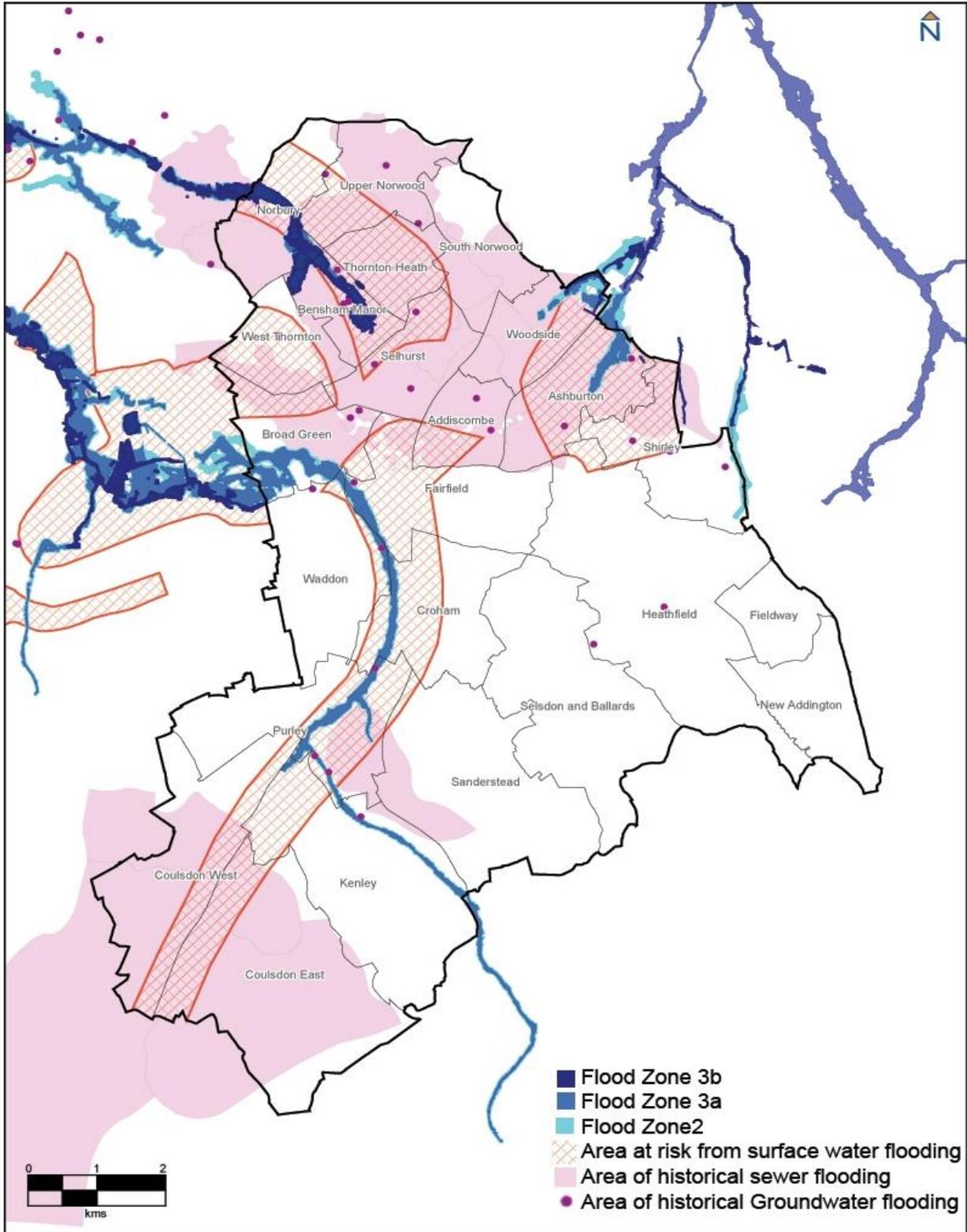


Actions to Consider for LEVEL 3: Flood Response

All organisations to consider:

- Assess the severity and decide whether a Borough Strategic (Gold) - or Tactical (Silver) - Coordinating Group is needed to manage the strategic / tactical response.
- Activate emergency response plans and/or BCM plans where appropriate.
- Scale up Open control centres / incident rooms where appropriate to provide coordination for your organisation and a central point of contact
- Check the status of key sites and infrastructure that are known to be in flood risk areas.
- Media messages need to be agreed and circulated on a regular basis. A flooding situation can change rapidly.
- Log all details of any reports of flooding and pass them to the Environment Agency, or Croydon Council Resilience Team (who will inform the LLACC, if open) on a regular basis.

3 Overview of Flood Risk in Croydon



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Scale 1:50000

Figure 3 - Map of Croydon's Overall Flood Risk (2008)

3.1 History of Flood Risk in Croydon

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 a major incident was declared as multiple agencies worked to keep water out of homes along the A22 and surrounding roads in Kenley and Purley.

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. According to research undertaken by the Environment Agency (EA), almost 50,000 residential properties are estimated to be at risk of surface water flooding within Croydon, with over 3,700 of those at high risk. Major flooding from rivers is less common in Croydon. Although the Caterham Bourne is designated as both a main river and an ordinary watercourse within the borough, 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.

Further information on flood risk in Croydon can be found:

- In the Local Flood Risk Management Strategy 2014 - 2020¹.
- A map displaying Croydon's overall flood risk is shown in **Figure 3**, and further flood risk maps can be found in Appendix A of Croydon's Local Flood Risk Management Strategy².
- Additional information can be found in the accompanying document "Flood Risk Information", which aims to provide supporting flood risk information to the Croydon Multi-Agency Flood Response Guidance.
- Most of the information in the Flood Risk Information are available in other publications within the Council i.e. SFRA, LFRMS, Flood Investigation Reports etc.

3.1.1 Croydon Caterham Bourne Flooding 2014 and Lessons Identified³

December 2013 to January 2014 was the wettest two-month period on record in the South London area. The prolonged heavy rainfall caused groundwater to rise to exceptionally high levels which led to significant flooding in the areas of Kenley and Purley around the route of the Caterham Bourne. Groundwater levels in Woldingham were recorded to increase by over 22 metres between late December and late January. However, the complex nature of an urbanised catchment meant there were also combined influences from surface water, sewers and artificial infrastructure which may have been blocked, damaged or failed to function correctly.

There was a significant multi-agency response following declaration of an emergency on 6th February 2014. Croydon Council set up a Borough Emergency Control Centre (BECC) which monitored the situation 24 hours a day for 20 days. A command and control structure was established by Croydon Council to determine a framework with the emergency services dealing with the incident and Gold meetings were held daily. Representatives from all Risk Management Authorities and emergency responders attended the Gold and Silver meetings.

Overall, given the scale of the event and number of agencies involved, it is felt by Croydon Council that the response worked well in protecting the communities in Croydon under very challenging circumstances. The

1

<https://www.croydon.gov.uk/sites/default/files/articles/downloads/Draft%20local%20flood%20risk%20management%20strategy%20summary.pdf>

2

<https://www.croydon.gov.uk/sites/default/files/articles/downloads/Draft%20local%20flood%20risk%20management%20strategy%20-%20appendix%20A.pdf>

³ Extracted from the Caterham Bourne Flood S19 Investigation Report (October 2014)

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number of flooded properties was low considering the size of the flood and this is thought to be due to early mobilisation of pumps and multi-agency working. Effective new relationships were formed between agencies and a multi-agency solution cell continues to address how the risks can be managed in the future at a regional scale.

Opportunities for improvement have been discussed by partner agencies with a focus around improving channels of communication between organisations and clarifying or formalising decision-making structures in these types of events. Information sharing and improved awareness with non-emergency partners about established London Emergency Services Liaison Panel (LESLP) procedures were highlighted as an area to improve. In the future, it was agreed that improved understanding of groundwater change and trigger levels as well as increased measuring points would be beneficial.

More information on this flood event can be found in the S19 Report, available here: <https://www.croydon.gov.uk/sites/default/files/articles/downloads/Caterham%20Bourne%20S19%20Flood%20Investigation%20Report%20%E2%80%93%20October%202014%202.pdf>.

3.2 Topography

The topography is characterised by steep slopes in Coulsdon in the south of the borough which then level off to flatter land in the north as shown in the accompanying document *Flood Risk Information* The Brighton Road is located in the natural valley of the topography, which is the flow path of the former River Wandle, now entirely culverted until it emerges at Wandle Park in South Croydon.

The majority of the Borough drains into the catchment of the River Wandle, which passes into London Borough of Sutton. The northern part of the Borough drains into the Norbury Brook which feeds into the River Wandle further downstream. The south-eastern part of the Borough including the settlements of Forestdale and Addington is characterised by steeper topography and more rural land which drains into the tributaries of the River Ravensbourne which flows eastwards into London Borough of Bromley.

3.3 Fluvial Flooding

Occurs when...	A watercourse cannot cope with the volume of water draining into it and overflows its banks onto surrounding land
Risk Information	<ul style="list-style-type: none">• Large ('main') rivers in Croydon include the River Wandle, Norbury Brook, (part of the) Caterham Bourne and the Chaffinch Brook.• 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 used to guide planning decisions; detailed information can be seen in Appendix 9 and on the Environment Agency's website.

3.4 Surface Water Flooding

Occurs when...	Heavy rainfall cannot be absorbed into the ground or enter the drainage systems.
Risk Information	<ul style="list-style-type: none"> • 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 (EA) 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. • According to research undertaken by the EA, almost 50,000 residential properties are estimated to be at risk of surface water flooding within Croydon, with over 3,700 of those at high risk. • Further information on surface water flooding, including the areas defined as Critical Drainage Areas (CDAs) can be found in Appendix 10.

3.4.1 Surface Water Management Plan (SWMP)

A SWMP study has been undertaken as part of the Drain London Project in consultation with key local partners who are responsible for surface water management and drainage in the London area. These include the Greater London Authority, Thames Water, the Environment Agency and Transport for London. The SWMP is managed by the Highways Department at Croydon Council, and is available publically here, <https://www.croydon.gov.uk/environment/flood-water/flood-management>.

3.5 Groundwater Flooding

Occurs when...	Water levels in the ground rise above surface levels which are most likely to occur in areas underlain by permeable rocks, and is likely to occur after seasonal periods of prolonged rainfall.
Risk Information	<ul style="list-style-type: none"> • 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. • More information can be found in Appendix 11.

3.6 Reservoir Inundation

Occurs when...	Reservoirs 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.
Risk Information	<ul style="list-style-type: none"> • South Norwood Lake is designated as a reservoir, managed by Croydon Council. • Information regarding reservoir inundation is classed as OFFICIAL SENSITIVE and therefore is stored separately by the Croydon Resilience Team.

3.7 Ordinary Watercourse Flooding

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.
Risk Information	<ul style="list-style-type: none"> • No modelling of the flood risk from ordinary watercourses has been undertaken to date across Croydon. • Future flood risk is based on the potential risk 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 be 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.

3.8 Sewer Flooding

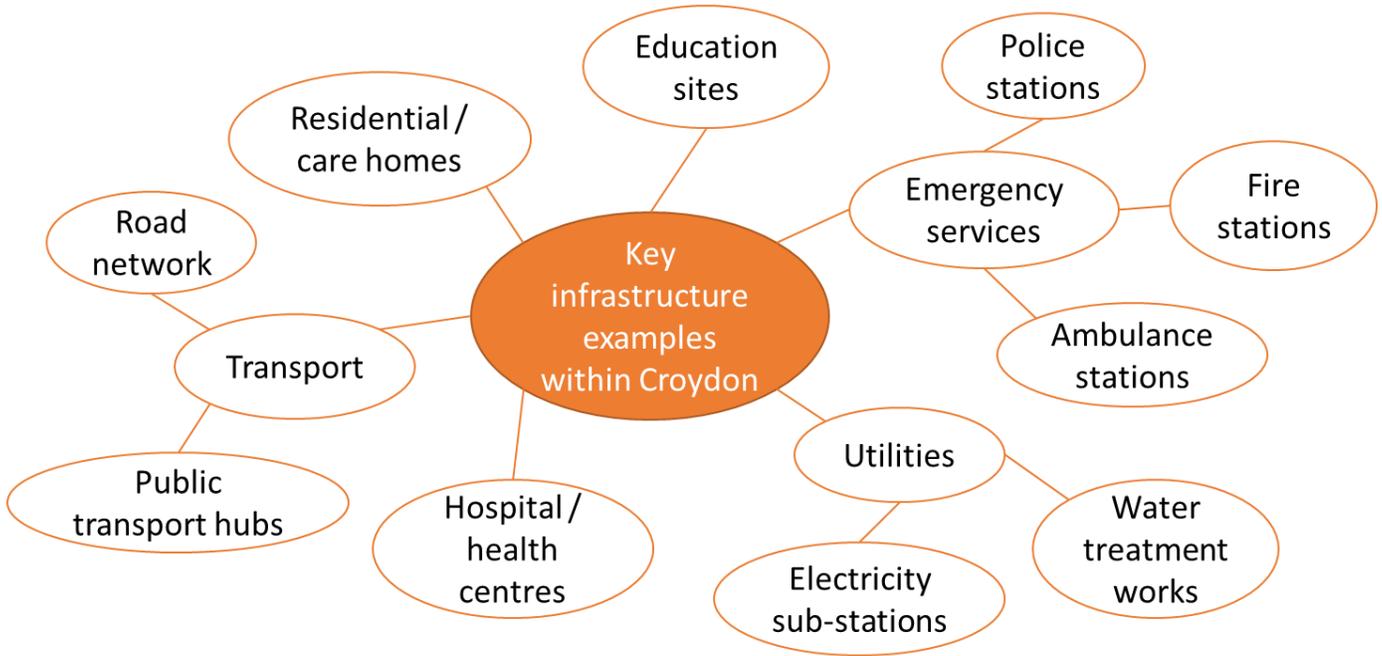
Occurs when...	Combined or surface water sewers are overwhelmed by a heavy rainfall event which exceeds the capacity of the sewer / drainage system. The system becomes blocked by debris or sediment, and/or the system surcharges due to high water levels in receiving watercourses. Flooding from the foul sewer can also occur through blockage, illegal connections or under capacity.
Risk Information	<ul style="list-style-type: none"> • 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.

3.9 South West London Flood Group

The South West London Flood Group was formed in 2011 as part of the Drain London project, comprising the Lead Local Flood Authorities (LLFAs) of Wandsworth, Merton, Sutton, Croydon, Kingston and Richmond, and the Environment Agency and Thames Water. The Group meets quarterly to discuss flood risk management activities across South West London to ensure a coordinated approach, sharing of best practice and identifying opportunities to undertake joint working.

3.10 Key Infrastructure

This document recognises key infrastructure in the London Borough of Croydon that has the potential to impact upon both Croydon and potentially the wider London and county regions from a flooding incident. The individual flood risk sheets in the accompanying document *Flood Risk Information* contain key vulnerable infrastructure relevant to that area, and the accompanying document *Flood Risk Information* provides a map of the key infrastructure that could be at risk to surface water flooding.



4 Multi-agency Roles and Responsibilities

The different agencies responding to a flood event will carry out their duties as stated in the LESLP Procedure Manual⁴ in addition to the following:

Police (MPS and BTP)

- In the event of the agreed procedures for warning and informing communities at risk not being effective, then, where practicable, assistance will be given.

London Fire Brigade

- Give assistance with pumping operations, depending on the situation prevailing at the time, priority being given to calls where flooding involves a risk to life, of fire or explosion and to calls from hospitals, residential homes for the elderly, public utilities and food storage depots.
- To assist other relevant agencies, particularly the local authority, to minimise the effects of major flooding on the community.

London Ambulance Service

- The LAS may become involved in the evacuation of vulnerable persons and supporting the local authority.
- It should be noted that the LAS does not possess any waterborne response capability but does have staff trained to work on boats and in some water environments.

NHS HART Teams

- HART (hazardous area response team) teams are tactically capable of responding to the following types of challenging incident related to a flood response:
 - Hazardous Materials – Working inside the inner cordon where hazardous materials are present; dealing with the aftermath of industrial accidents; transporting patients with high risk infectious diseases, for example Ebola; undertaking complex transportation cases (for example, after large scale accidents).
 - Confined Spaces – Providing the specialist healthcare response to patients caught in substantially enclosed spaces; following building collapses; where compromised atmospheres are present; where entrapment of patients is hampering the delivery of care.
 - Unstable Terrain – Providing the specialist healthcare response to patients caught within active rubble piles or where rural access or difficult terrain is providing a specific challenge to the rescue and extrication effort.
 - Water Operations – Providing the specialist healthcare response to patients caught in water environments, for example swift water rescue, or where urban or rural flooding has occurred, and including deployment to boat operations.

Local Authority

- Croydon Council is the Lead Local Flood Authority (LLFA) for the London Borough of Croydon, and as such is responsible for managing flood risk arising from surface water run-off, groundwater and 'ordinary' watercourses.
- As per the Flood and Water Management Act it is the responsibility of the LLFA to collate properties flooded information for their London Borough.

⁴ <https://www.met.police.uk/police-forces/metropolitan-police/areas/about-us/about-the-met/the-london-emergency-services-liaison-panel/>

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- Provision of general advice and information in support of the Environment Agency to the public on flood prevention measures and environmental health issues, including encouraging those at potential risk of flooding to sign up to the Environment Agency's flood alert scheme.
- London Boroughs may also provide further assistance to the public if resources permit, i.e. drying-out facilities, provision/filling or placing of sandbags where danger is foreseen.
- Joint agency co-ordination of non-life threatening floods and of the recovery phase following a flooding incident.

Transport for London / Network Rail

- Undertaking the management and operational continuity of transport infrastructure such as roads and rail (including tram) and the provision of public transport.
- The provision of engineering and plant equipment at the request of the pan London Gold Coordinating Group or affected local authority Golds including the provision/filling or placing of sandbags where danger to life or infrastructure is foreseen.

Environment Agency

- Issue Flood Warnings and ensure systems display current flooding information.
- Provide information to the public on what they can do before, during and after a flood event.
- Work with professional partners and stakeholders and respond to requests for flooding information and updates
- Receive and record details of flooding and related information.
- Pull together properties flooded data and information during a flood event to assist with flood warning work and defence operation.
- Operate water level control structures within its jurisdiction and in line with permissive powers.
- Flood event data collection.
- Arrange and take part in flood event exercises.
- Respond to pollution incidents and advise on disposal.
- Assist with the recovery process, for example, by advising on the disposal of silt, attending flood surgeries.

Utility providers

- Attend emergencies relating to their services putting life at risk.
- Assess and manage risk of service failure.
- Assist with the recovery process, including the management of public health considerations.

Voluntary services

- Support rest centres.
- Provide practical and emotional support to those affected.
- Support transport and communications.

4.1 Lead Agency in a Flood Event

The lead agency during a flood depends upon the impacts, and flood type and response actions.

- As the lead local flood authority, Croydon Council remains responsible for the flood response, however may not be the most appropriate operational or tactical lead depending on the impacts.
- During a smaller scale flood event (level 3) the Local Authority or Police may lead dependant on the impacts and which organisation has the primary response actions to manage the impacts.
- The response phase of a widespread pan-London flood event (level 4: strategic flood response) would be the Police.
- The recovery phase is led by the Local Authority.

4.2 Responsibilities for Environmental Impacts

In a flood event a number of environmental issues may occur. **Table 1** gives a brief description as to who is responsible for these issues.

Table 1 - Environmental issues arising from flooding, with responsible body

Environmental Issue	Responsible Organisation
Animal Carcasses	The council would be responsible for the disposal of animal carcasses found on council property. Domestic animals would be the responsibility of the owner.
Personal Property	The council should facilitate recycling and waste collection for flood damaged goods as part of its emergency response and recovery.
Silt	The council will take responsibility for clearing silt on public land but not on private property
Contaminated Sandbags	The council will dispose of its own contaminated sandbags, but due to the council's policy not to supply sandbags to the public, the council will not be held responsible for personal sandbags.
Domestic Oil	The council has a list of designated contractors who are responsible for removing this
Industrial Oil / Petrol	The Environment Agency are responsible for cleaning up Industrial Oil and Petrol and for this they have a list of designated contractors.

5 Multi-agency Command, Control and Coordination

Response to a flooding incident will require a multi-agency approach, and liaison with all blue light responders, the Environment Agency and other stakeholders as required is essential. Liaison will in the first instance take place at a Tactical Coordinating Group (TCG) meeting. It should be recognised that flooding may cover several areas, so therefore a location providing a more tactical overview across the borough, rather than meeting at one of the flooding sites may be worthwhile.

5.1 Tactical Coordinating Group (TCG)

When the decision to activate this flood guidance is taken representatives from the following organisations should be contacted to attend Tactical Coordinating Group meetings. These may be on scene, or off scene.

- Metropolitan Police
- London Fire Brigade
- London Ambulance Service
- Croydon Council
- Other specialist advisors, for example:
 - NHS England (London)
 - Environment Agency
 - Thames Water

A suggested TCG meeting agenda can be found in **Appendix 3**.

5.2 Local Strategic Coordination

The need may arise for a local strategic coordination group to be established to address the wider impacts that the flooding may be having on the borough. **Appendix 4** contains a table of considerations which should be referred to for Croydon Multi-Agency Strategic Coordinating Group meetings. The following considerations are examples of areas where strategic direction would be required.

- Proactive evacuation of vulnerable locations
- Protection of infrastructure to mitigate secondary consequences
- Develop a coordinated media strategy prior to impacts being observed
- Provide information on the likely level of disruption to travel and other services
- Identify mutual aid to help with rest centres, evacuation, erecting temporary defences, managing traffic disruption, dealing with injuries and rescue etc.

There is currently no local plan or framework for multi-agency strategic coordination at borough level within Croydon, but this will likely be chaired by the lead agency during the flood event.

5.3 Specific Considerations for a Flood Event

- **Appendix 3** provides a suggested agenda for Croydon Multi-Agency Tactical Coordinating Group meetings.
- **Appendix 4** contains a table of considerations which should be referred to for Croydon Multi-Agency Strategic Coordinating Group meetings.

5.3.1 *Flooded Properties Data*

During a widespread flood event the need for real time properties flooded data is key for reporting, allocating resources, evacuating communities, mobilising flood rescue efforts and planning recovery to name a few. Croydon Council and the Environment Agency need to work together jointly to share this information with one another during the response and recovery phase.

The National Flood Emergency Framework (2015) states that the following information must be captured when recording properties flooded:

1. The address

2. Flooding type: fluvial (river), surface water, groundwater, tidal, reservoir, sewers, canals, highways drainage etc.

3. Flooding extent:

- Internal
- Basement
- Garage (attached or not attached onto main building)
- Occupied caravans
- Park homes
- Gardens
- Driveways
- Outhouses and sheds

These can then be separated out into the following categories:

- **Internal property flooding:** water has entered the property. This includes basements and below ground level floors. Garages are included if attached onto the main building. Occupied caravan and park homes are also included.
- **External property flooding:** where water has entered gardens, driveways, outhouses, garages (that are separate from the main building) and sheds.

It is important to capture as much information as possible when recording and reporting properties flooded data.

5.3.2 *Health Guidance and Advice*

Flooding presents a number of risks to health. Health and safety considerations and information for responders are held by each of the responding agencies. These considerations are not in this document; responders needing more information should speak to their own agency and see the Public Health England (PHE) advice link below.

Due to the possibility of sewage being present in floodwater, NHS E (London) and PHE will provide advice concerning the risk to public health. PHE has a range of advice and support material to help professionals and the public address those risks and clean up safely which all can be found at the following link: [https://www.gov.uk/government/collections/flooding-health-guidance-and-advice.:](https://www.gov.uk/government/collections/flooding-health-guidance-and-advice.)

- People living through a flood:
 - Flooding: advice for the public
 - Flooding: planning, managing and recovering from a flood.
 - Flooding Health advice: mental health following floods.
 - Floods: how to clean up your home safely
- Frontline responders:

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- Recovering from flooding: information for frontline responders.
- Flooding and mental health: essential information for frontline responders.

5.3.3 Use of Sandbags

It is a property or business owner's responsibility to protect their premises from flooding. Sandbags are often used as a way of protecting property from floodwater. Croydon Council does not provide sandbags to the public in the event of flooding. The council may deploy sandbags to locations thought to be at risk of flooding. Public advice is to purchase sandbags from builder's merchants.

The Environment Agency provides guidance on the proper use of sandbags for flood protection. This is available at

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/467902/LIT_3833.pdf

5.3.4 Evacuation and Shelter

Evacuation is by no means an easy option and may not be the safest option for the majority of those potentially at risk. It may be safer to advise people to seek refuge in the upper storeys of a building rather than run the risk of being overcome by the floodwaters. A suggested evacuation leaflet for residents can be found in **Appendix 5**.

The decision to evacuate an area affected by, or at risk from, flooding will be the responsibility of the tactical and/or strategic coordinating group.

An evacuation will prompt Council action to establish a Rest Centre, if not already in operation, and arrange the transportation of evacuees. The Croydon Council Duty Resilience Advisor, in consultation with other relevant agencies, is responsible for determining the level of support to be given to those persons who refuse to be evacuated. All agencies should work together to coordinate an evacuation should the decision to evacuate be made.

Section 6 of this document describes methods that can be adopted in warning and informing residents of the need to evacuate.

Should residents refuse to evacuate, the following should be undertaken:

- Explain to the resident the dangers of remaining in the property;
- Record the contact details of all who refuse;
 - Inform the MPS Incident Commander.
- Move people to the upper floors if possible.

Evacuation routes and traffic management arrangements are not specified in this document as these arrangements will depend on the flood situation itself. However, evacuation routes and traffic management will be discussed in the initial phases of the response.

6 Communication

6.1 Multi-agency Communication

The lead agency's communications team must work with borough resilience forum partners and other Local Authorities to deliver a clear and unified multi-agency statement and regular follow ups including well into the recovery phase.

For a localised incident, it is likely the LA or MPS will lead the response and lead on the main communication messages. These should be regularly shared with any coordinating groups set up to ensure consistency.

If a major incident (for Croydon) is declared and a borough strategic coordinating group is convened, key messages should be produced and circulated regularly to all responders to ensure consistency.

If a major incident for London is declared and the Strategic Coordination Centre (SCC) is convened (due to widespread flooding in several boroughs), a media cell will be set up to handle all media issues. Individual organisations may still be approached by the media but the SCC must issue a top lines brief to ensure any interviews conducted away from the SCC contain consistent messages

6.2 General Public

An information leaflet can be found on the Environment Agency website providing guidance on before, during and after flooding⁵. This Environment Agency leaflet states that anyone who is at risk of flooding is advised to develop a personal flood plan and ensure they are signed up to the free flood warning service, Floodline.

Croydon Council, in consultation with the Metropolitan Police will provide up to date and consistent information on flood safety to the public – methods for warning and informing the public can be found in **Croydon Council's Communicating in an Incident Plan**.

6.3 Environment Agency Flood Warning Communication Methods

The EA send flood warnings to the public, professional partners and the media using a variety of methods. The flood risk and most practicable method at the time will determine which method/s is chosen to send out the flood warning to each area.

Floodline Warnings Direct

The EA is responsible for issuing warnings to the public, businesses, emergency responders and media relating to tidal and fluvial flooding. The warning codes are issued using their Floodline Warnings Direct (FWD) system which can send bulk messages to a mass audience via several formats. The formats are email, SMS text message, voice message and fax. People and organisations have to register their details on FWD in order to receive the messages. It is a free service and each individual/organisation can register up to 15 contacts. Messages issued through FWD also update flooding information on the Environment Agency website and the Floodline (0845 988 1188) service.

Floodline

Floodline is the Environment Agency's 24 hour flooding information telephone service on **0345 988 1188**. Floodline has trained operators available 24 hours a day, 7 days a week to assist with flooding enquiries, as well as recorded information on the latest warnings in force. The recorded information is accessed through Quickdial

⁵ <https://www.gov.uk/government/publications/flooding-what-to-do-before-during-and-after-a-flood>

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codes linked to each recording box. This gives the public fast access to the correct flooding information for their area. Householders and businesses can also call Floodline to register to receive warnings from Floodline Warnings Direct.

Public Address Loudhailer

These are used to broadcast warning messages via a unit mounted on a vehicle, which is driven around pre-planned routes in flood risk areas.

Media Warnings

“Broadcast” is the delivery of warning messages via the media, to a large population where it would be difficult to contact each property individually. Local media (radio & television) make special announcements on our behalf to broadcast warnings for critical flood risk areas. This service is in addition to the routine/usual service provided by the media.

Internet

The EA website lists the warnings in force for England and Wales; it is accessed through the following address: <http://www.environment-agency.gov.uk/homeandleisure/floods/31618.aspx>

People and businesses can also register to receive our warnings from Floodline Warnings Direct through the EA website at the following address: <https://fwd.environment-agency.gov.uk/app/olr/home>

Flood Wardens

Flood Wardens are used to help support a community in times of flooding. They can help reinforce warning messages, identify people in need and keep the EA and other agencies informed of the ‘on ground’ situation.

Radio

All warnings are routinely sent to radio stations for broadcast during news or weather bulletins.

6.4 National Severe Weather Warning Service

The Met Office provide the National Severe Weather Warning Service which issues warnings of severe or hazardous weather, which could cause problems ranging from widespread disruption of communications to conditions resulting in transport difficulties or threatening lives.

6.5 Door knocking

During the Croydon 2014 floods door knocking was used to communicate with those residents at risk. Although door knocking is resource intensive in relation to people and time, it proved effective for information gathering and communicating specific messages to a targeted group. The decision to door knock should be taken dynamically depending on the situation and resources to hand. More information, including a door-knocking template can be found in the Multi-Agency Identification of Vulnerable Persons plan.

6.6 Media

In the build up to a flooding incident, the media are routinely sent all warning messages issued by the Environment Agency, Met Office and Flood Forecasting Centre. As an incident unfolds, the scale of flooding and disruption will dictate the level of media interest. Organisations tend to be contacted individually by the media for updates and statements and organisations provide interviews to comment on their own responsibilities.

7 Recovery

Recovery is more than simply the replacement of what has been destroyed and the rehabilitation of those affected. It is a complex social and developmental process rather than just a remedial process. The manner in which recovery processes are undertaken is critical to their success. Recovery is best achieved when the affected community is able to exercise a high degree of self-determination.

Common issues following flooding include:

- Clean up and waste disposal
- Repairs to public infrastructure – schools, buildings, roads, bridges
- Restoration of power, communications and water
- Domestic and business insurance needs
- Displaced businesses
- Humanitarian assistance needs including
 - Homeless/ displaced residents
 - Psychological impacts
- Environmental impacts

The recovery phase of a flooding incident must begin as soon as practicably possible and run alongside flood response operations. Following the end of the emergency response phase to a flooding incident, the local Strategic Coordinating Group will decide when it is appropriate to stand down. At this point control will officially be handed to a designated multi-agency recovery coordinating group if required, led by Croydon Council.

Please refer to the **London Recovery Management Protocol** for further details on recovery.

8 Document Maintenance Procedures

8.1 Validation

This document should be tested via exercise or other appropriate testing event with relevant stakeholders. The following evidence is required to prove this validation:

- Post exercise report including actions, recommendations, and record of attendees.
- Incident reports (after a real activation).

8.2 Training / Exercise

- Once validated, training requirements (i.e. content, skills, frequency, etc.) should be identified and an appropriate training package designed.
- Training and exercises should be scheduled and conducted on a frequency based on risk for all staff necessary to activate this document.
- This document can be exercised alongside other individual agency, and multi-agency plans.
- Organisations will ensure the appropriate number of staff are available to support the delivery and participate to meet expected outcomes in the above exercises.

9 Appendix 1: Flood Warning Codes and Guidance Statements

The level of activation and response to flooding could depend on the warning code provided by the Environment Agency. There are four warning codes with escalating levels of impacts and require different levels of resources and so, responses should be addressed accordingly⁶. **Table 2** describes the codes and their potential impacts.

Table 2 - Flood Warning Codes and Impacts

Flood Warning Code	Meaning	When it's used	Impact on the ground
 <p>FLOOD ALERT</p>	<p>Flooding is possible. Be prepared.</p>	<p>Two hours to two days in advance of flooding.</p>	<ul style="list-style-type: none"> • Flooding of fields, recreation land and car parks. • Flooding of minor roads. • Flooding of farmland. • Spray or wave overtopping on the coast.
 <p>FLOOD WARNING</p>	<p>Flooding is expected. Immediate action required.</p>	<p>Half an hour to one day in advance of flooding.</p>	<ul style="list-style-type: none"> • Flooding of homes and businesses. • Flooding of rail infrastructure. • Flooding of roads with major impacts. • Significant waves and spray on the coast. • Extensive flood plain inundation (including caravan parks or campsites). • Flooding of major tourist/recreational attractions.
 <p>SEVERE FLOOD WARNING</p>	<p>Severe flooding. Danger to life.</p>	<p>When flooding poses a significant risk to life or significant disruption to communities.</p>	<ul style="list-style-type: none"> • Deep and fast flowing water. • Debris in the water causing danger. • Potential or observed collapse of buildings and structures. • Communities isolated by flood waters. • Critical infrastructure for communities disabled. • Large number of evacuees. • Military support.

⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/311020/flood_warnings_LIT_5215.pdf

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Flood Warning Code	Meaning	When it's used	Impact on the ground
Warning no longer in force	No further flooding is currently expected for your area.	When a flood warning or severe flood warning is no longer in force.	No new impacts expected from flooding, however there still may be: <ul style="list-style-type: none"> • standing water following flooding; • flooded properties; • flooded or damaged infrastructure.

The Flood Forecasting Centre (FFC) is responsible for issuing weather warnings that relate to conditions that could cause flooding. The primary product aimed at emergency responders is the daily Flood Guidance Statement.

9.1 Flood Guidance Statements

The joint EA/Met Office Flood Forecasting Centre produces a Flood Guidance Statement (FGS) which provides a daily flood risk assessment for Category 1 and 2 responders to assist with tactical planning decisions.

This assessment of risk is shown by county across England and Wales over five days. It identifies developing situations that could cause flooding and significant disruption to normal life. The FGS assesses the risk for all types of natural flooding – river, coastal, groundwater and surface water flooding.

It presents a collated assessment by the FFC and the local EA flood forecasting teams of the best understanding of risk based on weather forecasts, flood forecasts and catchment conditions on the ground.

The FGS is issued by the FFC every day at 10:30am. It will also be issued at other times through the day and night, if the situation warrants and/or the flood risk changes.

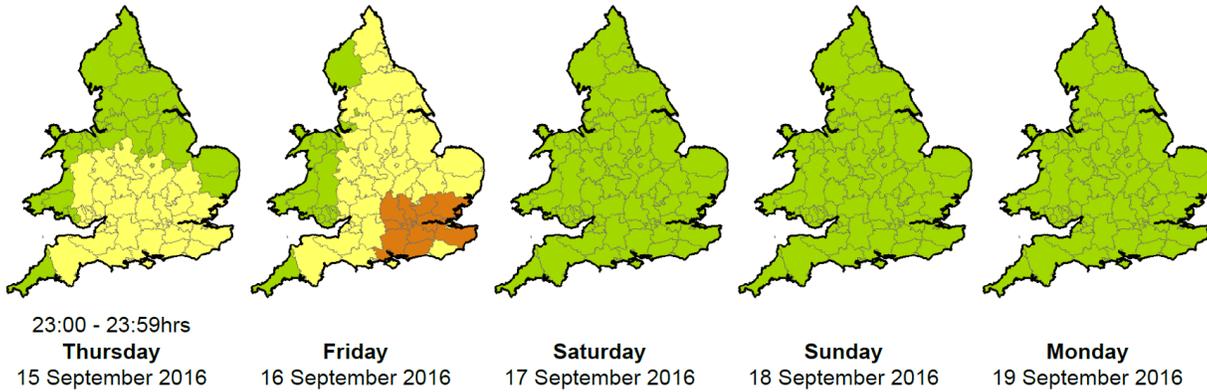
To assess the level of risk, the FFC takes into account a large number of weather and catchment factors. Assessments are made in different ways for coastal, river, surface water and groundwater. These are then presented on a coloured risk basis. For many reasons the ability to assess flood risk varies across England and Wales.

The following is reviewed for each Flood Guidance Statement:

- The likelihood of an adverse flood event where likelihood bands are described as very low <20%, low 20-40%, medium 40-60%, high 60% or greater.
- Recent weather conditions-is the event shortly after an earlier period of prolonged rain or other high impact weather.
- Area and duration – is it expected to be short and localised or will it affect a large geographical area over several hours?
- Knowledge about the condition of the catchments within the counties – how saturated are the catchments? How high are the rivers, and what are the underlying conditions?
- Detailed flood forecast models for the coast, showing surges and large waves, and flood flows for rivers are evaluated.
- Seasonal factors, for example snow cover or leaf fall.
- The combined effect of river flow and high tides – if a river flood is being assessed, does this coincide with high tides, which could cause problems?

Flood Guidance Statement 23:00hrs Thursday 15 September 2016

Our assessment of daily flood risk for England and Wales, working with flood forecasting teams in the Environment Agency and Natural Resources Wales, is below.



MEDIUM surface water flood risk in south-east England on Friday.

Figure 4 - Example section of a Flood Guidance Statement

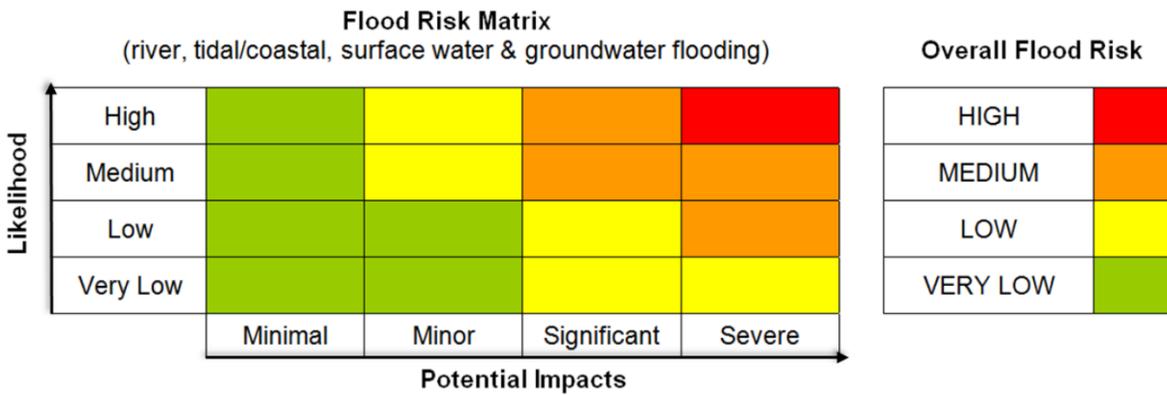


Figure 5 - Flood Risk Matrix

The FGS risk matrix and key shows the assessment of likelihood against impacts that form the basis of the county map colouring.

Flood Guidance Statements are issued by email to Category 1 and 2 responders. Organisations have to register with the FFC to receive them. A version of the FGS is published for the public on the Environment Agency website called the Three Day Flood Risk Forecast.

Flood Guidance Statements will generally be the only warning partners will receive regarding potential surface water flooding. They contain a yellow, amber, red scale to highlight risk to allow partners to take necessary action to prepare in advance of flooding occurring. The FGS risk scale is based on the risk of disruption from all sources of flooding though, not just surface water.

When London is coloured yellow, amber or red on a FGS, the Met Office Advisor (Civil Contingencies) will usually provide an amplification of the likely impacts focussing on London. These amplifications are issued to Category 1 and 2 responders by email.

10 Appendix 3: Tactical Coordinating Group Suggested Agenda

This template can be used as an actual agenda, virtual agenda or a checklist for agencies.

#	Item	Lead
1	Introductions <ul style="list-style-type: none"> Record names, roles and contact numbers of all attendees 	Chair
2	Urgent Business	All
3	Situation report on current flood risk <ul style="list-style-type: none"> River flooding Surface water flooding 	Environment Agency Local Authority
4	Potential impact assessment to include <ul style="list-style-type: none"> Extent of potential flooding and approximate depth, speed and cause Request impact maps to be compiled Vulnerable people and vulnerable site lists Total number of residents, businesses, transient population in affected area Critical infrastructure sites within flood zones to be identified Location of industrial sites in flooded area to be identified Liaise with utilities on areas of possible/likely disruption 	Chair
5	Traffic management plan <ul style="list-style-type: none"> Potential evacuation routes (pedestrian/road) 	Local Authority - Highways
6	Location of emergency shelters <ul style="list-style-type: none"> As required, clear of risk area 	Local Authority - Resilience Team
7	Flood mitigation methods (sandbags / barriers) <ul style="list-style-type: none"> Areas currently protected Areas requiring protection 	Local Authority - Highways / LFB
8	Public information required <ul style="list-style-type: none"> Information to be provided by each agency Methods/channels to be used Media management / press liaison 	Media / comms officer
9	Environmental Impact Assessment	Local Authority - Environmental Health
10	Public Health Issues	Local Authority - Public Health
11	Agency Updates	All
12	Horizon Scan <ul style="list-style-type: none"> Forecasting of weather conditions Priorities for next phase of incident 	Chair
13	Any other business	All
14	Time & location of next meeting	Chair

11 Appendix 4: Croydon Multi-Agency Strategic Considerations

Issue	Considerations
<p>Infrastructure</p> <p><u>National Infrastructure</u></p> <p>This is defined as: “those facilities, systems, sites and networks necessary for the functioning of the country and the delivery of the essential services upon which daily life in the UK depends”.</p> <p><u>Critical National Infrastructure</u></p> <p>There are certain “critical” elements of national infrastructure that if lost would lead to severe economic or social consequences or to loss of life in the UK. These critical elements make up the critical national infrastructure (CNI).</p>	<ul style="list-style-type: none"> • Identify which CNI has been impacted or is at risk. • Assess the direct and indirect impacts on: <ul style="list-style-type: none"> ○ Energy ○ Food ○ Water (clean and waste) ○ Waste ○ Transportation ○ Communications ○ Emergency services capability ○ Health care ○ Financial services / Government • Consider the scale and duration of loss. • Prioritise CNI sites. • Identify mitigation measures and alternative supplies. • Consider the knock-on consequences and how these will be managed. • Assess resource requirement and whether military aid is needed.
<p>Evacuation & shelter</p> <p>Evacuation may not always be the safest option for those potentially at risk. At times it may be safer for residents to seek refuge in the upper storey of a building rather than run the risk of being overcome by flood water.</p> <p>The decision to evacuate an affected area will be the responsibility of the police.</p>	<ul style="list-style-type: none"> • Mass evacuation arrangements are detailed in the London Mass Evacuation Plan and London Mass Shelter Plan and will apply to evacuation due to flooding. <ul style="list-style-type: none"> ○ The Croydon Council Emergency Centre plan will apply to smaller scale evacuations. • Consider basement dwellings. • Prioritise areas for evacuation. • Assess impact on receiving areas. • Provide guidance on funding for accommodation. • Agree on the ground evacuation communications and circulate this operationally i.e. what to advise people upon a refusal to evacuate. • Assess resource requirement and whether military aid is needed. • Consider the need to re-provide displaced services i.e. local health care and social services.

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Issue	Considerations
<p>Vulnerable people and areas</p> <p>Vulnerable people may be less able to help themselves in an emergency than self-reliant people. Those who are vulnerable will vary depending on the nature of the emergency.</p> <p>In general those with mobility or mental health difficulties and dependants that receive medical care in their own homes or children may be especially vulnerable in a flood.</p>	<ul style="list-style-type: none"> • Identify vulnerable areas based upon building service e.g. schools, nursing home, hospitals, prisons, basement dwellings etc. • Activate the Croydon Multi-agency Identification of Vulnerable Persons Plan. • Consider: <ul style="list-style-type: none"> ○ Issuing specific communications. ○ Prioritising vulnerable areas. ○ Mitigating the impact accordingly e.g. temporary defences, evacuation. ○ Safety and ability to evacuate.
<p>Waste removal</p> <p>Expect to see a major increase in the amount of waste that needs to be disposed of as a result of severe flooding. Normal waste collection and disposal arrangements will probably be disrupted.</p>	<ul style="list-style-type: none"> • A strategy to manage increased waste removal such as: <ul style="list-style-type: none"> ○ Contaminated and hazardous materials. ○ Sandbags. ○ Environmental e.g. dead animals. ○ Household waste (residential). ○ Building recovery e.g. flood damaged items. ○ Commercial businesses. • Communicate waste disposal advice to the public.
<p>Sewerage network disruption</p> <p>Flood water ingress into the sewerage network may cause sewerage flooding.</p> <p>Therefore sewerage disposal might be disrupted during a flood event.</p>	<ul style="list-style-type: none"> • Consider: <ul style="list-style-type: none"> ○ Other methods such as portaloos (950 portaloos were deployed during 2007 summer floods). ○ Minimise sewer flooding by tankering or pumping. ○ The need for evacuation. • Keep the community continually informed.
<p>Health advice</p> <p>Risks include: drowning, electrocution, carbon monoxide poisoning, physical trauma, chemical contamination, fire, infectious diseases from contaminated water etc.</p>	<ul style="list-style-type: none"> • Consider: <ul style="list-style-type: none"> ○ Health risks related to flooding (see health advice box opposite). ○ Remedial or mitigation solutions for contamination or pollution. ○ Long-term recovery needs including surveillance, screening and mental health well-being. • Brief: <ul style="list-style-type: none"> ○ General public on risks associated with flooding. ○ Responders on the ground around health and safety requirements.
<p>Recovery</p> <p>A longer-term activity of rebuilding, restoring and rehabilitating the community.</p>	<ul style="list-style-type: none"> • Consider the long-term recovery needs of communities affected by flooding. • Croydon Council will lead the recovery phase using the principles detailed the London Recovery Management Protocol.

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Issue	Considerations
<p>Public messages</p> <p>It is important public communications from all organisations are coordinated to ensure there is no contradicting information issued.</p>	<ul style="list-style-type: none"> • Develop a media strategy. • Disseminate: <ul style="list-style-type: none"> ○ Take action messages. ○ Public advice. ○ Service updates. ○ Joined-up messaging between responding agencies.
<p>Mutual Aid</p> <p>Successful response to emergencies across the UK has demonstrated that joint working and support can resolve very difficult problems that fall across organisational boundaries.</p>	<ul style="list-style-type: none"> • Assess mutual aid requirement for: <ul style="list-style-type: none"> ○ Evacuation ○ Rest centres ○ Protecting assets ○ Inputting mitigation measures ○ Managing major traffic disruption ○ Dealing with injuries ○ Flood rescue ○ Managing the media
<p>Political and Government Liaison</p> <p>Incidents in London attract national and international attention.</p>	<ul style="list-style-type: none"> • Concise and timely information on scale and duration of impact • Managing media and political scrutiny • Cost recovery

12 Appendix 5: Example evacuation leaflet

This information has been redacted.