

LONDON BOROUGH OF HAMMERSMITH & FULHAM

Report to: Cabinet

Date: 07/03/2022

Subject: Flood Risk Mitigation Programme

Report of: Councillor Wesley Harcourt, Cabinet Member Environment

Report author: Ian Hawthorn, Assistant Director Environment Special Projects and Highways

Responsible Director: Sharon Lea, Strategic Director for Environment

SUMMARY

In the summer of 2021, the borough was hit by a storm that caused over 300 properties to flood causing incredible hardship for many of our residents. Flooding can be very stressful to residents as it is an invasion of their homes and can cause very significant damage to properties. Keeping residents safe and secure in their homes is a No 1 priority of this Council.

Flood mitigation is a difficult task as assets that contribute to flooding often sit outside of the Council's control. This report sets out what we can do to help deal with flooding. This will involve both big and small projects including: major retro-fit schemes that completely reconstruct roads, installing water storage units underneath the surface that allow a slow release of water into the ground in the main flooding areas; de-paving and removal of hard surfaces in public spaces as well as supporting the same on private land; smaller intervention like stopping up rain gullies and diverting rain water from the road into newly created green spaces. The Council has also appointed a Flood Mitigation Czar as a lead councillor.

The focus of the report is two-fold: to inform and develop a flood mitigation programme that the Council can deliver on our roads; and to support Thames Water to develop an action plan that deals with their sewers alongside further protection measures to support residents against future flooding. We will also seek to encourage and support residents and business to reduce the hard surfaces in their private spaces. Work also needs to be undertaken with stakeholders on the serious insurance issues that this flooding causes our residents and businesses.

RECOMMENDATIONS

1. That detailed proposals for the flood mitigation measures described in the report be developed.
 2. That subject to funding being secured, the progression and implementation of the flood mitigation measures are delegated to the Strategic Director of Environment in consultation with the Cabinet Member for Environment.
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Wards Affected: All

Our Values	Summary of how this report aligns to the H&F Values
Building shared prosperity	Flooding has a negative impact on both residents and businesses alike disrupting lives and businesses. The proposed mitigations seek to reduce any disruption.
Creating a compassionate council	Flooding affects the most disadvantaged groups and therefore any measures to reduce the impact are important for protecting the most disadvantaged from the impact that flooding causes to lives and homes.
Doing things with local residents, not to them	All schemes will be developed, designed and delivered with residents in mind. Residents are key to any successful flood risk scheme being implemented.
Being ruthlessly financially efficient	Whilst reducing the impact of flooding will require significant financial investment, flooding has a major impact on the highway asset which requires expenditure on repairing the asset due to flood damage. Emergency reactive measures will prove costly over time to both the Council and residents as repairs are often costly and need significant amounts of time to be successful.
Taking pride in H&F	The proposed mitigations will act to transform streets and neighbourhoods and build on the current green infrastructure, allowing residents to take an active part in where they live and work with the Council to manage their space.
Rising to the challenge of the climate and ecological emergency	The proposed measures will directly combat the negative effects of climate change and mitigate against the risks presented by extreme weather events and flooding.

Financial Impact

This report is seeking agreement to develop the outline proposals into detailed options only and as such, there are no direct financial implications at this stage. Detailed options and their funding requirements will be considered as separate reports, in line with the Council's normal decision-making process.

The high-level estimated funding requirement is summarised in the table below, for illustration purposes only at this stage. Potential funding sources will need to be explored as part of the detailed option appraisals, but could include external grants (e.g. climate change related grants from central government or private sector organisations), developer contributions (subject to the availability of funding), existing flood mitigation Council reserves and existing highways revenue and capital planned maintenance budgets.

Flood Mitigation	Revenue/ Capital	One-Off/ Ongoing	Est. Funding Requirement
Sustainable drainage projects	Capital	One-off	£6,000,000
Reducing hard surfaces (Pilot)	Revenue	One-off	£300,000 p.a
Greening the grey	Capital	Ongoing	£50,000 p.a
Creating flood spaces	Capital	One-off	£500,000
Collaborative Highways/Housing Estate Schemes	Capital	One-off	£1,000,000

Implications completed by: Kellie Gooch Head of Finance Environment and verified by Emily Hill, Director of Finance, 25 January 2022

Legal Implications

The Council has statutory responsibilities in relation to flood risk and therefore has a duty to put in place measures to mitigate this risk. It is a lead local flood authority under the Flood and Water Management Act 2010. This means the Council needs to have a strategy in relation to flood risk in its area and carry out works with a view to managing these risks. In carrying out these functions it is required to co-operate with other bodies which a role in risk management relating to flooding including Thames Water and Transport for London.

The Council is also a category one responder under the Civil Contingencies Act 2004. A flood may constitute an emergency under this legislation as it is an event or situation which threatens serious damage to human welfare and the environment. The Council needs to assess the risk of an emergency occurring and to have plans with a view to preventing emergencies if possible and to control and mitigate their effects.

The Council will need to be in a position to undertake a range of measures to prevent and mitigate the risk of flooding, the dangers of which are increasing as a

result of climate change. As these measures are developed and put in place further legal input can be provided to assist in ensuring the most efficient compliant procurement strategies for commissioning the necessary works and services.

Implications completed by: John Sharland, Senior solicitor (Contracts and procurement) email: john.sharland@lbhf.gov.uk, 21 January 2022

Background Papers Used in Preparing This Report – none

DETAILED ANALYSIS

Proposals and Analysis of Options

1. On 12th July 2021 the Council saw the impact that extreme weather can have on the borough and what the absence of assets to cope with significant levels of rain fall means for residents. Over 150 properties were reported flooded in the borough with several of the most vulnerable residents severely affected. This is illustrated in the borough plan showing the streets impacted by the flooding on the 12th July 2021 in Appendix 1.
2. In the last several years the Council has been the leading authority in developing innovative flood risk schemes such as the two Counters Creek projects, Bridget Joyce Square, Australia Road and many others. Working with Thames Water and other specialists on the Counters Creek projects has allowed the Council to test and develop flood mitigation measures that have proved to be effective in the street environment. These measures have been replicated in several schemes across the borough in the last few years and these areas saw limited flooding impact on 12th July.
3. The Intergovernmental Panel on Climate Change's (IPPC) 2021 report made two central conclusions: that it is now certain that climate change is responsible for an observed increase in natural disasters; and that further major climate change is unavoidable. It is probable that this will result in more frequent and severe flooding events, along with other unpredictable weather events.
4. Reducing the likelihood of flooding and mitigating the impact requires new thinking and a step-change in surface water flood risk measures. The Council has installed successful sustainable drainage schemes (SuDS) on highways and housing estates in recent years, and these have demonstrated their effectiveness. Nevertheless, to achieve systemic impact a greater scale of flood mitigation measures is needed.
5. It is important to acknowledge that flood risk cannot just be eliminated even with innovation and significant investment; but widespread implementation of surface water management will reduce the likelihood and severity of flooding. As well as the measures proposed in this report, we need to continue to lobby Thames Water to upgrade their sewer capacity.

6. Thames Water, after events in the summer, are currently undergoing an independent review of flooding measures and their response to three major flooding incidents in London. They will report back later in the year. Any works they undertake will be done liaising with the Council and will align with our own works. At a public meeting in early February 2022, Thames Water committed to delivering an action plan to assist residents and businesses in the short term by March 2022. Thames Water are due to announce an investment fund for surface water which boroughs can bid for, and the independent review will highlight any further investments needed from Thames Water to enhance their current sewage capacity. The challenge to Thames Water is that they need to do more to mitigate flooding.
7. The river Thames although a potential flood source is managed by river walls maintained by the Council and several third parties and monitored by the Environment Agency. This is considered minimal risk compared to over flood sources such as sewer surcharge and surface water.
8. The set of options outlined in this report build upon what the Council has already done across the borough to build resilience against extreme weather events.
9. The table below shows the streets that were reported to the Council as severely affected during the extreme weather events on 12th July. These streets will be prioritised for enhanced flood mitigation action.

Aldensley Road	Mall Road	Dalling Road
Barons Court Road	Shepherd Bush Road	Devonport Road
Batoum Gardens	Westville Road	Dorville Cresecent
Blythe road	Margravine Road	Niton Street
Bollingham Road	Masbro Road	Overstone Road
Kenyon Street	Boscombe Road	Raynham Road
Lakeside Road	Crabtree Lane	Ellerby Street
Maclise Road	Crisp Road	Fielding Road
Goldhawk Road	Hammersmith Grove	Southerton Road
Grove Mews	Haydon Park Road	Sulgrave Road
Weltje Road		

Background - Sewer capacity and flooding on 12th July

10. London's extensive Victorian sewer system, designed by Joseph Bazalgette, diverts waste to the Thames Estuary, downstream of the main population. Six interceptor sewers, almost 100 miles in total length, are fed by 450 miles of main sewers that, in turn, convey the contents of some 13,000 miles of smaller local sewers. This is a Thames Water asset that they manage and maintain.

11. This system was designed to cope with 6.5 mm per hour of rainfall and a much smaller population. London's dramatic growth has put enormous pressure on capacity. High levels of rainfall (in excess of 6 mm per hour) in a short period of time can overwhelm the system.
12. On 12th July close to 48mm of rain fell within five hours (compared to a monthly average of 43mm), causing surcharge. This happens when rainwater, mixed with sewage in combined sewers, cannot be discharged into the Thames quickly enough. This sanitary sewer overflow floods properties through toilets and baths, and streets, causing a health risk.
13. Forecasting of the arriving storm front was accurate, but the intensity and continuation of the storm over West London for five hours was unexpected.

Flood Mitigation Options and Actions from the Public Meeting

14. Several potential flood mitigation measures that Council can undertake, and their estimated costs are outlined below. It is important to note that this must be a joint exercise and Thames Waters action plan will need to align to the measures the Council can introduce. It is proposed that these Council options are further developed into detailed business cases. Listed below are also the actions from the public meeting held with Thames Water held on the 2nd February 2022.
15. **Actions from the Meeting.** The key actions from the meeting were that Thames Water would develop and present an action plan for March 2022 which would be presented at a second public meeting. A review and explanation of the Council's gully service, an outline of what Sustainable Drainage Scheme the Council had installed already and how residents could request these schemes in their area and finally, super drainage scheme and what other greening schemes were available. In addition a multiple agency working group was to be set up supported by Thames Water to look at insurance assisted for affected residents.
16. **Thames Water Action Plan.** Officers from the Council have set up a series of meetings to monitor the progress of Thames Water's development of their action plan for March 2022.
17. **Gully Service.** The Council's rainwater gully assets on the borough's strategic road network are cleaned twice a year, our residential roads are cleaned annually, and there is a special tree route where streets with lots of London Plane trees are given an extra clean in December when the leaves have fallen. We also run a reactive service were blocked gullies that are reported to us are action within 24 hours. Some gullies that are defective will take longer because of a need of a complete repair. The Council currently has 10,010 gullies in the roads and have commenced a new review of these assets. The Council will roll out the use of smart gullies that allows live data on performance to be monitored 24/7. The Council had piloted 20 of these covers recently and these will be deployed in the areas flooded in the summer.
18. **Current SuDs in the borough.** A list of current sustainable drainage schemes is attached. The major retrofit schemes are as follows:

- Bridget Joyce Square (Australia Road),
- Mendora Road,
- Milena Road,
- Rostrevor Road,
- Greenside Road,
- Eddiscombe Road,
- Munster Road (section between St Dionis Road to Fulham Road),
- Godolphin Road (Thornfield Road to Goldhawk Road),
- Wendell Road (Bassein Park Road to Rylett Road),
- and Talgarth Road.

Work is ongoing to create a link on the web page to request an engineer to survey areas that report flooding so options for mitigation can be assessed.

- 19. Super drain.** Officers are investigating if this would be viable in any of the current layout of the borough's road.
- 20. Other Flooding options.** Are listed in the proposals set out below.
- 21. Flood Mitigation Czar.** The Council has appointed Cllr Helen Rowbottom to be the lead member of flood mitigation.
- 22. Retro-fit Sustainable Drainage Projects.** The proposal is to deliver another six retrofit schemes in the key flood locations impacted by the extreme weather event on 12th July (as noted in the table above). Using the measures delivered previously we would look to adapt these roads to the highest possible level of flood mitigation including adding containment water storage units, tree root management systems, more trees and using public realm features to enhance the street itself. Based on the scheme previously undertaken at Counters Creek, which was fully funded by Thames Water, it is expected that each retrofit scheme would cost in the region of £1m (£6m total capital investment for all 6 key flood locations). Funding for the scheme will be explored as part of the detailed business case, with a focus on again securing external funding in the first instance (e.g. external grants, developer contributions etc).
- 23. Reducing Hard Surfaces.** One of the causes of flooding has been the reduction of permeable surfaces across the borough, meaning less water can drain directly into the soil. Instead, surface water is redirected to the Council's gullies and Thames Water's sewers. An annual public de-paving programme is proposed, where skips and labour are provided to individual streets to assist residents and businesses in replacing their hard surfaces with permeable surfaces; this would take place in private space. This would be a continuous programme to start the process of education and action showing the public what they could do to help manage water. A similar scheme is already being rolled out in Lambeth. A pilot scheme could be rolled covering 6 streets in the worst affected areas which would cost around £300,000. An average length street would cost an estimated £50,000 each which would include a temporary surface option. Once the first set of streets are completed, we can develop what any future programme would look like and how it would be funded based

on the outcomes of the pilot. De-paving is already a key part of the climate change strategy. Again, funding for the scheme will be explored as part of the detailed business case, with a focus on securing from external funding in the first instance.

24. **Greening the Grey.** Highways have introduced a greening fund within the existing annual planned maintenance programme, ringfencing £200,000 for investment in de-paving areas that have verges and returning them to green alternatives. The proposal is to increase that fund to £250,000 per annum, by ringfencing an additional £50,000 from the planned maintenance budget (therefore no additional funding requirement). The borough has approximately 1,000 streets – it is expected that there will be opportunities to green the grey in 40% of these streets. In all Highway projects greening the grey principle will be applied where viable and we are currently seeing this in North End Road Market enhancement scheme.
25. **Creating Flood Spaces.** The Council has many open spaces that have been mapped by Highways. It is proposed to develop some of these areas to hold water in extreme rain events. This involves excavating large areas and installing flood risk measures by creating an artificial pond effect below the current highway level. The estimated cost to develop and deliver the first flood space is estimated at £500,000 (capital). The cost of subsequent schemes and we would estimate around four will vary, depending on the area available. Funding for the scheme will be explored as part of the detailed business case, with a focus on securing external funding in the first instance. We have submitted a bid in for funding for a green verge/swale that would run along New Kings Road from Eel Brook Common to Parsons Green with an aim of linking the two green spaces, also some signage for walking from Fulham Broadway station to Eel Brook.
26. **Collaborative Highways/Housing Estate Schemes.** The Council currently has several housing developments projects underway across the borough (16 in total). There is therefore an important opportunity to review flood mitigation potential across both the public highway and housing estate roads, including their surrounding spaces, in a way that will benefit both housing tenants and the wider public realm. For example, using excess highway water to feed green infrastructure in housing landscapes. It is proposed to establish a one-off £1m capital development budget covering 2/3 years that will enable Highways the opportunity to match highway flood risk work to any of the 16 current housing estate developments. This would allow Highways to incorporate highway sustainable drainage schemes into housing estate regeneration schemes, sharing the benefits of using both assets whilst working with the Housing Regeneration team. Any funding requirement from the Housing Revenue Account will be considered as part of the detailed business case.
27. **Increase flooding data information.** Working with Thames Water and local community groups to build a robust and concise flooding map of the borough and using this to drive flood mitigation options.
28. **Community Flood Groups.** Use Resident Associations and Community forums to form a Flooding Risk Management Group and actively engage with

community action groups on a regular basis to increase knowledge but focused flood risk mitigation measures.

Reasons for Decision

29. Climate change will create a major challenge for London in how it manages water. The Council has seen the impact of flooding for several years and the proposals outlined would be the first steps in reducing that impact to the residents and businesses of the borough.

30. Equality Implications

31. Flooding impacts all types of communities, especially the most vulnerable and this was highlighted on 12th July when assistance had to be provided to several vulnerable residents. Any mitigation is important to reduce this impact to all in the community, especially the most vulnerable.

Risk Management Implications

32. It is recognised that climate change poses a major challenge for London in how it manages water and that the frequency and severity of flooding incidents due to intense rainfall is likely to increase over time. The report recommends the exploration of a range of actions which the Council could consider mitigating the risk of future flooding incidents which have a significant impact on affected residents. The work will involve a detailed appraisal of the feasibility and impact of a range of options, as well as considering potential sources of funding for the options considered. This is in line with the Council's priorities including rising to the challenge of the climate and ecological emergency (by examining measures which would reduce/mitigate the impact of flooding events on residents/businesses) and being ruthlessly financially efficient (by seeking to prevent/limit damage from flooding in key risk areas).
33. In carrying out the detailed analysis and evaluation of options, officers will consider a range of factors including legal, environmental impacts associated with a proposed scheme. Officers should ensure that appropriate insurance advice is sought as part of this detailed options appraisal.

Implications completed by: David Hughes, Director of Audit, Fraud, Risk and Insurance, 13 January 2022

Climate and Ecological Emergency Implications

34. Flooding is a destructive and highly visible event for the borough's residents and organisations, and a tangible consequence of climate change. It should be viewed in the round with other climate risks, which are currently less visible but pose significant threats to health and infrastructure. The two other key threats to London that can be managed by boroughs are excess heat and drought.
35. These tend to pose the greatest risk to the most vulnerable, including older people, disabled people, homeless people, and those living in dense and higher-storey flats. Overheating within the Council's homes is likely to be an emergent risk over the next few decades.

36. Heatwaves pose particular threats in areas with limited green space (see heatmap below). The greening initiatives described above will help to reduce dangerous surface temperatures. Measures to mitigate heat risk and reduce water consumption, through green infrastructure and alterations to buildings, should also be considered alongside flood risk as part of any capital works, particularly to homes.
37. The proposed workstreams included in this report serve to both reduce the overall footprint of hard surfacing in the borough and mitigate flood risk now and under expected climate change. Moreover, the proposal will increase green space in the borough and create more habitats for nature.
38. Implications verified by: Hinesh Mehta Lead Climate Change/Sebastian Dunnett – Climate Change – Ecology Officer, 25 January 2022

Procurement implications

39. This report is a strategic update and procurement strategy report/s will follow for sign off of procurement for schemes. This report does not cover procurement routes and states a need to work through detail on approaches.
40. Implications verified by: Joanna McCormick Assistant Director Procurement and Commercial, 25 January 2022

Consultation

41. Consultation and coproduction will be undertaken with the affected residents and as part of the detailed development of the mitigation measures. The stakeholders include local residents, businesses, Thames Water, Environment Agency, GLA, TfL and London Councils plus a number of the water Industry Bodies.

LIST OF APPENDICES

- Appendix 1 – Borough Plan illustrating the streets flooded on the 12 July 2021
- Appendix 2 – 1st Counters Creek Project case study (includes an RBKC Scheme that was delivered by the h&f officers)
- Appendix 3 – 2nd Counters Creek Project case study