

# Flood Risk Management Annual Report

Report of the Assistant Director Highways and Infrastructure - March 2022

## 1. Introduction

A scrutiny review of Flood Risk Management (FRM) and Response was published in June 2010. This set out 12 recommendations which were completed in 2010. The Flood and Water Management Act 2010 passed into law conveying new responsibilities and making Birmingham City Council a Lead Local Flood Authority (LLFA). This report highlights progress in addressing these statutory responsibilities and provides an update on other flood risk management related issues.

This report also provides an update into areas for improvement identified in the review of the May 2018 flooding conducted by members of the Sustainability & Transport O&S Committee on 19th July 2018. No major issues were raised at the submittal of the last Flood Risk Management Report in March 2021.

### 1.1 Climate Emergency

On 11<sup>th</sup> June 2019, Birmingham City Council (BCC) announced a climate emergency and made the commitment to reduce the city's carbon emissions and limit Birmingham's contribution to climate change, with an aspiration to become net zero carbon by 2030. The impact of climate change will not just be felt afar, and the impact on Birmingham residents of increased extreme weather events, including flooding, droughts and heatwave is likely to be profound, with increasing risks to both life and property. Given our global footprint and the diversity of the city, the climate crisis will hit at the heart of families and communities within the city.

The Flood Risk Management team is mindful of the changes and impacts upon infrastructure, people and places and works with our local contractors and PFI partner to pre-emptively clear and monitor high risk structures and assets which have a significant effect on flood risk.

We are working with communities, our Private Finance Initiative (PFI) partner and local Flood Action Groups to provide sandbags, provide cyclical maintenance to high risk structures and additional clearing of gullies and trash screens in advance of a storm or flood event to proactively decrease the impact of surface water flooding across our area. Some areas are more challenging than others and require community buy-in and co-operation to access busy roads and to cleanse gullies on residential streets.

The Flood Risk Management team also monitor weather alerts and are pro-active in terms of responding to flood alerts and flood warnings. The team also provide an out of hours rota / service during evenings and weekends. Names and numbers of the appropriate staff are shared with the Control Room and this works as a contact for elected members, other teams and other parts of the Council to good effect for heavy rainfall or flood events. The team, when health and safety / resources allow, also actively monitor flood levels on-site or via cameras and online level gauges and work alongside other organisations to ensure a multi-agency led approach and co-operation with partner organisations such as the emergency services, the Environment Agency and Severn Trent Water.

## 1.2 COVID-19 Contingency and Hybrid Working

In light of the COVID-19 pandemic and COVID recovery stage, the Flood Risk Management Team have increased team resilience by being able to work in an agile and hybrid fashion, to enable the team to work remotely, whilst also meeting in an office or site environment. The team and our Flood Risk Contractors have delivered essential works and continued to deliver schemes and drainage works during the pandemic for BCC Leisure, Bereavement and Housing teams and also for external partners such as the Environment Agency. All members of the team are able to fulfil their roles in case of flood events. There is added contingency in case of a flood event, and the team are able to double-staff the out of hours rota to provide essential cover, when required, for events such as Storm Dudley and Storm Eunice. The Resilience Team are also working with wider teams to ensure that the Council is prepared and have contingency for vulnerable and 'at risk' people during this period.

A Flood Risk representative has been involved in the Environment Cell and the COVID Recovery Group (CRG) to help inform COVID related environmental issues and to take part in the Environment Cell decision-making process. This involvement has meant close collaboration with other teams from Inclusive Growth / City Operations, Neighbourhoods and our PFI partner - Kier and this close working resulted in a good response to heavy rainfall and minor flood events. The Environment Cell structure allowed for out-of-hours communication and requests to other teams such as Neighbourhood Street Cleansing and Waste Management for help and assistance, post flood and heavy rainfall events.

## 2. Flood and Water Management Act Duties

The following work has been undertaken to fulfil the Lead Local Flood Authority duties under the Flood and Water Management Act.

### 2.1 Local Flood Risk Management Strategy

The [Local Flood Risk Management Strategy](#), October 2017, which states the strategic direction for the management of flood risk across Birmingham is being updated for 2022, to reflect recent flood events, future pipeline of schemes and states our intent to work with partners to address, manage and mitigate against flood risk. The Local Flood Risk Management Strategy update was postponed due to the publication of the Environment Agency's [National Strategy](#) (published September 2020), new 2021 guidance from the Local Government Association and also due to the recent consultations on the [Flood Risk Management Plans](#) (FRMPs) and [River Basin Management Plans](#) (RBMPs). It will also include changes to the [climate change allowances](#) and will be supported by an updated Habitats Regulation Assessment and Strategic Environmental Assessment, in light of DEFRA and Natural England advice.

The Environment Agency strategy has a long-term vision is for: a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100. It has 3 long-term ambitions, underpinned by evidence about future risk and investment needs. They are:

- **Climate resilient places:** working with partners to bolster resilience to flooding and coastal change across the nation, both now and in the face of climate change
- **Today's growth and infrastructure resilient in tomorrow's climate:** making the right investment and planning decisions to secure sustainable growth and environmental improvements, as well as infrastructure resilient to flooding and coastal change
- **A nation ready to respond and adapt to flooding and coastal change:** ensuring local people understand their risk to flooding and coastal change, and know their responsibilities and how to take action.

By continuing and strengthening collaborative working arrangements to improve flood risk management, Birmingham City Council as Lead Local Flood Authority can deliver more schemes / drainage improvements and share best available data and good practice, supported by partners and other risk management authorities.

## 2.2 Cooperation with other Flood Risk Management Authorities

The Lead Local Flood Authority continues to cooperate extensively with other risk management authorities (RMAs) at various levels as established in the 3-tiered flood risk management governance structure. The BCC Flood Risk team also attend neighbouring Councils' partnership meetings and Environment Agency LLFA Networking groups whilst having representation on the Trent Regional Flood and Coastal Committee (RFCC), the Trent RFCC Financial Sub Committee (RFCC FSC) and the CIWEM West Midlands Committee.

### 2.2.1 Strategic Flood Risk Management Board

The Strategic Board last met in January 2022 and was well attended by members of the Flood Risk Management Team, Assistant Director of Highways, Severn Trent Water, the Environment Agency and Honorary Alderman Tony Kennedy. The Strategic Board meets twice yearly and will meet again in Summer 2022. The Strategic Board acts as the focus and political driver for partnership activity and allows for updates and progress from partners. No major issues were escalated to the Strategic Board from either the Birmingham Water Group or other risk management authorities.

### 2.2.2 Birmingham Water Group

The Birmingham Water Group met twice in June and November 2021 and recognised that good progress was being made with the s19 Action Tracker locations. Partners agreed that further work is required to decide which priority locations are to be collectively focused on, in line with the new Severn Trent Water Asset Management Plan (AMP7), Birmingham City Council and Environment Agency priorities. The Birmingham Water Group is the officer led partnership working to deliver flood risk management improvements across the City, and has representation from the Flood Risk Management Team, Severn Trent Water, Kier and the Environment Agency.

### 2.2.3 Project Groups

The Lead Local Flood Authority has worked with partners on a number of projects as follows:

#### **River Rea Partnership**

The Rea Catchment Partnership, led by the Environment Agency has over the past few years completed construction of two flood risk management schemes in the City:

- **Selly Park North Flood Risk Management Scheme**

The Selly Park North flood risk management scheme is fully operational and the Environment Agency has worked in partnership with Calthorpe Estates, Birmingham City Council and other organisations to help reduce the risk of flooding.

The area of Selly Park North has a history of flooding from the Bourn Brook severely affecting the area in 2008 and more recently in June 2016. The scheme reduces flood risk to 150 properties in the area. The scheme involved deepening and widening an existing flood water storage area near the Bourn Brook Walkway on Harborne Lane, Harborne. This increased the capacity of the storage area and offered wildlife and ecology improvements. Flow improvement works were also carried out at the Pebble Mill development site creating an overland flow route to direct flows into a new bypass culvert running underneath the Pershore Road. This has reduced the risk of fluvial flood water getting onto the highway and into properties. The Environment Agency, Severn Trent Water and Birmingham City Council are continuing to look at the residual risk of surface water flooding for additional surface water improvements in this area whilst working with the Local Flood Action Group.



Image taken from <https://portal.vision-link.co.uk/bournbrook.php> showing the Bourn Brook

- **Selly Park South Flood Risk Management Scheme**

Construction has completed on the Environment Agency's £2.4 million flood risk management scheme in Selly Park South. The Environment Agency worked in partnership with St Andrew's Healthcare, Birmingham City Council and other organisations to develop the Selly Park Flood Risk Management Scheme to help reduce the risk of flooding.

The area of Selly Park South has a history of flooding from the River Rea, most notably in 2008 when some residents were forced to move out of their homes as a result of flood damage. This scheme will help protect more than 200 properties in the area from fluvial flooding. The Environment Agency, Severn Trent Water and Birmingham City Council are looking at the residual risk of surface water flooding.

The scheme included the construction of an embankment on public open space, immediately upstream of Dogpool Lane bridge to help hold water during extreme heavy rainfall events. Bank levels were also raised downstream of the bridge to reduce the risk of flood water getting into properties.

The **River Rea Partnership** is also currently undertaking the following strategic study:

**Upper Bourn Brook Study**

The Environment Agency, Severn Trent Water and Birmingham City Council are working together on a catchment-wide study to understand the flood risk and develop flood mitigation options for the upper Bourn Brook catchment. The study covers the catchment upstream of Harborne Lane, Selly Oak, taking in Quinton, Woodgate, Bartley Green and Harborne. The study is at an early stage, initial modelling has been undertaken and high-level options are being investigated. Once this is complete the Environment Agency will prepare a Strategic Business Case on behalf of the partnership with a view to securing funding to further develop the options.

- **Lower Rea and The Bourn**

The Environment Agency is working on a catchment wide study to understand the flood risk and develop flood mitigation options for the Bourn and Lower Rea catchment. The Flood Risk Management Scheme, is currently at Strategic Outline Case development stage (funded by



Government Grant in Aid) to find a preferred way forward and viable scheme. This is likely to involve a series of flood storage areas on The Bourn and also potentially on the Lower Rea in Birmingham. The area has suffered extensive flooding in 2008, 2012 and 2016. We are currently working with partners, including West Midlands Combined Authority, Severn Trent Water and private businesses and developers to explore opportunities for delivery and funding contributions. This will help the project progress to Outline Business Case to develop the preferred option further and assuming funding can be found then on to Full Business Case and Construction.

### **The River Tame Flood Risk Management Strategy**

The River Tame Flood Risk Management Strategy sets out the Environment Agency's strategic approach to flood risk management on the River Tame by considering opportunities to manage flood risk across a wide area, while providing environmental benefits. The Environment Agency is currently delivering two schemes under this strategy.

- **Perry Barr and Witton Flood Risk Management Scheme**

A key part of the River Tame Strategy is the implementation of the Perry Barr and Witton flood risk management scheme, which is to be delivered over 2 phases, at an approximate cost of £42 million for both phases of the scheme. There are approximately 1,400 properties at risk from this section of the River Tame, including 950 residential properties. Phase 1 of the scheme was completed in spring 2017, bringing new flood walls, flood gates and flow conveyance improvements from Brookvale Road in Witton down to Gravelly Park Industrial Estate in Aston. Improvement works to culverts under the railway line in this area are currently outstanding, but will be completed as part of Phase 2. The improved flood wall and flood gates in Witton successfully stopped properties from flooding in May 2018. Construction work for Phase 2 started in late January 2018. The work here will increase flood storage capacity in the Sandwell Valley and is expected to be operational by the end of 2022. Birmingham City Council has made a contribution of £600k to this scheme in early 2019.

The Environment Agency will continue with their programme of environmental works. This will improve the quality of existing habitats, including grasslands, hedgerows and woodland. They also plan to plant over 20,000 trees as part of the scheme and have recently commenced with the winter tree planting programme. This work has started just south of the compound on the land between forge lane and the cycle path. This scheme will reduce future flood risk along the River Tame by the construction of a 1.7 million cubic metre flood storage reservoir in the Sandwell Valley.



**Aerial photo of the Perry Barr and Witton Flood Scheme construction site in the snow, taken January 2021. Photo courtesy of Andy Purcell.**

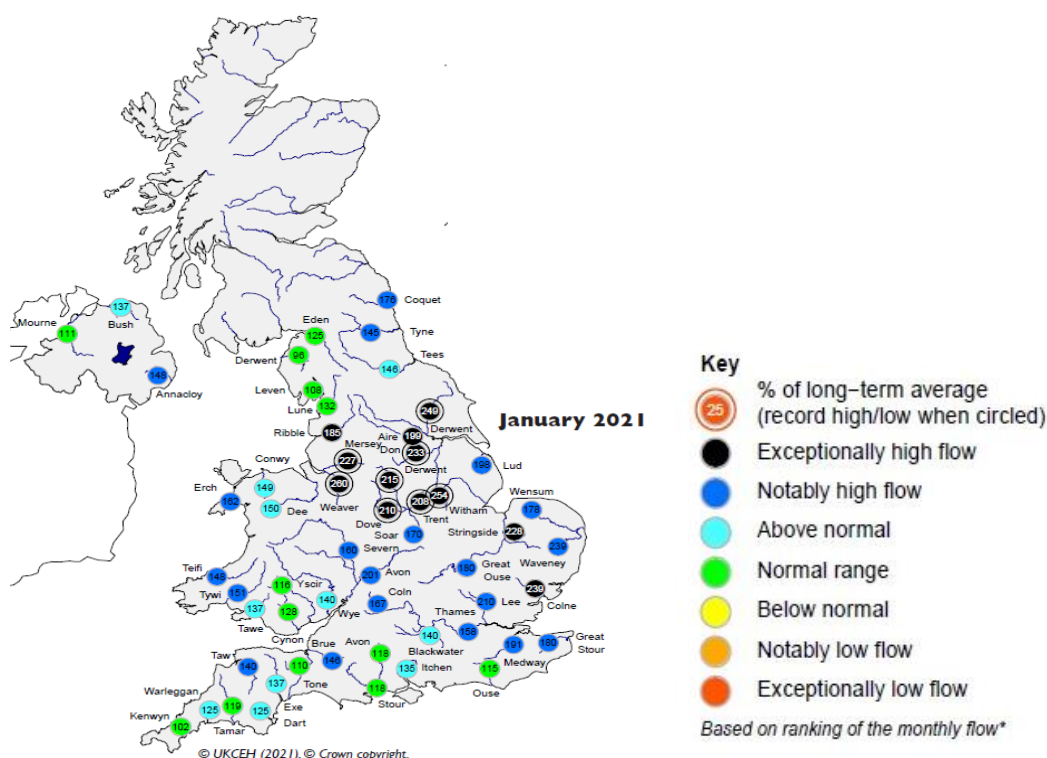
- **Bromford and Castle Vale flood risk management scheme**

The Bromford Flood Risk Management Scheme (FRMS) aims to reduce the risk of flooding from the River Tame and is now envisaged to cost £9 million due to delays and challenges with the construction phase. The scheme extends over 4.5 km from the River Rea, through Bromford and Castle Vale, and downstream to the M42 crossing at Water Orton. The scheme will better protect more than 900 homes and businesses from fluvial (river) flood risk. The Environment Agency have had challenges in delivering the scheme, which have led to significant delays in completing the works. The scheme involves raising flood walls and constructing new ones as well as building earth embankments. A cycling route is to be provided along the south bank linking up with the existing networks at Bromford Road and Chester Road. The overall scheme is expected to be completed by winter 2022/23. Highway works are pending Section 278 approval from Birmingham City Council and the Contractors have given commitments to improve delivery confidence and to complete this scheme at the earliest opportunity

## 2.3 Investigation and Publication of Reports of Flooding Incidents

### 2.3.1 Significant Flood and weather events

The Met Office has recently updated to the latest World Meteorological Organization climate averages for the period 1991-2020 and in meteorological terms, 2021 was thought to be an 'average' year. Climate is measured against 30-year 'averaging' periods known as 'climate normal' periods and these act as a benchmark against observational records of weather and climate can be compared to, in order to provide context for future climate projections. Although the UK mean temperature has been close to the 'average' compared to 1991-2020 - the climate is warming, and is 1.0°C warmer than the earlier 1961-1990 baseline. This series began in 1884 and all the top-ten warmest years in the historical series have occurred this century. When comparing two 30-year periods (1961-1990 and 1991-2020), the average temperature of the UK has increased by 0.8°C, rainfall by 7.3%, and sunshine by 5.6%.



**Figure above showing % of long-term average flows in January 2021, showing exceptional high flows across the Trent, Don and Mersey catchments. Taken from the CEH Hydrological Summary, January 2021**

Winter 2020/21 had the coldest mean temperature since 2010 and had exceptionally wet weather from Storm Christoph, followed by snow from Storm Darcy. It was wetter than average and mean river flows for January were above average across England. January was a wet month at the national scale (with 114% of the January average rainfall) and groundwater levels also increased to above average. Over 300 flood alerts were issued across England and Wales with approximately 675 properties experienced flooding across South Yorkshire, Cheshire, Greater Manchester and Lancashire.

The wet weather continued into February 2021 and rainfall totals were again above average for much of the UK, for the third consecutive month, particularly affecting central and southern Scotland, northern England, south Wales and Northern Ireland. As a whole, the UK received 118% of average rainfall, with areas of eastern England and Scotland registering more than 170%. March and April 2021 were largely dry and settled, interspersed with unsettled periods and river flows decreased to fall within normal range, with high flows noted in across catchments in north-west England. May 2021 had relative low temperatures and high rainfall, with successive westerly bands of rain leading to high flows in Wales and record-breaking monthly mean flows more than four times the average on the Conwy, Dee, Teifi, Twyi, Tawe and Cynon, The Severn-Trent catchment received 206% of average rainfall for this month.

June was largely dry, interspersed with thunderstorms and although North-West England recorded its driest June since 1941, this is contrasted with areas of southern England experiencing the second-wettest May and June on record. The M42 was flooded and roads were closed across Solihull. The changeable conditions continued into July, with heat warnings issued and also thunderstorms. Storm Evert at the end of July caused power outages and travel disruption which affected Birmingham, with the Control Room and the Flood Risk Management team receiving numerous calls from concerned residents regarding surface water flooding. Flooding was seen on the M5, there were also train cancellations at Birmingham New Street and Dorridge in Solihull was particularly impacted by flooding, with approximately 30 properties reporting internal flooding.

August was again unsettled and flood events were experienced in Belfast, Glasgow and the Isle of Wight and led into a dry September, interspersed with spells of rain and thundery showers. October saw repeated flooding in Cockermouth and the Lake District with the UK receiving 131% average rainfall and November brought Storm Arwen accompanied by a red weather warning. In this storm event, three people lost their lives, thousands of trees were felled, and it's estimated that hundreds of thousands of homes were left without power across northern England.

December 2021 was generally calm, with unseasonably warm temperatures (16.5°C recorded at Bala, Gwynedd) however Storm Barra hampered the recovery from Storm Arwen with further travel disruption, fallen trees and coastal flooding in Scotland, Northern Ireland and East Anglia. The UK as a whole received average December rainfall, although less than 70% of the average was registered in north-west Scotland (with less than 50% in the far north) and north-west and southern England. In contrast, parts of Wales, central and north-east England registered more than 130% of average rainfall.

The main storm events in 2021 that impacted Birmingham were noted as Storm Christoph in January, Storm Darcy in February and Storm Evert in July. All three storms led to reported incidences of surface water flooding, mainly affecting roads and highways. Lesser impacts were felt from Storm Arwen in November, Storm Barra in December and Storms Malik and Corrie in January 2022. However, between the 14th and 21<sup>st</sup> February 2022, Storms Dudley, Eunice and Franklin led to high winds and heavy rain, especially in the South-East with notable very high flows across the Severn catchment, after 150mm of rainfall across five days in upland Wales.

Rainfall intensity is expected to increase in the future. It's envisaged that surface water flooding will become more frequent with higher rainfall totals falling more often. River flows are also expected to increase leading to increased risk of fluvial flooding.

## Flood Warnings and Flood Alerts

The Flood Risk Management Team have been working with the Hydrometry teams at the Environment Agency to locate areas which do not currently have a flood warning service in place and locations for level gauges and rain gauges to better inform the Flood Warning Direct (FWD) service that the Environment Agency offer. The locations agreed with the Environment Agency are on the Bourne Brook, Perry Brook and the Plants Brook in Sutton Coldfield and these gauges have now been installed to benefit the local communities with more accurate flood warning service.

28 flood warnings / flood alerts affecting the Birmingham area were issued on the Rivers Rea, Cole, and Middle / Upper Tame during 2021. These are issued in advance of expected fluvial (river) flooding and do not usually cover the risks of surface water (pluvial) and flooding of smaller watercourses, unless contained within the wider warning or alert area.

DATE	WARNING / ALERT AREA NAME	TYPE
20/01/2021	Middle Tame	Flood Alert
28/01/2021	River Cole	Flood Alert
29/01/2021	Middle Tame	Flood Alert
30/01/2021	River Cole	Flood Alert
31/01/2021	Middle Tame	Update Flood Alert
16/06/2021	River Cole	Flood Alert
16/06/2021	River Rea	Flood Alert
16/06/2021	Upper Tame	Flood Alert
18/06/2021	River Cole	Flood Alert
18/06/2021	River Rea	Flood Alert
18/06/2021	Upper Tame	Flood Alert
25/06/2021	River Rea	Flood Alert
25/06/2021	Upper Tame	Flood Alert
25/06/2021	River Cole	Flood Alert
02/07/2021	River Cole	Flood Alert
02/07/2021	River Rea	Flood Alert
02/07/2021	Upper Tame	Flood Alert
22/07/2021	River Cole	Flood Alert
22/07/2021	River Rea	Flood Alert
22/07/2021	Upper Tame	Flood Alert
27/07/2021	Upper Tame	Flood Alert
05/10/2021	River Cole	Flood Alert
05/10/2021	Upper Tame	Flood Alert
30/10/2021	River Cole	Flood Alert
31/10/2021	River Rea	Flood Alert
31/10/2021	Middle Tame	Flood Alert
31/10/2021	River Cole	Flood Alert
31/10/2021	Upper Tame	Flood Alert

The Upper Tame flood alert area covers 'low-lying land and roads between Horseley Heath and Castle Vale on the River Tame and Bescot on the Ford Brook'. Middle Tame covers 'low-lying land and roads between Water Orton and Tamworth including the Bourne Brook at Fazeley'. The River Rea alert area affects 'low-lying land and roads between Longbridge and Nechells' whilst the River



Cole alert area is for 'low-lying land and roads between Majors Green and Coleshill' on the River Cole.

The Flood Risk Management Team would encourage people and residents at risk of flooding to sign up for free Environment Agency's Flood Warnings and Flood Alert via the 'Floodline' service on telephone: 0345 988 1188; Textphone: 0345 602 6340 or [online](#).

### **July 2021 and Storm Evert**

Wet and changeable conditions were seen in July, with both heat warnings and thunderstorms. Heavy rain particularly affected parts of Handsworth Wood and the Hilltop Brook burst its banks affecting a small number of properties. Blockages on strategic grill structures were cleaned in advance of the rainfall and Flood Risk contractors undertook blockage removal on watercourses to help allay the risk of flooding. Although heavy rain was forecast, no flood alerts were issued for the area prior to the storm and a Flood Alert for the River Tame was issued after the thunderstorm had passed. Storm Evert at the end of July then caused power outages and travel disruption. There were notifications of garden and highway flooding and the highway flooding dissipated once water levels in the sewer system went down. BCC Highways, Flood Risk Management team, Resilience and PFI partner worked closely in an attempt to ensure that the impact of flooding was managed effectively, and the risk to people and properties mitigated as far as reasonably practicable.

It should be noted that although Birmingham was not as adversely affected as other areas across Staffordshire, Solihull and the Black Country - if the rainfall experienced over Solihull were to have fallen in Birmingham, there would have been widespread flooding.

### **Flood Event s19 Investigations**

In 2016 and 2018, a significant number of flooding incidents were reported to Birmingham City Council. Immediately following the events, Birmingham City Council distributed approximately 2,000 'Flood Surveys' to all residents within, or in close proximity to, all areas where flooding was reported.

Flood surveys are important as they provide accounts of duration and depth of flooding along with any other pertinent information. These responses can accurately report internal property flooding, flooding to gardens and flooding to highways and surrounding areas.

Although neither the 2020 or 2021 thunderstorms did not trigger formal s19 investigations, mainly due to the sheer amount of intense nationally experienced rainfall that overwhelmed sewers and smaller watercourses – a Stage 1 investigation was undertaken for each reported incident to ascertain the source, path and receptors affected by the flooding. Flood Questionnaires were sent out and COVID-secure site visits were undertaken in order to gather information and to inform any future mitigation. These locations have now been added to the six year pipeline of schemes such as the 'Highway Drainage & Sewer Renewal Programme' - a renewal and upgrade scheme in conjunction with BCC Highways and Severn Trent Water; a 'City-Wide Culvert Renewal Programme' to reline or upgrade culverts in a poor state or condition; and a 'City-Wide PFR (Property Flood Resilience) Programme' to capture properties where an engineered solution is unviable or not cost-effective, in line with the Environment Agency's partnership funding arrangements.

### **Groundwater**

Birmingham is located over a principal aquifer. The Birmingham Strategic Flood Risk Assessment indicates that it is expected that groundwater levels will continue to rise towards its natural level as industrial abstractions continue to cease; and this is believed to be the cause of groundwater flooding within the council boundaries. Groundwater levels depend on aquifer properties, local geological conditions and a complex balance between recharge from rainfall, and discharges to rivers or pumped abstraction. Groundwater levels can change seasonally and rebound to the surface after a period of prolonged rainfall. Groundwater levels are measured in metres above ordnance datum and levels normally rise and fall with the seasons, reaching a peak in the spring

after being replenished through the winter (when evaporation losses are low and soil moist). Levels then tend to decline through the summer and early autumn.

Groundwater levels in Birmingham and London have been rising due to the cessation of pumping from wells, and abstractions not being as frequent as they once were at the start of the 20<sup>th</sup> century. Persistent rainfall across the Trent Catchment and snowfall means that groundwater has become a re-emerging issue across areas of Birmingham.

### **Detailed Investigation and Analysis**

The Lead Local Flood Authority conducts detailed investigation and individual location analysis of each area where a property experienced internal flooding. These investigations typically include a review of existing infrastructure and topography, identification of predominant flow paths, site visits and local knowledge gathering. Through a detailed analysis, the Lead Local Flood Authority has identified the types of flooding that occurred at each location during the events of both June 2016 and May 2018.

The Flooded Sites Action Tracker has been updated following the flooding incidents in June 2020, with any feasible cost-effective options to be brought forward into the new pipeline of schemes. The team have also been collating flood questionnaires and advising other risk management authorities on mitigation, whilst ensuring high risk structures are kept clear from blockage.

### **Recommended Actions**

Following analysis of affected areas, the Lead Local Flood Authority works in collaboration with other Risk Management Authorities to identify opportunities and options to mitigate flood risk, as the potential that a similar rainfall event will result in similar outcomes.

## **2.3.2 Section 19 Flooding Investigation Report**

The Flood and Water Management Act places a duty on Lead Local Flood Authorities to investigate incidents of flooding and this is set out in Section 19 of the act and the investigations are therefore typically termed '*Section 19 Reports*.' The final May 2018 report was published on 30<sup>th</sup> August 2019 following sign off by the Strategic Flood Risk Management Board as per the previous Section 19 report into the May 2016 flooding. Birmingham City Council and other Risk Management Authorities continue to progress the actions identified in the May 2016 and 2018 Section 19 Reports with updates given at the Strategic Board and Water Group.

## **2.3.3 Flooded Sites Action Tracker**

Flood events are tracked in a Flooded Sites Action Tracker. A copy of the most recent tracker is attached in Appendix A. As a result of the May 2018 flooding the number of locations on the tracker has increased substantially. However, plans are in place for the majority of locations, but solutions range from works in the current year, through to proposals for longer term national and regional grant funding.

## **2.4 Register of Flood Risk Management Assets**

Birmingham City Council continues to maintain a register of structures or features which, in the opinion of the authority, are likely to have a significant effect on a flood risk in its area. This register can be viewed online.

A number of assets have been inspected over the last year in line with the inspection frequency set out in the asset register. Where an issue with an asset has been identified the asset owner has been notified and asked to undertake the necessary maintenance works.

The team has also developed our own Hydraulic Maintenance of Structures (HMOS) database to identify the maintenance priority of structures from potential blockages and the resultant extent of flooding if no cyclical maintenance is undertaken in high risk areas. This database is to be used as the main driver to develop and promote the FRM Capital Programme of works.

## 2.5 Consenting Works on Ordinary Watercourses

Birmingham City Council as Lead Local Flood Authority is the Authority responsible for regulating activities on ordinary watercourses in Birmingham. As a result, Birmingham City Council is legally responsible for dealing with applications for ordinary watercourse land drainage consents. In 2021, fifteen applications were received for in-channel works or for works within byelaw distance of ordinary watercourses. The team also advise on internal works and HS2 crossings / exempt activities.

## 2.6 Works to Manage Flood Risk

The Lead Local Flood Authority has delivered a number of capital and revenue schemes. These works are funded from a variety of funding mechanisms and a considerable number of flood risk management works have been delivered internally on behalf of other Birmingham City Council service areas. Most notably the Flood Risk Management Team works routinely with our Leisure services teams to provide consultancy services for drainage and environmental improvement works. The team also arranges statutory inspections under the Reservoir Act 1975 in order that the Council's large raised reservoirs are managed in accordance with the Act.

The Environment Agency pipeline is a rolling 6-year programme which can be both updated annually with schemes either brought forward or pushed back, depending on the availability of funding and is fluid. This 6-year programme allows for the development of schemes which will be delivered in future years. The delivery of the Flood Defence Grant in Aid and Local Levy programme for 22/23 includes flood alleviation for up to fifty properties and it also includes studies to inform schemes to explore preferred cost-effective options. Birmingham-led projects and works including flood mitigation and drainage improvements for other teams and directorates will take place outside of this external programme, as detailed below:

The following works have been progressed since January 2021.

### 2.6.1 Grant Funded: Flood Defence Grant in Aid and/or Local Levy

Community flood resilience measures: (e.g. construction of land drainage to benefit communities and local investigation / measures

- **Eastern Road** - complete. Creation of a bund benefitting four properties to lessen flood risk.
- **Ripple Rd** – In progress to replace two missing flood guards in shared alleyways to benefit the lines of terraced properties.

#### **Grant Funded: External Organisations (Partnership working)**

- **First Avenue Flood Alleviation Scheme (River Rea)** – Removing two significant weirs and partial removal of two others to help naturalise the channel and lower water levels. Re-profiling existing channel, bank stabilisation for Environmental, habitat and Flood improvements (the Environment Agency)

### 2.6.1 Works Funded by Flood Risk Management Revenue Budget

Routine clearance to all strategic grill structures (frequencies vary from weekly to 6-monthly depending on the criticality of the asset) and additional grill clearance following severe weather.

### 2.6.2 City Wide

Sandbag distribution and re-stocking of Hydro-snakes when requested to Flood Action Groups. Neither sandbags nor hydrosnakes were issued in 2021. The following locations are where we have agreed to issue sandbags as these areas are supported by a Flood Action Group:

- **Selly Park South**

- **Selly Park North**
- **Northfield**
- **Sparkhill.**

Restoring flood channel/culvert capacity by excavation, cutting back vegetation and removing major blockages:

- **River Cole** - Formans Road to Nethercote Gardens
- **Plants Brook** - Ebrook Road to Eachelhurst Road
- **Turves Green Brook & Tributary to Bourn Brook** - Kingswood Road to Turves Green & Arosa Drive to Beaumont Drive
- **City Wide** - Flood Asset Maintenance works to all strategic grills
- **Handsworth Wood Brook** – Oxhill Rd to Sunningdale Close
- **Inspecting strategic culvert structures.**

#### **Other flood alleviation Projects**

- **Sunningdale Close, Handsworth Wood** - 1) Breakout and rebuild existing wing walls and to accommodate the installation of two bends with concrete surround to form new inlet structure; 2) Fabricate and install new raking trash screen to new inlet structure; 3) Provide and install non- return flap valve to existing outfall; 4) Construction of a new brick flood wall and water tightening measures to existing concrete panels
- **Silvercroft Avenue, Handsworth Wood** – Construction of new culvert and off-line flood storage balancing pond.

#### **2.6.3 Inspection & maintenance work to flood defence assets:**

- **Tysley Brook, Hall Green**
- **Oddingley Road, Turves Green**
- **Park Lane, Castle Vale**
- **Steel Road, Turves Green**
- **Eachelhurst Road, Walmley Ash**
- **Washwood Heath Road, Ward End**
- **Maintaining safe and clear access routes to flood defence assets and to ensure that they operate as per the original design.**

#### **2.6.4 Works provided for other BCC Departments**

On behalf of the **Local Planning Authority:**

- **Sustainable Drainage and permeability / suitability checks** - To inform Sustainable Urban Drainage Strategy (SuDS) suitability for the Strategic Housing Land Availability Assessment (SHLAA) sites on behalf of the Local Planning Authority. The Flood Risk Management team have processed approximately 20 pre-application requests and provide advice on drainage considerations and flood risk.
- The team also advise on the flood risk appropriateness of development sites put forward for development, drainage issues and surface water drainage. The team also advise where

needed on policy documents, neighbourhood plans, supplementary planning documents, and environmental improvement schemes and proposals.

On behalf of **Housing**:

- **Fisher Close** – Excavate and removal of silt to restore storage capacity of pool, and erection of safety fencing
- **Merrits Brook** - Channel clearance, removing major blockages and excavation works to restore channel capacity.

On behalf of **Bereavement**:

- **Handsworth Cemetery, Handsworth** – Site investigation works and analysis to localised flooding - resulting in proposals to drain plots to allow further burials.

On behalf of **Leisure**:

- **Alexander Stadium, Perry Barr** – Consultation work with Alexander Stadium team regarding the reconstruction of the stadium in preparation for Commonwealth Games 2022, and the additional drainage and effect on the Reservoir and Dam.
- **Wyndley Leisure Centre, Clifton Road, Sutton Coldfield** – Installation of strip drainage around a section of the building to alleviate internal flooding to Leisure Centre
- **Ward End Pool** – Consultation and advise for Pool improvement scheme
- **Geranium Close** – Clearance of major blockages consisting of fallen trees and urban debris to restore channel capacity to prevent localised flooding
- **Tennal Lane Allotments brook** - Clearance of major blockages consisting of fallen trees and urban debris to restore channel capacity to prevent localised flooding
- **Rose Hill** – Renewal of safety fencing and bank stabilisation.
- **Valley Parkway Pool** – Reshaping and top soiling land adjacent to pool following desilting
- **Manor Farm Pool** - Reshaping and topsoiling land adjacent to pool following desilting
- **Handsworth Park Pool** – Upper Pool re-profiling and desilting to improve water quality.
- **Brookvale Park Pool** – CCTV Survey and inspection of overflow siphons and breather pipework.

On behalf of **Highways**:

- **Selly Park North** - Additional gullies Selly Park North area
- **Section 38 agreements / Highway Improvement Schemes** – technical advice for highway Sustainable Urban Drainage Strategies (SuDS) and adoption.
- Working on **highway surface water problems and flooding issues** to help promote improve maintenance regimes and improvements to the Highway Drainage infrastructure to reduce flooding properties internally.
- **Plants Brook** – Upper Holland Rd -Restoring flood channel capacity by excavation, cutting back vegetation and removing major blockages

#### 2.6.5 Reservoir Works provided for BCC Leisure Services

- **Reservoir Act 1975 Section 10 and 12** - Inspections City Wide. Commission of 11 Section 12 Inspections by Supervising Engineer and 3 nr Section 10 Inspections by Inspection Engineer at Perry, Swanshurst and Wyndley Reservoirs.



- **On Site Emergency Plan** – Commission of an Onsite Plan to comply with new legislation for **each** of the 11 Large Raised Reservoirs.
- **Lifford Reservoir, Kings Norton** – Work on site to repair erosion to crest and increase height to design level for reservoir to prevent overtopping in an extreme event. Maintenance work to dam in preparation of Section 12 inspection.
- **Longmoor Reservoir, Sutton Coldfield** – Repair to main scour penstock to prevent leakage. Fitting of anti-vandal device to prevent unauthorised operation.
- **Perry Reservoir** – Following the section 10 inspection work commissioned to calculate drawdown rates, and produce a drawing showing all drainage around the reservoir, including newly constructed flow attenuation tanks for Alexander Stadium. Other work includes CCTV Survey of pipework under and around reservoir, replacement of inspection chamber covers, repair to penstock mechanism, and repair to brickwork on inlet headwall by stadium.
- **Powells Reservoir, Sutton Park** – Repairs to the existing brick and concrete spillway slabs and reconstruction of expansion joints to restore structural integrity. Erection of new permanent safety steel fencing
- **Salford Reservoir, Aston** – Penstock refurbishment to allow free operation of spindle.
- **Swanshurst Reservoir, Springfield** – Commissioned review of Flood study, and a review of the current surface of the downstream face. Other work includes a CCTV Survey of pipework in the dam, repair work to the auxiliary spillway to eliminate depressions, and repacking gabions.
- **Wyndley Reservoir, Sutton Coldfield** – Commissioned work to carry out a topographical survey of the dam, and to review the most recent flood study in the light of new recommendations. Other work includes construction of a reinforced concrete apron downstream of the penstock control to prevent erosion of brook following its operation. The fractured section of spillway slab cleaned and holes drilled to ascertain its thickness and resistance to uplift.

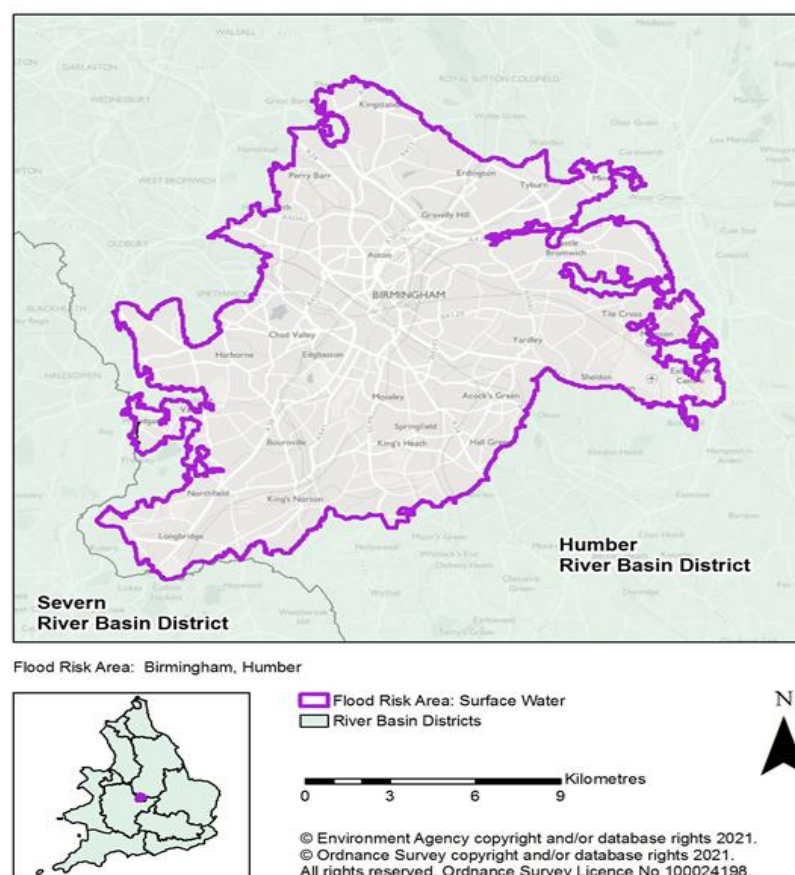
### 3. Flood Risk Regulations Duties

The Flood Risk Regulations implement the EU Floods Directive in England. They provide a framework for managing flood risk over a 6 year cycle, comprising:

- Preliminary Flood Risk Assessment (PFRA)
- identification of areas of potential significant risk, referred to as Flood Risk Areas (FRAs)
- mapping of flood hazards and risk and
- Flood Risk Management Plans (FRMPs), setting out measures and actions to reduce the risk.

Birmingham is noted as a pluvial (surface water) Flood Risk Area and the Environment Agency have designated Sparkhill and Selly Park as Fluvial (River) Flood Risk Area, from the River Cole and River Rea respectively, and they have duly updated the Flood Risk Measures for these areas.

The Birmingham Flood Risk Area (FRA) has been identified as the flood risk from surface water is considered nationally significant. Birmingham City Council, Solihull Metropolitan Borough Council, Dudley Metropolitan Borough Council, Sandwell Metropolitan Borough Council and Walsall Metropolitan Borough Council as Lead Local Flood Authorities take the lead on the development and delivery of the FRMP for this FRA and are responsible for managing flood risk from 'local' sources such as surface water, groundwater and ordinary watercourses.



#### Map showing Birmingham Flood Risk Area (differs from BCC administrative boundary)

Surface water flooding in the FRA occurs due to natural and artificial influences. Quite a high percentage of the rain that falls in the upper Tame catchment runs off it as drainage is impeded by the overlying loamy clay soil. Water flows overland entering built up areas. Heavy rain also ponds or flows off impermeable surfaces in the urban areas where it cannot soak into the ground. Urban drainage systems become overwhelmed or unable to discharge into receiving watercourses due to high water levels.

There are sixteen Main Rivers in the Birmingham FRA and numerous ordinary watercourses including unnamed streams and ditches. Many of these rivers and streams are susceptible to flooding. The fast run off from the upper catchments and run-off entering the watercourses from the urban areas means there is a rapid response to heavy rainfall. Historically flooding has been caused by channels not being able to take the high volumes of water and also by blocked culverts. Siltation and blockage of key structures can exacerbate flood risk and fly tipping is detrimental. Various communities are at risk of flooding - Selly Park and Sparkhill have been identified as Fluvial (River) Flood Risk Areas where the flood risk from rivers is considered nationally significant.

Lead Local Flood Authorities worked with the Environment Agency to publish the first set of Flood Risk Management Plans, covering the 10 river basin districts in England, on 17 March 2016. These plans set out how Risk Management Authorities are working together, and with communities, to manage flood and coastal risk over the next 6 years up to December 2021.

We have worked with the Environment Agency and neighbouring Councils to amend, transition and bring forward measures for the next 6-year cycle. Birmingham is noted, along with other large, dense conurbations as a Flood Risk Area, as there are a significant number of people, infrastructure and businesses, susceptible to a range of sources of flood risk

A high-level analysis of the 30-year 'Risk of Surface Water Flooding' dataset (high-risk) shows that there are 39 properties and 3 businesses at risk in Sparkhill Ward. There are 1,785 people (average household size) within the Sparkhill Flood Risk Area, with 358 properties at medium risk, and 386 at risk overall.

There are also 119 non-residential properties, with 66 at risk, as taken from the 'Flood Risk Maps for Rivers and Sea in England - December 2019'. The Social Flood Risk Index recognises Birmingham as one of the ten most flood disadvantaged local authorities in UK, and provides the most direct measure of flood disadvantage. Birmingham is also in the top ten for the '*Expected Annual Damages (EAD, £m) - Residential only*' metric.

## 4. Statutory Consultee Role for Planning

The Lead Local Flood Authority is a statutory consultee for surface water on major developments (10 dwellings or more; or equivalent non-residential or mixed development). Local planning decisions are expected to ensure that Sustainable Urban Drainage Strategies (SuDS) for the management of runoff are put in place unless demonstrated to be inappropriate and that the sustainable drainage system should be designed to ensure that the maintenance and operation requirements are economically proportionate.

The number of applications, discharge of conditions and pre-app enquiries in between 2017 and 2020 is as follows:

Year	Total No. of Applications	Major Planning Applications	Pre-App/General Enquiries	Discharge of Condition
2017	405	185	94	126
2018	392	140	83	169
2019	577	274	59	322
2020	613	285	32	210
2021	tbc	tbc	tbc	tbc

The statutory consultee role ensures that proposed developments and surface water drainage schemes are future-proofed in line with the National Planning Policy Framework (NPPF), with appropriate climate change allowances and conforms to the Council's Planning Policies, Birmingham Development Plan, Big City Plan, SPDs and other planning documents.

The LLFA has been a key consultee in the development of Rea Valley SPD which is the largest city brownfield regeneration scheme in England. We have also advised on flood risk, drainage and the creation of community scale green and blue infrastructure. We have also been providing detailed advice and guidance in relation to the new urban extension to the City in Peddimore, Sutton Coldfield and the creation of a naturalised Langley Brook and community scale SuDS.

We are working with planning colleagues to improve ways of working and to form a framework for better responses and to inform planning applications more efficiently and effectively. We are discussing validation requirements, and the provision of standing advice for low-risk applications to lessen the burden on the statutory planning role within the Flood Risk Management team and to provide timely advice back to the planning teams.

In turn, we are assisting the enforcement officers with high-profile cases to advise on drainage issues and likely causes of flooding. In the future, we hope to work with Planning and Planning enforcement to act as an internal consultee / consultant to advise upon unpermitted and any development not in accordance with the approved details, which impact upon flood risk or drainage. The Flood Risk Management team also act as facilitator between the Council and other risk management authorities and Birmingham uses the Flood Risk Management team's experience to better inform and warn those at flood risk. The team have continued to inform and respond to planning applications despite a third-fold increase on previous application numbers.

By informing Birmingham City Council policy, it is through strategic planning policies where we can inform major development most effectively – and having an over-riding drainage and flood risk policy such as TP6 helps to detail the surface water rates and volumes and required planning mitigation to ensure a high quality and sustainable development. The LLFA continues to influence planning applications and secure developer contributions whilst responding to changes to the planning system, ensuring that proposals are in line and proportionate to new guidance and amendments to the GDPO and 'use' classifications. We have also given detailed pre application advice internally to highways, and the Birmingham Housing Development Team, to help ensure that sites that are sensitive to flooding are appropriately designed to reduce and mitigate those risks, and the sites have the optimum number of new homes.

In the last year the team has engaged with the Climate Change Justice Maps, highlighting the importance of flood risk management, and utilising Green and Blue corridors throughout the city as multifunctional spaces for environmental enhancement as well as health and wellbeing which has influenced the City of Nature document, which highlights the opportunities to expand the green and blue infrastructure network in locations of flood risk from both fluvial and surface water flooding. The city has developed a Sustainable Finance Framework with external green investors allowing for the long-term investment into the city's blue and green infrastructure.

The LLFA have influenced the Perry Barr Masterplan which promotes flood resilience, SuDS and green and blue infrastructure to manage surface water within new areas of public realm and public spaces, and new developments. Specifically, the document introduces strategies for sustainable spaces and buildings, including sustainable water management and urban drainage, green walls and roofs, and opportunities for low carbon heat and power.

We have been working to support the revised masterplan for the Smithfield regeneration scheme in development, prioritising flood risk management from all sources and the incorporation of green and blue infrastructure within streets and the public realm.

The LLFA help to represent Birmingham City Council in the international network of biophilic cities group supporting best practice environmental projects. We have also supported the delivery of the Commonwealth Games by providing technical guidance on areas of Public Realm improvements in the city centre, including the Victoria Square / Colmore Row enhancements, and the China Town area as well as facilities at events locations including the new carpark and supporting infrastructure in Sutton Park.

The LLFA has also had a key role in the regulation of HS2 construction and ensured that they are taking action to naturalise and improve watercourses, incorporate SuDS wherever possible and limit discharge rate as far as practicable to the greenfield run off rate from their new developments.

## 5. Funding

### 5.1 Funding Streams

#### **Funding for Lead Local Flood Authority**

Funding for Lead Local Flood Authorities to meet the duties under the Flood Water Management Act is provided to Birmingham City Council as part of the Local Government settlement. This funding is not ring-fenced and the budget for the Flood Risk Management Team was reduced due to financial pressures on the Council.

#### **Environment Agency Partnership Funding Calculator**

On 17 April Defra and the Environment Agency published new guidance on partnership funding for flood and coastal erosion risk management. The changes are part of a suite of initiatives to help deliver the ambitions of the 25 Year Environment Plan and the new FCERM strategy. The Partnership Funding rule changes include:

- Updating payment rates to reflect inflation and new evidence on flood damages since 2011 (including people impacts such as mental health);
- Amending the flood risk bands for qualifying schemes to add a new intermediate risk band between high and medium risk. This will mean more schemes that reduce surface water flood risk are likely to receive government funding in the future;
- Accounting for the future impacts of climate change by also including people and properties that would potentially become at risk over the lifetime of a project;
- Improving the payment rates for environmental benefits to capture more fully the wider environmental benefits delivered by flood and coastal erosion risk management projects and to help support nature-based solutions.

### **Revenue Budget**

A small budget is provided to support flood management responsibilities, these include land drainage, maintenance of ordinary watercourses and emergency response. This budget has reduced over recent years in line with City Council budget cuts. A risk-based approach is undertaken to ensure that high risk grills are cleared before and after heavy rainfall as the strategic grills have a real impact on flood risk if left occluded.

### **Flood Defence Grant in Aid - Partnership Funding**

In the past, flood risk management schemes were generally funded by central government through the Flood Defence Grant in Aid (FDGIA) process which allocated funding to projects nationally based on cost/benefit prioritisation. This led to only schemes that scored highly in terms of benefits outweighing costs being taken forward.

From 2012, a revised approach has been undertaken. Funding levels for each scheme, paid by central government as Flood Defence Grant in Aid, relate directly to the benefits the scheme delivers, including number of households protected, damages prevented, deprivation, environmental benefits and amenity improvement. If the FDGIA does not cover the cost of the scheme, in order to progress a scheme the cost / scope can either be reduced and/or local contributions would need to be found. In 2020, the Environment Agency published a new Partnership Calculator, with overall improved grant rates for surface water schemes.

### **Local Levy**

The City Council pays levies to the Environment Agency in the form of Local Levy, in 2020/21 the Local Levy contribution was £298,990. The Local Levy is raised by the Regional Flood and Coastal Committee (Birmingham sits within the Trent Committee area) and is used as a locally-raised source of income to fund projects within the Trent region. Local Levy can be used to fund projects that might not be eligible for national funding or as a regional contribution to scheme costs under the partnership funding approach. It is envisaged that Birmingham will aim to draw down up to £325,000 in Local Levy monies over the next 6-year pipeline.

The RFCC has ratified a 2% increase to local levy payments in 2022/23 bringing the amount to £304,970. A 2% increase would provide a 28 to 1 cost benefit ratio, however the 2% increase would be a reduction in real terms with the cost of inflation. Levy balances have reduced significantly from a high of £6.12m in 2015/16 to less than £1m in 2021/22. Birmingham City Council are a significant net contributor to the pot but has an equal chance of securing the funding relative to net beneficiaries for Councils within the Trent RFCC.

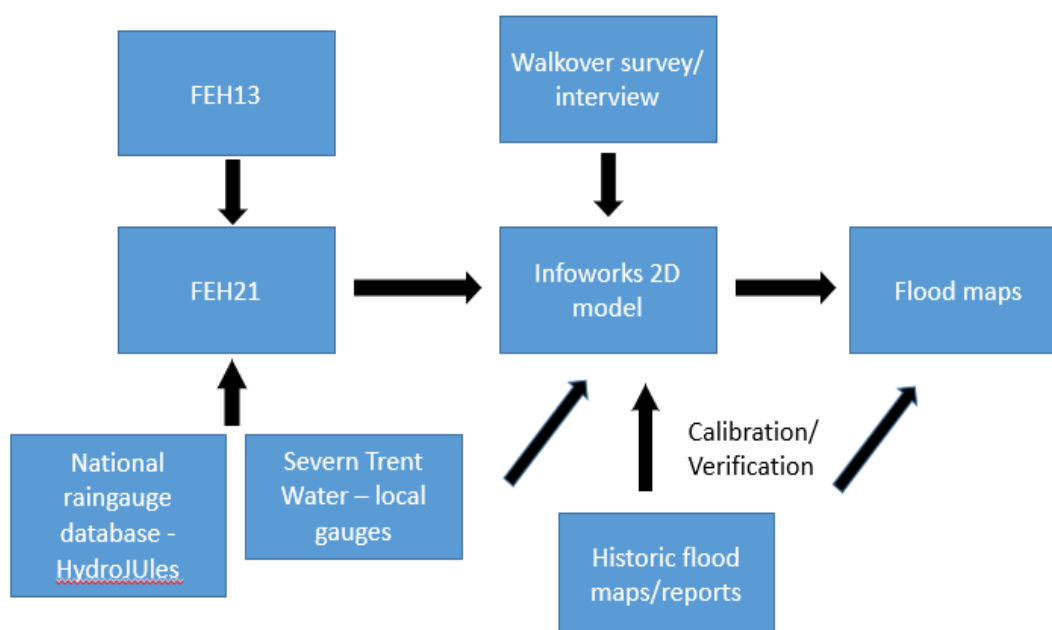
The amount raised from each Local Authority is based on the number of Council tax band D properties which has been agreed as a fair and equitable basis for the calculation. A 2.2% increase was approved by the RFCC in 2020, generating an additional £42,746 across the Trent RFCC area. Votes to increase the Local Levy payments are held each year and is linked to any National Grant in Aid underspend, The Environment Agency will be looking for opportunities to strengthen the Grant in Aid position by switching funding streams such as Local Levy to maximise the monies available.



In February 2021, Birmingham City Council has been offered a representative position on the Trent Regional Flood and Coastal Committee Financial sub-committee. As the largest Council in the Trent RFCC area and as the largest Unitary Council nationally, this is an important step to understanding the nuances of Local Levy bid appraisal and the approval criteria of the sub-committee. This representation will serve the Council well, and BCC will be able to maximise our Local Levy we contribute as a Council and have a say where Local Levy should be used across the Trent RFCC area.

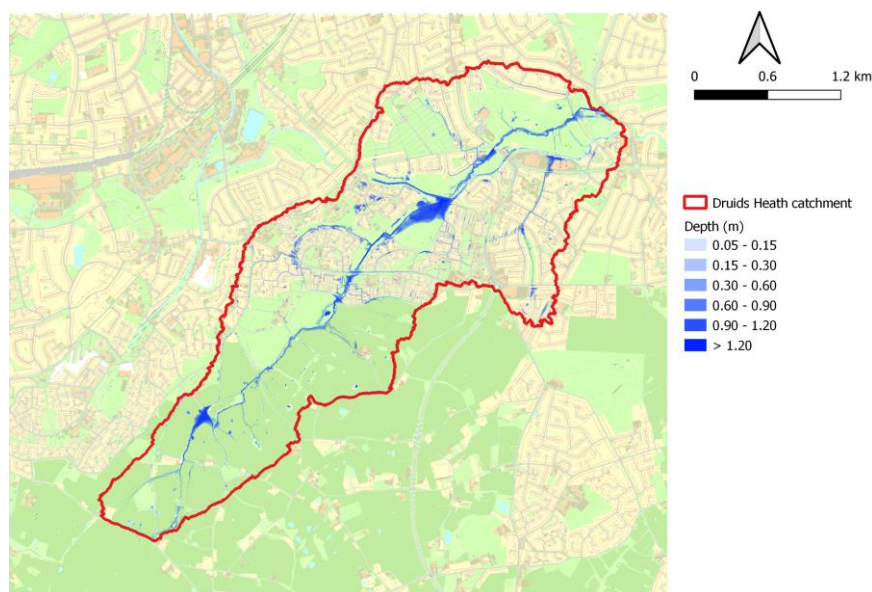
### DEFRA Boosting Action for Surface Water

DEFRA's national project called Boosting Action in Surface Water was a competitive funding stream working in conjunction with Lead Local Flood Authorities who put forward successful bids for Tranche 1 and Tranche 2 were evaluated and assured by DEFRA. Birmingham City Council had been successful in a bid for Druid's Heath and the outputs of this project will be used to develop a long-term strategy to manage the flood risk throughout the Druids Heath catchment. It is also anticipated that the improved mapping and modelling will support the wider internal regeneration aspirations of the area.



The Environment Agency national dataset – the 'Risk of Flooding from Surface Water' maps were seen not consistent with observed flooding and therefore had low confidence. Areas in Druids Heath are looking to be earmarked for regeneration and therefore there was a need for accurate mapping across the catchment.

The detailed model allowed for thorough analysis of causes of flooding and the comparison with the Environment Agency surface water maps in the context of assumptions were made in the models. The Depth Duration Frequency model was updated using both FEH13 versus FEH21 events with an analysis of uncertainties (i.e. precursor weather conditions, such as a wet or dry catchment. This model and associated mapping will form the basis for the optioneering of flood alleviation measures to be taken.



## 5.2 Funding Pressures

Historic reductions in budget due to savings requirements have made it increasingly difficult to fulfil the duties under the Flood and Water Management Act, carry out the statutory consultee role for planning and undertake maintenance of flood risk management assets and provide emergency response.

The Partnership Funding process has resulted in a range of funding sources being required to promote and deliver flood risk management schemes. For some schemes this includes an element of Flood Defence Grant in Aid together with an element of Local Levy but for many schemes this still leaves a shortfall which needs to be provided as third-party contributions. This approach puts significant pressure on limited resources to foster agreements and collaborations to facilitate schemes. In order for these schemes to progress local contributions or contributions from beneficiaries of the schemes need to be sought.

Aligning funding sources and facilitating the promotion of projects as well as seeking new funding opportunities continues to be a major priority for the Strategic Flood Risk Management Board and Flood Risk Management team going forward into 2022..

The Flood Risk Management team are a highly technical team and as from January 2021, are carrying one vacancy which has gone out to internal recruitment. The team can cope with the majority of demands in terms of projects, schemes and community engagement. However, the LLFA are struggling to provide timely responses to the sheer number of Developer and Planning enquiries expected of the team. We continue to liaise with the Planning Teams to see if they're able to provide financial support so we may gain additional resource.

Whilst we endeavour to be pre-emptive, there will always be an element of having to react to conditions and weather events as they develop. Although we can prepare for the challenge of climate change, as a Council, we will also need to develop an improved understanding of our reliance upon historic and aging infrastructure and work closely with partners, Members and communities, to upgrade systems where necessary and to find funding streams to enable us to become more resilient for the future. Please refer to Section 7.1.

## 6. Scrutiny: Previous Actions for Improvement

Subsequent to the flooding on 27th May 2018, a motion was passed at the Birmingham City Council meeting on 12th June 2018 calling for an inquiry into the floods of May 2018, to be carried out promptly. The motion called for the inquiry to include strong resident input and for the report to be

debated as a main agenda item at a future City Council meeting. The review was conducted by members of the Sustainability & Transport O&S Committee on 19th July 2018. A number of areas for improvement were noted in the subsequent investigation report. Progress against each area for improvement is outlined below.

## 6.1 Emergency Response Procedures

Area for Improvement: ***This flood was significant and although not classified as a Major Incident and no triggers to activate the Emergency Arrangements were met, the impact was significant for all those concerned. The lack of notification and alerting by strategic partners resulted in the City Council not being able to establish the level of coordinated support it would wish. As part of a wider review, the City Council is enhancing its response and emergency arrangements, lowering the triggers to alert the Resilience team and ensuring their involvement. It is also working with strategic partners to ensure that more robust notification of incidents occurs. These changes are needed to provide residents and businesses with a more coordinated support package both during and after such flood events which meet the changing needs of residents during the recovery cycle.***

Update: The Council's Emergency Plan has been reviewed and an interim update has been issued with the latest version was published in March 2019. All core council roles within the plan have been identified and training provided and activation of the duty officer (Council) remains key to activating any of our arrangements. The proactivity of the duty officer has been increased and we are actively promoting the notification of Birmingham City Council from partners (and following up any missed notifications) by partners. In heavy storms and thunderstorms, the FRM team monitored rainfall, undertook site visits and checked river levels and informed and liaised with Flood Action Groups at risk.

## 6.2 Model Constitution or Model Template for Flood Action Groups

Area for Improvement: ***During the evidence gathering there was an offer of support from the National Flood Forum to liaise with the City Council and to provide advice, mentoring and support to local residents wishing to set up a FLAG. It is hoped that Birmingham City Council will respond positively to this offer and that a model constitution or model template for FLAGS can be produced which can be made available as a resource to support local people to set up and run FLAGS in their area. However, as with any potential provision of support from the NFF to supplement the Birmingham City Council functions (either through establishing FLAGS or supporting citizens in recovery following an incident), funding will need to be identified and a clear understanding of what will be delivered for that funding will have to be agreed with the NFF and potentially other partner organisations.***

Update: The Birmingham City Council Resilience team have been supporting FLAGS as much as it can alongside their other duties, since the floods in May 2018. Birmingham City Council working in partnership with the Environment Agency intends to promote the existing FLAG template prepared by the National Flood Forum. Flood Risk Management and Resilience will be considering how the NFF can support Birmingham City Council in the future. With a fully staffed team from 2020, the FRM team have been able to and can further assist communities with setting up FLAGS and attending public virtual meetings. Groundwork West Midlands have been commissioned by the Environment Agency to support the FLAG in in Sparkhill by increasing personal resilience and to provide training to Flood Action Group members. Due to COVID-19, any public events were cancelled, however Groundwork look to continue this project with community events in 2022.

In terms of the National Flood Forum (NFF), the Flood Risk Management team and the NFF worked closely to submit a sizeable bid to the EA's Innovation Fund for a waste management, flood risk and environmental improvement drive across Sparkhill, Sparkbrook and Balsall Heath East and West. The team also submitted a bid to support SuDS streets in the Urban Quarter, around Digbeth. Although unsuccessful for both, the team will continue to seek funding opportunities

## 6.3 Traffic Management during flood events

Area for Improvement: ***The issue of Traffic Management during flood events needs to be followed up with both West Midlands Police and National Express West Midlands and other bus operators to make sure that a mechanism is put in place to ensure that traffic is re-routed and diverted away from flooded areas during a major incident.***

Update: Whilst it remains an operational consideration of all transport providers as to their routing, when activated, there are links and mechanisms in place to engage transport providers by Birmingham City Council as part of all our arrangements, the duty officer is able to contact transport providers and will endeavour to in a prioritised way (e.g. after dealing with risk to life and similar resident issues). This issue became apparent again in June - July 2021, where major motorways, railways and routes were inundated with surface water. It's difficult to manage traffic flows when areas are subject to flash flooding, however good communications help to warn and inform people of any diversions and of safer routes to take.

## 6.4 River Cole Valley Partnership

Area for Improvement: ***A River Cole Valley Partnership arrangement should be pursued by the Environment Agency along the lines of the arrangements already in existence for the rivers Rea and Tame, to facilitate the provision of flood defence and flood alleviation measures along the River Cole Valley.***

Update: The Environment Agency and Birmingham City Council have been working together since the floods of 2007 to develop flood alleviation measures along the River Cole valley. Over this time a number of partnerships have been developed including a joint study with Severn Trent Water and Solihull Metropolitan Borough Council. A number of options have been examined all of which failed to meet the central government cost benefit ratio for flood defence schemes.

The Environment Agency and Birmingham City Council have worked in partnership to undertake a debris removal along the River Cole since the flood event in May 2018. This work will reduce the risk of channel blockages and improve the conveyance of flows through the river.

In addition to this, the Environment Agency has been undertaking a programme of removing Japanese knotweed along the River Cole since 2018 as part of a 5-year eradication programme. This work will reduce the risk of damage to essential flood risk infrastructure.

The Environment Agency and Birmingham City Council have had further discussions since the 2018 flooding about developing a flood risk management scheme to offer protection to properties along the River Cole corridor including reviewing the risk status of the river and potential enmainment to identify funding opportunities.

The Environment Agency has suggested that a catchment wide approach to managing flood risk needs to be taken to develop a programme for the next central government funding cycle (2021 - 2026). It has been agreed to invite Solihull and Worcestershire, as neighbouring Lead Local Flood Authorities to form a catchment Partnership with Birmingham City Council and the Environment Agency to undertake an optioneering exercise to identify potential options for reducing flood risk.

In February 2020, Birmingham City Council set up a River Cole Working Group consisting of BCC Housing, Flood Risk Management and the Environment Agency to explore a catchment-based approach, suitable alleviation measures and funding opportunities to enable a suite of options to present to wider stakeholders and adjoining Councils in the upper reaches of the River Cole catchment. This information will be used to assess the number of properties at risk of flooding within the catchment and to assess funding opportunities through Grant in Aid, Local Levy and partnership contributions. We continue to press the Environment Agency for an alleviation scheme, given the known risk to communities along the Cole valley. In late 2021, the Birmingham City Council Flood Risk Management Team have submitted a bid to the Environment Agency for Property Flood Resilience measures for Sparkhill, subject to acceptance by the Environment Agency on the proviso

that the installation of property flood resilience measures would not compromise the delivery of any wider alleviation scheme.

## 7. Improvements

### 7.1 Flood Risk Management Team Pro-active Measures

The Team works with the Honorary Alderman who holds the Flooding Portfolio (on behalf of and in liaison with, the Cabinet Member) and continue to work closely with elected members and other teams to address flooding concerns and issues in their respective areas. We remain supportive, and endeavour to attract funding to help allay flooding and drainage and work with other teams to improve existing and inform proposed sites through Consenting and Planning. Birmingham is represented on the Trent Regional Flood and Coastal Committee (RFCC) and now have a regular representative on the Trent Financial Sub-Committee (FSC) to ensure that we maximise and realise funding opportunities as the one of the largest financial contributors of Local Levy in the Trent Regional Flood and Coastal Committee. It is important that our views are heard and that we work closely with other risk management authorities in partnership. The team also have a representative on the Chartered Institution of Water and Environmental Management (CIWEM) West Midlands Committee.

Developing HMOS (Hydraulic maintenance of Structures) to help inform prioritisation for a capital programme of important flood risk assets, mainly related to bridge and culvert structures. We have also been working with Highways Asset teams and Kier to identify areas which would benefit from highway drainage improvements. Alderman Kennedy is keen to establish a comprehensive capacity and condition review across all assets and locations for drainage and flood risks using best available data and analytics, scoping such an exercise is a challenge which needs careful planning with partners.

### 7.2 Flood Risk Management Audit

In early 2020, the Flood Risk Management team were audited for all aspects across the service area including, but not limited to:

- Co-ordination and monitoring arrangements established for flood management within the Directorate and across the Council as appropriate;
- Partnership working arrangements established with all relevant Risk Management Authorities and relevant external organisations;
- Arrangements for ensuring a Local Flood Risk Management Strategy for Birmingham has been established and is being kept up to date;
- Systems established to identify and prioritise any maintenance or improvement works required on the Council's watercourses.
- Mechanisms in place to ensure planning applications / any new development schemes are considering and identifying all appropriate measures to address potential flooding risks;
- Drainage Section's processes for identifying and obtaining appropriate sources of external funding to help support the Council in achieving its responsibilities as a Lead Local Flood Authority and a Land Drainage Authority.

The scope of the review was undertaken through a combination of discussions with key staff and examination of relevant documentation; to establish whether appropriate controls and processes have been established by the Council's FRM team to enable the Council to fulfil its roles and responsibilities as an LLFA and a Land Drainage Authority. The objective of the audit was to provide assurance that adequate and effective flood management arrangements have been established within the Council. No major concerns or issues were found by virtue of the audit and the team



received recommendations on how to further improve the service. The challenges that the team faced were found to be:

- To undertake further work with BCC Finance colleagues to ensure external funding can be approved in a timely manner.
- To ensure that the Council's LFRM Strategy is reviewed and updated – which is to follow after the publication / agreement of the FRMP measures.
- To review and update the terms of reference for both the Strategic Flood Risk Management Board and the Birmingham Water Group are reviewed and updated, which has been completed.

We hope to use the findings of the audit to develop agreed processes with our Finance, Procurement and Legal colleagues to help streamline the approval of grants and to update the Flood Risk Management Strategy reflecting new Local Government Association guidance, the FRMPs and Environment Agency National Strategy.

## 7.3 Consultants

Due to a current Principal Engineer vacancy in the team, the Flood Risk Management team are looking to secure consultant support to assist with fulfilling the Planning LLFA consultee role. Although the team are currently fulfilling all statutory roles - the demands on our service are such that we require additional support.

The team are still highly experienced in writing business cases, developing local engineering measures / options and liaising with communities and landowners. The team will continue to upskill where required and attract funds to enable the team to develop schemes whilst drawing on Consultant support for hydraulic modelling and other time / resource-intensive projects.

## Appendix A - Flooded Sites Action Tracker