

2019 FLOODING - FINAL INVESTIGATION REPORT**Report of the Deputy Chief Executive****1. INTRODUCTION AND PURPOSE OF REPORT**

- 1.1 On the last week of July and first week of August 2019, extreme rainfall events hit parts of north-west England and the south Pennines, with flooding observed across Greater Manchester and Cheshire. The main event day was 31st July 2019.
- 1.2 477 homes including cellars, garages, and outbuildings in the borough were flooded during this period.
- 1.3 The rainfall event significantly affected the north parts of Cheshire East and Stockport, with the borough receiving approximately a month's rainfall in a few days. Leading up to this Stockport had experienced many weeks of warm dry weather and as a result ground conditions were dry and water levels within the local watercourses were very low. The weekend's rain saturated ground and surcharged drainage networks. The volume and intensity of rainfall overloaded the local drainage system, causing surface water flooding throughout large parts of the borough.
- 1.4 The scale of flooding affected homes and areas within 1 in 1000 years prediction zones.
- 1.5 Lyme Park and Poynton, as well as villages higher in the Mersey Catchment in Cheshire, were flooded and this caused drainage networks to overflow into the Poynton Brook and Norbury Brook which flows to the Ladybrook and Micker Brook. Poise Brook and Chorlton Brook were also affected.
- 1.6 This culminated in damage and potential collapse of the spillway at Toddbrook Reservoir in Whaley Bridge on the River Goyt that led to homes being evacuated downstream.
- 1.7 There were large swathes of the borough where the drainage system did not cope with the level of rainfall.
- 1.8 Members will be aware that the flooding incident had an extremely negative impact on many people's lives. Many homes and businesses were subject to major damage, with many people forced out of their homes and businesses shut for several months whilst repairs were undertaken, disrupting their lives and economic wellbeing and causing enormous emotional distress. Those affected are understandably also concerned about flooding reoccurring and the potential longer-term impact on the value of their property and the ability to obtain insurance. Many more people are impacted by the threat of flooding and concern over whether their property will be affected by the next heavy rain episode.

- 1.9 This report presents the various aspects of the flood events in July 2019 and specifically incorporates the Final Independent Section 19 Investigation Report in accordance with the Flood & Water Management Act (FWMA) 2010 on the investigation into the flooding events undertaken independently by Mott MacDonald Consulting Engineers.
- 1.10 The report makes a series of recommendations of actions that the council and other Flood Risk Management Authorities (FRMA) could take to reduce the likelihood of flooding events and mitigate the impact of any flooding. It does not recommend solutions that guarantee flooding will not occur in the future. Indeed, the impact of climate change means that the weather circumstances that led up to the flooding are likely to be repeated. Unfortunately, this will lead to flooding within the borough.
- 1.11 The S19 draft report was presented at the September Area Committees (which continue to be held remotely) and at virtual meetings with residents from the affected communities where a presentation on the S19 draft report was given with an opportunity to ask questions or comment on the report. There was also an opportunity to register for individual discussions with officers after the presentations.
- 1.12 The extent of the flooding within the borough was across a wide geographic area. The report does not provide detailed specific analysis and recommendations for every home that was flooded or threatened by flooding, but instead provides analysis of what happened across the borough and the most significant of the flooding. The report makes a series of recommendations to provide support for all homes within the borough as well as more detailed approaches in the areas that suffered the greatest.
- 1.13 The report is concerned with those areas that suffered from flooding in 2019 but the council's response and overall approach reflects a boroughwide approach and considers locations that are vulnerable to flooding but were not affected so severely by the rain last year.

2. INDEPENDENT SECTION 19 FLOOD INVESTIGATION REPORT FOR JULY 2019 EVENT

- 2.1 The aim of the independent investigation is to provide a factual record of the flooding to meet the requirements of Section 19 of the FWMA.
- 2.2 The independent report completed by Mott MacDonald on behalf of the Council on the investigation into the flooding in Stockport in July 2019 is appended in Appendix A and provides an overview of the event and the affected communities and properties.
- 2.3 The investigation was completed in accordance with the requirements of the:
- 2.1.1 AGMA Policy for Investigating Flood Incidents;
 - 2.1.2 Flood and Water Management Act 2010;

2.1.3 Stockport Local Flood Risk Management Strategy.

2.4 The investigation includes the following elements:

- 2.1.1 Consultation with all relevant RMA (and relevant stakeholders);
- 2.1.2 Public Consultation using Local Drop-in Sessions;
- 2.1.3 Properties and infrastructure affected;
- 2.1.4 Possible flood sources and mechanisms;
- 2.1.5 RMA response during and post event to date;
- 2.1.6 Existing and proposed flood risk management activities;
- 2.1.7 High-level hydrological and hydraulic review.

2.5 It produces a formal investigation report to document:

- 2.1.1 Background information on the location/s affected;
- 2.1.2 A summary of the flood event(s);
- 2.1.3 Consideration of the likely cause(s);
- 2.1.4 An indication of the roles and responsibilities of each RMA (and stakeholders) and action taken or proposed;
- 2.1.5 There is a specific focus on the flooding affecting the A555 around Woodford and Hazel Grove;
- 2.1.6 Conclusions and recommendations arising from the investigation.

2.6 The report also contains the details provided by the various Risk Management Authorities which are to be consulted and it is acknowledged that further information on the flooding incidents may be available and members at the Economy and Regeneration Scrutiny Committee and the Local Area Committees will be asked to comment on this report as will United Utilities (UU) and the Environment Agency (EA) to inform the final report that will ultimately be reviewed and approved by the Cabinet.

3. DETAILS OF LOCAL CONDITIONS

3.1 The summer of 2019 in the UK was exceptionally hot and the Meteorological Office reports that Friday 26th July 2019 was the hottest ever July day in UK recorded history at 38.7 C in Cambridge. This is similar to temperatures recorded in the summer of 1976, 2003 and 2015.

3.2 Meteorologists advise that although heatwaves are extreme weather events, research shows that with climate change they are likely to become more frequent. Met Office projections show that heatwaves with the intensity of last summer's event could occur on average as regularly as every other year by the middle of the century.

3.3 After peak heat temperatures, returning closer to normal weather becomes less settled with an increased chance of rain.

3.4 On Sunday 28th July 2019, Stockport received high levels of rainfall and surface water flooding was reported across the borough. Wednesday 31st July was exceptional in that after 4 days of rainfall across the borough this was coupled

with high intensity rainfall centring around Poynton and Prestbury higher in the hills of the Poise Brook and Ladybrook catchments.

- 3.5 It is estimated that as a comparison the 1 day's rainfall on the 31st July was twice the amount received in both the recent previous flood events in June and September 2016.
- 3.6 The amounts and intensity of the rainfall would have exceeded the capacity of all the drainage networks and coupled to that, the sodden ground meant drainage would flow quickly to the watercourses in the natural catchments and both surface water run-off and fluvial flows would have increased exceptionally into the rivers.
- 3.7 On the 31st July rain stopped around 21:00 and specific properties downstream in Cheadle Hulme and Cheadle were flooded about 1.5 hours later from the river.
- 3.8 Although registered for flood warnings the Council did not receive flood warning or flood alerts that week from the Environment Agency.

4. INDEPENDENT REPORT – INITIAL FINDINGS

- 4.1 According to flood records provided by the Council, the Environment Agency and United Utilities, there were 776 flood reports. This is over a hundred more than the September 2016 flood event. For this flood event we recorded the different types of flooding and recorded a total of 329 cases of internal flooding to buildings. This was more than the number of properties flooded across the three flood events in June 2016 combined (295).
- 4.2 Properties affected by flooding were recorded across all areas of Stockport on the 28th to 31st July 2019. Most council ward areas were affected by this event with more than five properties flooded, with the majority across the heavily urbanised west and south areas of the borough. The Council arranged drop-in sessions according to the significance and highest number of flood reports and these were held in; Asdwood, Bramhall Green, Cheadle, Hazel Grove and Romiley.
- 4.3 There were many flooded areas recorded as surface water flooding and this could be attributed to a combination of the capacity of the drainage systems and the drainage flows to the nearby rivers. Ultimately, it is the capacity of the river flows that impact on the flood risk and flooding.
- 4.4 The major examples of this are in Cheadle around Councillor Lane which is on the culverted Main River, Chorlton Brook. Adswood and Queens Road Cheadle Hulme is also developed on culverted tributaries of Chorlton Brook. The area around Highfield Road in Cheadle Hulme is on a culverted watercourse, Turves Brook. Romiley centre is particularly sensitive as the area is drained via a culverted watercourse to the River Goyt.
- 4.5 Key areas in this event were more focused around fluvial flooding (open rivers) including Queens Road and the Demmings mainly Bramhall Green, Bramhall Moor, Cheadle, Cheadle Hulme, Offerton Green and Torkington. These are

known hotspots and other areas of flooding were considered as having capacity issues around sewers and drainage that will need further investigation with the respective RMAs.

- 4.6 The A555 was flooded from the previous Sunday and a road closure was in place.
- 4.7 In terms of response and recovery, the report acknowledges that the council, the Environment Agency and United Utilities as RMAs along with other authorities responded to the July flood event, providing immediate assistance to those flooded and carrying out post event investigations, repairs and support.
- 4.8 In terms of weather warnings, there was a severe warning throughout that period and there is a review of the intensity of rainfall that was not predicted.
- 4.9 In terms of flood warnings, there were flood alerts given for the whole area but no warnings over this period in the areas that were affected. The warnings issued were for the Mersey and Goyt in Stockport.
- 4.10 In terms of post-event responses, there many operations undertaken as part of a multi-agency response.
- 4.11 Following the flood event, United Utilities (UU) investigated and recorded each flood incident and where possible determined the source and cause of flooding and blockages were also cleared if found. In some cases, United Utilities recorded the incident to be associated with non-UU assets, such as private drains (which are the responsibility of the homeowner) and surface water and groundwater sources. UU then shared these issues with the council as Lead Local Flood Authority (LLFA). UU also assisted customers in clean-up operations and it was notable that UU provided this in areas that were not affected by sewer flooding, but river flooding.
- 4.12 The Environment Agency carried out routine inspections along rivers and where appropriate removed debris. This was assisted by the council especially at council owned river/road bridges.
- 4.13 The council assisted with welfare visits and arranged skips to assist residents whose homes had been flooded. Inspections and surveys were arranged to assess the conditions of the flooded culverted watercourses and highway drainage. The Council advised owners on remedial actions.
- 4.14 The council managed a data gathering exercise through door to door approaches to those affected by flooding to assist with the investigation and recording of the issues.
- 4.15 The council provided financial assistance to residents of those properties impacted by flooding in the form of grant funding and council tax freezes.

5. AREA COMMITTEE COMMENTS

- 5.1 Members of all the Area Committees were asked to comment on the draft S19 Investigation Report and key feedback is detailed below.

Stepping Hill Area Committee – 29th September 2020

- Members raised concerns that some of the recommendations following previous flooding in 2016 had not yet been addressed, particularly regarding driving through flooded water and drainage.
- Concern was expressed that the report was inconclusive and that some roads were missing that had been affected by the flooding. It was commented that the independent consultant had only focused on particular hotspots but that the Council were aware of further areas that had been affected and were consulting with local residents to address problems.
- Members asked that the report be updated to include measures that had been taken since the flooding such as the installation of a new pump system on the A555 so that residents would be aware of this. It was commented that there would be a separate report at a later date covering what had changed since the flooding.
- Clarification was sought about what measures were being taken in regard to bodies of water, such as Toddbrook Reservoir, that were outside the local area but still posed a flood risk. It was commented that the failure of the dam wall at the reservoir had resulted in a separate investigation and subsequent recommendations and that the Council was involved in the creation of an emergency flood plan for any potentially affected areas. It was noted that central Government had also developed specific flood action plans for these kinds of bodies of water.

Cheadle Area Committee – 29th September 2020

- Concern was expressed that the part of the A555 which had an exit at Handforth/Heald Green, near to the Lakeland store, appeared to have been omitted from the report. Although this section of the A555 was in the area of Cheshire East, a lot of the residents affected by the flooding lived in Heald Green.
- A Member enquired what recourse the Council had if the Environment Agency had not carried out recommendations from a previous flooding investigation report in 2016.
- There were many flooded areas recorded as surface water flooding and this could be attributed to a combination of the capacity of the drainage systems and the drainage flows to the nearby rivers.
- As some of the flooding in Stockport was caused water flowing from Lyme Park and villages higher in the Mersey Catchment in Cheshire flooding, a Member enquired whether the Council was liaising with Cheshire East Council to discuss ways the problems could be alleviated in the future.
- The Council needed to review its flood plans as flooding was now more prevalent than at the time the plans were prepared

Marple Area Committee – 30th September 2020

- Concern was also expressed regarding some aspects of the report that had already appeared in the 2016 report so had not yet been addressed. In response, it was noted that the problems were being addressed and data has

been collated to respond to previous reports and this report would be finalised by December 2020 with more details included with a response.

- It was noted that no flood alerts were received from the Environmental Agency despite the Goyt being in Stockport. In response, it was noted that the trigger was the Mersey and because of the pattern of the rivers it was too late to issue any warnings, but discussions were being held about it with the Environmental Agency.
- It was suggested that the report needed to be made accessible to all with less legal jargons and references.

Heatons & Reddish Area Committee – 28th September 2020

- As a Section 19 flooding investigation report, the report had a narrow remit which didn't cover all the flooding activity it needed to cover.
- In most cases the drains became blocked as a result of the flooding. However, the gully cleansing regime had been refined as a result of the flooding in 2019.
- The Council did have monies for replacement measures, but a lot of the recommendations were aimed at United Utilities and the Environment Agency

Central Stockport Area Committee – 1st October 2020

- It was doubtful whether there would be enough funding for all of the recommendations to be carried out, many of which were the responsibility of United Utilities or the Environment Agency.

Bramhall & Cheadle Hulme South – 1st October 2020

- It was commented that the report identified that the A555 attenuation tanks had been badly designed and it was queried where the responsibility for the design of the tanks lay. In response it was stated that the tanks on the legacy part of the road had been installed as part of the original build approximately 20 years ago for which Cheshire County Council had been the lead authority. However, it was clarified that the failure of the attenuation ponds due to design and construction defects had been a more significant factor.
- There were issues in the construction and design of the A555 that had been rectified by the contractor.
- Concern was expressed in relation to the time that had been taken to replace the failed pumps and controls at the original A555 pumping station at Hall Moss Lane bridge. In response it was stated that the replacement pumps had been ordered after the flooding event in March 2019 that had exposed the failure of the existing pumps, however due to their nature they were designed and built to order. The replacement pumps had been scheduled to be installed the week after the July flooding event.
- The flood warning system had proved ineffective for much of the Stockport area. It was stated that the warning system was based on water levels in the River Mersey, however the sudden and intense nature of the rainfall was such that the Ladybrook filled quicker and reacted quicker to this, and discussions would take place with the Environment Agency in relation to the appropriateness of the continued use of water levels in the River Mersey as the trigger for warnings across the borough.

- There was evidence that when residents complained about incidents of flooding, they had been passed around various agencies and it was suggested that there needed to be a more coordinated approach to this.
- It was queried how the council was going to review its response to road closures during flood events which had been highlighted as an action from a June 2016 report. In response it was stated that due to the wide area that was covered, it was difficult to manage this across the borough within the resource constraints of the council. It was stated that a trial was taking place in the Heaton area with regard to the automation of this process.
- Complex land ownership and riparian responsibilities meant that it was not always possible or practical to check blockages and maintain structures.
- The report currently didn't include any timescales attached to the recommendations. However, when the report was submitted to scrutiny committees and Cabinet later in the year, it would be accompanied by an officer report that would outline the council's response.
- There needed to be accountability for the design and build failures identified with the A555 road. It was commented that the identified defects have been rectified at the contractor's expense.
- The report identified that residents should give consideration to implementing flood mitigation measures, however a number of residents around the Bramhall Green roundabout had done so but were still subject to flooding. It was further noted that where insurance companies paid for remediation, this would not cover the additional expense of implementing measures to reduce the likelihood of it happening again which was a failing of the existing system.
- There were a number of bridges in the area that did not have sufficient capacity to allow excess water to flow properly, causing water to back up and then flood. However, it was commented that there was insufficient funding available to undertake the necessary works to rebuild bridges that would be necessary to fully resolve this issue.
- There had been a flooding issue on Highfield Road, Cheadle Hulme caused by culverts that were in private ownership. The Council had previously tried to engage with residents to ascertain and identify riparian ownership of the culvert, however nine months on from the initial consultation. In response, it was stated that there were a large number of culverts across the borough where it was not fully understood where they ran.

Werneth Area Committee – 28th September 2020

- It was noted that work was already underway in Layfield Avenue to alter the 'curb', but it was suggested that the local residents be engaged and informed of the process involved to avoid any complaints relating to the work being undertaken.
- Members welcomed the report and the references to the blocked gullies in Romiley as a reason for some of the flooding as it would mean that there would now be scheduled cleaning to avoid any future flooding.
- It was noted that not all locations were referenced in the report.

COMMUNITY COMMENTS

- 5.2 Virtual meetings were completed with people and groups from the affected communities who were asked to comment on the draft S19 Investigation Report. Officers provided a presentation at the meeting (see appendix A) and answered questions. A number of residents requested individual meetings to discuss their particular issues. These online meetings have been held and, in some cases, follow up site visits have taken place.

RECOMMENDATIONS FROM THE INDEPENDENT REPORT

- 5.3 The purpose of this report is to document the flood which affected communities of Stockport in July 2019 and report on the subsequent investigations completed so that the respective RMAs can consider and prioritise appropriate actions. In this way, communities can be clearer on what has happened since the floods, and what each RMA is planning to do to reduce or mitigate the impacts of future flooding within the borough.
- 5.4 The report contains general actions, which apply across the whole borough of Stockport and where appropriate ongoing or planned actions to be taken in specific locations. Due to the widespread nature of the flooding, it is not possible to identify detailed actions for each community which was affected.
- 5.5 At this stage, the actions listed are recommendations only and their delivery is likely to depend on the RMAs securing funding and on other commitments and priorities. Any major works requiring capital investment will be considered through the Defra funding programme. The RMAs will continue to work together to engage with the communities affected and to identify all potential options for each location to holistically reduce flood risk across Stockport.
- 5.6 Meanwhile, the communities need to be prepared for similar extreme weather events in the future, such as heavy and intense downpours after a quite dry period. These kinds of event are becoming more common due to climate change, and their impacts can be mitigated to some extent by paying attention to the weather forecast and flood warnings, and regular maintenance of drains and watercourses.
- 5.7 Each of the flood risk management agencies will need to consider their recommendations and council officers will proactively engage with them to progress these discussions.

STOCKPORT COUNCIL'S RESPONSE TO THE RECOMMENDATIONS

- 5.8 The report makes a number of recommendations to the Council in its various roles including civil contingency, highway drainage asset management and Lead Local Flood Authority both borough wide and in local areas. The following sections identify the actions undertaken to date and the measures to be taken in response to the recommendations. The recommendations will require significant resource and time to be dedicated to addressing them.
- 5.9 An annual Flood Resilience Plan report will be brought to the Communities and Housing Scrutiny Committee detailing measures that are to be taken and progress against the plan. This will include the Highways Drainage Asset management plan and the Emergency Flood Plan detailing how the council prepares for flooding forecasts and responds to emergencies.

- 5.10 In high level terms, the recommended measures fall into the following categories:
- To improve drainage across the borough
 - To support households and businesses to be more resilient
 - To improve communications and advice ahead of forecast floods and in the immediate aftermath, including road closures
 - To improve the proactive and preventative maintenance of critical assets, especially ahead of forecast heavy rain
 - To improve the water capture by landowners within the catchment area
 - To identify engineering measures that may mitigate the impact of heavy rain
- 5.11 The increased emphasis on capturing water where it lands rather than engineering solutions downstream is particularly welcome. Unless water can be captured then engineering solutions pass the water downstream and increase measures required elsewhere. This recommendation aligns with the council's recently published response to the climate emergency – Stockport CAN (Climate Action Now), which has set out a range of greenspace and water capture measures designed to absorb more water where it falls.
- 5.12 The implementation of engineering measures at all the locations identified will not be a short-term programme and will continue to be within existing available resources. It should be noted that some recommended actions from the 2016 S19 flood report have not been undertaken. The EA prioritise schemes where they can achieve the highest impact per pound spent. The council will continue to work with FMAs to seek funding for investment within the borough.
- 5.13 The tables below highlight the measures being taken by the council and FMAs against the recommendation of the report but the key elements are:
- 5.14 Officers have developed a highways asset management approach for highways drainage and have put in place measures that prioritise those drains or assets that are prone to flooding and are low lying. We are further reviewing this area of work in light of the recommendations and will bring an update to Communities and Housing Scrutiny in March 21.
- 5.15 The council and Greater Manchester civil contingency officers are reviewing and updating the Emergency Flood Plan which provides guidance on action to be taken before, during and after a flooding event including preventative emergency maintenance of drainage assets, assessment of the need for road closures and public information and communication during the incident.
- 5.16 The Council's website has been updated to provide easier access to information and support and also now has an updated form and information for the public to report any flooding. This report will also allow data to be collected and used to inform future investigation programmes.
- 5.17 Officers have put in place measures to and will continue to identify culverts, structures and other assets that may have an impact on a flooding event and will work with their owners to develop appropriate maintenance regimes.

- 5.18 Officers are working with representatives from United Utilities and the Environment Agency to develop the Flood Resilience Plan and will bring this to Communities and Housing Scrutiny Committee in March 2021. The plan will set out the measures to be taken to develop joint local work programmes including Offerton Green/ Poise Brook, Ladybrook/ Mickerbrook, Romiley and Hazel Grove, subject to funding.
- 5.19 Officers are working with GM colleagues to develop a funding bid for resources from the North West Regional Flood and Coastal Committee to develop an innovative approach to encourage and support landowners to capture more water at source with greater tree planting, the use of leaky dams and the creation of meadows.
- 5.20 In addition, officers work closely with planning colleagues commenting on planning applications with regard to SUDS- sustainable urban drainage strategies and flood risk and will support the development of new policies in the emerging local plan. The council as part of its offer for residents to request dropped crossing for new off-road parking insists that permeable surfaces are provided.
- 5.21 A number of measures have been undertaken since last year's flooding to improve drainage of the A555. Officers are continuing to work with contractor on the A555 to resolve remaining identified drainage issues with scheme. The existing pumping station on the A555 has been refurbished with tanks cleaned out, new pumps fitted, and the electrical installation updated. Automatic warning systems for both the new and existing pumping stations are now operational.

The following table shows the Stockport wide recommendations and the council's response:

5.22 July 2019 Flood Event; Recommended actions – Stockport wide

RMA	Recommended Action		Response/Proposed Action
The Councils Highways Department	1.1	Maintain efficient operation of highway drains	Council has introduced a more intelligent approach to drainage maintenance, gathering data to identify drains prone to blockages and targeting cleansing regime for drains that are low lying and prone to flooding in the event of heavy rain. We will review these findings further and update our approach to drainage with a new highway drainage asset management plan as part of the Flood Resilience Plan by March 2021.
	1.2	Ensure necessary maintenance is carried out to local highway drains following flood events	
	1.3	Consider ways to raise awareness of damage caused by driving through floods	Officers are working to develop automatic measures at repeat locations, which enable sensors to identify when roads need to be closed. An improved responsiveness is in place to manage the impact of flooding at repeated locations when heavy rain is expected, both in terms of localised road signs and social media updates. However, there will always be limited capacity out of hours which will limit the speed and number of roads that can be closed with adequate signage in the event of the type of flooding experienced in the summer of 2019. This work will be strengthened further by the implementation of the Emergency Flood Plan which is being developed with civil contingency colleagues at a GM level and is expected to provide a more co-ordinated response to emergencies. The Emergency Flood Plan work will be shared with Communities and Housing as part of the Flood Resilience Plan.
	1.4	Review criteria for 'flood event' road closures to protect road users AND roadside property	
	1.5	Develop 'risk based' gulley maintenance system and implement alongside routine gulley clearance programme. Monitor effectiveness of gulley clearance i.e. contractor performance.	See 1.1
	2.1	Consider supporting residents to improve their property resilience	The council has increased the advice available to residents through improvement of the website, and increased the

The Council as LLFA			prominence of links to the FloodHub website, where residents can access detailed advice on increasing their resilience. We have also introduced a new reporting process on the website in the event of flooding that will reinforce these links to support agencies.
	2.2	Ensure property owners are aware of their responsibilities as riparian owners of watercourses (whether open or culverted watercourses)	The council will continue to work with property owners to promote awareness of responsibilities as riparian owners. Officers have developed a detailed information booklet and targeted those watercourses where flooding has taken place. The council will update its website with the information about riparian ownership responsibilities by March 2021.
	2.3	Investigate and support residents on issues related to private drains	The council will continue to provide advice and support to residents in relation to private drains.
	2.4	The council as LLFA to develop its QGIS spatial database to provide a concise register of structures or features which are likely to have a significant effect on flood risk (as required by the FWMA cl. 21(1)). Register to include locations of hydraulic constraint and locations at risk of blockage including all assets including those under the influence EA, UU and private owners	The council will continue to develop its spatial database and include locations of hydraulic constraint and locations at risk of blockage. We use this database to undertake periodic inspections and proactive inspections of critical concern ahead of forecast periods of rain.
	2.5	Utilise the above to drive a periodic inspection programme to identify need for maintenance	The council will continue to undertake periodic inspection of critical infrastructure.
	2.6	Develop with other RMA's an action plan for proactive checking of key locations in response to severe weather (rainfall) forecasts	See 2.4
	2.7	Develop with the RMA partners a prioritised programme of investigations and interventions and publish interventions	The council is working closely with RMAs to develop our programme of investigations and interventions and will produce an updated programme of activity by March 21. This programme will detail funded activity as well as proposed schemes that will require

	2.8	Develop a process for public reporting of progress on actions of the LLFA	future funding. It is proposed that an annual report on progress against this plan is brought to the Communities and Housing Scrutiny Committee.
	2.9	Consider development of policy for the control of 'paving over' of gardens and the minimum requirements for control of surface water drainage	The council welcomes these recommendations. It is important that there is greater focus on water retention, both higher up in the catchment area and at all levels within the borough. Landowners and individual property owners have important roles to play in retaining water on their land rather than allowing it to overwhelm watercourses.
	2.10	Engage with upstream RMA's, landowners and other agencies to identify potential for strategic policies to control upstream runoff e.g. Cheshire East Council, United Utilities (reservoir storage control) and National Trust (Lyme Park land management)	Council policy already requires new driveways to be permeable and consideration will be given to broadening this as part of the Local Plan. Officers are working with GM colleagues to develop a funding bid for resources from the North West Regional Flood and Coastal Committee to develop water retention in catchment area land. In addition, the council has recently published its response to the climate change Stockport CAN (Climate Action Now), which sets out an ambition to plant more woodlands and orchards across the borough as well as meadows. Each of these measures will assist in capturing rain at source.
	2.11	Implement and test updated 'flood' reporting system	The council has introduced a flood reporting system. This system will also allow data to be gathered and can be used to inform future investigations and investment.
	2.12	Identify key riparian owned assets and encourage riparian owners to form local watercourse 'teams' to share knowledge and co-ordinate with the LLFA.	See 2.2
The Council as LLFA and the Environment Agency	3.1	Continue to manage flood risk from new development. Seek flood risk benefits from new development where possible. Ensure provisions are made for exceedance flows, overland flow and runoff from remote catchments	The council is working closely with RMAs to develop our programme of investigations and interventions and will produce an updated programme of activity by March 21. This programme will detail funded activity as well as proposed schemes that will require future funding. It is proposed that an annual report on progress against this plan is brought to the Communities and Housing

		are considered. Consider the implications of downstream surcharge on local drainage capacity.	Scrutiny Committee.
United Utilities	4.1	Maintain efficient operation of separate and combined sewers	
	4.2	Ensure effective communication with the Council regarding flooding events/potential flood users	
	4.3	Ensure all flood reports are captured and not 'deflected' to LLFA. Develop procedure to share reports with the LLFA where the source or responsibility are uncertain	
Environment Agency	5.1	Review SMBC borough-wide flood management	
	5.2	Ensure Main River watercourses are suitably maintained	
	5.3	Review trigger levels for Flood Alerts in this area	
	5.4	Ensure effective communication with the Council regarding flooding events/potential flood issues	
Property Owners	6.1	Consider installation of Property Level Protection (e.g. door and window barriers, air brick stoppers, flood valves or non-return valves on foul and surface water outlets – particularly from basements)	The council is supporting property owners and residents to achieve these recommendations. It has improved the availability of information to property owners and residents, including measures that they can take to protect their home and assets. The website information also includes key things to be considered as part of an action plan.
	6.2	Check weather forecast and flood warnings regularly	
	6.3	Develop an individual 'action plan' for a flood event. Reference EA publications	
Riparian	7.1	Understand responsibilities as riparian	The council is supporting this recommendation and has produced a

Owners		owner	detailed information booklet that it has shared at some locations across the borough. We will make the information available on the website by March 21.
	7.2	Carry out periodic inspection programme to identify need for maintenance	
	7.3	Develop an action plan for proactive checking of key locations in response to severe weather (rainfall) forecasts	
Residents/ General Public	8.1	Act responsibly and with consideration when driving on flooded roads; restrict speed and thereby reduce bow-wave affecting flooded property.	The council will support this through the implementation of a revised Emergency Flood Plan, which will include targeted social media messages when flooding is forecast.
	8.2	Limit surface water discharge from property; follow guidance for run-off control	

5.23 The local specific recommendations and the council's response are included in the following table:

July 2019 Recommended actions – Local specific

RMA	Recommended Action		Location/Community	Response/Proposed Action
The Council Highways Department	9.1	Correct construction defects, clear all drainage networks and in particular ensure catchment B attenuation pond is functioning correctly.	A555	A series of measures have been undertaken since the flooding, including refurbishing the existing pumping station and the installation of automatic warning systems. We are continuing to investigate whether further measures would improve the road's resilience.
	9.2	Review practicality of enlargement of A555 attenuation storage, in all catchments, to achieve design intent of 100 year capacity. To achieve resilient highway infrastructure and to protect downstream communities. Review design storm conditions (duration and appropriate runoff coefficients) and attenuation drain down times. Action	A555	

		includes development of drainage models for each catchment, including all of catchment E (original construction + 2018 Construction) taking input from Action 9.4.		
	9.3	Consider A555 resilience to flood exceedance events and prepare appropriate action plans. Understand inundation depths and potential impacts upon power supplies, pumping equipment and controls.	A555	
	9.4	Compile record drawings and data sheets for catchment E drainage network, storage tanks and as-existing pumping installation to feed into Action 9.2	A555	
The Council as LLFA	10.1	Develop programme and lead RMA actions 9.1 and 12.1 to 12.4 in respect of Lady Brook/Micker Brook	Bramhall Green, Sandringham Road, Queens Road and The Demmings and Wilmslow Road/Broadway Avenue.	The council is working with the RMAs to review the investment programme for the borough. The updated fluvial flood mapping of Lady Brook and Micker Brook will enable potential measures to be identified and appraised. These can then be used as evidence to support funding bids. An updated investment programme will be brought to the council in the summer and an annual report brought to Communities and Housing Scrutiny on progress of investment and the actions within this report.
	10.2	Develop programme and lead RMA actions 12.5-12.6 in respect of Poise Brook through Offerton Green.	Offerton Green, Minsmere Walks, Shearwater Road etc	The council is working with the RMAs to review the investment programme for the borough. An updated investment

	10.3	Promote possible short-term flood alleviation measures on Bean Leach Road to prevent spillage from the road to housing and to promote spillage into the watercourse on the downstream side of the road. Coordinate actions with EA and Highways Department	As above	programme will be brought to the council by March 21 and an annual report brought to Communities and Housing Scrutiny on progress of investment and the actions within this report. This work can then be used as evidence to support funding bids.
	10.4	Develop with UU (Action 11.1) an area-wide understanding of drainage networks draining Guywood Lane, Central Avenue, and Sandy Lane to Compstall Road and discharge route. Identify capacity restrictions and review interventions including upstream source control measures, local storage, creation of exceedance flow paths and enhance drainage of ponding areas.	Romiley, Guywood Lane, Central Avenue, Sandy Lane	
United Utilities	11.1	Investigate full extents of drainage networks feeding into Guywood Lane, Central Avenue, Sandy Lane and discharge network and review capacity issues. Develop findings with LLFA and review opportunities to enhance capacity; including options to drain ponded water at Leyfield Avenue.	Romiley, Guywood Lane, Central Avenue, Sandy Lane	The council will support UU to investigate these locations.
Environment Agency	12.1	Update fluvial flood mapping of the Lady Brook/Micker Brook catchment to validate 2019 flood extents at Bramhall Green, Sandringham Road, Queens Road and the Demmings and Wilmslow Road/Broadway Avenue. Flood hydrology should review influence of rain on saturated ground.	Bramhall Green, Sandringham Road, Queens Road and The Demmings and Wilmslow Road/Broadway Avenue.	The council will support the EA to review these recommendations.

	12.2	In support of Action 12.1 re-survey critical channel sections e.g. at bridges, culverts and other pinch points; identify service crossings within the flood flow section. Compare sections with historic surveys to highlight change e.g. bed debris, new/unrecorded services, siltation, encroachment by trees.	As above	
	12.3.	Using output of Action 12.1; develop Flood Alert systems for Lady Brook/Micker Brook based on Poynton Brook flow gauge.	As above	
	12.4	Using output of Action 12.1; review full range of options to deliver flood risk management scheme(s) on Lady Brook/Micker Brook (including upstream runoff control, upstream attenuation, removal of bridge constraints, linear defences	As above	
	12.5	Review fluvial flood mapping of Poise Brook through Offerton Green against the July 2019 flood mechanism (that indicated bulk flood water along Bean Leach Road bypasses the mapped 3 rd party flood defence bund.)	Offerton Green; Minsmere Walks, Shearwater Road etc	
	12.6	Using output of Action 12.5; review options to deliver flood risk management scheme(s) on Poise Brook through Offerton Green.	As above	
	12.7	Review impact of revised Flood Alert trigger levels on Poise Brook.	Poise Brook	

6. CONCLUSIONS AND RECOMMENDATIONS

- 6.1 Members are requested to comment on the Final Mott MacDonald Section 19 Flood Investigation Report for the July 2019 floods in Appendix A and recommend that the Cabinet approves the final report.
- 6.2 That members approve the proposed response and request an annual Flood Resilience Plan is brought to Communities and Housing Scrutiny each year

7. LEGAL

- 7.1 The section 19 report will be placed on the website once it has been approved.

8. EQUALITIES

- 8.1 There are no specific implications in this report.

9. ENVIRONMENT

- 9.1 The report identifies a number of recommendations in relation to surface water and fluvial flooding.

10. FINANCIAL IMPACT

- 10.1 The report includes a number of recommendations regarding investigations in specific locations which may result in improvement schemes being identified.

BACKGROUND PAPERS

Final Section 19 Flood Investigation Report for July 2019 Flood Event.

Anyone wishing to inspect the above background papers or requiring further information should contact [Mark Glynn](#) on Tel: 0161-474-3700 or by email on mark.glynn@stockport.gov.uk or Sue Stevenson Tel. 0161 474 4351 sue.stevenson@stockport.gov.uk.