

Nottingham City Council

Flood Investigation Report:

17th June 2020 Flood Event

Charles Avenue, Nottingham

**Prepared under Section 19 of the Flood and
Water Management Act 2010**



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City Council

DOCUMENT CONTROL

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Date	July 2021
Document ID	
Document version	1.04

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FLOOD INVESTIGATION REPORT SUMMARY

Nottingham City Council is a Lead Local Flood Authority (LLFA) under the Flood and Water Management Act (2010) (FWMA).

Section 19 of the FWMA states that on becoming aware of a flood the LLFA must, where appropriate, investigate which risk management authorities have relevant flood risk management functions and whether they have, or are proposing to, exercise those functions in response to the flood.

Flooding occurred at Charles Avenue and flows affected properties situated lower on 17th June 2020. It was considered necessary to undertake a formal investigation because of the nature of flooding and repeated instances with key Risk Management Authorities (RMA's) involved. This Flood Investigation Report has been completed by the City Council under our duties as the LLFA and summarises the formal investigation that has been undertaken.

The flooding occurred as a result of an exceptional and unforeseen intense period of localised rainfall. Subsequently, local drainage systems, both public and private, were unable to cope. This resulted in surface water flooding the public highway, private gardens and eventually causing internal flooding to residential properties.

1 INTRODUCTION

1.1 What is a Formal Flood Investigation?

Flooding has a devastating impact that affects people, property, business, the environment and transport. There are many different sources of flooding including rivers, sewers, surface water and groundwater and there are a number of Authorities and organisations involved in managing the risk of flooding from these different sources. Flooding can be caused by a complex interaction of different sources that can be difficult to resolve, particularly in urban areas.

Nottingham City Council is a Lead Local Flood Authority (LLFA) under the Flood and Water Management Act (2010) (FWMA). In recognition of the complex nature of flooding and the number of different Authorities that can be involved, Section 19 of the FWMA places a duty on LLFA's to investigate flooding in their area, as appropriate. The legislative requirements of Section 19 are included below.

Flood and Water Management Act (2010) – Section 19

- (1) On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate—
 - (a) which risk management authorities have relevant flood risk management functions, and
 - (b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.
- (2) Where an authority carries out an investigation under subsection (1) it must—
 - (a) publish the results of its investigation, and
 - (b) notify any relevant risk management authorities.

This report has been prepared in response to this legislative requirement.

1.2 Which Authorities are involved?

The Flood and Water Management Act (2010) identifies organisations that have flood risk management responsibilities as 'Risk Management Authorities'. Table 1 shows the key responsibilities of Risk Management Authorities that operate in the Nottingham City area.

Due to the number of different organisations involved, the City Council is responsible for the leading on flood investigations and works in partnership with relevant Risk Management Authorities. Through leading the investigation, the City Council will identify which Risk Management Authorities have flood risk management functions in relation to the flood event and what actions they propose to take, if any, to reduce flood risk in the future.

Risk Management Authority	Flood Risk Management Functions
Lead Local Flood Authority & Highway Authority: Nottingham City Council	<ul style="list-style-type: none">• River (fluvial) flooding from minor watercourses ('Ordinary Watercourses')• Surface water (pluvial) flooding

	<ul style="list-style-type: none"> • Groundwater flooding • Provision and maintenance of highway drains and road gullies
Water and Sewerage Company: Severn Trent Water	<ul style="list-style-type: none"> • Providing effectual drainage • Maintaining adopted public sewerage network
Environment Agency	<ul style="list-style-type: none"> • River (fluvial) flooding from large watercourses ('Main Rivers') • Flooding from the Sea and estuaries • Reservoir flooding
Highways England	<ul style="list-style-type: none"> • Maintaining adopted Strategic Road Network (SRN). • Provision and maintenance of drainage systems on the SRN.

Table 1: Risk Management Authorities in Nottingham City Council's administrative area.

1.3 When are Formal Flood Investigations undertaken?

Nottingham City Council has developed thresholds and triggers for when a formal investigation will be undertaken following a flood event. These thresholds relevant to this Flood Investigation are shown below:

<p>Nottingham City Council Thresholds for Initiating Flood Investigations</p> <p>For a residential dwelling such as houses or flats, including Nottingham City Homes properties, a Section 19 flood investigation shall be carried out where:</p> <ul style="list-style-type: none"> • Internal (over the doorstep) flooding affects five or more properties and the properties are either in close proximity, or the flooding is hydraulically linked.

1.4 Flood Investigation Report

The flood event on the 17th of June 2020 caused the internal flooding of one property at Charles Avenue, Nottingham. Whilst the site does not meet Nottingham City Council's (NCC) threshold for a S19 investigation, due to the complexity and involvement of key Risk Management Authorities (RMA's), a formal flood investigation report has been drafted.

2 SITE INFORMATION

2.1 Location of the flooding incident and the local area

Charles Avenue is located in the urban area of Lenton Abbey within the administrative district of Nottingham City Council (NCC). The road is roughly 200 metres long and is connected to A52 which is part of Highways England Strategic Road Network (SRN).

The topography of the land falls towards south east and there are no known watercourses at this location. All drainage functions are either drained through Highways England network, public sewer or Highways Drainage. Subsequently, the catchment is relatively small and of an urban nature at this location.

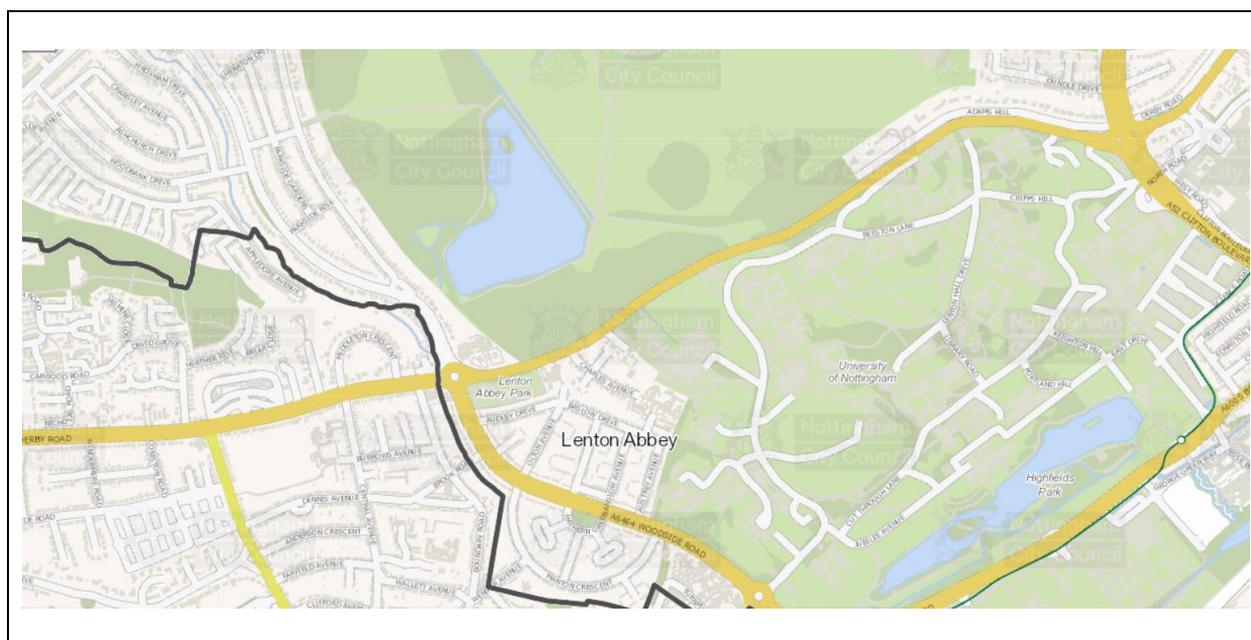


Figure 1: Site location

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2.2 Historical Flooding

There is an anecdotal report of a previous flooding incident however Nottingham City Council hold no formal records or reports of flooding at this location.

2.3 Predicted Flooding

The Environment Agency's Flood Map is a national dataset, which shows the areas in England and Wales predicted to flood from rivers and the sea. The dataset was made publicly available and is published on the Environment Agency's website⁽¹⁾.

The flood map indicates that Charles Avenue is not affected by flooding from rivers or watercourses however is at high risk of surface water flooding.

An extract from the Environment Agency flood maps is included in **Appendix A**.

The area is subject to High, Medium and Low Risk of flooding from Surface water. High Risk areas are where there is a chance that 1 in 30-year event flooding is likely to occur. Medium Risk areas are where there is a chance flooding will occur between 1 in 30 to 1 in 100-year event. Low Risk areas are where there is a chance of flooding for an event greater than 1 in 100-year.

High Risk areas are estimated to not experience surface water flooding. Medium Risk areas are estimated to have sections of flooding with varying depths below 300mm. Areas of Low Risk are estimated to have sections of flooding between 300mm and 900mm.

⁽¹⁾ <https://flood-warning-information.service.gov.uk/long-term-flood-risk>

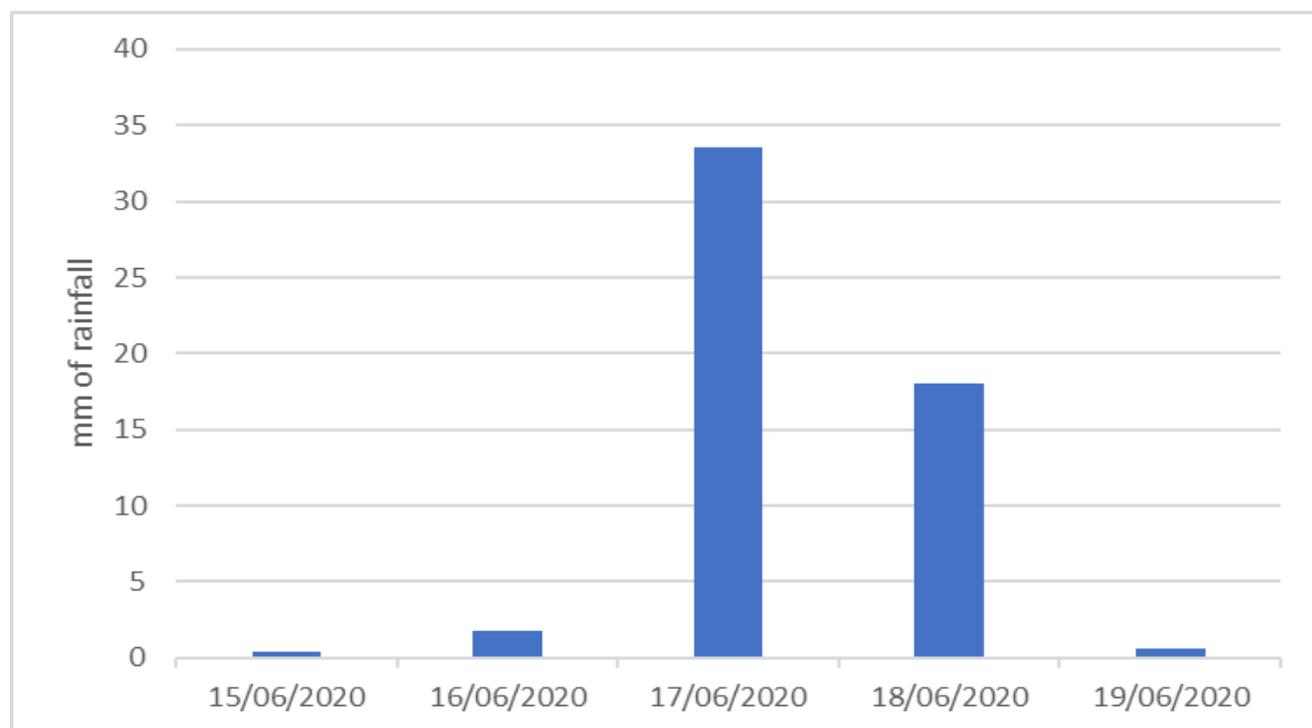
3 FLOOD INVESTIGATION

3.1 Weather conditions before and during the event

Nottingham City Council own a network of rain gauges across the city. The nearest rain gauge is located in Clifton off Lanthwaite Road.

The rain gauge recorded a total of 33.6mm of rain over a period of 45 minutes on the 17th of June 2020. On the 18th of June a total of 18mm of rain fell over a period of 8 hours. Days leading up to 17th of June recorded minimal rainfall as highlighted in the table below.

Date	Total rainfall (mm) – Clifton
15/06/2020	0.4
16/06/2020	1.8
17/06/2020	33.6
18/06/2020	18
19/06/2020	0.6



The average precipitation for Nottingham in June is 56 mm ⁽¹⁾. The date of the flooding incident indicates that almost an average month's rainfall fell over a period of 2 days in Clifton and surrounding areas. As such, the rainfall intensity was extremely high which would have compromised existing drainage systems to deal with the amount of rainfall.

The return period estimated for the rainfall is estimated to be 1 in 155-year event. This highlights that there is a 0.645% chance of an event happening in a year.

⁽¹⁾ <https://en.climate-data.org/europe/united-kingdom/england/nottingham-128/>

3.2 Flooding Source and Mechanism

The area of Charles Avenue is heavily urbanised with a highways and public sewer network draining the catchment.

Due to the local topography, certain properties on Charles Avenue are situated at a lower level in the catchment, thereby are susceptible to surface water run-off from the surrounding urbanised areas.

The current public surface water network does not have the capacity to deal with extreme rainfall events and does not have any associated storage facilities in the upstream catchment. Therefore, surface water run-off, created by this type of extreme rainfall event, cannot be adequately captured by the drainage systems resulting in flooding.

3.3 Preventative Measures

Highway Services provide an emergency 24/7 call out service. This meant that there was an on-call operative available to aid with the flood response. This involved utilising a gully unit on site to clear the gullies and prevent further flooding at the front of the properties.

Severn Trent Water have met with the LLFA and investigated their network to understand if there are any damages or blockages to the network and ensure water is freely flowing through the system.

Residents should look to invest in sandbags or more permanent flood defences as Nottingham City Council has limited supply and cannot guarantee deployment during periods of inclement weather.

3.4 Flooding Impacts

1 building experienced significant flooding and communal areas were flooded with approximately 10 flats being affected by water ingress. Depths was estimated to vary from a couple of inches to about 300mm. The flats and communal lounges experienced damage to soft furnishing, carpets, flooring and wallpapers.

4 RIGHTS AND RESPONSIBILITIES

Which Risk Management Authorities have flood risk management functions in relation to the flood event?

4.1 Lead Local Flood Authority (Nottingham City Council)

The FWMA places a number of responsibilities on LLFAs in relation to flood risk management. As stated in Section 1, LLFAs have a responsibility to investigate flood incidents, as appropriate, under Section 19 of the Act. Whilst we can investigate flood events, work with our professional partners and make recommendations for reducing the risk of future events, LLFAs do not have a responsibility or the funding to solve all flooding issues.

4.2 Highways Authority (Nottingham City Council)

NCC as the Highways Authority have a duty to maintain all highways classed as being "maintainable at public expense" that fall within their area of control. They have the lead responsibility for providing and managing highway drainage and roadside ditches under the Highways Act 1980. The owners of land adjoining a highway also have a common-law duty to maintain ditches to prevent them causing a nuisance to road users.

The Highways Authority are required to ensure that the drainage system is adequate and ensure they are maintained.

4.3 Public Sewer (Severn Trent Water)

Water companies are Risk Management Authorities (RMAs) and play a major role in managing flood and coastal erosion risks. They manage the risk of flooding to water supply and sewerage facilities and flood risks from the failure of their infrastructure.

The main roles of water and sewerage companies in managing flood and coastal erosion risks are to:

- Ensure their systems have the appropriate level of resilience to flooding and maintain essential services during emergencies.
- Maintain and manage their water supply and sewerage systems to manage the impact and reduce the risk of flooding and pollution to the environment. They have a duty under section 94 Water Industry Act 1991 to ensure that the area they serve is "effectually drained". This includes drainage of surface water from the land around buildings as well as provision of foul sewers.
- Provide advice to LLFAs on how water and sewerage company assets impact on local flood risk
- Work with developers, landowners and LLFAs to understand and manage risks – for example, by working to manage the amount of rainfall that enters sewerage systems.
- Work with the Environment Agency, LLFAs and district councils to coordinate the management of water supply and sewerage systems with other flood risk management work.

4.4 Highways England

Highways England as the Highways Authority for Strategic Road Networks have a duty to maintain all highways classed as being "maintainable at public expense" that fall within their area of control. They have the lead responsibility for providing and managing highway drainage and roadside ditches under the Highways Act 1980. The owners of land adjoining a highway

also have a common-law duty to maintain ditches to prevent them causing a nuisance to road users.

The Highways Authority are required to ensure that the drainage system is adequate and ensure they are maintained.

5 RECOMMENDATIONS FOR THE PUBLIC

Recommendations to the public:

- Where available, sign up to the EA's flood warnings (Floodline) by calling 0345 988 1188 or by registering online <https://www.gov.uk/sign-up-for-flood-warnings>.
- Where available, monitor online river gauge information as well as flood warnings <https://flood-warning-information.service.gov.uk/river-and-sea-levels>.
- Owners of affected properties should consider preparing a Household Emergency Plan and an emergency kit containing essential items.
- Implement resilience infrastructure inside of the property e.g. tiles instead of carpets, PVC doors instead of wood, water compatible walls, flooring and kitchen fittings, sump and pump systems, and raised electrics/meters.
- With support from Flood Risk Management Authorities, the community should make efforts to form a local resilience/flood group and communicate with their neighbours to help each other during an event. This should including appointing Community Flood Wardens and preparing a Community Emergency Plan.
- Seek support for insuring your property <https://www.floodre.co.uk/>
- Regularly inspect drainage systems in the area. Report blockages or other issues to the responsible owner and the LLFA.
- Homeowners who live adjacent to the watercourse should be aware of their maintenance responsibilities through Riparian Ownership.
- Any works to be undertaken by landowners on or adjacent to the watercourse requires consent and a permit from the Environment Agency.
- For further information, please see the Environment Agency's "What to do before, during and after a flood" document ⁽³⁾.

(1) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/403213/LIT_5216.pdf

6 CONCLUSIONS & AGREED ACTIONS

6.1 Agreed Action Plan

A total of 10 flats as part of 1 residential property was flooded internally on 17th June 2020. A short high intensity rainfall event occurred over 45 minutes on 17th June and a minor event on 18th June contributed to the significant flooding.

Nottingham City Council as the Highways Authority and Severn Trent Water are the Risk Management Authorities that have flood risk management functions in relation to the flood event. Nottingham City Council is responsible for managing highway drainage and for investigating the flood event and Severn Trent Water is responsible for managing and maintaining the public sewer network.

Nottingham City Council as the Highways Authority will work with the Lead Local Flood Authority in adding these gullies to their flooding 'hot-spot' locations, hence prioritising cleansing prior to a forecast storm event.

Severn Trent Water have met with the LLFA and investigated their network to understand if there are any damages or blockages to the network and ensure water is flowing through the system.

A number of recommendations have been made for residents to improve their level of preparedness and resilience. It is also important for residents to report any future flooding issues to Nottingham City Council and the relevant Risk Management Authority.

There have been a number of actions undertaken in response to the flood event, as well as further actions planned.

Nottingham City Council (LLFA) Actions	Status
Advise residents on potential Property Level Resilience (PLR) measures.	Meeting to be arranged with residents.
Nottingham City Council (Highway Services) Actions	
Continue to maintain road gullies on a regular basis to ensure that they are clear for floodwater to drain away. Gullies on Charles Avenue will be added to the 'Hotspot List'.	Ongoing maintenance activity. Gullies to be placed on 'Hotspot List'.
Severn Trent Water Actions	
Investigate sewer network	Complete.
Ensure sewer network is maintained and kept running.	Ongoing.
Highways England Actions	
Investigate sewer network	Complete.
Ensure sewer network is maintained and kept running.	Ongoing.

7 DISCLAIMER

This report has been prepared by the Council solely for the purpose of complying with its duties under Section 19 of the Flood and Water Management Act 2010 to establish:-

1. Which risk management authorities have relevant flood risk management functions, and
2. Whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.

Nottingham City Council does not accept any liability arising from reliance on or the use of this report or its contents by any third party for any other purpose.

The findings of the report are based on a subjective assessment of the information available by those undertaking the investigation and should not be considered as a definitive statement of all factors that may have triggered or contributed to the flood event.

Nottingham City Council expressly disclaim responsibility for any error in, or omission from, this report and the supporting technical assessment Report and for any error in, or omission from, this report arising from or in connection with any opinion, conclusion and recommendations expressed.

Although the Council may have commented upon contextual issues related to the flood event, it is not the purpose of this report to determine any private rights arising from the flood event. Nor is the purpose of this report to reach conclusions as to whether any Risk Management Authority or other stakeholder (e.g. private land owners, public bodies or government agencies) has breached any duty of care (whether statutory or common law) that they may have held.

Any party wishing to assert any rights or cause of action related to the flooding event or in the process of buying/selling or insuring property should not place reliance on this report but should conduct and rely on their own investigations.

8 CONTACTS & USEFUL LINKS

Nottingham City Council Contacts & Links		
Nottingham City Council	0115 915 5555	https://www.nottinghamcity.gov.uk/reportit
Flood Risk Management Team	0115 876 5275 Monday to Friday 9:00-16:30	Advice on improving the level of protection to your property
Highway Services Team	0115 915 2000	https://myaccount.nottinghamcity.gov.uk/service/report-it-report-a-blocked-gully
Bulky Waste Collection	0115 915 5555	Free of charge bulky waste collection http://www.nottinghamcity.gov.uk/bulkywaste
Useful Web Pages	https://www.nottinghamcity.gov.uk/information-for-business/environmental-health-and-safer-housing/flooding/flood-document-library/	
Environment Agency Contact & Links		
Environment Agency	https://www.gov.uk/report-flood-cause	Reporting a flood
	0800 80 70 60	Environment Agency incident hotline (24 hours)
	0345 988 1188	Floodline
Severn Trent Water Contacts & Links		
Severn Trent Water	https://www.stwater.co.uk/in-my-area/report-a-problem/	Report a drainage problem (non-emergent)
	0800 783 4444	Emergencies (24 hours) e.g. leaking water main causing flooding

9 APPENDICES

Appendix A: Predicted Flood Risk Maps (Source: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/postcode>)



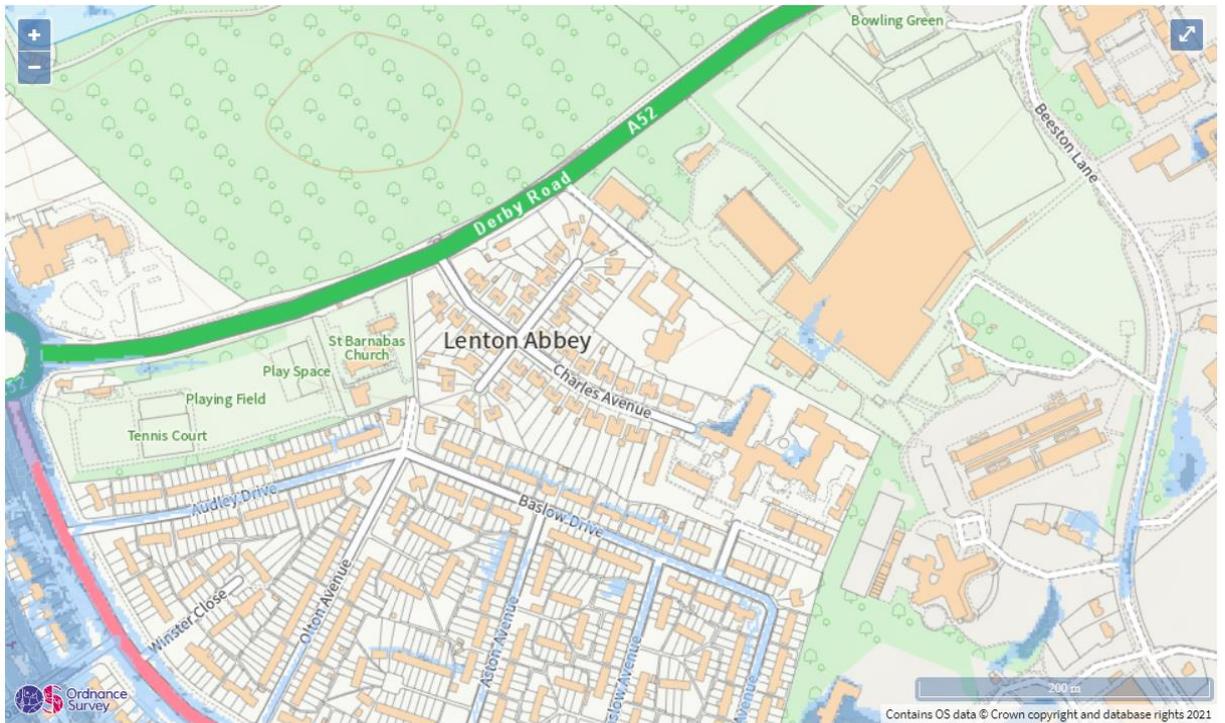
Surface water flood risk: water depth in a high risk scenario
Flood depth (millimetres)

- Over 900mm
- 300 to 900mm
- Below 300mm
- ⊕ Location you selected



Surface water flood risk: water depth in a medium risk scenario
Flood depth (millimetres)

● Over 900mm
 ● 300 to 900mm
 ● Below 300mm
 ⊕ Location you selected



Surface water flood risk: water depth in a low risk scenario
Flood depth (millimetres)

● Over 900mm
 ● 300 to 900mm
 ● Below 300mm
 ⊕ Location you selected