

**SHEFFIELD CITY COUNCIL
FLOOD AND WATER MANAGEMENT ACT 2010**

**SECTION 19 STATUTORY REPORT:
INVESTIGATION OF FLOODING EVENT IN SHEFFIELD ON 7TH AND 8TH
NOVEMBER 2019**

1.0 Introduction

- 1.1 Sheffield City Council has undertaken an investigation into flooding that occurred within the city on 7th and 8th November 2019.
- 1.2 The Council has investigated the flooding event in its role as Lead Local Flood Authority (LLFA) for the Sheffield area under section 19 of the Flood and Water Management Act 2010.

2.0 Rainfall Event and Warnings

- 2.1 Sheffield experienced heavy rainfall throughout Thursday 7th November 2019 that continued into the early hours of Friday 8th November. Environment Agency rain gauges recorded 82 mm of rain having fallen on the city over a 24 hour period.
- 2.2 The Environment Agency has reported that rainfall levels and river depths were second only in magnitude to the 2007 event in Sheffield. The storm has been estimated to have been a 1:100 to 1:150 annual exceedance probability event.
- 2.3 The Met Office issued an amber rainfall warning for South Yorkshire at 11.45 pm on Wednesday 6th November 2019. This was followed by Environment Agency flood warnings issued from 8 am to 8pm on Thursday, 7th November for the following main rivers in Sheffield:
- Blackburn Brook – Chapeltown – Ecclesfield – Wincobank;
 - Ecclesfield Brook
 - River Sheaf and Porter Brook
 - River Don –Wharnccliffe Side to Meadowhall
 - River Loxley – Malin Bridge to Owlerton

3.0 Risk Management Authorities

3.1 The risk management authorities (RMAs) with statutory duties in relation to the flooding event are :

- a Sheffield City Council in its capacity as LLFA and as Highway Authority with Amey LG/Hallam Highways acting as the Council's emergency first response contractor.
- b The Environment Agency as the authority for main rivers
- c Yorkshire Water as sewerage undertaker.

3.2 Sheffield City Council as LLFA convened a multi-agency meeting with all RMAs on 3rd December to review the flooding incident, emergency response actions, the cause of flooding and progress on mitigation actions.

4.0 Emergency Response

4.1 Following the receipt of the amber rainfall warning, the Council's first response contractor, Amey LG, initiated the emergency plan for the closure of the moveable flood gates, penstock and doors on the River Don from Kelham Island to Meadowhall . The Amey Operational Control Room Duty Manager confirmed that all River Don flood gates and doors had been closed at 4.30 am on 7th November.

4.2 Amey's Duty Manager also activated the Streets Ahead Contract Emergency Plan for dealing with flooding on the highway at midnight on 6th November allocating resources and personnel to deal with the emergency response. Amey checked that priority drainage assets and known flooding hotspot locations listed in the emergency plan were clear of debris in the hours prior to the event.

4.3 The SCC Duty Chief Officer activated the Council's Emergency control room on the morning of Thursday 7th November. The Council declared a major incident at 2 pm on 7th November and the Council's major incident plan was initiated.

4.4 During the afternoon and evening of 7th November, Amey resources were prioritised on closing impassable roads, clearing road gullies and culvert entrances and delivering sandbags to properties and locations that were either being flooded or in imminent danger of flooding.

5.0 Impact of the Flooding

- 5.1 The Council's investigations have determined that the incident resulted in 41 residential properties and 36 commercial properties being flooded internally. Those properties are located in the districts of Ecclesfield, Chapeltown, Deepcar, Woodhouse Mill, Hillsborough, Owlerton and Brightside. As part of these investigations, the Council has not received any reports that a residential property was made inhabitable or that a business was closed as a result of the flood event in Sheffield.
- 5.2 Transport was disrupted with 129 roads being flooded across the city and 12 roads closed to traffic. Transport disruption included the A6109 Meadowhall Road leading to the closure of Junction 34 of the M1 Motorway. It was reported that tram services from the City Centre to Meadowhall were suspended for two days . Disruption to rail services lasted several days as lines were flooded or blocked by landslides preventing travel on routes around Sheffield.
- 5.3 Some businesses and hotels in Sheffield's lower Don Valley were evacuated as a precautionary measure due to rising river levels and warnings being issued. Meadowhall Shopping Centre provided accommodation for stranded customers overnight due to the surrounding area being flooded.
- 5.4 Sheffield City Council has not received any reports of injury or fatality resulting from the flood event in the Sheffield area.

6.0 Causes of Flooding

- 6.1 As outlined at item 2.0 of this report, a considerable amount of rain fell on the Don and Sheaf catchments impacting on the city on 7th and 8th November. Very wet conditions in early autumn meant that soils in the upland areas were already saturated at the start of November, reducing their capacity to store rainfall, thereby increasing runoff and exacerbating flooding. Compensation reservoirs above the city were at capacity and did not act as a buffer to upland run-off.
- 6.2 Watercourses and local drainage systems were overwhelmed by the intensity of rainfall and, in some cases, blocked by debris washed down during the event resulting in flooding to property and roads. Rising levels in the River Don were largely contained in channel by the city's newly built flood defences. Regular improvements to river channel maintenance meant that flooding

wasn't exacerbated by debris build up at bridges and culverts – a feature of the 2007 event. There was some localised overtopping of flood defences and river walls by flood water at Meadowhall and Brightside; and at Owlerton, Ecclesfield and Woodhouse Mill where some properties were flooded internally.

- 6.3 Yorkshire Water confirmed that the local combined sewer system at Falding Street, Chapeltown was overwhelmed by storm flows and surcharged resulting in internal flooding to houses. The nearby sewer overflow system was unable to outfall to the Blackburn Brook due to high watercourse levels.

7.0 Flood Mitigation Actions Following the Event

- 7.1 As mentioned, the Council/Amey closed the River Don flood gates from Kelham Island to Meadowhall in the early hours of the 7th November. The flood gates were re-opened on 15th November 2019 following the Environment Agency confirmation of River Don flood warnings being no longer in place.
- 7.2 The Council/Amey dealt with 31 requests for sandbags from residents and businesses during 7th and 8th November.
- 7.3 Mitigation and remedial actions carried out in the days and weeks following the flooding focussed on the source and cause of flooding at the various locations as outlined in this section.
- 7.4 In the days following the event, Amey removed debris build up from key bridges and culvert entrances on all main rivers.
- 7.5 At Ecclesfield on the Whitley Brook, Amey carried out immediate debris clearance work on 8th November to culvert entrance grillages ensuring that the Brook was free flowing.
- 7.6 At Deepcar on the Clough Dyke, Amey carried out clearance work to the Clough Dyke Culvert within parkland close to Woodroyd Road during November releasing the build up of floodwater within the parkland.
- 7.7 Main river clearance work - the Environment Agency reported that they had commissioned work to clear washed down debris in main river channels completing this work in December 2019.

8.0 Longer Term Flood Risk Reduction Measures

- 8.1 The City Council has been working closely with the Environment Agency for a number of years on a capital investment programme to reduce the risk of flooding from Sheffield's main rivers on the city's residential and business communities. The programme approach encompasses building new capital flood defences in the city where appropriate combined with upstream storage and upland natural flood management measures to slow river flow during storms.
- 8.2 It is accepted that the completed Sheffield Lower Don Valley capital defences had a significant contribution to reducing the impact of flooding from the River Don during the November 2019 flood event.
- 8.3 The Council and the Environment Agency are planning further capital flood protection schemes over the next 5 years in the Upper Don Valley. The first phase is scheduled to start in 2020 and will protect some of the areas flooded during the November event at Hillsborough and Owlerton by the River Loxley. A Blackburn Brook Flood Protection Scheme is in planning for later in the capital programme.
- 8.4 At a multi-agency meeting convened by the City Council on 5th December 2019, Yorkshire Water confirmed that they are assessing sewerage system improvement works to reduce the risk of sewer flooding at Falding Street, Chapeltown.

Table 1 – Flooded Property Locations in Sheffield on 7th/8th November 2019

Location	Residential properties (number)	Commercial Properties (number)	Source of Flooding
Mill Road , Ecclesfield	9	3	Whitley Brook culvert
Whitley Lane, Ecclesfield	3	0	Whitley Brook culvert
Woodroyd Road, Deepcar	9	0	Clough Dyke culvert
Furnace Lane, Woodhouse Mill	2	1	River Rother washlands
Falding Street, Chapeltown	19	0	Sewer
Butterthwaite Lane/Station Road, Ecclesfield	0	2	Blackburn Brook watercourse
Club Mill Road	0	1	River Don
Attercliffe Road/Foley Street	0	4	River Don
Jessops Riverside, Brightside	0	8	River Don
Weedon Street, Meadowhall	0	6	River Don
Meadowhall Road, Meadowhall	0	4	River Don, Blackburn Brook watercourse
Holme Lane, Hillsborough	0	4	River Loxley
Penistone Road, Owlerton	0	5	River Loxley
Totals	42	38	

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