

Flood Investigation Report

Kitling Greaves Lane, Outwoods

May 2019

About

This is a report produced under Section 19 of the Flood and Water Management Act (2010)

Acknowledgements

The community and organisations within Staffordshire that have contributed to the flood investigation.

Version

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Abbreviations

FWMA	Flood and Water Management Act (2010)
IDB	Internal Drainage Board
LLFA	Lead Local Flood Authority
SCC	Staffordshire County Council
STW	Severn Trent Water
EA	Environment Agency

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Summary

This Flood Investigation Report has been produced by Staffordshire County Council (SCC) fulfilling duties under the Flood and Water Management Act (FWMA, 2010) as the Lead Local Flood Authority (LLFA) for Staffordshire.

Under Section 19 of the Flood and Water Management Act (2010), LLFAs have a duty to investigate flooding incidents, where it deems it to be 'necessary or appropriate' and determine which organisation(s) have roles and responsibilities and what actions they are taking. SCC therefore has a co-ordinating role. Formal flood investigations are undertaken where the Council is aware that five or more properties in a locality have been affected by internal flooding (over the threshold (doorstep level) of the property).

The legislation does not place responsibility on the Council to prevent flooding happening again, although the Council will work with all relevant organisations and local communities as far as reasonably possible to reduce the chance of a repeat flood event. Under the Civil Contingencies Act 2004, the County Council also provides an emergency response through the Highways department and the Staffordshire Civil Contingencies Unit to protect and assist local communities.

In the period preceding 12th March 2018, the "Beast from the East" or Anticyclone Harmut brought with it sustained low temperatures and snowfall until the 4th March when temperatures rose but with sustained low pressure. Snow melted and occasional wet weather allowed for saturated ground between the period 4th March – 11th March. Rain fell on 12th March which resulted in approximately 6 properties understood to have flooded.

This report captures information for communities where the Council has been made aware of property flooding. There are a number of Risk Management Authorities (RMAs) that have relevant flood risk management responsibilities and functions including:

- SCC (LLFA and Highways Authority);
- District Councils
- Severn Trent Water (STW)
- The Environment Agency (EA)

The identified RMAs, other groups including local flood action groups, Councils, the local community, and landowners, should continue to work together to share information and reports, with the aim of meeting the actions contained in this report.

1 Introduction

Staffordshire County Council is a Lead Local Flood Authority (LLFA) with duties and powers for managing flood risk. The Flood and Water Management Act (FWMA) provides that Lead Local Flood Authorities will have a duty to investigate flooding. Section 19 states that:

“(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.”

Following major flood events, it can often be difficult to identify the source of the flooding and with whom actions to help resolve flooding issues may lie. The purpose of Section 19 of the Flood and Water Management Act 2010 is to ensure that, where this uncertainty occurs, LLFAs assist with identifying the source(s) of flooding and notifying those Risk Management Authorities (RMAs) which have responsibilities.

The County will undertake a formal investigation for locally significant flood events when one or more of the following criteria are met. This is set out in the Staffordshire Local Flood Risk Management Strategy, which was approved by Staffordshire County Council’s Cabinet on the 21st October 2015.

- Five or more residential properties are reported to have been internally flooded during a single flood event in one location;
- Two or more business properties are reported to have been internally flooded during a single flood event in one location, or;
- One or more items of critical infrastructure are reported to have been adversely affected during a single flood event in one location.

1.2 Roles and responsibilities

The following table provides information on the roles and responsibilities for flood risk management in Staffordshire. This table is intended to provide a summary only of respective roles in flood risk management and more information is available in [Part 1 of the Local Flood Risk Management Strategy](#). The Local Flood Risk Management Strategy contains a [map of the extent of Main Rivers and Ordinary Watercourses](#).

Land and property owners have a responsibility to keep watercourses flowing where they either own land or property next to a watercourse as Riparian Owners and in taking action to protect their own properties. This is not a legal responsibility for Risk Management Authorities, unless they are the landowner.

Table 1-1 Summary of roles and responsibilities for flood risk management

Organisation	Operational role
Environment Agency	Main Rivers e.g. Tame, Trent Reservoirs (regulation role) Flood warning and forecasting
Lead Local Flood Authority (Staffordshire County Council)	Surface water Groundwater Ordinary Watercourses (consenting and enforcement)
District and Borough Councils	Ordinary Watercourses (works)
Sow and Penk Internal Drainage Board	Ordinary Watercourses in the Internal Drainage District around Stafford
Water Companies (Severn Trent and United Utilities)	Public Sewers
Highways Authorities (Staffordshire County Council for County Roads, Highways England for Trunk Roads)	Highway drainage
Staffordshire Civil Contingencies Unit/ West Midlands Local Resilience Forum	Emergency planning Co-ordinate the Local Resilience Forum (emergency services and emergency responders)

2 Flood event of March 2018

2.1 Data collection

Data has been collected from a number of sources, including:

- Information captured by Risk Management Authorities and the Staffordshire Civil Contingencies Unit
- Contact with residents (meetings, questionnaires)
- Local site visits
- Contact from Councillors
- Environment Agency analysis of rainfall return periods
- Flood Risk Assessment accompanying a prior planning permission sought in the vicinity

It should be noted that this report be treated as a snapshot in time and more information may come forward that will need to be taken into account as actions are progressed.

2.2 Weather and Flood Magnitude

In the period preceding 12th March 2018, the “Beast from the East” or Anticyclone Harmut brought with it sustained low temperatures and significant snowfall until the 4th March when temperatures rose but accompanied by sustained low pressure. Snow melted and occasional wet weather allowed for saturated ground between the period 4th March – 11th March. During this period it is likely that the conditions would have allowed for significant debris to enter low-lying areas. The rain that fell on 12th March resulted in approximately 6 properties understood to have flooded.

Data was requested for rainfall for nearby rainfall gauges operated by the Environment Agency but these did not record any significant rainfall. Using data obtained from remotely sensed data, the highest rainfall duration observed was deemed to be a 1 in 1.13 year event according to the Environment Agency. The rain that fell on the 12th March was therefore localised. Remote sensed data is not the most reliable data to estimate rainfall but it is understood to be the best available information.

2.3 Source and Cause of the Flooding

There is a difference between the return period of a rainfall event and the return period of a flood. This is influenced by the condition of the ground surface. Due to the preceding weather conditions it is likely that the ground condition allowed more runoff than it ordinarily would.

Several properties are shown to be at high risk of flooding from surface water flooding in Kitling Greaves Lane according to the Environment Agency’s Updated Flood Maps for Surface Water (uFMfSW). The catchment of Kitling Greaves Lane is mostly rural and approximately 124 Hectares in size. A watercourse starts to the west of Kitling Greaves Lane and runs along the southern side of the road, through open fields and is then culverted (piped) until it is open again at the north eastern extent of Kitling Greaves Lane. The source of flooding here is therefore understood to be river (fluvial) primarily but as surface water mostly contributes to the flows in river and the fact that the road will convey surface water; the source is both fluvial and surface water. The culvert has been noted to be clear at both ends and gullies appear to be not significantly silted.

The highway to the western end of Kitling Greaves Lane mostly slopes towards the watercourse on the southern side. Therefore flows are confined predominantly to the watercourse. Before the channel leads into the culverted section, there is a gabion stone structure on the northern side of the watercourse which was presumably installed to prevent erosion of the bank and a trash screen is installed on the face of the culvert which appears to be satisfactory condition. At this section, the channel capacity has been estimated conservatively.

The estimated capacity at this point of the watercourse has been compared to the storm/flow that was likely generated on the 12th March. Using the most impermeable soil type as a proxy to the condition of the ground that preceded the rainfall event, the flow is determined to be less than the capacity of the channel at this point and also the capacity of the culvert downstream.

The gullies within the road are not designed to store or convey flood water from watercourses and therefore based on the above it can reasonably be concluded that a significant blockage was likely a major contributory factor to the flooding that occurred on the 12th March. Evidence supports the view that a significant blockage on the upstream face of the culvert under Kitling Greaves Lane compromised the ability of the culvert to pass flow downstream on that day. It is known that debris and tyres blocked the culvert face on the day.

3 Actions and recommendations

3.1 Actions and Recommendations

It is acknowledged that land owners and residents have already worked together upstream to clear the open section of watercourse. This will surely help maintain the efficient flow and capacity of the watercourse.

The only Relevant Risk Management Authority identified is Staffordshire County Council as Highways Authority during this event. It is the LLFA's view that they have responsibility for the trash screen at the intersection of the open watercourse and culvert and the drains/gullies within the highway that exclusively drain the highway.

It is our recommendation to SCC Highways Authority that they review actions associated with the trash screen at this location. It is our further recommendation that SCC Highways Authority check manholes along the length of the culvert in Kitling Greaves Lane to see if there is silt within the culvert that could compromise the ability of the road to efficiently drain (although visual inspection of the culvert ends indicate no obvious siltation issues).

Actions of individuals or external bodies that are not Risk Management Authorities referred to in Table 1-1 are outside of the scope of this report. It should be noted that the watercourse levels here rise relatively quickly in response to rainfall. Oftentimes the storm conditions that precede heavy rainfall lead to accumulation of debris in the watercourse and that which, once water levels rise, are transported downstream. In the case of this watercourse, the trash screen may therefore well be clear prior to rain falling, but can quickly become partially or fully blocked. There is therefore more to managing flood risk here than maintenance of the trash screen and the Lead Local Flood Authority will seek to work with the community and others to address any future actions.

In line with the Local Flood Risk Management Strategy for Staffordshire, information on flooding that has happened will also be used to inform, where appropriate:

- Our understanding of the level of flood risk around the County/Borough and how we take a risk based approach to prioritising our resources,
- Our understanding of where watercourses and assets, such as culverts and trash screens have caused particular issues and future maintenance needs. We will work to achieve these with land and asset owners,
- Where we can support communities to understand flood risk and become more resilient to flooding,
- Responses to major planning applications to ensure new development does not exacerbate existing flood risk issues and where possible, carefully planned Sustainable Drainage Systems on new developments reduce flood risk elsewhere,
- Partnership working with other flood risk organisations to take a joined up approach to flood risk management,
- Work undertaken by the Local Resilience Forum to be more prepared for future flood events, and
- The future programme for flood alleviation schemes.

4 About this report and disclaimer

This report has been prepared as part of SCC's responsibilities under the FWMA. The findings of the report are based on a subjective assessment of the information available by those undertaking the investigation and therefore may not include all relevant information. As such it should not be considered as a definitive assessment of all factors that may have triggered or contributed to the flood event.

The opinions, conclusions and any recommendations in this report are based on assumptions made by SCC when preparing this report, including, but not limited to those key assumptions noted in the report, including reliance on information provided by others.

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