

Flood Investigation Report

June 2016 flood events

Staffordshire wide

February 2017

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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Produced by	Hannah Burgess, Flood Risk Manager	October 2016
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Version history

Version	Date	Changes made
Version 04	26 September 2016	Issued to EA and STW
Version 05	26 th October 2016	EA comments taken into account
Version 06	14th November 2016	STW comments taken into account
Version 07	18th November 2016	Final mapping added

Abbreviations

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

References

CEH 2015. The Flood Estimation Handbook (FEH) Online Service, Centre for Ecology & Hydrology, Wallingford, Oxon, UK

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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), SCC has 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 SCC 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 County Highways and the Staffordshire Civil Contingencies Unit to protect and assist local communities.

Between the 8th and the 17th of June 2016, the weather was characterised by warm, humid conditions, with sporadic thunderstorms accompanied by intense rainfall. The worst affected parts of Staffordshire were the areas to the south and west of Leek in the north, the Cannock area and areas adjoining the Black Country in the south. Around 30 properties were flooded in the County, with over 40 near misses. Across the Midlands, parts of Birmingham, Dudley, Sandwell, Wolverhampton, Walsall and Stoke were also badly affected.

This report captures information for communities across Staffordshire where the County 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)
- United Utilities (UU) and
- The Environment Agency (EA)

The identified RMAs, other groups including local flood action groups, Parish 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 Council 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.

The flooding of more than five properties, two or more businesses and critical infrastructure at a number of locations during the period from the 8th June to the 17th June 2016 has therefore triggered Section 19 of the Flood and Water Management Act (2010), leading to the production of this report. This report covers settlements where internal property flooding is known to have occurred. Around 30 properties were flooded in the County, with over 40 near misses. Nothing in this report identifies individual properties that are at risk from flooding.

The most recent major flood event prior to June 2016 was in June 2012 when around 100 properties were flooded in communities across Staffordshire. More frequent but less severe flooding is experienced on a relatively frequent basis and informally investigated where resources allow.

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	Emergency planning Co-ordinate Staffordshire Local Resilience Forum (emergency services and emergency responders)

2 Flood events of June 2016

2.1 Data collection

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

- Information captured by Risk Management Authorities and the Staffordshire Local Resilience Forum
- Online survey hosted on SCC website
- Local site visits and surveys, for example, at Bishops Wood
- Media and social media
- Contact from MPs and Councillors
- Contact from residents and business owners
- Environment Agency analysis of rainfall return periods

It is important to note that this report has been produced within 6 months of the flooding occurring, with the intention that it should capture work to date and the planned actions going forward. It should therefore be treated as a snapshot in time and more information is likely to come forward on the areas affected by flooding that will be taken into account as actions are progressed.

2.2 Rainfall return periods

The Environment Agency has analysed the rainfall from the event using both rain gauges and remotely sensed RADAR information that senses how much rain is falling. During intense rain storms, the amount of rain falling can often vary significantly at a local level and so depending on how far a location is from the nearest rain gauge, this data should be treated with caution. Remotely sensed rainfall data can give us a greater coverage of the County, but indirectly measures rainfall intensity and can both over and underestimate the true rainfall depth.

The Environment Agency has estimated the event likelihood expressed as a return period. This is the average interval between rainfall events. For example, a 100 year rainstorm has a 1% chance of happening in any one year. Understanding the rarity of a particular flood event is important so that the flooding mechanisms in affected areas can be better understood. This information can be used to help inform decision making with regards to flood risk management activities.

Table 2-1 shows the estimated return period of the rainfall for the worst affected settlements in Staffordshire. There are a number of limitations to this assessment of event rarity and a copy of the full rainfall analysis report is available on request from the Environment Agency.

Table 2-1 Rainfall return periods for worst affected settlements in Staffordshire

Settlement	Return period based on nearest rain gauge	Distance to nearest gauge	Return period based on remotely sensed data
Bishops Wood	Not considered exceptional	7.3km	1 in 35
Cannock	1 in 70	5.3km	1 in 24
Kingsley Holt	1 in 26	1.1km	1 in 22
Shenstone	1 in 2	6.5	1 in 2
Knypersley	1 in 5	1.2km	1 in 3
Harlaston and Clifton Campville	1 in 2	7.7km	1 in 3
Newcastle	1 in 5	10.7km	1 in 6
Stafford	1 in 4	9.8km	Not considered exceptional
Kinver	1 in 4	8.5km	1 in 91
Wheaton Aston	1 in 42	6.6km	1 in 59

Results based upon FEH methodology and data, CEH (2015)

2.3 Areas worst affected

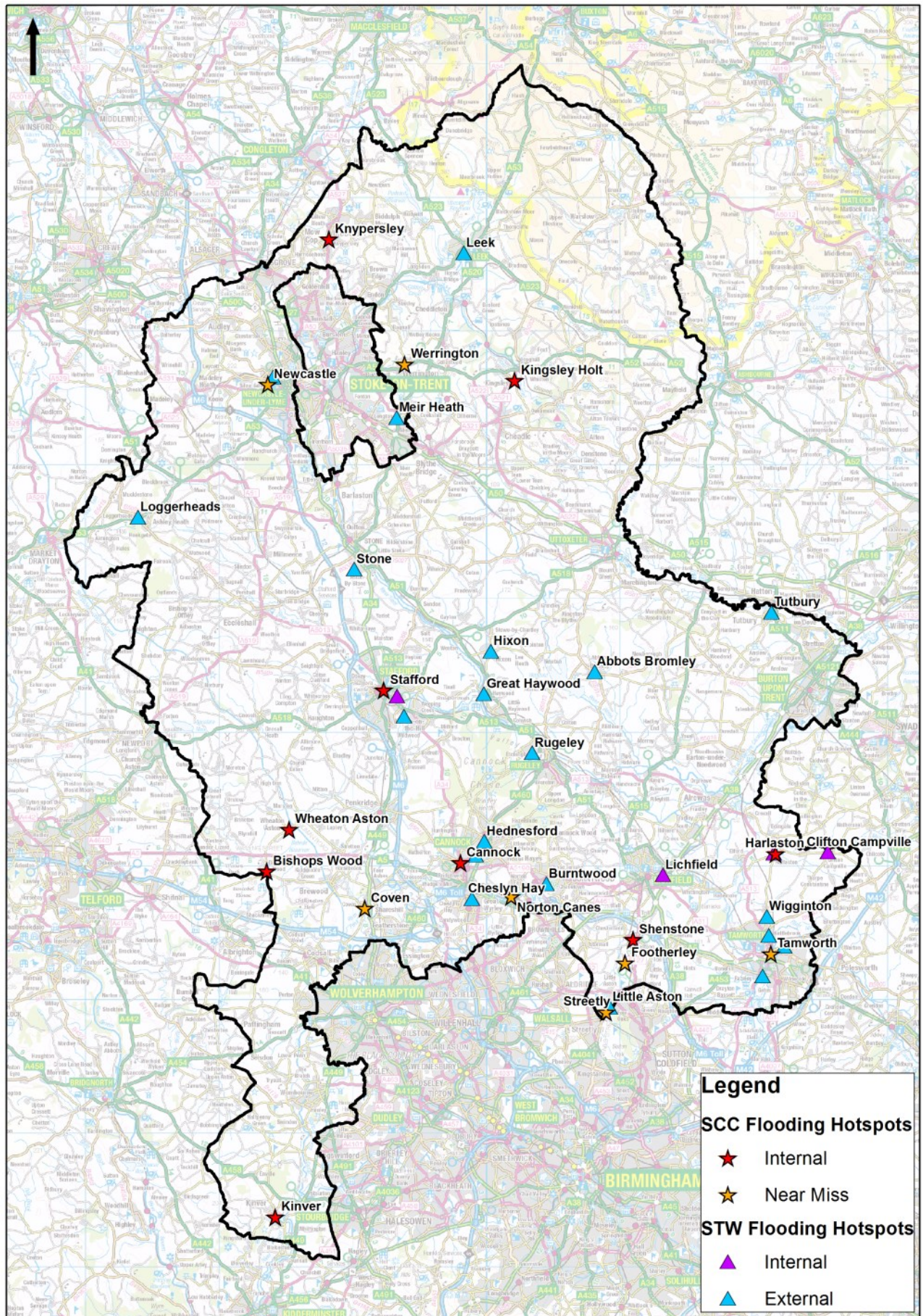
Table 3-1 summarises the causes and impacts of the flooding for the worst affected settlements, based on the understanding at the time this report was produced. Figure 2-1 shows a map of the affected settlements where internal property flooding, near misses and sewer flooding were experienced.

Severn Trent Water carries out its own investigations where the sewer network causes flooding issues (prioritising internal property flooding). Therefore the report here focuses on areas of surface water or watercourse flooding or where the sewer network is part of a wider drainage issue.

Table 2-2 Worst affected settlements: causes and impacts of flooding

Date	Settlement	District	Properties flooded	Main sources
14/06/2016	Bishops Wood	South Staffordshire	10	Surface water and Ordinary Watercourse
10/06/2016	Cannock	Cannock Chase	8	Surface water and Ordinary Watercourse
08/06/2016	Kingsley Holt	Staffordshire Moorlands	4	Ordinary Watercourse
16/06/2016	Shenstone	Lichfield	2	Surface water
13/06/2016	Stafford	Stafford	1	Surface water and Ordinary Watercourse
08/06/2016	Kinver	South Staffordshire	1	Surface water and Main River
15/06/2016	Knypersley	Staffordshire Moorlands	1	Surface water and Ordinary Watercourse
16/06/2016	Harlaston and Clifton Campville	Lichfield	2	Main River and Ordinary Watercourse
14/06/2016	Wheaton Aston	South Staffordshire	1	Surface water
		Total	30	

Figure 2-1 Map of worst affected settlements



3 Actions and recommendations

3.1 Actions

Table 5-1 sets out relevant Risk Management Authorities and other interested parties, actions that have been taken to date and those actions planned for the future, with the relevant Risk Management Authority who will lead.

Table 3-1 Actions

Settlement	Relevant RMAs	Actions to date	Actions in future, lead RMA and timescale
Cannock	SCC as LLFA	Meetings with affected residents and businesses	Support a Local Flood Action Group in Wimblebury to support Risk Management Authorities to establish what actions can be taken and by who to help alleviate future flooding issues and how these might be funded. (SCC lead, timescale early 2017) Support Local Businesses affected in the town centre to identify measures that can reduce flood risk and how these might be funded. Encourage business continuity planning to mitigate the impacts of future events. (SCC lead, timescale mid 2017)
Bishops Wood	SCC as LLFA (lead) Severn Trent Water	Site visit and multi agency meeting	Map and survey the local watercourse network (SCC lead, timescale late 2016) Support a Local Flood Action Group to support Risk Management Authorities to establish what actions can be taken and by whom to help alleviate future flooding issues and how these might be funded (SCC lead, timescale early 2017)
Kingsley Holt	SCC as LLFA	Site visit and discussion with residents Survey and cleanse of culverted watercourse	Work with residents and landowners to establish where urgent works are needed to reinstate watercourse, where preventative work might help to reduce the chance of a repeat event and how the work might be funded (SCC lead, timescale mid 2017)
Shenstone	SCC as LLFA (lead) SCC as Highways Authority Severn Trent Water	Site visit and discussion with residents and Housing Association	Survey of local drainage system (SCC lead, timescale end of 2016) Work with Housing Association and residents to investigate the potential for Property Level Resilience measures and how these might be funded (SCC lead, timescale mid 2017)

Settlement	Relevant RMAs	Actions to date	Actions in future, lead RMA and timescale
Stafford	SCC as LLFA (lead) Severn Trent Water	Site visit and discussion with residents	Investigate watercourse ownership, survey as necessary and identify where works might be needed, by whom and how these might be funded (SCC lead, timescale mid 2017) For areas of Stafford recently affected by sewer flooding, Severn Trent Water are leading on the post flood investigation work.
Kinver	SCC as LLFA	Site visit and discussion with residents	Work with local residents and landowners to identify what works might be possible, any impact of these on third party land and how these might be funded (SCC lead, timescale early 2017)
Knypersley	SCC as LLFA	Site visit and discussion with resident and the Coal Authority	Work with the Coal Authority to investigate the impact of mine subsidence on the local drainage network and what remedial measures might be possible (SCC lead, timescale mid 2017) Work with residents to investigate the potential for Property Level Resilience measures and how these might be funded (SCC lead, timescale mid 2017)
Harlaston and Clifton Campville	Environment Agency	Site visit and discussion with residents	Work with the residents to identify what works might be possible and how these might be funded. (Environment Agency lead)
Wheaton Aston	SCC as LLFA SCC as Highways Authority	Site visit and discussion with residents	Work with the residents and SCC as Highways Authority to identify what works might be possible, any impact of these on the A5 and how these might be funded (SCC lead, timescale mid 2017)

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 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 Staffordshire Local Resilience Forum to be more prepared for future flood events, and
- The future programme for flood alleviation schemes across the County.

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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