



Flood Investigation Report

Flooding on the A45 Eastbound between Great Doddington and Wilby Way 14th July 2012

Revision Schedule

Northamptonshire County Council Flood Investigation Report

Rev	Date	Details	Author	Checked and Approved By
01	14 th August 2012	Draft Report for Stakeholder Consultation	Josie Bateman (Flood and Water Management Project Manager)	Roy Boulton (Assistant Director Environment and Planning)
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Executive Summary

This Flood Investigation Report (FIR) has been completed by Northamptonshire County Council under our duties as the Lead Local Flood Authority (LLFA).

Section 19 of the Flood and Water Management Act 2010 (F&WMA) states that on becoming aware of a flood in our area, when appropriate, we must investigate the relevant flood risk management authorities involved and find out which flood risk management functions have been, or will be taken, if any.

It was deemed necessary to complete a formal investigation into the flood incident on the A45 on the 14th of July 2012 as the flooding affected a piece of critical infrastructure within the county of Northamptonshire and was closed for just over 7 hours. Records also indicate that flooding of a similar nature has occurred along this stretch of road in the past.

The flooding that occurred on the A45 eastbound from Great Doddington to Wilby Way was a reflection of the intense rainfall that fell onto a saturated catchment over a short period of time. The inability of the ground to absorb more water and the inundation of the drainage network as well as an identified blockage resulted in excess surface water flowing over and accumulating on the carriageway.

Our main conclusion is that risk management authorities, and other groups, must continue to work together, sharing information and reports. The responsible Flood Risk Management Authority has been identified as the Highways Agency and they have agreed to investigate this matter further and recommend any mitigation measures that may be required.

1. Introduction

1.1. Lead Local Flood Authority Investigation

1.1.1 Section 19 of the Flood and Water Management Act (F&WMA) states:

- (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.

1.1.2 It was deemed necessary to complete a formal investigation into the flood incident on the A45 on 14th July 2012 as the flooding affected a piece of critical infrastructure within the county of Northamptonshire and was closed for just over 7 hours. Records also indicate that flooding of a similar nature has occurred along this stretch of road in the past.

Northamptonshire County Council's Draft threshold for formal investigation:

A formal flood investigation will be carried out if one or more of the following occurs:

- There is ambiguity surrounding the source or responsibility of a flood incident;
- Flooding has affected critical infrastructure for a period in excess of 3 hours from the onset of flooding;
- Internal flooding of one property has been experienced on more than one occasion in the last 5 years;
- Internal flooding of five properties in close proximity has been experienced during one single flood incident.

Definition of close proximity: Where it is reasonable to assume that the affected properties were flooded from the same source or interaction of sources.

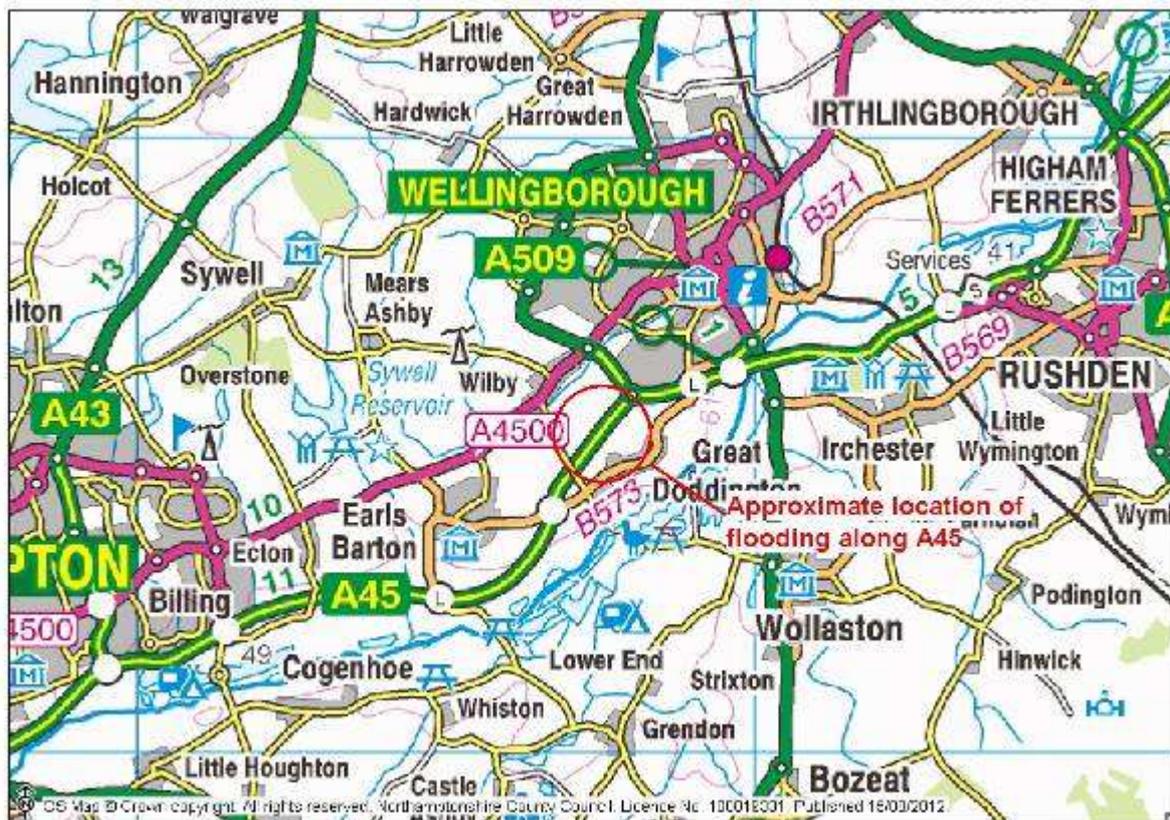
1.1.3 During the early hours of 14th July 2012 significant rainfall fell over the catchment. At 07:30 hours there was a single Road Traffic Collision causing central reserve barrier damage. At 07:46 the Highways Agency Operation staff attended the scene and identified an inundated drainage network and water flooding from an adjacent field across carriageway.

- 1.1.4 By 08:13 the police had closed the east bound slip road and carriageway at Earls Barton and diversion routes were put in place.
- 1.1.5 At 08:47 attempts were made to unblock the drainage network, but a suspected blockage was too deep (40 metres) to dislodge with rods and therefore required more robust jetting equipment. Due to severe rainfall over the preceding week there was a limited availability of drivers on standby as they are only able to work for a fixed period of time per day. A jetter from Telford was the only resource available at the required time. The jetter had arrived on scene by 13:21 and the blockage was successfully removed by 14:18.
- 1.1.6 By 14:47 all road closures had been removed and the traffic had started to run freely.

1.2. Site Location

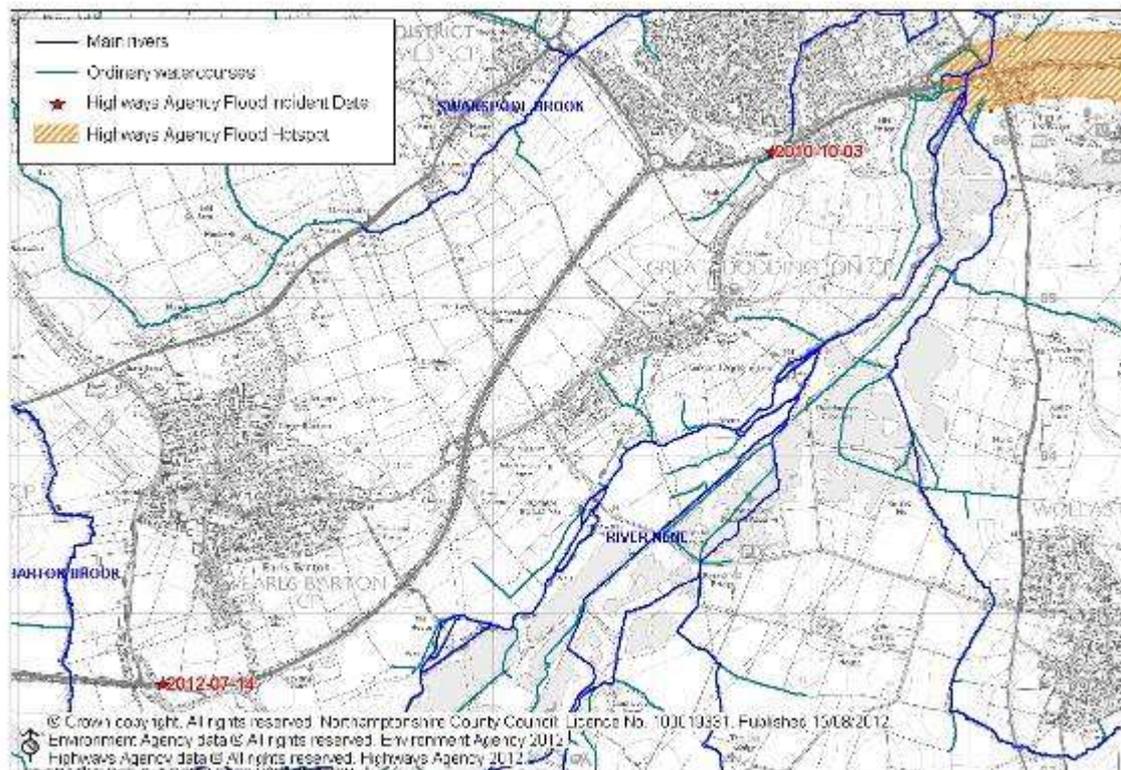
- 1.2.1 The stretch of road affected by flooding was the A45 eastbound between the village of Great Doddington and the Wilby Way roundabout. Map 1 below shows the location relative to the towns of Northampton and Wellingborough.

Map 1. Site location



- 1.2.2 There are no main rivers or ordinary watercourses that could have affected this stretch of the A45. Map 2 below is annotated to show the relative location of the watercourses in the locality and previously identified flooding hotspots.

Map 2. Watercourse Location and Flooding Hotspots



1.3. Drainage System

1.3.1 This stretch of the A45 sits in a cutting with adjacent land set on a higher level. There were reports of surface water runoff from the adjacent higher land entering the carriageway. The highway drainage system, including the gullies, drains and drainage network was completely inundated by the high levels of rainfall and associated water running off of the higher land adjacent to the carriageway (See photo 2).

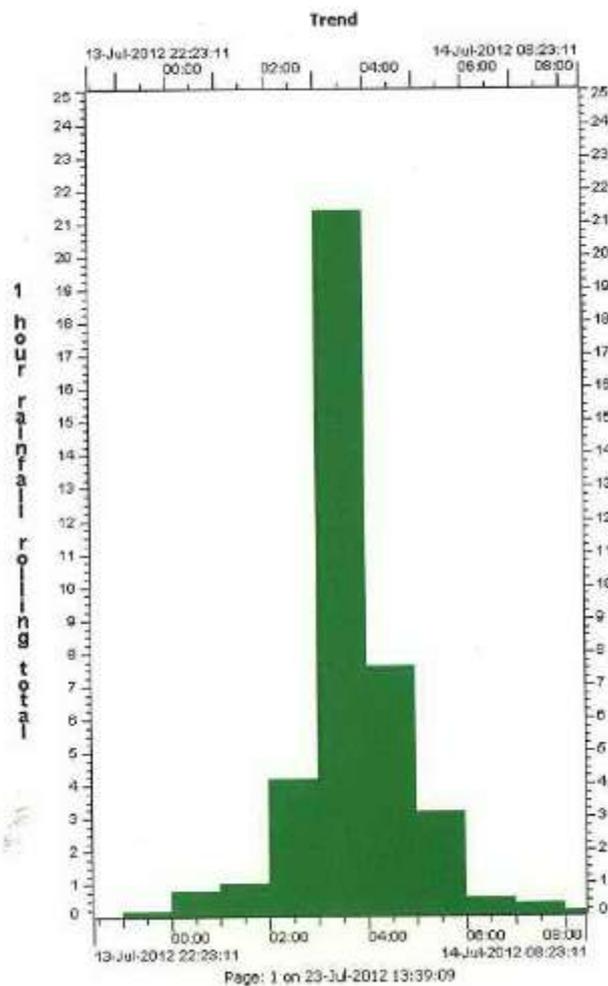
2. Drainage History

2.1. Previous Flood Incidents

2.1.1 There have been no previous records of flooding in this exact location, however Map 2 above indicates where recent reports of flooding have occurred on the A45 in 2010 and 2012. Mitigation measures have been identified for these locations and funding is being sought to deliver the required solutions.

2.2. Rainfall Analysis

2.2.1 The period up to 14th July 2012 saw regular periods of intense rainfall, which saturated the catchment. Between midnight and 04:30 hours on 14th July 2012, 44mm of rain fell in this locality. The rainfall chart for the Yardley Hastings Rain Gauge is shown below (source: Environment Agency).



2.2.2 As the catchment was already saturated, the majority of this rainfall would have quickly found its way into both natural and artificial drainage systems.

3. Summary of Impacts and findings

3.1. Impacts

3.1.1 There were various impacts in the area as a result of the heavy rainfall. The focus of this investigation is the flooding on a particular stretch of the A45 between Great Doddington and Wilby Way.

3.2. Summary of Impacts

- Road closure of a major trunk road for over 7 hours (7 hours and 8 minutes);
- Time and cost associated with the manpower required to alleviate the flooding;
- Knock-on implications for surrounding road network resulting from the road closure and the implementation of the diversion routes, causing localised congestion.

Picture 1. Water Level



(Source: Highways Agency 14.07.12 – 08:55)

Picture 2: Photo of water running off surrounding land



(Source: Highways Agency 14.07.12 – 09:55)

4. Rights and Responsibilities

4.1. Lead Local Flood Authority (LLFA)

- 4.1.1 As stated within the Introduction section, NCC as the LLFA has a responsibility to investigate flood incidents under Section 19 of the F&WMA.
- 4.1.2 The LLFA also has a responsibility to maintain a register of assets which have a significant effect on flooding as detailed within Section 21 of the F&WMA. The register must contain a record about each structure or feature, including the ownership and state of repair. NCC is also required to keep a record of flooding hotspots across the county.
- 4.1.3 As LLFA, NCC will therefore be looking for support from other authorities to ensure flood incidents are reported, and any assets which have a significant effect on flood risk are recorded on the asset register.
- 4.1.4 While NCC can suggest possible causes of flooding on the A45 and make recommendations to ensure flood risk is mitigated as far as possible, the F&WMA does not provide NCC with the mandate or funding to tackle all identified causes of flooding.

4.2. Highways Agency

- 4.2.1 For the purpose of this investigation, the Highways Agency are the relevant flood risk management authority with the responsibility for the provision and management of highway drainage and roadside ditches on all motorways and trunk roads in Northamptonshire (M1, A5, A43, A45, A14 and the M45) under the Highways Act (1980).

4.3. Highways Authority

- 4.3.1 Northamptonshire County Highways Authority in partnership with their contractors MGWSP is responsible for the provision and management of highway drainage and roadside ditches under the Highways Act (1980) in Northamptonshire. This excludes motorways and trunk roads (M1, A5, A43, A45, A14 and the M45) that are the responsibility of the Highways Agency.

4.4. Borough Council of Wellingborough

- 4.4.1 The BCW has no responsibility or powers for managing flood risk on highway infrastructure.

4.5. Environment Agency

- 4.5.1 The EA have no responsibility or powers for managing flood risk on highway infrastructure.

4.6. Anglian Water

- 4.6.1 Anglian Water has no responsibility or powers for managing flood risk on this highway network.

4.7. Neighbouring Land Owners

4.7.1 Neighbouring land owners have a responsibility to prevent surface water runoff flowing onto neighbouring land. If the neighbouring land use is farmland, as is the case in this situation, this type of flooding can be exacerbated by soil compaction or vegetation removal either seasonally by ploughing, or temporarily as topsoil is stripped, so that rainwater is no longer able to soak into the ground. Land management techniques can prevent soil from getting compacted and reduce the risk of flooding. Flooding from farmland may also happen as a result of drainage ditches becoming blocked. NCC as Lead Local Flood Authority is willing to work with the Highways Agency to investigate whether any land management methods could be introduced or improved to reduce any future flooding impacts.

5. Conclusion

5.1.1 The flooding that occurred on the A45 eastbound from Great Doddington to Wilby Way was a reflection of the intense rainfall that fell onto a saturated catchment over a short period of time. The inability of the ground to absorb more water and the inundation of the drainage network as well as an identified blockage resulted in excess surface water flowing over and accumulating on the carriageway.

6. Recommendations

- 6.1.1 The method for prioritising flood risk management works varies for each risk management authority involved, dependant on factors such as resources available, operational area, and interpretation of flood risk.
- 6.1.2 NCC as the LLFA is in a position to facilitate sharing of information between risk management authorities. We also suggest that the following recommendations are considered:
1. The Highways Agency and Lead Local Flood Authority work with adjacent landowners to ensure their land is being properly managed and any drainage ditches properly maintained;
 2. The Highways Agency to investigate the provision of additional locally based jetting equipment;
 3. The Highways Agency to investigate the cause of the drainage blockage and identify any mitigation measures that may be required to prevent a potential reoccurrence of this problem; and
 4. The Highways Agency to ensure a broader dissemination of consultation material on proposed diversion routes linked to the A45 and investigation into the requirement for additional diversion route signs to ensure continuity.

7. Disclaimer

This report has been prepared as part of Northamptonshire County Council's responsibilities under the Flood and Water Management Act 2010. It is intended to provide context and information to support the delivery of the local flood risk management strategy and should not be used 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 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 Northamptonshire County Council 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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Acronyms

EA	Environment Agency
NCC	Northamptonshire County Council
FIR	Flood Investigation Report
F&WMA	Flood and Water Management Act 2010
LLFA	Lead Local Flood Authority
BCW	Borough Council of Wellingborough

Appendix 1. Standard Notice

Environment Agency Standard Notice relating to data obtained from the Environment Agency for flood investigation purposes.

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