

## Bar Hill

### 1.1 Background

As the Lead Local Flood Authority (LLFA) for Cambridgeshire, it is Cambridgeshire County Council's duty to investigate flood incidents as detailed within Section 19 of the Flood and Water Management Act 2010.

#### **Flood and Water Management Act 2010: Section 19 – Local Authorities: Investigations**

- 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.

The County Council carries out flood investigation, in order to comply with current legislation. Unfortunately owing to very limited resources it is not possible to investigate every incident, and as such thresholds for investigation have been set within the Cambridgeshire Flood Risk Management Strategy.

### 1.2 Risk Management Authority

The flood investigation reports have been produced in partnership with the relevant Risk Management Authorities (RMA). RMAs are defined by the Flood and Water Management Act 2010, as they have responsibilities for flood risk management. The RMAs have a duty to carry out flood risk management functions in a manner consistent with national and local strategies.

The RMAs in Cambridgeshire are listed below; Table 1 highlights the relevant RMA that will take the lead in managing the risk from various local sources of flooding.

- Environment Agency (EA)
- Lead Local Flood Authority (LLFA) – the County Council
- Sewerage Undertaker - Anglian Water (AW)
- City and District Councils (C&DC)
- Internal Drainage Boards (IDBs)
- Highway Authority (HA) – the County Council other than for the A1, A1(M), M11, A14 and A428 for which Highways England are responsible.

The flood investigation reports determine which RMA(s) have exercised their flood risk management functions in response to flooding.

*Table 1 Relevant flood Risk Management Authorities that will take the lead in managing the risk from various local sources of flooding.*

<b>Flood Sources</b>	<b>EA</b>	<b>LLFA</b>	<b>C&amp;DC</b>	<b>AW</b>	<b>HA</b>	<b>IDBs</b>
<b>WATERCOURSES</b>						
Main River	✓					
Ordinary watercourse		✓				✓
Awarded watercourse			✓			
<b>SURFACE RUNOFF</b>						
Surface water		✓				
Surface water originating on the highway					✓	
Surface water sewer flooding from water company systems				✓		
<b>OTHER</b>						
Groundwater		✓				
Foul sewer flooding				✓		
Reservoirs	✓					
The sea	✓					

In the case of Bar Hill, the relevant RMA's are Cambridgeshire County Council Highways Authority and Anglian Water.

Riparian owners also often have an important role to play. A riparian owner is a landowner with a watercourse running through or alongside their land. Riparian owners have responsibilities to maintain and allow the free flow of water through their land. Further information on riparian owner rights can be found on the [Cambridgeshire County Council website](#).

## **Flood Incident, Extent and Impact:**

*Table 2. Formal Flood Investigation Report*

<b>Date of incident</b>	8th/9 <sup>th</sup> August 2014
<b>Reference Number</b>	FI/14/000048
<b>Location of incident</b>	Various, Bar Hill
<b>Risk Management Authority reported to</b>	South Cambridgeshire District Council and Cambridgeshire County Council.
<b>Incident reported by</b>	Residents.
<b>Historical flooding</b>	Unknown
<b>Source of flooding</b>	Multiple sources that included surface water and drains

## Location

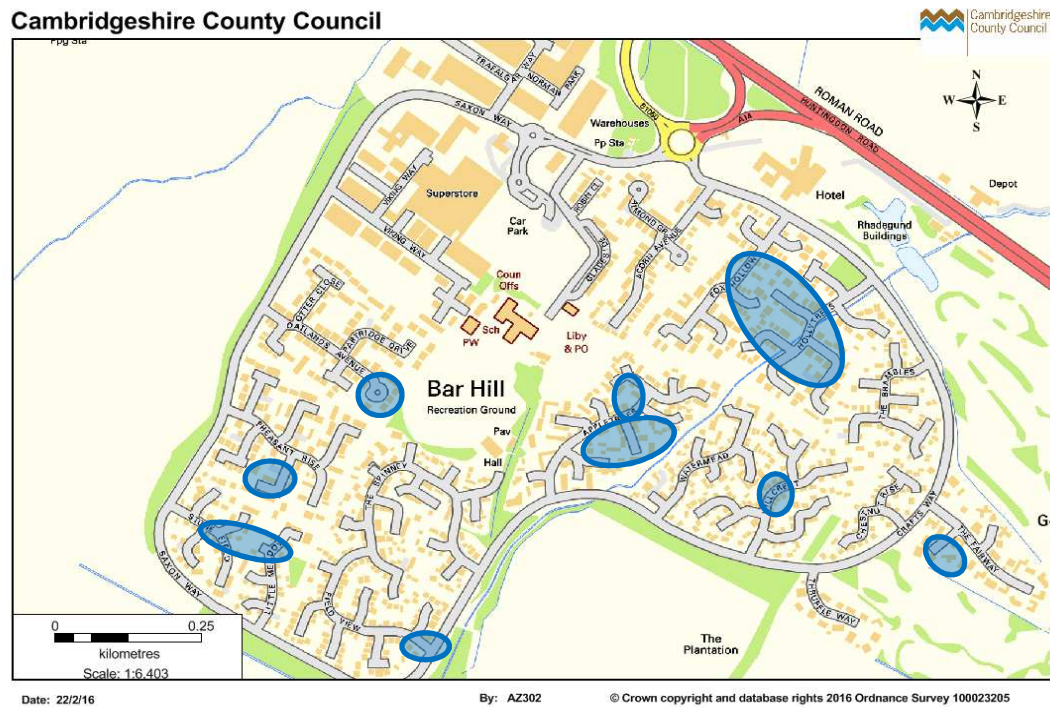


Figure 1. Location of flood incident

Note: The above map is indicative and does not represent the precise extent of flooding.

## Likely cause of incident

Extremely high levels of intense rainfall falling in a short time period onto a localised area. Flooding occurred as a result of an extreme rainfall event. The average expected rainfall for Bar Hill for the whole month of August is 46mm. On the 8<sup>th</sup> of August 2014 three times the monthly long term average rainfall fell (equivalent to three months rainfall in six hours). This equated to a rainfall event with an annual probability of 1 in 330. Contributing factors include:

- Bar Hill contains areas of both Flood Zone 3 and 2 due to the presence of two significant watercourses which drain the area and flow to the north east. Flood Zone 3 is land assessed have having a 1 in 100 or greater annual probability of river flooding and Flood Zone 2 is that with an annual probability of flooding of greater than 1 in 1000 but less than 1 in 100.
- Owing to the extreme rainfall, the capacity of all drainage networks were overwhelmed; and
- The volume of rain water inundated the watercourses and road network in the village, resulting in flooding from a range of sources that included surface water on roads, the overtopping of the watercourse and surcharging of local drains.

## Summary of impact

Bar Hill Primary School was flooded. At least 79 properties were reported by the community as having flooded internally with external flooding to approximately 30 additional properties.

<b>Action taken by relevant Risk Management Authorities</b>	
HA	Following the extreme rainfall event, Cambridgeshire County Council Highways arranged for all the main lines to be jetted and cleansed. The bridges near Hollytrees were also inspected and were found to be functioning as they should. In July 2014, 241 gully's were cleansed by CCC contractors and in December 2015, 178 gullies were cleansed.
LLFA, EA, SCDC, AW.	<p>Following the extreme rainfall event, Cambridgeshire County Council held a post flooding drop-in event that was attended by 56 residents. The event successfully gathered information from residents on the causes and impacts of flooding at Bar Hill. Flood questionnaires were completed and evidence gathered in respect of the flooding event. Cambridgeshire County Council has been working in partnership with the relevant RMAs to establish what happened during the flood event. The findings are contained within this report.</p> <p>At the drop in event members of the public expressed concern that Oakington Brook that flows through Bar Hill was the main source of flooding. A hydraulic modelling assessment was commissioned to investigate the flooding mechanisms in respect of Oakington Brook. The report indicates that flooding from Oakington Brook within Bar Hill is sensitive to changes in summer weed growth and culvert blockages. It recommended a maintenance regime and that riparian landowners be reminded of their rights and responsibilities.</p>
Bar Hill Parish Council	Since the 2014 flood event, Bar Hill Parish Council, a large riparian landowner, has arranged for the clearance of a blocked surface water sewer outfall at the infiltration basin by the A14 and other sections of watercourse for which they are riparian owners. This should have a beneficial impact on the operation of the local surface water system.
AW	Following the flood event of August 2014, Anglian Water inspected and carried out maintenance on the relevant sections of their network at Bar Hill. It is understood that their network ultimately flows into the maintained infiltration basin.
<b>Further actions</b>	
<p>Since the flood event of 2014, Cambridgeshire County Council has published three newsletters to update residents of progress with matters that were raised during the post flood event drop-in sessions. The final report of the hydraulic modelling assessment in respect of the section of Oakington Brook at Bar Hill will be available in due course.</p> <p>Cambridgeshire County Council recommends that residents, whose properties have been flooded, contact the <a href="#">National Flood Forum</a> for details on how to protect their property.</p>	

Cambridgeshire highways issues should be reported via [the County Council's website](#) or by calling 0345 045 5212. The routine cleansing of highways gullies across Cambridgeshire is now prioritised as part of a risk based approach to highway drainage maintenance.

Please note: The actions undertaken as part of this flood investigation do not preclude the risk of the area flooding in the future. If you live in an area that is at a risk of flooding, you are encouraged to undertake the action highlighted in the 'Further Solutions' section in Table 2.

### **Next Steps**

Cambridgeshire County Council, as LLFA, will ensure that this report is forwarded to the RMAs and the riparian owner(s) identified in the above table and that these authorities are aware of their flood risk management responsibilities. It is expected that all bodies will continue to share information and work co-operatively to manage future risk.