

Hertfordshire County Council Flood Investigation Report Whitwell, Hertfordshire



Photo courtesy of local resident



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Revision Schedule

Hertfordshire County Council Whitwell Flood Investigation Report

Friday 23 January 2015
Revision 5 - Final

Rev	Date	Details	Author	Checked and Approved by
1	19/11/14	For internal consultation	Suzanne Phillips Project Officer Flood Risk Management HCC	Andy Hardstaff Flood Risk Management Team Leader HCC
2	21/11/14	Text revision following comments from AH	Suzanne Phillips Project Officer Flood Risk Management HCC	Andy Hardstaff Flood Risk Management Team Leader HCC
3	21/11/14	For RMAs consultation	Suzanne Phillips Project Officer Flood Risk Management HCC	Andy Hardstaff Flood Risk Management Team Leader HCC
4	07/01/15	Further amendments	Suzanne Phillips Project Officer Flood Risk Management HCC	Andy Hardstaff Flood Risk Management Team Leader HCC
5	23/01/15	Final amendments	Suzanne Phillips Project Officer Flood Risk Management HCC	John Rumble Head of Environmental Resource Planning HCC

Explanation of Acronyms

Acronym	Explanation
FWMA 2010	Flood and Water Management Act 2010 – Legislation that was developed and enacted as a result of the review in to the serious flooding in 2007. It brings new powers and duties to local authorities and other regulatory bodies.
HCC	Hertfordshire County Council
LDA 1991	Land Drainage Act 1991 – Legislation that sets out a range of roles and responsibilities relating to flood risk management. It is also the legislation that gives powers to local authorities to manage flood risk and highlights the role of the landowner to manage watercourses on their land to maintain the flow of water.
LLFA	Lead Local Flood Authority – This is the role assigned to the unitary or county council for an area with a range of duties and powers to support the management of local flood risk.
RMAs	Risk Management Authorities – Bodies identified in the FWMA 2010 with roles and powers to manage flood risk. In Hertfordshire this includes the County Council, district councils, Highway Authority, the Environment Agency, the Bedfordshire and River Ivel Internal Drainage Board and water companies.

Executive Summary

In Whitwell in the early hours of the morning on 7 February 2014, heavy rainfall fell on saturated ground, causing surface water runoff from farmland. Two properties were subsequently flooded internally and one property suffered external flooding as a result of this runoff.

Due to the severity of the flooding and the number of properties impacted by this flood event, Hertfordshire County Council (HCC) as Lead Local Flood Authority (LLFA) have investigated the flood incident under Section 19 of the Flood and Water Management Act (FWMA) 2010 and published this report. The aim of this report is to establish the causes of the flooding; identify the relevant Risk Management Authorities (RMAs), highlight their role and responsibilities and confirm if those authorities intend to use their relevant powers to help manage the flood risk to Whitwell.

It has been concluded that the flooding that occurred on 7 February 2014 was primarily as a result of a succession of storms combining with heavy rainfall over an extended period of time. This saturated the surrounding catchment in the days prior to the flood event. Any additional rainfall was unable to soak into the ground resulting in surface water runoff. This runoff made its way to the edge of farmland, overflowing and flooding properties in 2 locations.

The existing highway drainage system in the affected roads would have had limited capacity to cope with the flood water.

As part of the Technical Assessment Report, produced by consultants appointed by HCC, a list of recommendations that might help to manage flood risk to Whitwell has been put forward. This report looks at the feasibility of each of these recommendations and highlights which, if any, RMAs would need to be involved.

The main recommendations explored are:

- Survey and clean the highway drainage system;
- Individual property level protection;
- Develop a programme of surface water management measures.

There is no one solution to resolve the flooding in Whitwell and there is no guarantee that flooding can be prevented particularly under the exceptional conditions similar to those that occurred on 7 February. A collaborative approach will be required between all RMAs, landowners and the local community to manage flood risk in the future.

1. Introduction

1.1 LLFA Investigation

Under Section 19 of the Flood and Water Management Act (FWMA) 2010 Hertfordshire County Council (HCC) as Lead Local Flood Authority (LLFA), on becoming aware of a flood in its area, must, to the extent that it considers it necessary or appropriate:

- investigate the incident;
- identify the Risk Management Authorities (RMAs) with relevant flood risk management functions;
- establish if the relevant RMAs have responded to the flood event or are proposing to respond;
- publish its findings; and
- inform the relevant RMAs of its findings.

As defined under Section 6, subsection 13 of the FWMA 2010, an RMA has certain powers to manage, regulate, assess and mitigate flood risk. We have identified the following RMAs as part of this Section 19 flood investigation for Whitwell:

- HCC as LLFA
- North Hertfordshire District Council
- HCC as Highway Authority

After 7 February 2014, HCC received a report that a residential property had suffered internal flooding in Whitwell.

As a preparatory step to identify if a detailed flood investigation should be carried out, officers from the Flood Risk Management Team at HCC wrote to those believed to have been affected, to gather further information and confirm the number of properties flooded internally.

Due to the severity of the flooding, it was determined that this flood incident met the criteria in Policy 2 of HCC's Local Flood Risk Management Strategy (<http://www.hertsdirect.org/services/envplan/water/floods/floodrisk/lfrmsHERTS/>) and HCC subsequently commissioned a basic flood investigation.

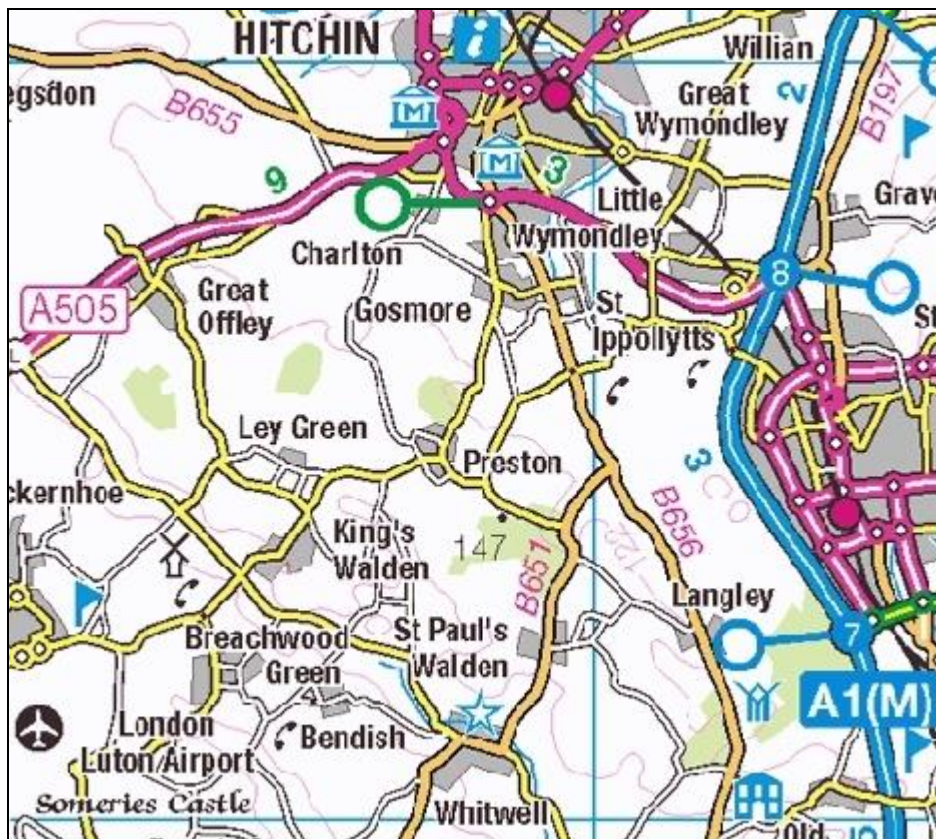
1.2 Site Location

The village of Whitwell is situated six miles south of Hitchin, illustrated in Figure 1.1. The site affected by flooding is located in the north west of Whitwell, as shown in Figure 1.2.

1.3 Previous flood events

One resident was aware of a historic flood event in 1968, although this pre-dated the construction of the properties.

Figure 1.1 Whitwell, Hertfordshire – Location Map



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Figure 1.2 Area affected by flooding in Whitwell



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2. Assessment of 7 February 2014 flood event

2.1 Observations

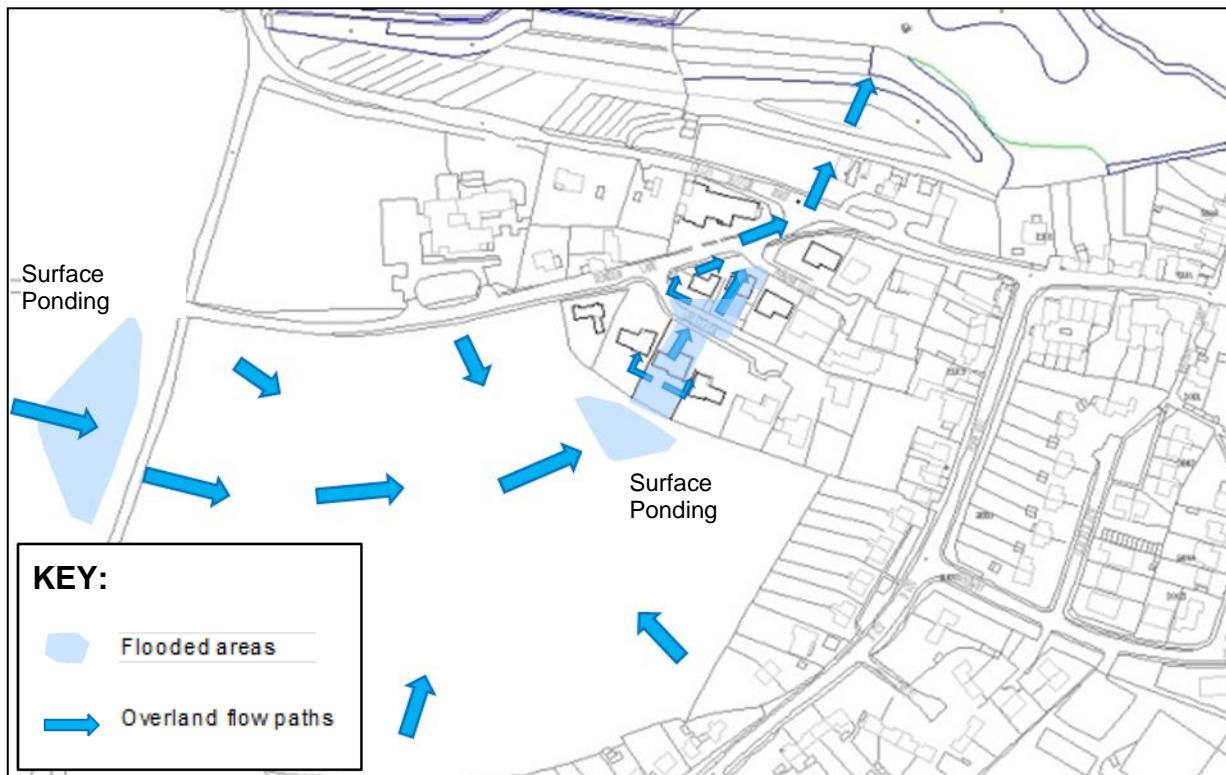
In Whitwell in the early hours of the morning on 7 February 2014, heavy rainfall fell on saturated ground, causing surface water runoff from farmland. Water ponded at the bottom of a field adjacent to Cresswick, overflowing into a property's rear garden and subsequently entering the property through rear doors.

Flood flows then found their way round both sides of the property, onto Cresswick and towards the rear gardens of Mimram Close. Water built up in the gardens of properties in Mimram Close, finding its way into one property via an old dryer vent and the rear conservatory. The adjacent property in Bendish Lane suffered flooding to their garage.

Overland flow paths run predominantly eastwards from farmland, then in a north east direction through Cresswick and Mimram Close, following the lowest point of the land.

A total of 3 properties were flooded; 2 internally. Figure 2.1 shows the flow route the water took.

Figure 2.1 Overland flow paths



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2.2 Ground conditions

Following a series of heavy storms the ground in the catchment surrounding Whitwell was saturated with no capacity to allow for the infiltration of additional rainfall.

2.3 Sources of flooding

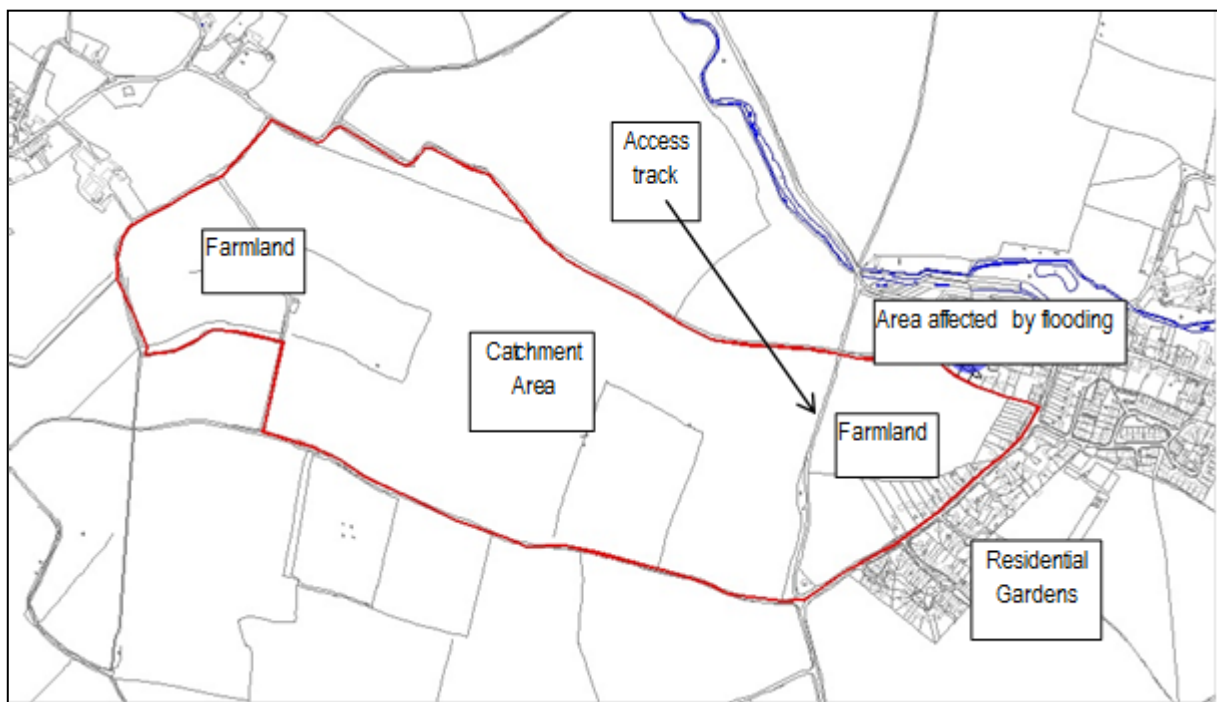
2.3.1 Surface water runoff (pluvial)

The catchment that drains to the area which flooded measures approximately 69.2ha. This is shown below in Figure 2.2. The catchment is relatively steep, sloping from a high point to the west of approximately 148m elevation, to the lowest point in Lilley Bottom Road, at an elevation of approximately 190m. The flooded properties in Cresswick and Mimram Close lie at approximately 93m and 91.5m elevation, respectively.

The land west of Cresswick is almost entirely arable farmland, with Bendish Lane marking the northern boundary of the catchment. A small number of rear gardens in Horn Hill form the south eastern part of the catchment.

Surface water runoff from farmland is funnelled to a low point, at the rear of Cresswick, which eventually overflows..

Figure 2.2 Catchment boundary



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2.4 Highway drainage

There are a few isolated gullies in Cresswick and Mimram Close. The initial flow path does not directly cross any gullies due to their location in Cresswick, but would eventually meet gullies in Mimram Close and Bendish Lane.

2.5 Possible causes of flooding

The following are the key findings of the pluvial analysis and other flooding mechanisms that have been determined as part of this investigation:

- Winter 2013/2014 was one of the wettest on record for the region; and heavy (while not extreme) rainfall falling on already highly saturated ground with an elevated groundwater table has caused flood flows.
- Rainfall onto saturated farmland to the south and west of the site caused surface water runoff to flow directly towards the affected area.
- The highway drainage system would not have affected the flooding in Cresswick and would have had limited capacity to prevent flows into the rear gardens of Mimram Close.

3. Responsible Authorities and landowners

HCC as the LLFA have investigated the flooding at Whitwell to establish the relevant RMAs that have Flood Risk Management Functions in accordance with the FWMA 2010 as part of this study. Those RMAs and their relevant powers and functions are set out below.

3.1 Hertfordshire County Council as Lead Local Flood Authority

HCC as the LLFA for its area has fulfilled its legal responsibility to carry out a Flood Investigation under Section 19 of the FWMA 2010, to;

1. Identify the relevant RMAs and;
2. Establish if those authorities intend to utilise their own powers and to what extent. The actions that the relevant RMAs have agreed to take are set out in Section 5.

In order to achieve the responsibilities under Section 19, HCC as LLFA must first establish the cause and impacts of the flooding and identify where possible, potential solutions as discussed in this report.

The LLFA has powers to carry out flood risk management works for flooding from surface water runoff and ground water in accordance with the Local Flood Risk Management Strategy for Hertfordshire.

3.2 North Hertfordshire District Council

North Hertfordshire District Council are the local planning authority for the Whitwell area and their role is to determine planning applications for new development, approve and assess any impacts from all sources of flooding and any associated proposed drainage.

3.3 Hertfordshire County Council as Highways Authority

Cresswick, Mimram Close and Bendish Lane are adopted highways. HCC are the responsible authority to maintain and manage adopted highways including associated drainage infrastructure such as gullies, drainage pipes, soakaways and any assets that lie within the highway boundary.

HCC Highways have powers to manage water on an adopted road under the Highways Act 1981, however where this water originates from third party land and not from runoff from the highway these powers are limited.

3.4 Landowners

Landowners are responsible for the management of their land, including any associated drainage. This will encompass drainage ditches, land management

practices and surface water runoff. They also have the right to allow their land to drain naturally but must manage this so that it does not cause a nuisance to others.

4. Conclusions and recommendations

4.1 Conclusions

A major factor contributing to the flooding was the amount, longevity and intensity of the rainfall during the days preceding the flood event on 7 February 2014. The winter of 2013/14 has been confirmed to be the wettest winter on record for the UK.

This meant that with saturated soils throughout the catchment, the rain water could not enter the natural drainage system.

The highway drainage system in the area would have had a limited capacity in reducing the flood flows.

In order to develop and provide a suitable resolution to the flooding, there needs to be a collaborative approach between the LLFA, relevant landowners and all the identified relevant RMAs.

4.2 Recommendations

The following are the recommendations of the county council, in its capacity as LLFA and follow from the main findings from the Section 19 flood investigation carried out into the flood event in Whitwell on 7 February 2014.

No.	Recommendations	Comments	RMAs and other parties to be involved
1.	Investigation of Property level protection	That individual properties have flood risk assessments with a view to retro-fitting protection to properties to increase resilience to flooding. This is for individual property owners to organise and fund, although there is a Repair & Renew Grant available for people that suffered internal between 1 April 2013 and 31 March 2014. Advice is available from North Hertfordshire District Council.	<ul style="list-style-type: none">• North Hertfordshire District Council
2.	Survey and clean highway drainage system	That the highway drainage system in Cresswick, Mimram Close and Bendish Lane be surveyed using CCTV to establish any serious structural defects which may be affecting performance. That any identified blockages be removed to ensure that the system is free of debris and silt.	<ul style="list-style-type: none">• HCC – Highways Authority
3.	The development of a programme of surface water management measures	This to include a programme of measures that could include highways related works and land management measures in the southern and western rural catchment. These options will need to be modelled to ensure that they carry no increased flood risk downstream. Any identified programme will be subject to appropriate cost-benefit appraisal as part of any bid process for funds to implement it.	<ul style="list-style-type: none">• HCC – LLFA• HCC – Highways Authority• North Hertfordshire District Council

5. Next Steps and Actions

5.1 Lead Local Flood Authority

The following are agreed actions to be undertaken by HCC in its capacity as LLFA;

1. To work with relevant partners, including the Highways Authority, North Hertfordshire District Council and local landowners to develop and test a programme of surface water management measures to minimise, manage and mitigate any surface water runoff entering Cresswick, and subsequently Mimram Close and Bendish Lane.

5.2 Highway Authority

The following are suggested actions to be undertaken by HCC in its capacity as Highways Authority;

2. To survey and clean the highway drainage system in Cresswick, Mimram Close and Bendish Lane.
3. To work with the LLFA and other partners to develop and test a programme of surface water management measures to minimise, manage and mitigate any surface water runoff entering Cresswick, and subsequently Mimram Close and Bendish Lane.

Highways have stated that they have a surface dressing job on Bendish Lane which is due for pre-patching in March 2015. As part of this scheme they will raise the kerbs outside the church to try and prevent water flowing onto the private land.

5.3 North Hertfordshire District Council

The following are suggested actions to be undertaken by North Hertfordshire District Council;

4. To support affected residents in securing nationally funded Repair and Renew Grant for the installation of appropriate property flood protection measures.
5. To work with the LLFA and other partners to develop and test a programme of surface water management measures to minimise, manage and mitigate any surface water runoff entering Cresswick, and subsequently Mimram Close and Bendish Lane.

6. Disclaimer

This report has been prepared as part of Hertfordshire 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. NHTB Consultancy and Hertfordshire County Council expressly disclaim responsibility for any error in, or omission from, this report and the supporting technical assessment Report arising from or in connection with any of the assumptions being incorrect.

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