FLOOD INVESTIGATION REPORT

STATION ROAD, HELMDON

21st NOVEMBER 2012

Client: Flood & Water Management Team Planning Services Northamptonshire County Council County Hall, Room 271, Northampton NN1 1DN

Prepared by: Richard Jones

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## REVISION SCHEDULE

Northamptonshire County Council  
Flood Investigation Report  
Station Road  
Helmdon

David Smith Associates Reference: 12/15446

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<td>Draft Report</td>
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EXECUTIVE SUMMARY

This Flood Investigation Report (FIR) has been completed by David Smith Associates on behalf of Northamptonshire County Council under its duties as the Lead Local Flood Authority (LLFA) in accordance with Section 19 of the Flood and Water Management Act 2010 (F&WMA).

Statutory Context

Section 19 of the F&WMA states that on becoming aware of a flood which meets certain pre-determined criteria, the LLFA must undertake a formal flood investigation in order to determine the relevant flood risk management authorities involved and which flood risk management functions have been, or should be taken to mitigate future flood risk. Where an authority carries out an investigation it must publish the results.

Within the Draft Northamptonshire Local Flood Risk Management Strategy the thresholds for undertaking a FIR are:

Northamptonshire LLFA thresholds for formal investigation:

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

- 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.

Definition of internal flooding: Where water crosses the threshold of a commercial or residential building.

Flooding Incident

It was deemed necessary to complete a formal investigation into the flood incident on Station Road, Helmdon on 21st November 2012. At least 3 properties flooded internally and the Highway was closed. Similar events have occurred with some frequency in Helmdon in the past. This all meets the draft threshold for investigation as set out above.
Cause of Flooding

The flooding that occurred in Helmdon is 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 ineffectiveness of historic land drainage systems meant excess surface water flowed over ground following natural contours to the low point of Station Road immediately south of Helmdon Brook, to be drained down to Helmdon Brook by Highway drainage and public sewerage systems which are not intended to convey land drainage.

Main Findings

Our main conclusion is that risk management authorities, and other groups, must continue to work together, sharing information and reports. Property owners should be made aware of the flood resistance and resilience measures available, and this information is provided by both the Environment Agency and the National Flood Forum Blue Pages.

- Flood Forum Blue Pages – http://www.floodforum.org.uk/
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 Within the Draft Northamptonshire Local Flood Risk Management Strategy the thresholds for undertaking a Formal Investigation Report in the County have been determined as:

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1.2 Flooding Incident

1.2.1 It was deemed necessary to complete an investigation into the flood incident on Station Road, Helmdon on 21st November 2012. At least 3 properties flooded internally and the Highway was closed. The source of the water contributing to the flooding was ambiguous. Similar events have occurred with some frequency in Helmdon in the past. This all meets the draft threshold for investigation as set out above.

1.2.2 Well above average rainfall was experienced in central England in April, July and November 2012, giving rise to saturated ground and conditions for flooding events to occur.

1.2.3 During Wednesday 21st November 2012 significant rainfall fell on the Helmdon catchment. There was flooding on Station Road to the south of Helmdon Brook and the road was closed to traffic by residents. At least 3 properties were affected by flood water beyond their building thresholds, and several other properties were at high risk of flooding or had issues with sanitary appliances.

1.2.4 An investigation was carried out and a report prepared by the Water Authority, Anglian Water Services, dated 13th November 2012 relating to the public foul and surface water sewerage systems.

1.2.5 David Smith Associates undertook a Flood Incident Investigation on 13th December 2012. An Anglian Water Customer Liaison Manager, The Clerk to Helmdon Parish Council, a local resident with records of flooding events in Helmdon, and a representative of Helmdon Primary School were engaged in dialogue regarding the events of 21st November 2012.

1.2.6 The majority of the Flood Incident Investigation was undertaken in areas of the village south of Helmdon Brook, where the reported incidents occurred.

1.3 Site Location

1.3.1 Helmdon is situated in the southwest of Northamptonshire approximately four miles north of Brackley and five miles west of Silverstone. See Appendix A.

1.3.2 The village is located at the base of a valley with an ordinary watercourse (Helmdon Brook) flowing west to east through the village centre. This is a tributary of the River Tove with its origin approximately two and a half miles to the west. See Appendix B for an overall Catchment Plan of the area.

1.3.3 The high ground surrounding the village is agricultural land of various uses. A dismantled railway runs east to west through the village on a small embankment following the line of Helmdon Brook. The dismantled Great Central Railway (GCR) runs to the west of the village and is characterised by a large cutting to the south west of the village, becoming a large embankment directly west of the village with a viaduct over the area of Helmdon Brook.

1.3.4 Foul water from the village is pumped from a pumping station near to Helmdon Brook to a sewage treatment works to the west of the GCR, immediately south of the viaduct.
1.4 Drainage Systems

1.4.1 Various networks/systems of ditches serve the GCR earthworks as well as some roads and fields in the village. These are of a variable standard of maintenance, but it is considered that these are in place to transport surface water to lower ground and eventually to Helmdon Brook. These are separate to the public sewerage system. See Appendix C, Incident Plan, for the approximate routes and initial understanding of the ditch systems.

1.4.2 Anglian Water Services own and maintain the foul and surface water public sewers present throughout the village. These accept foul and surface water from domestic and commercial properties, as well as the public highway. They also accept surface water from some ditches.

1.4.3 There is a system of surface water drainage throughout the village comprising of ditches and road gullies. The Highway Drainage system connects to the public sewerage system in places. A Highway road gully adjacent to No. 7 Station Road is reported to make a separate piped connection through the privately owned land of No. 7 Station Road and the field to the east until it is thought to discharge to Helmdon Brook.

1.4.4 A system of ditches exists at the footpath to the south of Helmdon Primary School. A ditch exists flowing south to north on the eastern boundary of the school playing field, which connects to the schools drainage system and ultimately the public sewerage system in Station Road.

1.4.5 Helmdon Brook comprises a narrow channel directly east of the GCR viaduct. This becomes wider as it approaches the village. Where Station Road crosses the brook in the centre of the village there is a bridge which is understood to be the responsibility of the Highway Authority. The bridge has two arches, one channelling the main flow of the brook, and the other at a slightly higher elevation which becomes operational during extreme flows.

1.4.6 An ordinary watercourse is indicated on the Environment Agency Flood Plan in Appendix D, from the approximate position of an existing catchpit east of the Sewage Treatment Works, heading northeast beneath the GCR embankment to connect with Helmdon Brook. This is in line with the historical route of a land drainage ditch prior to the railway being constructed, which is indicated on the 1885 historic map in Appendix F.

1.4.7 It is understood that a ditch system exists from Manor House Farm fields which runs through the rear garden of No. 16 Shortlands Close. It is considered that this system may convey field run-off to enter the public sewerage system in Church Street.
2. **DRAINAGE HISTORY**

2.1 **Previous Flood Incidents**

2.1.1 Numerous previous flood incidents have been recorded by residents of the village from 1998 onwards. These are recorded in the table in Appendix H. This table has been completed by and provided directly by residents of the village.

2.1.2 The Parish Council representative reported that there is a belief in the village that flooding problems began following abandonment of the GCR and transfer of ownership of the railway land.

2.2 **Rainfall Analysis**

2.2.1 Well above average rainfall was experienced in central England in April, July and November 2012, giving rise to saturated ground and conditions for flooding events to occur.

2.2.2 On Wednesday 21st November 2012 significant rainfall fell on the Helmdon catchment. Over 35mm of rainfall is understood to have fallen on this date. (source: Environment Agency)

3. **SUMMARY OF IMPACTS AND FINDINGS**

3.1 **Impacts**

3.1.1 Various incidents of flooding affected people and property on the 21st November 2012 as a result of the significant rainfall. The following outlines the events and impacts, as obtained from those present during the Flood Incident Investigation.

3.2 **Surface Water Overland Flow**

3.2.1 A large volume and high velocity of surface water flowed south to north along the base of the west side of the GCR embankment. This overtopped the field boundaries and flowed east through the Grange Lane road tunnel onto the public highway, then east to Station Road. The heavy flow of water continued to the area of Station Road directly south of Helmdon Brook.

3.2.2 The heavy flow of water was met by other significant flows of water which ran south to north along the east side of the GCR embankment. This overtopped the ditches on Grange Lane onto the public highway at various points east of the tunnel beneath the GCR.

3.2.3 A flow of water also joined the main flow from the southern section of Station Road from higher ground. The main flow was also joined by flows of water from the school car park and from Church Street.

3.2.4 Therefore the main flow observed was from the west side of the GCR embankment, but this was met by numerous other sources before settling at the south side of Helmdon Brook where it caused a ponding effect.
Flood Incident Report
Station Road, Helmdon

3.2.5 The pond that formed could not flow into the road gullies or public sewerage system as the volume of water exceeded the drainage capacity of the system and therefore could not be conveyed into the Helmdon Brook to prevent the pond forming.

3.2.6 Surface water overland flow was reported from fields to the southwest of the Sewage Treatment Works overtopping a land drain ditch on the south boundary and flowing across the STW to the lower ground to the north.

3.2.7 Surface water overland flow was reported flowing off fields to the southeast of ‘Upper Court’, Station Road, becoming part of the flow down Station Road detailed in 3.2.3.

3.2.8 The playing field of the school absorbed water which flowed through an embankment into the car park as detailed in 3.2.3. There was also a flow of water off the playing field and yard into a courtyard at the rear of the school which caused a risk of flooding to the school building.

3.2.9 The ditch system to the south of the school was reported to be full, while the ditch flowing north on the east boundary of the school playing fields was not flowing with water.

3.2.10 The Incident Plan in Appendix C indicates reported routes of surface water during the event.

3.3 Effect on Watercourses and Hydrological Structures

3.3.1 Helmdon Brook was reported to be reasonably deep, but flowing freely east of the Station Road bridge.

3.3.2 West of the Station Road bridge, the water levels were reported to be considerably higher, at the soffit of the arches. The water was impeded from flowing smoothly into the higher of the two arches. Instead the water flowed directly to the southern arch, then swirled around until forced into the higher, northern arch resulting in a throttling effect reducing the capacity of both arches.

3.3.3 Further upstream, between the GCR viaduct and Helmdon village, there was evidence of the brook overtopping and water flattening grass up to 20 metres away from the banks of the brook.

3.4 Areas of Flooding

3.4.1 An area of standing water was formed from a point immediately south of Helmdon Brook extending south as far as the road junction of Station Road and Church Street. The road was closed by residents to prevent vehicles passing through the water.

3.4.2 The depth of flooding at its deepest point was approximately 325mm. This was at the frontage of properties across the road to The Green and the post box.

3.4.3 Internal flooding to properties occurred at two residential properties on Station Road. At one property this was through air bricks and manifested below ground floor level. At the other property water seeped into the property at ground floor level and flowed across ground floor living areas.
3.4.4 Another residential property on Station Road had the benefit of the use of purpose made flood defence mechanisms that had been installed to the garage entrance and front door entrance. Therefore flood water entering the property was kept to a minimum but was still present to some degree. Had the defences not been in place approximately 300mm depth of flood water would have been present in ground floor living areas.

3.4.5 At two additional residential properties further south on Station Road, the flood water came up to approximately 25mm below ground floor level. Had there been turbulence to the main pond of water such as a vehicle passing through it, the water would have overtopped into the property.

3.4.6 It is understood that some residential properties on The Green had sanitary appliances that were affected during the flooding incident.

3.4.7 An area of Station Road immediately north of Helmdon Brook had ponding during the incident but this did not affect private property.

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 from surface runoff, groundwater or ordinary watercourses (non-main river) 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 NCC’s practices relating to third party assets is to notify third party owners of their asset forming part of a flood risk system, and assist by advising third party owners on their condition and their responsibility to maintain the assets.

4.1.4 As Lead Local Flood Authority, 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.

4.1.5 While NCC can suggest possible causes of flooding in Helmdon 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 **South Northants Council (SNC)**

4.2.1 SNC have powers under Section 14 of the LDA to undertake flood risk management works on ordinary watercourses (non-main river) where deemed necessary.

4.2.2 Under Section 20 of the Land Drainage Act 1991 (as amended)(LDA), SNC have the powers to (by agreement of any person and at their expense) undertake drainage work which that person is entitled to carry out and maintain.
SNC also have powers to serve notice on persons requiring them to carry out necessary works to maintain the flow of ordinary watercourses under Section 25 of the act.

The above powers are subject to consent from the Environment Agency or NCC.

**Environment Agency (EA)**

The EA has a strategic overview responsibility under the F&WMA as well as permissive powers to carry out maintenance work on main rivers under Section 165 of the Water Resources Act (WRA). Helmdon Brook is an ordinary watercourse and therefore does not fall under the EA’s remit.

Main river means all watercourses shown as such on the statutory main river maps held by the Environment Agency and the Department of Environment, Food and Rural Affairs, and can include any structure or appliance for controlling or regulating the flow of water into, in or out of the channel. The Environment Agency has permissive powers to carry out works of maintenance and improvement on these rivers.

The EA will encourage third party asset owners to maintain their property in appropriate condition and take enforcement action where it is appropriate. They may consider undertaking maintenance or repair of third party assets only where it can be justified in order to safeguard the public interest and where other options are not appropriate.

**Highway Authority (HA)**

NCC Highways have a duty to maintain the highway under Section 41 of the Highway Act 1980 but subject to the special defence in Section 58. The road bridge over Helmdon Brook falls within the highway boundary.

**Water Authority (Anglian Water Services) (AWS)**

Water and sewerage companies are responsible for managing the risks of flooding from water and foul or combined sewer systems. Public sewers are designed to protect properties from the risk of flooding in normal wet weather conditions. However, in extreme weather conditions there is a risk that sewer systems can become overwhelmed and result in sewer flooding.

Since October 2011, under the ‘Private Sewer Transfer’, AWS will adopt piped systems on private land that are connected to a public sewer. Sewerage Undertakers have a duty under Section 94 of the Water Industry Act 1991, to provide sewers for the drainage of buildings and associated paved areas within property boundaries.

Sewerage Undertakers are responsible for public sewers and lateral drains. A public sewer is a conduit, normally a pipe that is vested in a Water and Sewerage Company, or predecessor, that drains two or more properties and conveys foul, surface water or combined sewage from one point to another point and discharges via a positive outfall.

There is no automatic right of connection for other sources of drainage to the public sewer network. Connection is therefore discretionary following an application to connect.
4.6 Riparian Landowners

4.6.1 As detailed within the EA document ‘Living on the Edge’, riparian landowners have certain rights and responsibilities, including the following:

- they must maintain the bed and banks of the watercourse, and also the trees and shrubs growing on the banks;
- they must clear any debris, even if it did not originate from their land. This debris may be natural or man-made;
- they must keep any structures that they own clear of debris. These structures include culverts, trash screens, weirs and mill gates;

4.6.2 If they do not carry out their responsibilities, they could face legal action. Riparian landowners must understand and act upon these responsibilities. NCC has proposed to write to certain landowners in the area highlighting the importance of this.

4.6.3 Riparian landowners must be aware that any works in, over, under or within 9 metres of a main river, require formal consent from the EA under the WRA and associated Byelaws. Riparian landowners also require formal consent from NCC for any works over, under or within 9 metres of an ordinary watercourse (non-main river).

4.7 Residents

4.7.1 Helmdon residents who are aware that they are at risk of flooding should take action to ensure that they and their properties are protected.

4.7.2 Community resilience is important in providing information and support to each other if flooding is anticipated. Actions taken can include signing up to Flood Warning Direct, nominating a community flood warden, producing a community flood plan, implementing property level protection and moving valuable items to higher ground, to more permanent measures such as installing floodgates, raising electrical sockets and fitting non-return valves on pipes. NCC and the EA can provide advice on these matters and more information can be found at:

- Flood Forum Blue Pages – http://www.floodforum.org.uk/
4.7.3 NCC and the EA hold standing advice in relation to sources of flooding as experienced during the Flood Incident. These are available at the following locations:

- NCC Advice on How to Resolve Nuisance Flooding from Runoff

- Environment Agency, practical advice to help you reduce the impact of flooding from groundwater

4.7.4 Anyone affected by flooding should try to document as much information about the incident as possible. NCC should be contacted and will make a record of the details provided.

5. CONCLUSION

5.1.1 The flooding that occurred in Helmond is a reflection of the intense rainfall that fell onto a saturated catchment over a short period of time. Existing drainage systems and watercourses were unable to cope with the deluge of water, causing the water to flow to other areas and drainage systems that are not able to manage the quantity of water experienced. The Station Road bridge over Helmond Brook also contributed by being restricted in capacity to accept the flows passing beneath it.

5.1.2 Existing drainage systems and watercourses were seen to be in a poor state of maintenance, to the point where they are almost non-existent. In particular, ditches were seen to be almost completely full of silt and debris making their historic existence difficult to trace. Identifying structures linking the ditches beneath carriageways and other property was also not possible due to the quantity of silt and debris, but it is considered that such structures are in existence.

5.1.3 The lack of functionality of the ditch and watercourse system around the village and the GCR means that run-off from privately owned land is overtopping into the public highway to be drained by Highway Drainage and public sewerage systems which are not designed for this purpose. The original drainage systems associated with the earthworks of the GCR and its severance of the natural land drainage regime are required to remain in place as though the railway was still operational.

5.1.4 A build-up of vegetation and debris in the channel of the Station Road bridge over Helmond Brook, together with the ineffectiveness of the hydrological design of the inlets into the two channels causes water in the brook to build up on the west side of this structure, which then limits the effectiveness of drainage systems with outfalls in this location.
6. **RECOMMENDATIONS**

6.1.1 Listed below are the recommended course of actions emanating from this formal Flood Investigation Report.

6.1.2 It is important to note that it is for the relevant responsible body or persons to assess each recommendation in terms of the legal obligation, resource implications, priority and cost/benefit analysis of undertaking such action.

6.1.3 The recommendations may be included within the Action Plan linked to the Local Flood Risk Management Strategy or in the relevant risk management authority’s future work programmes, as appropriate.

1) An overall asset plan of Helmdon be developed which can be used to plan and calculate a village wide strategy of reinstatement of historic drainage that prevents overspill of land drainage to the public Highway and public sewerage system, and to inform future work programmes. This could be included as part of the community flood plan and may require intrusive investigations, dye surveys and CCTV surveys on the existing drainage systems to ascertain its exact historic function. To include, but not be limited to:

- locating and excavating existing headwalls and piped sections of ditches,
- investigating the means of eventual outfall to Helmdon Brook,
- Investigating the possible historic culverting of the existing land drainage channel beneath or around the GCR earthworks at the sewage treatment works, including the routes of pipework from the catchpit at this location.
- Identifying the routes of land drainage from the southeast areas of the village.

2) The LLFA to inform owners of the drainage systems within the village catchment, in particular the original ditch drainage systems to the GCR earthworks and agricultural fields to the south of the village of their legal responsibilities, and provide details of a recommended maintenance regime. This to include a recommendation that owners of all ditch and watercourse systems in and around the village should assist in the village wide strategy of reinstatement of historic drainage, which may require owners to re-excavate ditches to a calculated cross sectional area, repair all piped/culvert sections or replace these with new pipework of calculated diameter and dredge and trim watercourses.

The calculations are required to ensure the hydraulic capacity of the drainage. Replacement structures and clearing of vegetation should be carried out as required to facilitate these works. All such works would require the appropriate Consent for Works on an Ordinary Watercourse in accordance with Section 23 of the Land Drainage Act 1991.

3) LLFA and NCC Emergency Planning to provide advice to residents on options for property level protection, instate and liaise with a Flood Warden and produce/update the village community flood plan.
4) NCC Highways to:
   - undertake regular highway drainage cleansing throughout the village, and develop a detailed plan of their assets to share with the LLFA;
   - assess the capacity of their assets and identify any areas with insufficient capacity for draining runoff from the highway. Where this leads to flood risk to properties improvement works should be considered.
   - Investigate the gully and pipework located at No. 7 Station Road to determine where possible any Rights of Easement, route, condition and capacity of pipework;
   - consider more regular cleaning of the watercourse channels of Helmdon Brook beneath the Station Road bridge; and
   - consider any works necessary to improve the flow of water through the brick arch channels of Helmdon Brook at Station Road bridge.
   - explore the possibility of lowering ground levels between The Green and Helmdon Brook to the west of Station Road to allow a natural run-off channel for flood water.

5) Anglian Water to carry out their own recommendations in their report dated 13th November 2012. These are:
   - To repair the collapsed surface water sewer in Station Road, upstream from manhole 5652.
   - The surface water sewers merge at the junction of Church Street and Station Road. Anglian Water will disconnect the overflow from 7651, and pipe the flow from Station Road straight into manhole 6653. This will take the Station Road surface water directly to the outfall, via the west side of Station Road. The Church Street surface water will go directly via the east side of Station Road.
   - Identify streams, springs and other land drainage connected to the foul system and disconnect.

6) Anglian Water to assess the hydraulic capacity of their assets, identify any improvements required and implement these.

7) Helmdon Primary School to assess means of preventing run-off from playing fields flowing to the courtyard area at the rear of the school. With other land owners they should also assess the ditches to the south and east of the playing field. These should be made to function adequately and an assessment of the outfall and storage requirements considered.

8) The documents available from NCC and the EA detailed in 4.7.2 and 4.7.3 are recommended to all residents affected by surface water runoff from neighbouring land, or the emergence of groundwater.
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.

Any recommended actions outlined in this FIR will be for the relevant responsible body or persons to assess in terms of resource implications, priority and cost/benefit analysis of the proposal. Moving forward, these may be included in the Action Plan linked to the Local Flood Risk Management Strategy or in the relevant risk management authority’s future work programmes as appropriate.

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ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>EA</td>
<td>Environment Agency</td>
</tr>
<tr>
<td>NCC</td>
<td>Northamptonshire County Council</td>
</tr>
<tr>
<td>SNC</td>
<td>South Northants Council</td>
</tr>
<tr>
<td>FIR</td>
<td>Flood Investigation Report</td>
</tr>
<tr>
<td>F&amp;WMA</td>
<td>Flood and Water Management Act 2010</td>
</tr>
<tr>
<td>LDA</td>
<td>Land Drainage Act 1991</td>
</tr>
<tr>
<td>LLFA</td>
<td>Lead Local Flood Authority</td>
</tr>
<tr>
<td>WRA</td>
<td>Water Resources Act 1991</td>
</tr>
<tr>
<td>LIDAR</td>
<td>Light Detection and Ranging</td>
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</table>
USEFUL CONTACTS

Environment Agency
General Enquiries 08708 506 506 (Mon-Fri, 8am - 6pm)
Incident Hotline 0800 80 70 60 (24hrs)

Northamptonshire County Council
Street Doctor (Highways) 0300 126 1000 (24hrs)

Lead Local Flood Authority - (Northamptonshire County Council)
Flood and Water Management Team: 01604 366014 (Mon-Fri, 9am - 5pm)
Email: floodandwater@northamptonshire.gov.uk

USEFUL LINKS

Highways Act 1980:

Water Resources Act 1991:

Land Drainage Act 1991:

EA - ‘Living on the Edge’ a guide to the rights and responsibilities of riverside occupation:

EA - Prepare your Property for Flooding:
How to reduce flood damage Flood protection products and services

Northamptonshire County Council Flood and Water Management Web Pages:
APPENDIX A

Site Location Plan
STATION ROAD HELMDON CATCHMENT PLAN

21st NOVEMBER 2012

ISSUE NUMBER: 12

SHEET NUMBER: 15446/50

All items shown on this drawing are approximate only and should not be relied upon for accuracy.

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NORTHAMPTONSHIRE COUNTY COUNCIL

CONTRACT

LEAD LOCAL FLOOD AUTHORITY

FLOOD INCIDENT INVESTIGATIONS

ISSUE

REVISED

DIM. 

SCALE

DRAWN

CHECKED

DATE

DATE

DRAWING

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6/10/12

10/10/12

15446/50

12

15446/50

12

APPENDIX B

Catchment Plan
APPENDIX C

Incident Plan
APPENDIX D

EA Map of Areas Susceptible to Surface Water Flooding
APPENDIX E

EA Flood Map for Surface Water
APPENDIX F

Historic Map 1885
APPENDIX G

LIDAR Topography Map
APPENDIX H

Table of Historic Flooding Events, provided by village residents
<table>
<thead>
<tr>
<th>Date</th>
<th>Event (Road=Station Road)</th>
<th>Weather</th>
<th>Excessive flow from:</th>
<th>Surface Water Drains (Sewers)</th>
<th>Foul Sewer Manhole 7601 at junction of Station Road and Church Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>08 April 1998</td>
<td>Major flooding. Properties damaged by water &amp; sewage</td>
<td>?</td>
<td>?</td>
<td>Failed (No gullies)</td>
<td>?</td>
</tr>
<tr>
<td>08 August 1999</td>
<td>Whole area flooded</td>
<td>Very large flow (1005.jpg)</td>
<td>?</td>
<td>Failed (No gullies)</td>
<td>Failed - Fountain</td>
</tr>
<tr>
<td>01 November 2000</td>
<td>Road impassible</td>
<td>?</td>
<td>?</td>
<td>Failed (No gullies)</td>
<td>Failed - Fountain</td>
</tr>
<tr>
<td>12 February 2001</td>
<td>Road impassible</td>
<td>?</td>
<td>?</td>
<td>Failed (No gullies)</td>
<td>Failed - Fountain</td>
</tr>
<tr>
<td>09 September 2005</td>
<td>Road flooded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 July 2007</td>
<td>Wide area flooded. Bridge House garden wall demolished to allow flow to brook</td>
<td>Very heavy storm</td>
<td>No evidence of run off?</td>
<td>Failed (No gullies)</td>
<td>Failed</td>
</tr>
<tr>
<td>15 January 2008</td>
<td>Road flooded</td>
<td></td>
<td>Very large flow (C2007-08.jpg)</td>
<td>Flowed thro' the school</td>
<td>Well over banks</td>
</tr>
<tr>
<td>03 June 2008</td>
<td>Significant flow on roadway</td>
<td></td>
<td></td>
<td>ok</td>
<td>Failed (No gullies)</td>
</tr>
<tr>
<td>07 December 2008</td>
<td>New gully installed on east side of Station Road</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 December 2008</td>
<td>Water up to house thresholds. Road impassible</td>
<td>?</td>
<td>Very large flow (dscf4623.avi). Diversion of water to old ditch worked later in the day</td>
<td>Failed (No gullies)</td>
<td>Failed</td>
</tr>
<tr>
<td>18 July 2008 (onwards)</td>
<td>Culverts cleared of several tonnes of stones. Soil &amp; vegetation removed from one exit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 June 2009</td>
<td>Elbows fitted to surface water sewer outlets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01 August 2009</td>
<td>Short sharp heavy shower</td>
<td>No</td>
<td>No</td>
<td>ok</td>
<td>Failed - Fountain</td>
</tr>
<tr>
<td>04 July 2012</td>
<td>Whole area flooded</td>
<td>Heavy rain shower &lt;30 min</td>
<td>Very large flow</td>
<td>Very large flow</td>
<td>Failed</td>
</tr>
<tr>
<td>18 July 2012</td>
<td>Surface drains overwhelmed</td>
<td>Heavy rain shower 6 mins</td>
<td>Very large flow along Station Rd and Church St</td>
<td>Low</td>
<td>Failed</td>
</tr>
<tr>
<td>15 August 2012</td>
<td>excessive surface water on road</td>
<td>Sudden heavy rain</td>
<td>Significant flow</td>
<td>Failed</td>
<td></td>
</tr>
<tr>
<td>04 November 2012</td>
<td>excessive surface water on road</td>
<td>Overnight rain</td>
<td>Very significant flow</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>21 November 2012</td>
<td>Water level well above house thresholds. Road impassible. Later, pumped out by fire service</td>
<td>Rain previous days. Light rain then heavy 30 min</td>
<td>Very large flow. Significant flow. Some flow</td>
<td>Very high upstream of culverts</td>
<td>Failed</td>
</tr>
<tr>
<td>25 November 2012</td>
<td>Road flooded 2:30am</td>
<td>Further rain (not heavy)</td>
<td>Very large flow</td>
<td>Medium</td>
<td>Foul Sewer Manhole 7601 at junction of Station Road and Church Street</td>
</tr>
</tbody>
</table>
APPENDIX I

Anglian Water Services Surface Water Flooding Investigation November 2012
Anglian Water

Helmdon

Surface Water Flooding Investigation

November 2012
Introduction

At the end of August 2012 Helmdon Parish Council informed Anglian Water that surface water flooding had occurred in the village on 4 separate occasions in 2012. Unfortunately these had not been reported to Anglian Water at the time of flooding.

History

In 2007 and 2008 there was extensive flooding in Helmdon on various dates. Anglian Water carried out extensive surveys on the public foul and surface water sewers and defects were corrected. We also put a flap valve on the outfall and rebuilt the headwall at the brook.

Events in 2012

The dates for the flooding events in 2012 are
29 April 2012 – continuous heavy rain for 36 hours
4 July 2012 – storm
18 July 2012 – storm
15 August 2012 – storm

Since 28 April 2012 it has been an exceptionally wet year with May, June and July being the wettest for 100 years.

At the Parish Council meeting on 26 September foul flooding was also reported. However all the photographic evidence shows extensive surface water flooding. All nominally foul systems will accept an element of surface water drainage from roofs etc. It follows that surcharge of the surface water network during heavy rainfall may be expected.

As a result of these flooding events Anglian Water has investigated the surface water network, the foul network and the wastewater pumping station. Silt from the flooding events was impacting on the pumping station and the rising main. Immediately this was known we addressed the problem by cleaning out the pumping station wet well and rising main.

Foul Network

Video from the Parish Council shows manhole 7601 at the junction of Church Street and Station Road surcharging. Inspection on a dry day showed a continuous flow of clean water into this manhole suggesting a connection of a stream, spring or similar. This flow was traced back up Church Street and
reduces considerably after 40 Church Street. CCTV will be done to identify source of flow.

**Surface Water Network Inspection**

Maps showing the surface water sewers in blue and photographs are at the end of this document.

**Church Street**

The surface water sewer that serves the top of Church Street discharges into the field behind Bell Close. The outfall is not at the drinking trough, as had been reported by village residents; it is about 15 metres further downstream. The outfall was confirmed to be free flowing. This section of sewer had a steady flow on a dry day. This suggests a connection of a stream, spring or similar.

The surface water sewer that serves the lower part of Church Street starts outside 15 Church Street. It is a brick culvert. At the head there is no flow however when it reaches the junction with Station Road there is a continual flow coming from the direction of Church Street on a dry day. This suggests a connection of a stream, spring or similar.

The junction of the Church Street and Station Road surface water sewers is in manhole 7651. This manhole is in the road, near the kerb, outside 1 Church Street. The manhole surcharges and the manhole cover is reported to lift during a flood event. The manhole is approximately 70cm deep (Photograph 1). When the level of the water in the manhole starts to back up, it overflows through the pipe shown at the top of photograph 2. This overflow joins the surface water sewer that runs down the west side of Station Road and outfalls on the pumping station side of the road just before the bridge.

When manhole 7651 is not surcharged the flow goes only down the surface water sewer on the east side of Station Road and discharges about 27 metres downstream of the bridge.

**Station Road**

At the top of Station Road there is a surface water sewer down both sides of the road. The two legs merge into one at the bottom of Grange Lane (lane coming down from the railway bridge and sewage treatment works).
The sewer on the east side (Hinton’s Close side) of Station Road starts in the verge outside number 43. The pipe is plastic and once it has gone under Hinton’s Close it becomes an open ditch. It is then piped again from outside 37 until the start of the school field, then it is an open ditch for about 30 metres. This is a very unusual arrangement for a true public surface water sewer.

At the top of Station Road on the west side, the surface water sewer starts above the final house (56) at manhole 6352. This sewer receives land drainage from the direction of the railway embankment. On a dry day this was running constantly (photograph 3). This suggests a connection of a stream, spring or similar.

The surface water sewer continues down the verge to manhole 5652 where it merges with the sewer from the other side of the road. The surface water sewer was blocked in the verge between an unmarked manhole in the verge outside number 32 and manhole 5652. This sewer has subsequently been investigated and found to be collapsed. At present work is suspended while the relaying of the collapsed section of the surface water sewer is priced and funds allocated.

Manhole 5652 receives the flow from the ditch that runs down the south side of Grange Lane (photograph 4). This is a new connection put in by Highways. A previous connection from this ditch had collapsed. The ditch receives surface water from an extensive area of new block paving at the rear of 22 and 24 Station Road.

The surface water sewer continues down Station Road to join the flow from Church Street at manhole 7651.

**Other factors to be considered**

From the corner of Grange Lane to 18 Station Road there appears to have been a ditch in the verge. This ditch would previously have taken the drainage from the field. It is unclear whether this would ever have taken the flow from the ditch on the south side of Grange Lane.

On the afternoon of 17 October, following heavy rainfall the previous night, water can be seen pouring from the earth bank in the school car park (photograph 5).

It is reported that during heavy rainfall, huge amounts of water run down Grange Lane and spill onto Station Road. This is assumed to be land drainage.
In both Church Street and Station Road there is a lot of infill housing. The effect of this development has been to replace permeable surfaces, which would previously have soaked up rainfall, with impermeable surfaces which actually increase the amount of runoff.

**Anglian Water’s responsibilities**

Anglian Water is responsible for the public foul sewerage network and public surface water sewers. The public surface water network accepts roof water from properties. Additionally the highways authority have a right to discharge into our surface water sewer where there are gully connections. This right is to discharge a reasonable volume only.

Anglian Water is not responsible for ground water, such as springs, or for ditches and piped ditches or the flow from them, or for land drainage runoff from surrounding properties such as the school field or Grange Lane.

**Highways’ responsibilities**

The highways authority have a duty under the Highways Act 1980 to maintain the highway, which includes draining it, so that it is safe for pedestrians and traffic and does not cause a nuisance. Highways are consented to discharge into the surface water sewer. That consent however, is subject to certain conditions. The volume discharged must be reasonable. For Highways to fulfil their statutory duty they must provide adequate drainage for the highway.

**Conclusion**

From all the photographic evidence and eye witness accounts the flooding that occurred was a result of exceptional weather events. These events are becoming more frequent. Helmdon is vulnerable to flash flooding because it sits at the bottom of a valley with all roads leading down to the centre.

During rain events the surface water sewer surcharges as a result of an unreasonable volume of water entering via road gullies as a result of connections from ditches, streams, springs and land drainage runoff.

Photographs and video provided by the Parish Council show a river of water coming down Station Road. The cause of flooding is the unreasonable volume of water being directed by surrounding areas towards the road.

The ditch from Grange Lane should not be connected to the public surface water sewer. This is a significant factor in the surcharge of the sewer. However, if
Anglian Water were to enforce a disconnection of the ditch, the water would pour down the road at the junction of Grange Lane and Station Road and enter the surface water sewer via highway gullies.

If the ditch on the east side of Station Road was disconnected this would also have the same effect.

The streams that are piped into the surface water sewer restrict the normal flow carrying capacity.

Anglian Water does not intend to disconnect these ditches or streams. Doing so would stop the surcharge to our surface water sewers during a storm event but would make the flooding worse in Helmdon.

Anglian Water is not responsible for ground water, such as springs, or for ditches and piped ditches or the flow from them, or for land drainage runoff.

Where streams, springs and other land drainage are found to be connected to the foul system Anglian Water has powers to enforce disconnection. Such connections restrict the capacity of foul systems and contribute towards foul flooding during rain events.

Anglian Water wants to give all the assistance that we can to the residents of Helmdon however we can only work on our assets and give advice where the responsibility lies with others.

**Recommendations**

**For Anglian Water**

To repair the collapsed surface water sewer in Station Road, upstream from manhole 5652.

The surface water sewers merge at the junction of Church Street and Station Road. Anglian Water will disconnect the overflow from 7651, and pipe the flow from Station Road straight into manhole 6653. This will take the Station Road surface water directly to the outfall via the west side of Station Road. The Church Street surface water will go directly via the east side of Station Road. We are seeking funding to do this alteration.

Identify streams, springs and other land drainage connected to the foul system and disconnect.
For consideration by others

The Parish Council should ask that the Local Planning Authority check that the new area of block paving on the south side of Grange Lane has planning permission and is correctly built. If it is not, then the Local Planning Authority should take enforcement action.

During rain events, try to identify where the flow is coming from. The owners of the land have a responsibility to not allow surface water runoff to flood the highway. The highways authority are the enforcing agency for flooding on to roads.

Ensure that road gullies are kept clear, this is particularly important in autumn.

Every effort should be made to slow the flow of water down into the village centre. This could include individual householders looking at where drainage from their own hard landscaping is flowing and making any necessary changes.
Photograph 1 Manhole 7651 flow from piped stream

Photograph 2 Manhole 7651 overflow to west side Station Road sewer
Photograph 3 manhole 6352 taking flow from railway embankment direction
Photograph 4 manhole 5652 takes flow from Grange Lane ditch

Photograph 5 runoff from School field
Helmdon Map 3 Station Road School area
APPENDIX J

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APPENDIX K

Photographs from Flood Incident Investigation 13\textsuperscript{th} December 2012
Catchpit at west toe of dismantled railway bank, east of Sewage Treatment Works.

Helmdon brook west of Helmdon village, with tunnel through dismantled railway. Treated foul water effluent and land drainage discharge at this point.
Field boundary at west toe of abandoned railway embankment where overspill to Grange Lane occurred, showing fields to south.
West mouth of Grange Lane tunnel beneath dismantled railway

Station Road, Helmdon. Darkened mortar indicates moisture from flooding event.
Station Road bridge over Helmdon Brook, inlet channels.

Station Road Helmdon, with The Green on left. Main area of flooding during incident.
Property access on Station Road, south of village centre. Overspill of runoff from fields beyond occurred onto Station Road.

Silted up ditch system to south of Helmdon Primary School