## REVISION SCHEDULE

Northamptonshire County Council  
Flood Investigation Report  
Yelvertoft

<table>
<thead>
<tr>
<th>Rev</th>
<th>Date</th>
<th>Details</th>
<th>Author</th>
<th>Checked</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
<td>08/12/2016</td>
<td>Revised draft report</td>
<td>Jon Saner (Environment Agency)</td>
<td>Josie Bateman (Flood and Water Manager F&amp;WM)</td>
<td>15/12/2016</td>
</tr>
<tr>
<td>03</td>
<td>09/01/2017</td>
<td>Draft report for stakeholder consultation</td>
<td>Jon Saner (Environment Agency)</td>
<td>Josie Bateman (Flood and Water Manager F&amp;WM)</td>
<td>09/01/2017</td>
</tr>
<tr>
<td>04</td>
<td>02/02/2017</td>
<td>Revision following additional information/consultation</td>
<td>Jon Saner (Environment Agency)</td>
<td>Josie Bateman (Flood and Water Manager F&amp;WM)</td>
<td>22/02/2017</td>
</tr>
</tbody>
</table>
FOREWORD

One of the roles of Northamptonshire County Council as the Lead Local Flood Authority (LLFA) is to carry out investigations into flooding incidents if they meet the set thresholds.

The LLFA will:

- Identify and explain the likely cause/s of flooding;
- Identify which authorities, communities and individuals have relevant flood risk management powers and responsibilities;
- Provide recommendations for each of those authorities, communities and individuals; and
- Outline whether those authorities, communities or individuals have or will exercise their powers or responsibilities in response to the flooding incident.

The LLFA cannot:

- Resolve the flooding issues or provide designed solutions; or
- Force Authorities to undertake any of the recommended actions.
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EXECUTIVE SUMMARY

This Flood Investigation Report (FIR) has been completed by the Environment Agency on behalf of Northamptonshire County Council (NCC) 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 predetermined 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 Northamptonshire Local Flood Risk Management Strategy the approved 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.
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Definition of internally flooded properties

Note: properties include both homes and businesses (this is a non-statutory definition used for the collection of data)

Properties flooded: are those where it is considered that the property has been flooded internally, i.e. water has entered the property;

- Basements and ground level floors are included;
- Garages are included if in the fabric of the building. Garages adjacent or separate from the main building are not included;
- Includes occupied static caravans and park homes, but not tents.

This definition is based on homes, but includes businesses where water has entered the fabric of the buildings.

Properties affected: are those where water has entered gardens or surrounding areas which restricts access, or where flooding has disrupted essential services to the property such as sewerage. For businesses this includes those where the flood waters are directly preventing them trading as usual.

Flooding Incident

It was deemed necessary to complete a formal investigation into the flood incident in Yelvertoft on 9th March 2016. Internal flooding of one property has been experienced on more than one occasion in the last 5 years. This meets the threshold for investigation as set out above.

Approximately 30mm fell across Northamptonshire in the first 12 hours of 9th March 2016. Over 70 properties were reported to have been flooded internally, with a total of over 200 reports of flooding, from a combination of agricultural runoff, surface water runoff and ordinary watercourse flooding.

Cause of Flooding

The flooding that occurred at Yelvertoft was caused by heavy rainfall falling on the saturated River Avon catchment. The Yelvertoft Brook Flood Storage Area; culverted section of the brook and below ground drainage systems were unable to collect and convey rainwater effectively. This led to excess water flowing over ground following natural contours to low points around private property.

Main Findings

Our main conclusion is that the relevant risk management authorities together with the local community, and other community groups, must continue to work together, sharing information and reports.

Property owners should be aware of flood resistance and resilience measures available, and this information is provided on the NCC Flood Toolkit here:

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—

(c) publish the results of its investigation, and
(d) notify any relevant risk management authorities.

1.1.2 Within the Northamptonshire Local Flood Risk Management Strategy the thresholds for undertaking a Formal Investigation Report in the County have been determined as:

**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.
1.2 Flooding Incident
1.2.1 It was deemed necessary to complete a formal investigation into a flood incident at Yelvertoft on 9th March 2016. Internal flooding of one property has been experienced on more than one occasion in the last 5 years. This meets the threshold for investigation as set out above.

1.2.2 The Environment Agency undertook a flood drop-in event on the 12th May 2016. Affected residents and businesses were spoken to regarding the flooding incident on 9th March 2016, as well as previous flooding incidents.

1.2.3 Approximately 30mm fell across Northamptonshire in the first 12 hours of 9th March 2016. Over 70 properties were reported to have been flooded internally, with a total of over 200 reports of flooding, from a combination of agricultural runoff, surface water runoff and ordinary watercourse flooding.

1.3 Site Location
1.3.1 Yelvertoft is situated in the west of Northamptonshire approximately fifteen miles west of Northampton town centre. See Appendix A.

1.3.2 Yelvertoft is situated south of the River Avon, which flows east to west to the north of the village.

1.3.3 Two watercourses flow south to north through, or around the village and flow into the River Avon.
1.3.4 The High Street forms the main way through the village for east/west traffic. Elkington Road and Crick Road form the main way through the village for north/east traffic.

1.3.5 With reference to mapping on Northamptonshire County Council’s online Flood Toolkit, Ashwells Lane, High Street, Bridgend, Swinnertons Lane, Crick Road, Elkington Road and areas of the Wards Lane housing estate are deemed to be located in an area at high risk of surface water flooding.

1.3.6 Large areas in the centre of the village are shown to be located within Flood Zone 3. This is an area that could be flooded from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.

1.4 Drainage Systems

1.4.1 Local Authority Asset Maps indicate that foul water public sewers serve Yelvertoft.

1.4.2 A comprehensive system of Highway Authority road gullies are indicated throughout the village.

1.4.3 Two watercourses flow through or around Yelvertoft and drain into the Upper Avon catchment. The first watercourse is Clay Coton Brook which flows southeast to north to the east of the village, and flows into the River Avon approximately 3.5 km to the north. Clay Coton Brook originates approximately 3.0 km southeast near to Winwick and is classed as a Main River around Yelvertoft.

1.4.4 The second watercourse is Yelvertoft Brook, which flows into Yelvertoft from the southwest and originally through to the Clay Coton Brook. It originates approximately 1.0 km southwest of the centre of Yelvertoft. Yelvertoft Brook is classed as a Main River through the village.

1.4.5 During the 19thCentury Yelvertoft Brook was culverted along the southern edge of Swinnertons Lane receiving additions to its length over time. It now totals approximately 180m before resurfacing then is culverted again for approximately 40m before discharging into the Clay Coton Brook.

1.4.6 Before being designated a Main Watercourse in 2005 Yelvertoft Brook was diverted along the north edge of Crick Road into a small Flood Storage Area.

1.4.7 It is understood that a historic overspill feature for the culverted section of Yelvertoft Brook between Swinnertons Lane to Bridge End though land associated with Elkins Close has recently been removed and any over ground flows may be impeded by recent fence lines and raised ground.
2. DRAINAGE HISTORY

2.1 Previous Flood Incidents

2.1.1 The following table lists flooding incidents that have been recorded in the area of the flood incident:

<table>
<thead>
<tr>
<th>Year</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easter 1998</td>
<td>26 Properties recorded as being affected.</td>
</tr>
<tr>
<td>06/11/2000</td>
<td>1 property flooded on School Lane</td>
</tr>
<tr>
<td>10/01/2007</td>
<td>Flooding occurred at 1am, reported by Northampton Fire Service</td>
</tr>
<tr>
<td></td>
<td>Crick Road was reported to be almost impassable.</td>
</tr>
<tr>
<td></td>
<td>1 property had nearly 2ft of water in the property and required pumping</td>
</tr>
<tr>
<td></td>
<td>by the fire service.</td>
</tr>
<tr>
<td></td>
<td>5 properties reported water in gardens.</td>
</tr>
<tr>
<td>09/03/2016</td>
<td>Approximately 15 properties flooded from excessive rainfall leading to</td>
</tr>
<tr>
<td></td>
<td>the FSA filling to capacity and over topping.</td>
</tr>
<tr>
<td></td>
<td>This excess rainfall could then not pass into an undersized culvert</td>
</tr>
<tr>
<td></td>
<td>resulting in nearby properties being affected.</td>
</tr>
</tbody>
</table>

2.2 Rainfall Analysis

2.2.1 Monthly rainfall totals were above average across much of Northamptonshire during December 2015 and February 2016 which led to saturated ground across catchment areas. (Source: NCC rain gauges at Silverstone, Thrapston, Tiffield, Warmington, Wellingborough and Yelvertoft. MET Office Moulton Park climate station averages from 1981 - 2010).

2.2.2 Rainfall data from the Kings Newnham rain gauge, situated approximately 15.0 km west of Yelvertoft, indicates that 28.6mm of rain fell over approximately 8 hours between 01:30 and 10:15 on the morning of 9th March 2016. This equates to approximately 88% of the average monthly rainfall total. (Source: Environment Agency rain gauge. MET Office Moulton Park climate station averages from 1981 – 2010).
3. SUMMARY OF IMPACTS AND FINDINGS

3.1 Areas of Flooding and Impacts

3.1.1 After speaking to residents after the flood event a member of the Environment Agency prepared a detailed account of the events that occurred during the flood incident on 9th March 2016. This is reproduced below, all times are approximate:

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:30</td>
<td>Yelvertoft Brook reaching top of banks.</td>
</tr>
<tr>
<td>07:55</td>
<td>Crick Road Flood Storage Area almost full.</td>
</tr>
<tr>
<td>08:15</td>
<td>Yelvertoft Brook had overtopped, water flowing along Crick Road and High Street</td>
</tr>
<tr>
<td>08:20</td>
<td>Water starting to flow down Swinnertons Lane. Properties on High Street and Crick Road with internal flooding</td>
</tr>
<tr>
<td>08:45</td>
<td>Water reached far end of Swinnertons Lane flooding further properties. Water level rose entering gardens and Properties on Elkins Close</td>
</tr>
<tr>
<td></td>
<td>Some properties that initially experienced flood water approaching from only one direction were now approached and flooded from other sides.</td>
</tr>
<tr>
<td>09:00</td>
<td>Flooding at confluence of Yelvertoft Brook and Clay Coton Brook where banks had been overtopped resulting in flood water on driveways and gardens to properties at foot of Ashwells Lane and Bridgeend. No obvious internal flooding.</td>
</tr>
<tr>
<td>13:00</td>
<td>Water Level receding</td>
</tr>
</tbody>
</table>

3.1.2 The above information, along with the information gained during the site visits, shows that the flooding in Yelvertoft was caused by exceedance of the Yelvertoft Brook flood storage area and culvert.

3.1.3 The inability for these culverts to effectively carry away the water may have been caused by lack of capacity (insufficient diameter or blockage), an inability to discharge to Clay Coton Brook due to high water levels covering the outlets, or a combination of the two.

3.1.4 A resident of Elkins Close reported that the culverted section of the Yelvertoft Brook running alongside Swinnertions Lane was unable to convey water during a flood and this had been a recurring problem. They also mentioned that this particular culvert section was replaced with concrete piping in 1998.
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4. CONCLUSION

4.1.1 The flooding that occurred in Yelvertoft, was caused by heavy rainfall on a saturated catchment. Drainage systems were unable to convey and dispose of rainwater effectively to larger watercourses downstream of the village. This led to the capacity of culverts and the flood storage area being exceeded and water flowing over ground following natural contours to low points around private properties.

4.1.2 The affected properties are situated at localised low points making them vulnerable to overland flow of surface water running off the highway.

4.1.3 The inability of culverts to effectively carry away water was caused by either a lack of capacity (insufficient diameter or blockage), an inability to discharge to Clay Coton Brook due to high water levels covering the outlets, or a combination of the two.
5. RIGHTS AND RESPONSIBILITIES

5.1 Communities and Residents
5.1.1 Communities may consist of the Town or Parish Council, Flood Forum, Community Group and affected residents, amongst others.

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

5.1.3 Community resilience is important in providing information and support to each other if flooding is anticipated. Actions taken can include signing up to the Environment Agencies Flood Warning Direct, subscribing to MET Office email alerts for weather warnings, supporting the Community Flood Group, producing a community flood plan, implementing property level protection and moving valuable items to higher ground.

5.1.4 NCC has produced a number of flood guides covering various subjects, some of which relate to this flood incident. The relevant guides have been identified and are available at:
- http://www.floodtoolkit.com/pdf-library/

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<table>
<thead>
<tr>
<th>No.</th>
<th>Flood Guide Title</th>
<th>To Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agricultural Run-Off</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Ditch Clearance</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Flood Investigations</td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>Watercourse Management</td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>Flood Related Benefits of the Water Framework Directive</td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>Reservoirs and Flooding</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Funding for Flood Alleviation</td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>Roles and Responsibilities for Sewers</td>
<td>X</td>
</tr>
<tr>
<td>9</td>
<td>Roles and Responsibilities for Highways</td>
<td>X</td>
</tr>
<tr>
<td>10</td>
<td>Groundwater Flooding</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>What to do in a Flood Emergency</td>
<td>X</td>
</tr>
<tr>
<td>12</td>
<td>How to Protect your Home</td>
<td>X</td>
</tr>
<tr>
<td>13</td>
<td>Insurance and Flood Risk</td>
<td>X</td>
</tr>
<tr>
<td>14</td>
<td>Using Experts for Flood Risk Assessment</td>
<td>X</td>
</tr>
<tr>
<td>15</td>
<td>Riparian Ownership and Flood Risk</td>
<td>X</td>
</tr>
<tr>
<td>16</td>
<td>Flood Defence Consenting</td>
<td>X</td>
</tr>
<tr>
<td>17</td>
<td>Using Agricultural Land for Attenuation</td>
<td>X</td>
</tr>
<tr>
<td>18</td>
<td>Enforcing Flood Risk Management</td>
<td>X</td>
</tr>
<tr>
<td>19</td>
<td>Flood Related Roles of Parish Councils and Communities</td>
<td>X</td>
</tr>
<tr>
<td>20</td>
<td>Buying a House: Is there a Flood Risk?</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Flood Warnings</td>
<td>X</td>
</tr>
<tr>
<td>22</td>
<td>Neighbourhood Planning and Flood Risk</td>
<td>X</td>
</tr>
<tr>
<td>23</td>
<td>New Development and Emergency Flood Plans</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Fisheries and Flooding</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Flood Advice for Businesses</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Impacts of Flooding</td>
<td>X</td>
</tr>
<tr>
<td>27</td>
<td>Together we can Reduce Flood Risk</td>
<td>X</td>
</tr>
</tbody>
</table>
5.1.5 Anyone affected by flooding should try to document as much information about the incident as possible using the Flood Incident Report Form, which can be found at:

https://www.floodtoolkit.com/emergency/report-flood/

5.2 **Lead Local Flood Authority (LLFA)**

5.2.1 As stated within the introduction section, NCC as the LLFA has a responsibility to investigate flood incidents under Section 19 of the F&WMA.

5.2.2 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.

5.2.3 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 those third party owners on the condition of their assets and their maintenance responsibilities.

5.2.4 As Lead Local Flood Authority NCC will be looking for support from other risk management authorities, communities and individual home owners to ensure flood incidents are reported, and any assets which have a significant effect on flood risk are recorded on the asset register.

5.2.5 While NCC can suggest possible causes of flooding in Yelvertoft, 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 act on identified causes of flooding or force risk management authorities to undertake any recommended actions.

5.3 **Highway Authority (Northamptonshire Highways)**

5.3.1 Northamptonshire 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.

5.3.2 New highway drainage systems are designed to Highways England’s Design Manual for Roads and Bridges (Volume 4, Section 2). They are only required to be constructed to drain surface water run-off from within the highway catchment rather than from the wider catchment.

5.3.3 There are historic drainage systems in historic highways which can become the responsibility of the Highway Authority due to dedication, as opposed to adoption. These drainage systems may not have been designed to any standard.

5.4 **Water Authority (Severn Trent Water Services) (STW)**

5.4.1 Water and sewerage companies are responsible for managing the risks of flooding from surface water, foul water 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.
5.4.2 Since October 2011, under the ‘Private Sewer Transfer’, STW adopted piped systems on private land that serve more than one curtilage and were connected to a public sewer on 1st July 2011. 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.

5.4.3 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, and discharges via a positive outfall.

5.4.4 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.

5.5 Daventry District Council (DDC)

5.5.1 DDC has powers under Section 14 of the Land Drainage Act 1991 (LDA) to undertake flood risk management works on ordinary watercourses (non-Main River) where deemed necessary.

5.5.2 Under Section 20 of the LDA, DDC have the powers to (by agreement of any person and at that person’s expense) carry out any drainage work which that person is entitled to carry out. Agreement may not be required in certain emergency or legally upheld situations.

5.5.3 DDC also has 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 LDA.

5.5.4 The above powers are subject to consent from NCC.

5.5.5 DDC are the Planning Authority and have a role in Building Control and the Building Regulations.

5.6 Environment Agency (EA)

5.6.1 The EA has a strategic overview responsibility of all sources of flooding and coastal erosion under the F&WMA.

5.6.2 The responsibility for maintenance and repair of Main Rivers lies with the riparian owner, but the EA have permissive powers to carry out maintenance work on Main Rivers under Section 165 of the Water Resources Act 1991 (WRA).

5.6.3 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.

5.6.4 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.
5.6.5 The River Avon, and Yelvertoft / Clay Coton Brook are Main Rivers. The culverted section of Yelvertoft Brook is Main River.

5.6.6 Other work carried out by the EA includes:

- Working in partnership with the Met Office to provide flood forecasts and warnings.
- Developing long-term approaches to Flood and Coastal Erosion Risk Management (FCERM). This includes working with others to prepare and carry out sustainable Catchment Flood Management Plans (CFMPs). CFMPs address flood risk in each river catchment. The Environment Agency also collates and reviews assessments, maps and plans for local flood risk management (normally undertaken by lead local flood authorities (LLFAs)).
- Providing evidence and advice to support others. This includes national flood and coastal erosion risk information, data and tools to help other risk management authorities and inform Government policy, and advice on planning and development issues. The EA are statutory consultees of the Local Planning Authority.
- Working with others to share knowledge and the best ways of working. This includes work to develop FCERM skills and resources.
- Monitoring and reporting on FCERM. This includes reporting on how the national FCERM strategy is having an impact across the country.

5.7 Land Owners and Developers

5.7.1 Land owners are responsible for the drainage of their land and controlling any movement of sediment from their land. Legally, owners of lower-level ground have to accept natural land drainage from adjacent land at a higher level. The exception to this is where the owner of the higher level land has carried out “improvements” such that the run-off from the land cannot be considered “natural”.

5.7.2 Agricultural practices by land owners can be considered as “improvements” to the land, so that cultivation of crops or other land uses can take place. Mitigation works are required on improved land to account for the change in natural land drainage and changes to surface water run-off this can create.

5.7.3 Land owners and developers are responsible for working with the Local Planning Authority to ensure that their development is completed in accordance with the planning permission and all conditions that have been imposed.

5.7.4 Advice for developers is available on the Flood Toolkit.

http://www.floodtoolkit.com/planning/developers/

The flood guides detailed in 5.1.4 above should also be referred to.
6. RECOMMENDATIONS

6.1 General
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.

6.2 Communities and Residents
(e.g. Town/Parish Council, Flood Forum, Community Group, land owners and affected residents).

6.2.1 Review the library of flood guides on the Flood Toolkit, detailed in 5.1.4 above.

- Produce an overall plan of the catchment area, with the cooperation of all drainage system owners of surrounding properties. This can be used to plan a strategy of ownership, maintenance and improvements of existing drainage systems. This should form the basis of a Community Flood Plan. This plan should include as a minimum:
  - Identification of any historic routes of drainage from the various catchment areas of the village, which could be reinstated or improved.
  - Identification of riparian ownership and responsibilities for field drainage systems such as ditches, culverted watercourses, and open watercourse sections.
  - Identify any land uses within the catchment that may unduly affect the normal flow of surface water.

- Preparing Household Emergency Plans for vulnerable properties in this area.
- Regularly inspecting ditches and pipework in the area of flood risk. Report blockages or other issues to the land owner and the LLFA.
- Explore options for property level protection and implement any recommendations. This could include additional drainage at the rear of properties, self-sealing air bricks and flood barriers. Information on Flood Prevention measures for Home Owners, Communities and Businesses can be found on the Flood Toolkit: http://www.floodtoolkit.com/risk/prevention/
- Permanent measures such as installing floodgates, raising electrical sockets and fitting non-return valves on pipes can also be considered. NCC and the EA can provide advice on these matters and more information can be found at: http://www.floodtoolkit.com/emergency/preparation/
- Explore community wide solutions (e.g. attenuation areas, overflow routes, tree planting).
- Use the Flood Toolkit Funding Tool to find sponsors who may be willing to help fund improvement projects: http://www.floodtoolkit.com/risk/funding/
Continue to report flood incidents to the Lead Local Flood Authority at: https://www.floodtoolkit.com/emergency/report-flood/. Endeavour to obtain as much evidence of flood events as possible, such as photographic and video evidence.

Have a Community Flood Risk Report carried out. Northamptonshire County Council Flood and Water Management Team can prepare flood risk reports for your community. Email: floodandwater@northamptonshire.gov.uk with the subject title “community flood risk report for [name of your community]”. Example Community Flood Risk Reports for the villages of Brigstock and Geddington can be downloaded from the Flood Toolkit here: http://www.floodtoolkit.com/how-to-guides/community-project/

A Community Flood Risk Report could then be used to produce a more detailed Community Flood Risk and Mitigation Investigation. This will find specific areas in the catchment that could be improved or monitored to reduce flood risk. There are guides and leaflets to help through this process, available on the Flood Toolkit. http://www.floodtoolkit.com/how-to-guides/community-project/

6.3 Lead Local Flood Authority (LLFA)
6.3.1 Work with the NCC Emergency Planning Team and the Environment Agency to support the Community Flood Group.

6.3.2 Work with the NCC Emergency Planning Team, the Environment Agency and other flood management authorities to support the community in the production of a Community Flood Plan and provide advice to residents on how to explore options for property level protection.

6.3.3 Inform owners of the drainage systems and watercourses within the overall surface water catchment area of their legal responsibilities.

6.4 Highway Authority (Northamptonshire Highways)
6.4.1 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.

6.4.2 Assess the suitability of third party drainage systems accepting discharge from Highway Drainage systems and report any unsatisfactory areas to the LLFA.

6.5 Water Authority (Severn Trent Water Services) (STW)
6.5.1 Assess the sources of water entering the public sewerage system.

6.5.2 Assess the capacity of their assets and identify any areas of insufficient capacity. Where this leads to flood risk to properties improvement work should be considered.

6.5.3 Develop a detailed plan of their assets to share with the LLFA and the Community.

6.6 Daventry District Council (DDC)
6.6.1 Undertake regular highway drainage cleansing throughout Yelvertoft, including the carriageway channel. Identify and develop a detailed plan of their assets to share with the LLFA and the community.
6.6.2 Continue to consult with the Environment Agency and Lead Local Flood Authority (Surface Water Drainage Team) as required in respect of planning applications for new developments to reduce flood risk. Aim to ensure that all works are carried out in accordance with the approved plans and documents.

6.6.3 Undertake to utilise enforcement powers under Section 25 of the Land Drainage Act 1991 where it is considered that riparian owners are failing to maintain ordinary watercourses in their ownership.

6.6.4 Endeavour to assist other flood risk management authorities and land owners in the preparation of a detailed plan of assets relating to drainage and flood risk, to share with the LLFA and the community.

6.7 Environment Agency

6.7.1 Work with the NCC Emergency Planning Team and the LLFA to support the Community Flood Group.

6.7.2 Encourage third party asset owners to maintain their property in appropriate condition and consider enforcement action if appropriate.

6.7.3 Consider undertaking maintenance or repair of third party assets if it can be justified in order to safeguard the public interest and where other options are not appropriate.

6.7.4 Consider undertaking studies to determine options for improvements to Main Rivers to reduce flood risk.

6.8 Land Owners and Developers

6.8.1 Developers should work with local authorities to ensure all development is completed in accordance with approved plans and documents, and planning policy.

6.8.2 Land owners should undertake regular inspection and maintenance of their drainage systems in accordance with a defined maintenance regime. Identify and develop a detailed plan of their assets to share with the LLFA, other flood risk management authorities and the community.

6.8.3 Land owners should assess the capacity of their drainage systems and identify any areas with insufficient capacity for the collection, conveyance, storage and disposal of surface water. Where this could lead to runoff to the public highway or nuisance to third party private property improvement works should be considered.

6.8.4 Review the library of flood guides on the Flood Toolkit, detailed in 5.1.4 above.

6.8.5 Agricultural Land owners should carry out works to their land to reduce surface water run-off.

- These include following principles of good soil husbandry and providing land drainage systems such as ditches.
- The Single Payment Scheme, Cross Compliance Guidance for Soil Management, 2010 edition, should be referred to:
These works help to retain the natural land drainage regime and provide the best soil conditions for the continued agricultural use of the land.

Farmers in receipt of Common Agricultural Policy (CAP) payments are required to carry out a Soil Protection Review which should identify any problems with soil erosion and runoff and help identify solutions to the problem.

Examples of good practice for reducing surface water run-off from agricultural land are:

- Ploughing fields in a perpendicular direction to the slope of the land, reducing the effect of channelling of water over the land when it rains;
- Using techniques and machinery to limit compaction of soils;
- Growing crops that match the capability of the land, particularly in relation to the timings of activities and not overworking soils through the year;
- Providing new ditches, sub-soil drainage and outfalls, and re-instating and regularly maintaining existing ditches. Old existing ditches may be completely filled and difficult to see. The type of soil make-up, type of flora and overall lie of the land can help to determine the routes of filled in historic ditches;
- Preventing changes to the levels of the land that would cause channelling of surface water to a single point where this would not naturally occur.

It should be noted that following good practice for managing surface water run-off cannot completely remove the risks of natural land drainage and the associated quantities and flow routes of run-off that can cause flooding.
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 programme as appropriate.

The opinions, conclusions and any recommendations in this Report are based on assumptions made by the Environment Agency and 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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The implications for producing Flood Investigation Reports and any consequences of blight have been considered. The process of gaining insurance for a property and/or purchasing/selling a property and any flooding issues identified are considered a separate and legally binding process placed upon property owners and this is independent of and does not relate to the County Council highlighting flooding to properties at a street level.

The Environment Agency and Northamptonshire County Council do not accept any liability for the use of this report or its contents by any third party.
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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
https://www.gov.uk/government/publications/prepare-your-property-for-flooding

Northamptonshire County Council Flood and Water Management Web Pages:
http://www.floodtoolkit.com/

Northamptonshire County Council Local Flood Risk Management Strategy:

Flood and Water Management Act 2010
USEFUL CONTACTS

Northamptonshire County Council
Highways:
Tel: Street Doctor (Highways) 0300 126 1000 (24hrs)
Website: 
Email: highways@northamptonshire.gov.uk

Emergency Planning:
Tel: 0300 1261012
Email: emergencyplanning1@northamptonshire.gov.uk

Flood and Water Management Team:
Tel: 01604 366014 (Mon-Fri, 9am - 5pm)
Email: floodandwater@northamptonshire.gov.uk

Environment Agency:
General Tel: 08708 506 506 (Mon-Fri 8-6) Call charges apply.
Incident Hotline: 0800 807060 (24 hrs)
Floodline: 0345 988 1188
Email: enquiries@environment-agency.gov.uk
Website: www.environment-agency.gov.uk

Severn Trent Water
Emergency Tel: 0800 783 4444
Website: https://www.stwater.co.uk/in-my-area/report-a-problem/

Daventry District Council
Tel: 01327 871100
Email: comments@daventrydc.gov.uk

Yelvertoft Parish Council
Website: http://www.parish-council.com/YelvertoftParishCouncil/

The Flood Toolkit “Who is responsible” page:
http://www.floodtoolkit.com/contacts/
APPENDIX A

Location, Catchment and Main Rivers
Northamptonshire County Council Flood Incident Investigation. Yelvertoft. Incident Date: 9 March 2016
APPENDIX B

Flood Map for Planning
Flood Map Areas (assuming no defences)
Flood Zone 3 shows the area that could be affected by flooding from a river with a 1 in 100 (1%) or greater chance of happening each year.
Flood Zone 2 shows the extent of an extreme flood from rivers with up to a 1 in 1000 (0.1% - 1%) chance of occurring each year.
Northamptonshire County Council Flood Incident Investigation. Yelvertoft. Incident Date: 9 March 2016

Legend

High: Greater than or equal to 1 in 30 (3.3%) chance in any given year.
Medium: Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year.
Low: Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year.
Very low: Less than 1 in 1,000 (0.1%) chance in any given year.

This information is shown on the Risk of Flooding from Surface Water map on the Environment Agency website.
APPENDIX D

Yelvertoft Brook Culverts
APPENDIX E

Yelvertoft Flood Storage Area
Northamptonshire County Council Flood Incident Investigation. Yelvertoft. Incident Date: 9 March 2016

Crick Road Flood Storage Area
APPENDIX F

Yelvertoft Local Authority Map
APPENDIX G

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